INCH-POUND
MIL-M-38510/117C
11 August 2005
SUPERSEDING
MIL-M-38510/117B
10 February 2004

MILITARY SPECIFICATION
MICROCIRCUITS, LINEAR, ADJUSTABLE, POSITIVE, VOLTAGE REGULATORS, MONOLITHIC SILICON

This specification is approved for use by all Departments and Agencies of the Department of Defense.

Reactivated for new design as of 10 February 2004. May be used for either new or existing design acquisition.

The requirements for acquiring the product herein shall consist of this specification sheet and MIL-PRF-38535

1. SCOPE

1.1 Scope. This specification covers the detail requirements for three and four terminal monolithic silicon, adjustable, positive, voltage regulators. Two product assurance classes and a choice of case outlines and lead finish are provided for each type and are reflected in the complete part number. For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.4).

1.2 Part or Identifying Number (PIN). The PIN is in accordance with MIL-PRF-38535, and as specified herein.

1.2.1 Device types. The device types are as shown in the following:

Device type	Circuit	Case outline letter
01	4-terminal voltage regulator, 5 volts $\leq V_O \leq$ 30 volts at 0.5 A	X
02	4-terminal voltage regulator, 5 volts $\leq V_O \leq$ 30 volts at 1.5 A	Y
03	3-terminal voltage regulator, 1.25 volts $\leq V_O \leq$ 37 volts at 0.5 A	X
04	3-terminal voltage regulator, 1.25 volts $\leq V_O \leq$ 37 volts at 1.5 A	Y
05	3-terminal voltage regulator, 1.25 volts $\leq V_O \leq$ 37 volts at 3.0 A	Y
06	3-terminal voltage regulator, 1.25 volts $\leq V_O \leq$ 37 volts at 5.0 A	Y

1.2.2 Device class. The device class is the product assurance level as defined in MIL-PRF-38535.

Comments, suggestions, or questions on this document should be addressed to: Commander, Defense Supply Center Columbus, ATTN: DSCC-VAS, 3990 East Broad St., Columbus, OH 43218-3990, or emailed to linear@dscc.dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at http://assist.daps.dla.mil.

1.2.3 Case outlines. The case outlines are as designated in MIL-STD-1835 and as follows:

Outline letter	Descriptive designator	Terminals	Device types	Package style
X	See figure 1	4	01	Can
Y	See figure 2	4	02	Flange mount
X	See figure 3	3	03	Can
Y	See figure 4	2	04,05,06	Flange mount

1.3 Absolute maximum ratings.

Input voltage (device types 01 and 02) .... 40 V
Input-output differential voltage
(device types 03 and 04).. 40 V
(device types 05 and 06).. 35 V
Lead temperature (soldering, 60 seconds) .... +300°C
Junction temperature (T_J) .... +150°C 1/
Storage temperature range .... -65°C to +150°C

1.4 Recommended operating conditions.

Input voltage range:
Device types 01 and 02 .... 8 V dc to 38 V dc
Device types 03 and 04 .... 4.25 V dc to 41.25 V dc
Device types 05 and 06 .... 4.25 V dc to 36.25 V dc
Ambient operating temperature range (T_A) .... -55°C to +125°C

1.5 Power and thermal characteristics.

$T_A = T_S$	Case	Max θ_{JA}	Maximum P_D without heat sink	Max θ_{JC}	Maximum P_D with heat sink	Max θ_{C-S} 2/
125°C 3/	X	140°C/W	0.18 W	40°C/W	0.5 W	10°C/W
	Y	35°C/W	0.71 W	4°C/W 4/	5.6 W 5/	0.5°C/W
25°C 3/	X	140°C/W	0.89 W	40°C/W	2.50 W	10°C/W
	Y	35°C/W	3.60 W	4°C/W 4/	28.00 W 6/	0.5°C/W
-55°C 3/	X	140°C/W	1.50 W	40°C/W	4.00 W	10°C/W
	Y	35°C/W	5.80 W	4°C/W 4/	45.00 W 6/	0.5°C/W

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1/ The device is protected by a thermal shutdown circuit which is designed to turn off the output transistor whenever the device junction temperature is in excess of 150°C.
2/ This value represents the maximum allowable thermal impedance of a heat sink to remain within the thermal ratings.
3/ Based on T_J = 150°C and specified values of θ_{JA} and θ_{JC}.
4/ Maximum θ_{JC} at all temperatures (for case Y only) = 1.5°C/W for device type 05 and 1.0°C/W for device type 06.
5/ Power dissipation (P_D) at 125°C (for case Y only) = 12.5 W for device type 05 and 16.6 W for device type 06.
6/ Power dissipation (P_D) at -55°C and +25°C (for case Y only) = 30 W for device type 05 and 50 W for device type 06.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-38535 - Integrated Circuits (Microcircuits) Manufacturing, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-883 - Test Method Standard for Microelectronics.
MIL-STD-1835 - Interface Standard Electronic Component Case Outlines.

(Copies of these documents are available online at http://assist.daps.dla.mil/quicksearch/ or http://assist.daps.dla.mil or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this document shall take precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Qualification. Microcircuits furnished under this specification shall be products that are manufactured by a manufacturer authorized by the qualifying activity for listing on the applicable qualified manufacturers list before contract award (see 4.3 and 6.3).

3.2 Item requirements. The individual item requirements shall be in accordance with MIL-PRF-38535 and as specified herein or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein.

3.3 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-PRF-38535 and herein.

3.3.1 Block diagram and terminal connections. The block diagrams and terminal connections shall be as specified on figures 5 through 8.

3.3.2 Schematic circuits. The schematic circuits shall be maintained by the manufacturer and made available to the qualifying activity and the preparing activity (DSCC-VA) upon request.

3.3.3 Case outlines. The case outlines shall be as specified in 1.2.3 and on figures 1, 2, 3, and 4.

3.4 Lead material and finish. Lead material and finish shall be in accordance with MIL-PRF-38535 (see 6.6).

3.5 Electrical performance characteristics. Unless otherwise specified, the electrical performance characteristics are as specified in table I and apply over the full operating ambient temperature range of –55°C to +125°C.

3.5.1 Stability. If the device is located an appreciable distance from the power supply filter, a solid tantalum bypass capacitor should be connected as close to the device V_{CC} input as possible to suppress oscillation. A solid tantalum bypass capacitor is recommended on the device output. Since load currents of less than 5 milliamperes may result in a loss of voltage regulation, regulators should be preloaded with 5 milliamperes of load current in lightly loaded applications. In applications where fast rising high current pulses are present, additional output capacitance of 20 μF or more shall be used.

3.5.2 Test limit. The test limits specified in tables I and III apply only for the stated test conditions (example, 2 percent duty cycle), which essentially keep the junction temperature constant. In most applications the junction temperature will greatly exceed the 25°C ambient or sink temperature; thus devices may not perform within the 25°C specified limits.

3.6 Electrical test requirements. Electrical test requirements for each device class shall be the subgroups specified in table II. The electrical tests for each subgroup are described in table III.

3.7 Marking. Marking shall be in accordance with MIL-PRF-38535.

3.8 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 52 (see MIL-PRF-38535, appendix A).

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions 1/ 2/ $-55°C \leq T_A \leq +125°C$ see figure 9 and 3.5 unless otherwise specified		Device type	Limits		Unit
		Input voltage	Load current		Min	Max	
Output voltage	V_{OUT}	V_{IN} = 8 V	I_L = -5 mA, -500 mA	01	4.75	5.25	V
		V_{IN} = 30 V	I_L = -5 mA, -50 mA		4.75	5.25	
		V_{IN} = 38 V	I_L = -500 mA		28.5	31.5	
		V_{IN} = 10 V, T_A = 150°C	I_L = -5 mA		4.75	5.25	
Line regulation	V_{RLINE}	8 V $\leq V_{IN} \leq$ 30 V	I_L = -50 mA	01	-150	150	mV
		8 V $\leq V_{IN} \leq$ 25 V	I_L = -350 mA		-50	50	
Load regulation	V_{RLOAD}	V_{IN} = 10 V	-500 mA $\leq I_L \leq$ -5 mA	01	-100	100	mV
		V_{IN} = 30 V	-50 mA $\leq I_L \leq$ -5 mA		-150	150	
Thermal regulation	V_{RTH}	V_{IN} = 15 V, T_A = 25°C	I_L = -500 mA	01	-50	50	mV
Standby current drain	I_{SCD}	V_{IN} = 10 V	I_L = -5 mA	01	-7.0	-0.5	mA
		V_{IN} = 30 V	I_L = -5 mA		-8.0	-0.5	
Standby current drain change versus line voltage	ΔI_{SCD} (LINE)	8 V $\leq V_{IN} \leq$ 30 V	I_L = -5 mA	01	-1.0	1.0	mA
Standby current drain change versus load current	ΔI_{SCD} (LOAD)	V_{IN} = 10 V	-500 mA $\leq I_L \leq$ -5 mA	01	-0.5	0.5	mA
Control pin current	I_{CTL}	V_{IN} = 10 V, T_A = 25°C	I_L = -350 mA	01	-5.0	-0.01	µA
		V_{IN} = 10 V, $-55°C \leq T_A \leq 125°C$	I_L = -350 mA		-8.0	-0.01	

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions 1/ 2/ $-55°C \leq T_A \leq +125°C$ see figure 9 and 3.5 unless otherwise specified		Device type	Limits		Unit
		Input voltage	Load current		Min	Max	
Output short circuit current	I_{OS1}	V_{IN} = 10 V		01	-2.0	-0.50	A
	I_{OS2}	V_{IN} = 30 V			-1.0	-0.01	
Output voltage recovery after output short circuit current	V_{OUT} (RECOV)	V_{IN} = 10 V, 3/ after I_{OS1}	R_L = 10 Ω, C_L = 20 μF	01	4.75	5.25	V
		V_{IN} = 30 V, 3/ after I_{OS2}	R_L = 1 kΩ		4.75	5.25	
Voltage start-up	V_{START}	V_{IN} = 8 V	R_L = 10 Ω, C_L = 20 μF	01	4.75	5.25	V
Ripple rejection	ΔV_{IN} / ΔV_{OUT}	V_{IN} = 10 V, 4/ e_i = 1 Vrms, at f = 2400 Hz	I_L = -125 mA, T_A = 25°C, see figure 11	01	45		dB
Output noise voltage	V_{NO}	V_{IN} = 10 V, 4/ see figure 12	I_L = -50 mA, T_A = 25°C	01		125	μVrms
Line transient response	ΔV_{OUT} / ΔV_{IN}	V_{IN} = 10 V, 5/ ΔV_{IN} = 3.0 V, see figure 13	I_L = -5 mA, T_A = 25°C	01		30	mV/V
Load transient response	ΔV_{OUT} / ΔI_L	V_{IN} = 10 V, 5/ see figure 14	I_L = -50 mA, ΔI_L = -200 mA T_A = 25°C	01		2.5	mV/mA

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions 1/ 2/ $-55°C \leq T_A \leq +125°C$ see figure 9 and 3.5 unless otherwise specified: Input voltage	Load current	Device type	Limits Min	Limits Max	Unit
Output voltage	V_{OUT}	V_{IN} = 8 V	I_L = -5 mA, -1 A	02	4.75	5.25	V
		V_{IN} = 30 V	I_L = -5 mA, -100 mA		4.75	5.25	
		V_{IN} = 38 V	I_L = -1 A		28.5	31.5	
		V_{IN} = 10 V, T_A = 150°C	I_L = -5 mA		4.75	5.25	
Line regulation	V_{RLINE}	8 V ≤ V_{IN} ≤ 30 V	I_L = -100 mA	02	-150	150	mV
		8 V ≤ V_{IN} ≤ 25 V	I_L = -500 mA		-50	50	
Load regulation	V_{RLOAD}	V_{IN} = 10 V	-1 A ≤ I_L ≤ -5 mA	02	-100	100	mV
		V_{IN} = 30 V	-100 mA ≤ I_L ≤ -5 mA		-150	150	
Thermal regulation	V_{RTH}	V_{IN} = 15 V, T_A = 25°C	I_L = -1 A	02	-50	50	mV
Standby current drain	I_{SCD}	V_{IN} = 10 V	I_L = -5 mA	02	-7.0	-0.5	mA
		V_{IN} = 30 V	I_L = -5 mA		-8.0	-0.5	
Standby current drain change versus line voltage	ΔI_{SCD} (LINE)	8 V ≤ V_{IN} ≤ 30 V	I_L = -5 mA	02	-1.0	1.0	mA
Standby current drain change versus load current	ΔI_{SCD} (LOAD)	V_{IN} = 10 V	-1 A ≤ I_L ≤ -5 mA	02	-0.5	0.5	mA
Control pin current	I_{CTL}	V_{IN} = 10 V, T_A = 25°C	I_L = -500 mA	02	-5.0	-0.01	µA
		V_{IN} = 10 V, -55°C ≤ T_A ≤ 125°C	I_L = -500 mA		-8.0	-0.01	

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions 1/ 2/ $-55°C \leq T_A \leq +125°C$ see figure 9 and 3.5 unless otherwise specified		Device type	Limits		Unit
		Input voltage	Load current		Min	Max	
Output short circuit current	I_{OS1}	V_{IN} = 10 V		02	-4.0	-1.00	A
	I_{OS2}	V_{IN} = 30 V			-2.0	-0.02	
Output voltage recovery after output short circuit current	V_{OUT} (RECOV)	V_{IN} = 10 V, 3/ after I_{OS1}	R_L = 5 Ω, C_L = 20 µF	02	4.75	5.25	V
		V_{IN} = 30 V, 3/ after I_{OS2}	R_L = 5 kΩ		4.75	5.25	
Voltage start-up	V_{START}	V_{IN} = 8 V	R_L = 5 Ω, C_L = 20 µF	02	4.75	5.25	V
Ripple rejection	ΔV_{IN} / ΔV_{OUT}	V_{IN} = 10 V, 4/ e_i = 1 Vrms, at f = 2400 Hz	I_L = -350 mA, T_A = 25°C, see figure 11	02	45		dB
Output noise voltage	V_{NO}	V_{IN} = 10 V, 4/ see figure 12	I_L = -100 mA, T_A = 25°C	02		250	µVrms
Line transient response	ΔV_{OUT} / ΔV_{IN}	V_{IN} = 10 V, 5/ ΔV_{IN} = 3.0 V, see figure 13	I_L = -5 mA, T_A = 25°C	02		30	mV/V
Load transient response	ΔV_{OUT} / ΔI_L	V_{IN} = 10 V, 5/ see figure 14	I_L = -100 mA, ΔI_L = -400 mA T_A = 25°C	02		2.5	mV/mA

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions 1/ 2/ -55°C ≤ T_A ≤ +125°C see figure 9 and 3.5 unless otherwise specified		Device type	Limits		Unit
		Input voltage	Load current		Min	Max	
Output voltage	V_{OUT}	V_{IN} = 4.25 V	I_L = -5 mA, -500 mA	03	1.20	1.30	V
		V_{IN} = 41.25 V	I_L = -5 mA, -50 mA		1.20	1.30	
		V_{IN} = 6.25 V, T_A = 150°C	I_L = -5 mA		1.20	1.30	
Line regulation	V_{RLINE}	4.25 V ≤ V_{IN} ≤ 41.25 V, T_A = 25°C	I_L = -5 mA	03	-9	9	mV
		4.25 V ≤ V_{IN} ≤ 41.25 V, -55°C ≤ T_A ≤ 125°C	I_L = -5 mA		-23	23	
Load regulation	V_{RLOAD}	V_{IN} = 6.25 V, T_A = 25°C	-500 mA ≤ I_L ≤ -5 mA	03	-12	12	mV
		V_{IN} = 6.25 V, -55°C ≤ T_A ≤ 125°C	-500 mA ≤ I_L ≤ -5 mA		-12	12	
		V_{IN} = 41.25 V, T_A = 25°C	-500 mA ≤ I_L ≤ -5 mA		-12	12	
		V_{IN} = 41.25 V, -55°C ≤ T_A ≤ 125°C	-500 mA ≤ I_L ≤ -5 mA		-12	12	
Thermal regulation	V_{RTH}	V_{IN} = 14.6 V, T_A = 25°C	I_L = -500 mA	03	-12	12	mV
Adjust pin current	I_{ADJ}	V_{IN} = 4.25 V	I_L = -5 mA	03	-100	-15	µA
		V_{IN} = 41.25 V	I_L = -5 mA		-100	-15	
Adjust pin current change versus line voltage	ΔI_{ADJ} (LINE)	4.25 V ≤ V_{IN} ≤ 41.25 V	I_L = -5 mA	03	-5	5	µA

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions 1/ 2/ $-55°C \le T_A \le +125°C$ see figure 9 and 3.5 unless otherwise specified — Input voltage	Load current	Device type	Limits Min	Max	Unit
Adjust pin current change versus load current	ΔI_{ADJ} (LOAD)	V_{IN} = 6.25 V	-500 mA $\le I_L \le$ -5 mA	03	-5	5	µA
Minimum load current	I_Q	4.25 V $\le V_{IN} \le$ 14.25 V, forced V_{OUT} = 1.4 V		03	-3.00	-0.05	mA
		V_{IN} = 41.25 V forced V_{OUT} = 1.4 V			-5.00	-0.2	
Output short circuit current	I_{OS1}	V_{IN} = 4.25 V		03	-1.8	-0.50	A
	I_{OS2}	V_{IN} = 40 V			-0.50	-0.05	
Output voltage recovery after output short circuit current	V_{OUT} (RECOV)	V_{IN} = 4.25 V, 3/ after I_{OS1}	R_L = 2.5 Ω, C_L = 20 µF	03	1.20	1.30	V
		V_{IN} = 40 V, 3/ after I_{OS2}	R_L = 250 Ω		1.20	1.30	
Voltage start-up	V_{START}	V_{IN} = 4.25 V	R_L = 2.5 Ω, C_L = 20 µF	03	1.20	1.30	V
Ripple rejection	ΔV_{IN} / ΔV_{OUT}	V_{IN} = 6.25 V, 4/ e_i = 1 Vrms, at f = 2400 Hz	I_L = -125 mA, T_A = 25°C, see figure 11	03	65		dB
Output noise voltage	V_{NO}	V_{IN} = 6.25 V, 4/ see figure 12	I_L = -50 mA, T_A = 25°C	03		120	µVrms
Line transient response	ΔV_{OUT} / ΔV_{IN}	V_{IN} = 6.25 V, 5/ ΔV_{IN} = 3.0 V, see figure 13	I_L = -10 mA, T_A = 25°C	03		6	mV/V
Load transient response	ΔV_{OUT} / ΔI_L	V_{IN} = 6.25 V, 5/ see figure 14	I_L = -50 mA, ΔI_L = -200 mA T_A = 25°C	03		0.60	mV/mA

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions 1/ 2/ $-55°C \leq T_A \leq +125°C$ see figure 9 and 3.5 unless otherwise specified		Device type	Limits		Unit
		Input voltage	Load current		Min	Max	
Output voltage	V_{OUT}	V_{IN} = 4.25 V	I_L = -5 mA, -1.5 A	04	1.20	1.30	V
		V_{IN} = 41.25 V	I_L = -5 mA, -200 mA		1.20	1.30	
		V_{IN} = 6.25 V, T_A = 150°C	I_L = -5 mA		1.20	1.30	
Line regulation	V_{RLINE}	4.25 V ≤ V_{IN} ≤ 41.25 V, T_A = 25°C	I_L = -5 mA	04	-9	9	mV
		4.25 V ≤ V_{IN} ≤ 41.25 V, -55°C ≤ T_A ≤ 125°C	I_L = -5 mA		-23	23	
Load regulation	V_{RLOAD}	V_{IN} = 6.25 V, T_A = 25°C	-1.5 A ≤ I_L ≤ -5 mA	04	-3.5	3.5	mV
		V_{IN} = 6.25 V, -55°C ≤ T_A ≤ 125°C	-1.5 A ≤ I_L ≤ -5 mA		-12	12	
		V_{IN} = 41.25 V, T_A = 25°C	-200 mA ≤ I_L ≤ -5 mA		-3.5	3.5	
		V_{IN} = 41.25 V, -55°C ≤ T_A ≤ 125°C	-200 mA ≤ I_L ≤ -5 mA		-12	12	

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions 1/ 2/ $-55°C \leq T_A \leq +125°C$ see figure 9 and 3.5 unless otherwise specified		Device type	Limits		Unit
		Input voltage	Load current		Min	Max	
Thermal regulation	V_{RTH}	V_{IN} = 14.6 V, T_A = 25°C	I_L = -1.5 A	04	-12	12	mV
Adjust pin current	I_{ADJ}	V_{IN} = 4.25 V	I_L = -5 mA	04	-100	-15	µA
		V_{IN} = 41.25 V	I_L = -5 mA		-100	-15	
Adjust pin current change versus line voltage	ΔI_{ADJ} (LINE)	4.25 V ≤ V_{IN} ≤ 41.25 V	I_L = -5 mA	04	-5	5	µA
Adjust pin current change versus load current	ΔI_{ADJ} (LOAD)	V_{IN} = 6.25 V	-1.5 A ≤ I_L ≤ -5 mA	04	-5	5	µA
Minimum load current	I_Q	4.25 V ≤ V_{IN} ≤ 14.25 V, forced V_{OUT} = 1.4 V		04	-3.00	-0.05	mA
		V_{IN} = 41.25 V forced V_{OUT} = 1.4 V			-5.00	-0.2	
Output short circuit current	I_{OS1}	V_{IN} = 4.25 V		04	-3.50	-1.50	A
	I_{OS2}	V_{IN} = 40 V			-1.00	-0.18	
Output voltage recovery after output short circuit current	V_{OUT} (RECOV)	V_{IN} = 4.25 V, 3/ after I_{OS1}	R_L = 0.833 Ω, C_L = 20 µF	04	1.20	1.30	V
		V_{IN} = 40 V, 3/ after I_{OS2}	R_L = 250 Ω		1.20	1.30	
Voltage start-up	V_{START}	V_{IN} = 4.25 V	R_L = 0.833 Ω, C_L = 20 µF	04	1.20	1.30	V
Ripple rejection	ΔV_{IN} / ΔV_{OUT}	V_{IN} = 6.25 V, 4/ e_i = 1 Vrms, at f = 2400 Hz	I_L = -500 mA, T_A = 25°C, see figure 11	04	65		dB

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions 1/ 2/ -55°C ≤ T_A ≤ +125°C see figure 9 and 3.5 unless otherwise specified		Device type	Limits		Unit
		Input voltage	Load current		Min	Max	
Output noise voltage	V_{NO}	V_{IN} = 6.25 V, 4/ see figure 12	I_L = -100 mA, T_A = 25°C	04		120	µVrms
Line transient response	ΔV_{OUT} / ΔV_{IN}	V_{IN} = 6.25 V, 5/ ΔV_{IN} = 3.0 V, see figure 13	I_L = -10 mA, T_A = 25°C	04		6	mV/V
Load transient response	ΔV_{OUT} / ΔI_L	V_{IN} = 6.25 V, 5/ see figure 14	I_L = -100 mA, ΔI_L = -400 mA T_A = 25°C	04		0.30	mV/mA
For device type 05, see figure 10							
Output voltage	V_{OUT}	V_{IN} = 4.25 V	I_L = -5 mA, -3.0 A	05	1.20	1.30	V
		V_{IN} = 36.25 V	I_L = -5 mA, -150 mA		1.20	1.30	
		V_{IN} = 6.25 V, T_A = 150°C	I_L = -5 mA		1.20	1.30	
Line regulation	V_{RLINE}	4.25 V ≤ V_{IN} ≤ 36.25 V, T_A = 25°C	I_L = -5 mA	05	-4	4	mV
		4.25 V ≤ V_{IN} ≤ 36.25 V, -55°C ≤ T_A ≤ 125°C	I_L = -5 mA		-20	20	
Load regulation	V_{RLOAD}	V_{IN} = 6.25 V, T_A = 25°C	-3.0 A ≤ I_L ≤ -5 mA	05	-3.5	3.5	mV
		V_{IN} = 6.25 V, -55°C ≤ T_A ≤ 125°C	-3.0 A ≤ I_L ≤ -5 mA		-12	12	
		V_{IN} = 36.25 V, T_A = 25°C	-150 mA ≤ I_L ≤ -5 mA		-3.5	3.5	
		V_{IN} = 36.25 V, -55°C ≤ T_A ≤ 125°C	-150 mA ≤ I_L ≤ -5 mA		-12	12	

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions 1/ 2/ $-55°C \le T_A \le +125°C$ see figure 10 and 3.5 unless otherwise specified		Device type	Limits		Unit
		Input voltage	Load current		Min	Max	
Thermal regulation	V_{RTH}	V_{IN} = 11.25 V, T_A = 25°C	I_L = -1.0 A	05	-5	5	mV
Adjust pin current	I_{ADJ}	V_{IN} = 4.25 V	I_L = -5 mA	05	-100	-15	µA
		V_{IN} = 36.25 V	I_L = -5 mA		-100	-15	
Adjust pin current change versus line voltage	ΔI_{ADJ} (LINE)	4.25 V $\le V_{IN} \le$ 36.25 V	I_L = -5 mA	05	-5	5	µA
Adjust pin current change versus load current	ΔI_{ADJ} (LOAD)	V_{IN} = 6.25 V	-3.0 A $\le I_L \le$ -5 mA	05	-5	5	µA
Minimum load current	I_Q	4.25 V $\le V_{IN} \le$ 14.25 V, forced V_{OUT} = 1.4 V		05	-3.00	-0.05	mA
		V_{IN} = 36.25 V forced V_{OUT} = 1.4 V			-5.00	-0.2	
Output short circuit current	I_{OS1}	V_{IN} = 4.25 V		05	-5.2	-3.0	A
	I_{OS2}	V_{IN} = 35 V			-2.0	-0.15	
Output voltage recovery after output short circuit current	V_{OUT} (RECOV)	V_{IN} = 4.25 V, 3/ after I_{OS1}	R_L = 0.416 Ω, C_L = 20 µF	05	1.20	1.30	V
		V_{IN} = 35 V, 3/ after I_{OS2}	R_L = 250 Ω		1.20	1.30	
Voltage start-up	V_{START}	V_{IN} = 4.25 V	R_L = 0.416 Ω, C_L = 20 µF	05	1.20	1.30	V
Ripple rejection	ΔV_{IN} / ΔV_{OUT}	V_{IN} = 6.25 V, 4/ e_i = 1 Vrms, at f = 2400 Hz	I_L = -500 mA, T_A = 25°C, see figure 11	05	65		dB

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions 1/ 2/ -55°C ≤ T_A ≤ +125°C see figure 10 and 3.5 unless otherwise specified		Device type	Limits		Unit
		Input voltage	Load current		Min	Max	
Output noise voltage	V_{NO}	V_{IN} = 6.25 V, 4/ see figure 12	I_L = -100 mA, T_A = 25°C	05		120	µVrms
Line transient response	ΔV_{OUT} / ΔV_{IN}	V_{IN} = 6.25 V, 5/ ΔV_{IN} = 3.0 V, see figure 13	I_L = -10 mA, T_A = 25°C	05		12	mV/V
Load transient response	ΔV_{OUT} / ΔI_L	V_{IN} = 6.25 V, 5/ see figure 14	I_L = -100 mA, ΔI_L = -400 mA T_A = 25°C	05		0.30	mV/mA
Output voltage	V_{OUT}	V_{IN} = 4.25 V	I_L = -5 mA, -5.0 A	06	1.19	1.29	V
		V_{IN} = 36.25 V	I_L = -5 mA, -150 mA		1.19	1.29	
		VIN = 6.25 V	I_L = -7.0 A		1.19	1.29	
		V_{IN} = 6.25 V, T_A = 150°C	I_L = -5 mA		1.19	1.29	
Line regulation	V_{RLINE}	4.25 V ≤ V_{IN} ≤ 36.25 V, T_A = 25°C	I_L = -5 mA	06	-4	4	mV
		4.25 V ≤ V_{IN} ≤ 36.25 V, -55°C ≤ T_A ≤ 125°C	I_L = -5 mA		-17	17	
Load regulation	V_{RLOAD}	V_{IN} = 6.25 V, T_A = 25°C	-5.0 A ≤ I_L ≤ -5 mA	06	-3.8	3.8	mV
		V_{IN} = 6.25 V, -55°C ≤ T_A ≤ 125°C	-5.0 A ≤ I_L ≤ -5 mA		-8	8	
		V_{IN} = 36.25 V, T_A = 25°C	-150 mA ≤ I_L ≤ -5 mA		-3.8	3.8	
		V_{IN} = 36.25 V, -55°C ≤ T_A ≤ 125°C	-150 mA ≤ I_L ≤ -5 mA		-8	8	

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions 1/ 2/ $-55°C \le T_A \le +125°C$ see figure 10 and 3.5 unless otherwise specified		Device type	Limits		Unit
		Input voltage	Load current		Min	Max	
Thermal regulation	V_{RTH}	V_{IN} = 11.25 V, T_A = 25°C	I_L = -1.0 A	06	-2	2	mV
Adjust pin current	I_{ADJ}	V_{IN} = 4.25 V	I_L = -5 mA	06	-100	-15	µA
		V_{IN} = 36.25 V	I_L = -5 mA		-100	-15	
Adjust pin current change versus line voltage	ΔI_{ADJ} (LINE)	$4.25 V \le V_{IN} \le 36.25 V$	I_L = -5 mA	06	-5	5	µA
Adjust pin current change versus load current	ΔI_{ADJ} (LOAD)	V_{IN} = 6.25 V	$-5.0 A \le I_L \le -5 mA$	06	-5	5	µA
Minimum load current	I_Q	$4.25 V \le V_{IN} \le 14.25 V$, forced V_{OUT} = 1.4 V		06	-3.00	-0.05	mA
		V_{IN} = 36.25 V forced V_{OUT} = 1.4 V			-5.00	-0.2	
Output short circuit current	I_{OS1}	V_{IN} = 4.25 V, t = 0.1 ms		06	-16.0	-7.0	A
	I_{OS2}	V_{IN} = 4.25 V, t = 0.5 ms			-16.0	-7.0	
	I_{OS3}	V_{IN} = 4.25 V, t = 5.0 ms			-15.0	-5.0	
	I_{OS4}	V_{IN} = 35 V, t = 10 ms			-3.0	-0.20	
Output voltage recovery after output short circuit current	V_{OUT} (RECOV)	V_{IN} = 4.25 V, 3/ after I_{OS3}	R_L = 0.25 Ω, C_L = 20 µF	06	1.19	1.29	V
		V_{IN} = 35 V, 3/ after I_{OS4}	R_L = 250 Ω		1.19	1.29	
Voltage start-up	V_{START}	V_{IN} = 4.25 V	R_L = 0.25 Ω, C_L = 20 µF	06	1.19	1.29	V

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions 1/ 2/ $-55°C \leq T_A \leq +125°C$ see figure 10 and 3.5 unless otherwise specified		Device type	Limits		Unit
		Input voltage	Load current		Min	Max	
Ripple rejection	ΔV_{IN} / ΔV_{OUT}	V_{IN} = 6.25 V, 4/ e_i = 1 Vrms, at f = 2400 Hz	I_L = -500 mA, T_A = 25°C, see figure 11	06	65		dB
Output noise voltage	V_{NO}	V_{IN} = 6.25 V, 4/ see figure 12	I_L = -100 mA, T_A = 25°C	06		120	μVrms
Line transient response	ΔV_{OUT} / ΔV_{IN}	V_{IN} = 6.25 V, 5/ ΔV_{IN} = 3.0 V, see figure 13	I_L = -10 mA, T_A = 25°C	06		12	mV/V
Load transient response	ΔV_{OUT} / ΔI_L	V_{IN} = 6.25 V, 5/ see figure 14	I_L = -100 mA, ΔI_L = -400 mA T_A = 25°C	06		0.30	mV/mA

1/ All tests performed at T_A = 125°C may at the manufacturer's option, be performed at T_A = 150°C. Specifications for T_A = 125°C shall then apply at T_A = 150°C.

2/ Static tests with load currents greater than 5 mA are performed under pulsed conditions defined on figures 9 or 10 as applicable.

3/ Output voltage recovery test shall be performed, with the designated load conditions, immediately after removal of each I_{OS} test forced output voltage condition.

4/ The meter for e_i and e_o shall have a minimum bandwidth from 10 Hz to 10 kHz and shall measure true rms voltages.

5/ The oscilloscope shall have a bandwidth between 5 and 15 MHz.

4. VERIFICATION.

4.1 Sampling and inspection. Sampling and inspection procedures should be in accordance with MIL-PRF-38535 or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not effect the form, fit, or function as described herein.

4.2 Screening. Screening shall be in accordance with MIL-PRF-38535, and shall be conducted on all devices prior to qualification and quality conformance inspection. The following additional criteria shall apply:

a. For class S and B devices, an additional burn-in screen shall be performed to test the operation of the thermal shutdown circuit. This screen shall be performed after serialization (3.1.8 of method 5004 of MIL-STD-883) and before interim electrical parameters (pre burn-in, 3.1.9 of method 5004 of MIL-STD-883). The requirements of 3.2.3 of method 1015 of MIL-STD-883 shall apply to this screen except the devices need not be tested in an oven.

b. Interim and final electrical test parameters shall be as specified in table II, except interim electrical parameters test prior to burn-in is optional at the discretion of the manufacturer.

c. The burn-in test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1015 of MIL-STD-883.

d. Reverse bias burn-in shall not be performed.

e. Additional screening for space level product shall be as specified in MIL-PRF-38535.

f. Constant acceleration (method 2001 of MIL-STD-883); test condition B shall be used for case Y.

4.3 Qualification inspection. Qualification inspection shall be in accordance with MIL-PRF-38535.

4.4 Technology Conformance inspection (TCI). Technology conformance inspection shall be in accordance with MIL-PRF-38535 and herein for groups A, B, C, and D inspections (see 4.4.1 through 4.4.4).

4.4.1 Group A inspection. Group A inspection shall be in accordance with table III of MIL-PRF-38535 and as follows:

a. Tests shall be as specified in table II herein.

b. Subgroups 5, 6, 8, 9, 10, and 11 shall be omitted.

4.4.2 Group B inspection. Group B inspection shall be in accordance with table II of MIL-PRF-38535 and as follows:

a. When using the method 5005 option, end point electrical parameters shall be as specified in table II herein.

b. When using the method 5005 option, constant acceleration for class S (method 2001 of MIL-STD-883); test condition B shall be used for case Y.

TABLE II. Electrical test requirements.

MIL-PRF-38535 test requirements	Subgroups (see table III)	
	Class S devices	Class B devices
Interim electrical parameters	1	1
Final electrical test parameters 1/	1,2,3,4	1,2,3,4
Group A test requirements	1,2,3,4,7	1,2,3,4,7
Group B electrical test parameters when using the method 5005 QCI option	1,2,3, and table IV delta limits	N/A
Group C electrical parameters	1,2,3, and table IV delta limits	1 and table IV delta limits
Group D end point electrical parameters	1,2,3	1

1/ PDA applies to subgroup 1.

4.4.3 Group C inspection. Group C inspection shall be in accordance with table IV of MIL-PRF-38535 and as follows:

a. End point electrical parameters shall be as specified in table II herein. Delta limits shall apply to group C inspection for classes B and S devices.

b. The steady-state life test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1005 of MIL-STD-883.

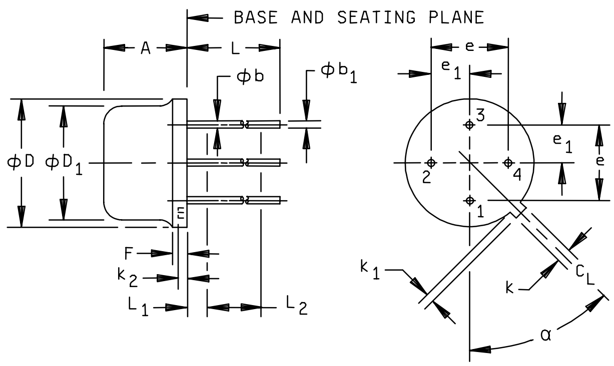
4.4.4 Group D inspection. Group D inspection shall be in accordance with table V of MIL-PRF-38535 and as follows:

a. End point electrical parameters shall be as specified in table II herein.

b. Constant acceleration (method 2001 of MIL-STD-883); test condition B shall be used for case Y.

4.5 Methods of inspection. Methods of inspection shall be as specified and as follows.

4.5.1 Voltage and current. All voltage values given are referenced to the designated return sense line. Currents given are conventional current and positive when flowing into the referenced terminal.

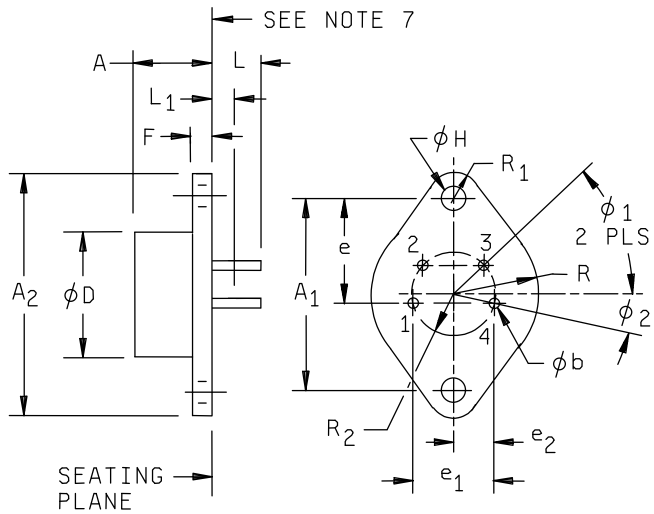


Dimensions					
Symbol	Inches		Millimeters		Notes
	Min	Max	Min	Max	
A	.240	.260	6.10	6.60	
ϕb	.016	.019	.41	.48	3
ϕb_1	.016	.021	.41	.53	3
ϕD	.335	.370	8.51	9.40	
ϕD_1	.305	.335	7.79	8.51	
e	.200	T.P.	5.08	T.P	5
e_1	.100	T.P.	2.54	T.P	5
F	---	.050	---	1.27	
k	.028	.034	.71	.86	
k_1	.029	.045	.74	1.14	4
k_2	.009	.041	.23	1.04	
L	.500	---	12.70	---	
L_1	---	.050	---	1.27	
L_2	.250	---	6.35	---	
α	45°	T.P	45°	T.P	5

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
3. (Four leads) ϕb applies between L_1 and L_2. ϕb_1 applies between L_2 and .500 (12.70 mm) from the reference plane.

   Diameter is uncontrolled in L_1 and beyond .500 (12.70 mm) from the reference plane.
4. Four leads.
5. Measured from the maximum diameter of the product.
6. Leads having a maximum diameter .019 (.48 mm) measured in gaging plane .054 (1.37 mm) + .001 (.03 mm) - .000 (.00 mm) below the base plane of the product shall be within .007 (.18 mm) of their true position relative to a maximum width tab.
7. The product may be measured by direct methods or by gage.

FIGURE 1. Case outline X (device type 01).

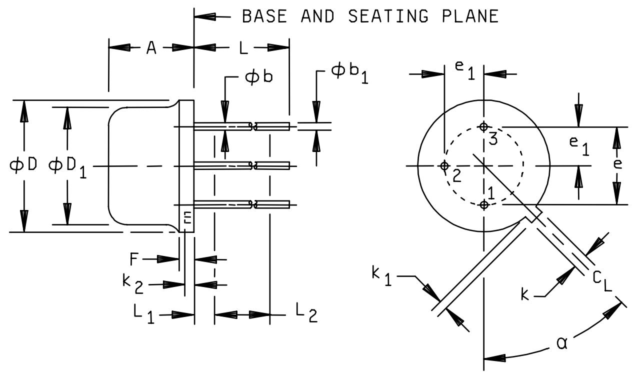


Dimensions					
Symbol	Inches		Millimeters		Notes
	Min	Max	Min	Max	
A	.250	.450	6.35	11.43	
A_1	1.177	1.197	29.90	30.40	
A_2	1.480	1.500	37.59	38.10	
ϕb	.038	.043	.97	1.09	3,7
ϕD	---	.875	---	22.22	
e	.655	.675	16.64	17.14	
e_1	.420	.440	10.67	11.18	
e_2	.205	.225	5.21	5.72	
F	.060	.135	1.52	3.43	
ϕH	.151	.161	3.84	4.09	5,6
L	.312	.500	7.92	12.70	4
L_1	---	.050	---	1.27	3,5
R	.495	.525	12.57	13.34	
R_1	.131	.188	3.33	4.78	
R_2	.470	T.P.	11.94	T.P.	
θ_1	54°	T.P.	54°	T.P.	
θ_2	18°	T.P.	18°	T.P.	

FIGURE 2. Case outline Y (device type 02).

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
3. (Four leads) ϕb applies between L_1 and .500 (12.70 mm) from the seating plane.
   Diameter is uncontrolled in L_1 and beyond .500 (12.70 mm) from the seating plane.
4. Four leads.
5. Two holes.
6. Two holes located at true position within diameter .010 (.25 mm).
7. Leads having a maximum diameter .043 (1.09 mm) measured in gaging plane .054 (1.37 mm) + .001 (.03 mm) - .000 (.00 mm) below the seating plane shall be located at true position within diameter .014 (.36 mm).
8. The mounting surface of the header shall be flat to convex within .003 (.08 mm) inside a .930 (23.62 mm) diameter circle on the center of the header and flat to convex within .006 (.15 mm) overall.

FIGURE 2. Case outline Y (device type 02) – Continued.



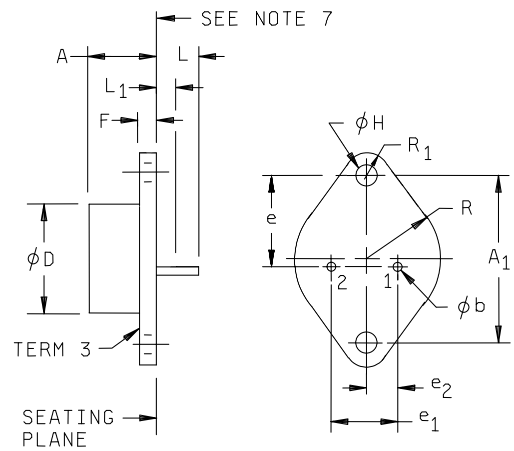
Dimensions					
Symbol	Inches		Millimeters		Notes
	Min	Max	Min	Max	
A	.165	.185	4.19	4.70	
ϕb	.016	.019	.41	.48	3
ϕb_1	.016	.021	.41	.53	3
ϕD	.335	.370	8.51	9.40	
ϕD_1	.305	.335	7.75	8.51	
e	.200	T.P.	5.08	T.P	5
e_1	.100	T.P.	2.54	T.P	5
F	---	.050	---	1.27	
k	.028	.034	.71	.86	
k_1	.029	.045	.74	1.14	4
k_2	.009	.041	.23	1.04	
L	.500	---	12.70	---	
L_1	---	.050	---	1.27	
L_2	.250	---	6.35	---	
α	45°	T.P	45°	T.P	5

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
3. (Three leads) ϕb applies between L_1 and L_2. ϕb_1 applies between L_2 and .500 (12.70 mm) from the reference plane.

   Diameter is uncontrolled in L_1 and beyond .500 (12.70 mm) from the reference plane.
4. Three leads.
5. Measured from the maximum diameter of the product.
6. Leads having a maximum diameter .019 (.48 mm) measured in gaging plane .054 (1.37 mm) + .001 (.03 mm) - .000 (.00 mm) below the base plane of the product shall be within .007 (.18 mm) of their true position relative to a maximum width tab.
7. The product may be measured by direct methods or by gage.

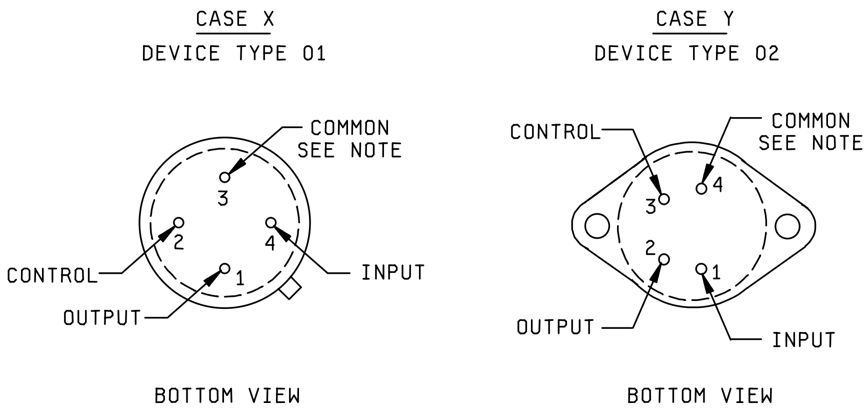
FIGURE 3. Case outline X (device type 03).



Dimensions					
Symbol	Inches		Millimeters		Notes
	Min	Max	Min	Max	
A	.250	.450	6.35	11.43	
A_1	1.177	1.197	29.90	30.40	
ϕb	.038	.043	.97	1.09	3,7
ϕD	---	.875	---	22.22	
e	.655	.675	16.64	17.14	
e_1	.420	.440	10.67	11.18	
e_2	.205	.225	5.21	5.72	
F	.060	.135	1.52	3.43	
ϕH	.151	.161	3.84	4.09	5,6
L	.312	.500	7.92	12.70	4
L_1	---	.050	---	1.27	3,5
R	.495	.525	12.57	13.34	
R_1	.131	.188	3.33	4.78	

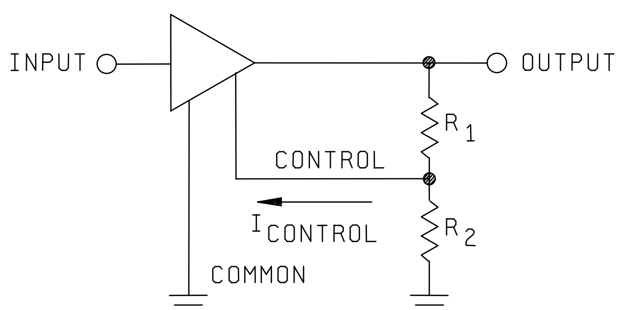
NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
3. (Two leads) ϕb applies between L_1 and .500 (12.70 mm) from the seating plane.
   Diameter is uncontrolled in L_1 and beyond .500 (12.70 mm) from the seating plane.
4. Two leads.
5. Two holes.
6. Two holes located at true position within diameter .010 (.25 mm).
7. Leads having a maximum diameter .043 (1.09 mm) measured in gaging plane .054 (1.37 mm) + .001 (.03 mm) - .000 (.00 mm) below the seating plane shall be located at true position within diameter .014 (.36 mm).
8. The mounting surface of the header shall be flat to convex within .003 (.08 mm) inside a .930 (23.62 mm) diameter circle on the center of the header and flat to convex within .006 (.15 mm) overall.

FIGURE 4. Case outline Y (device types 04, 05, and 06).



Note: Case is connected to common.

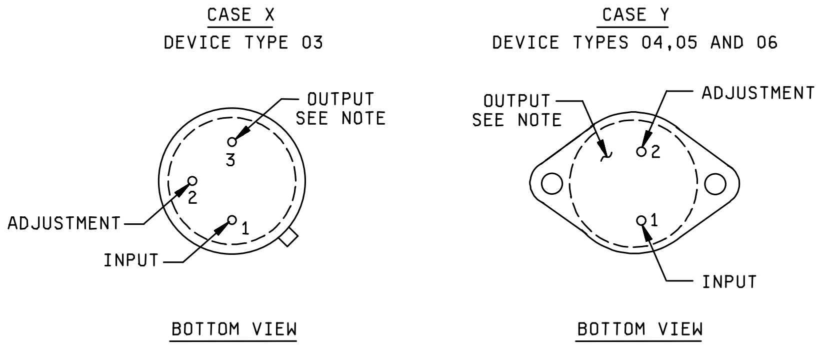
FIGURE 5. Terminal connections for device types 01 and 02.



NOTES:

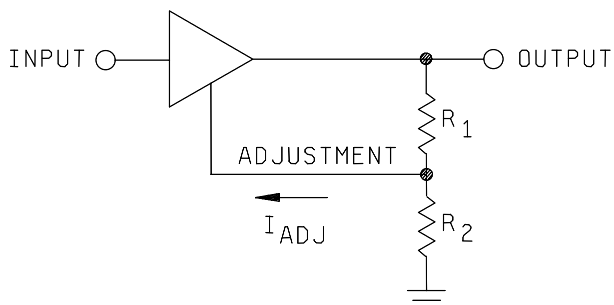
1. V_{OUT} = [((R_1 + R_2) / R_2) x ($V_{CONTROL}$) + |$I_{CONTROL}$| x R_1] volts.
2. $V_{CONTROL}$ = 5.00 V (nominal).
3. R_2 = 1.0 kΩ provides a minimum of |5 mA| load to the regulator at any V_{OUT}.

FIGURE 6. Block diagram for device types 01 and 02.



NOTE: Case is connected to output.

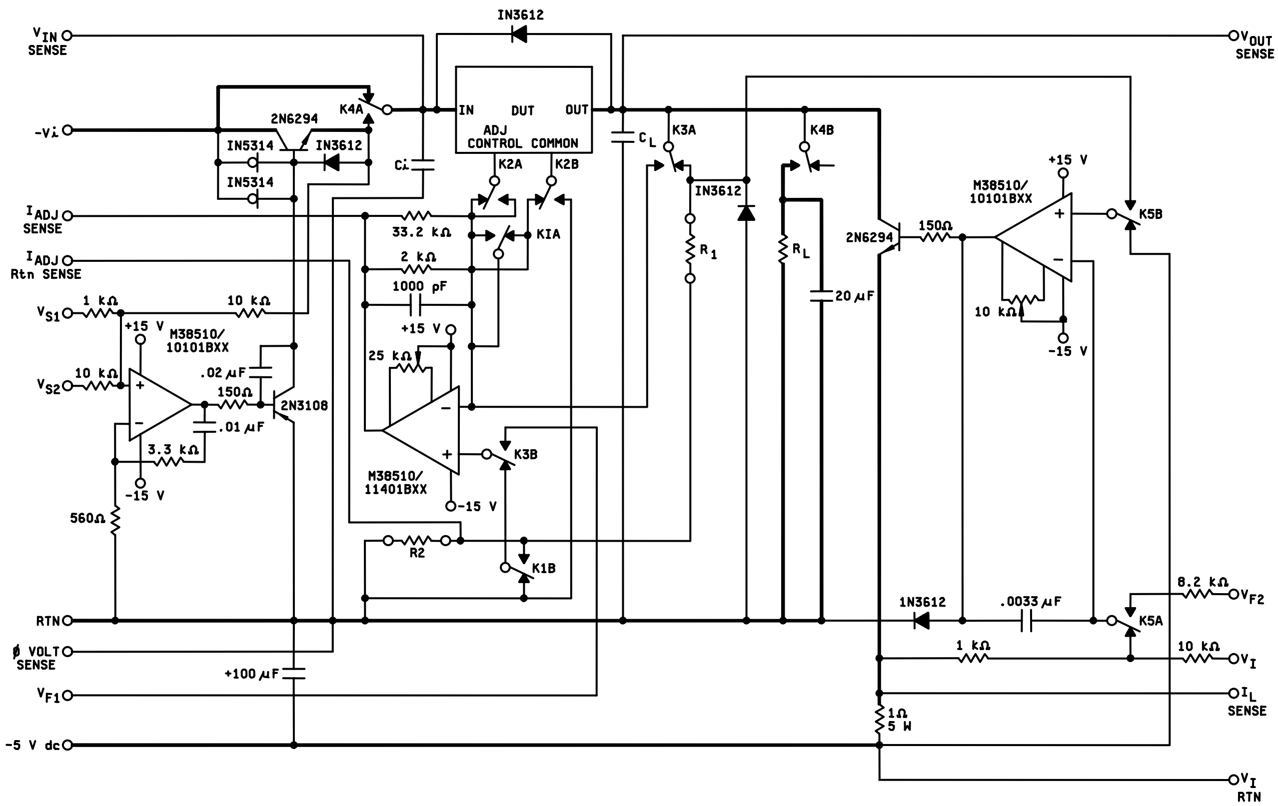
FIGURE 7. Terminal connections for 03, 04, 05, and 06.



NOTES:

1. V_{OUT} = [((R_1 + R_2) / R_1) x (1.25) + |I_{ADJ}| x R_2] volts.
2. R_1 = 250 Ω provides a minimum of | 5 mA | load to the regulator at any V_{OUT}.

FIGURE 8. Block diagram for device types 03, 04, 05, and 06.



Device table				
Device type	01	02	03	04
R_1	0 Ω	0 Ω	249 Ω	249 Ω
R_2	1 kΩ	1 kΩ	0 Ω	0 Ω
R_L	10 Ω	5 Ω	2.5 Ω	0.833 Ω
C_i	0.33 µF	0.33 µF	1.0 µF	1.0 µF
C_L	0.1 µF	0.1 µF	1.0 µF	1.0 µF

FIGURE 9. Test circuit for static tests for device types 01, 02, 03, and 04.

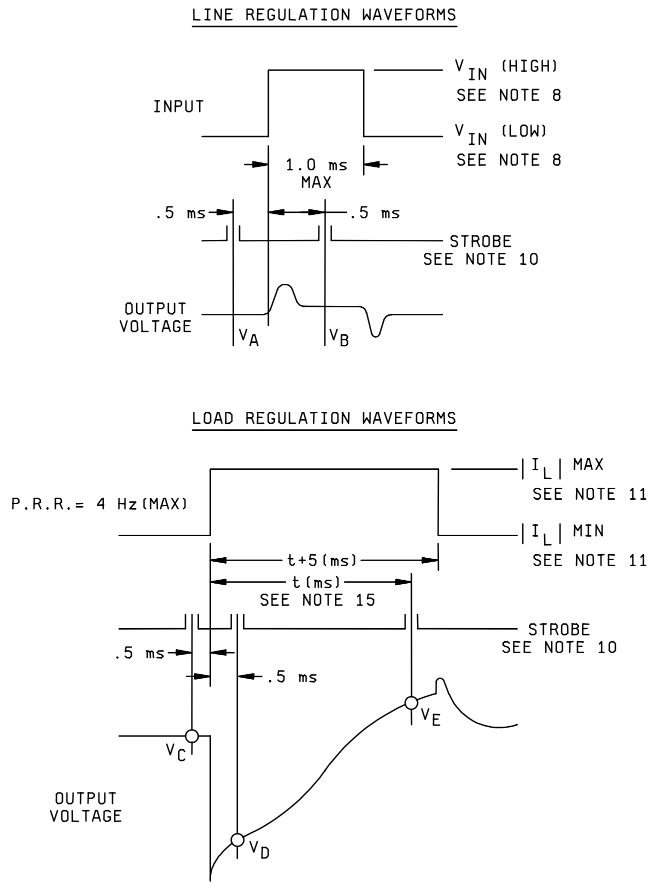


FIGURE 9. Test circuit for static tests for device types 01, 02, 03, and 04 – Continued.

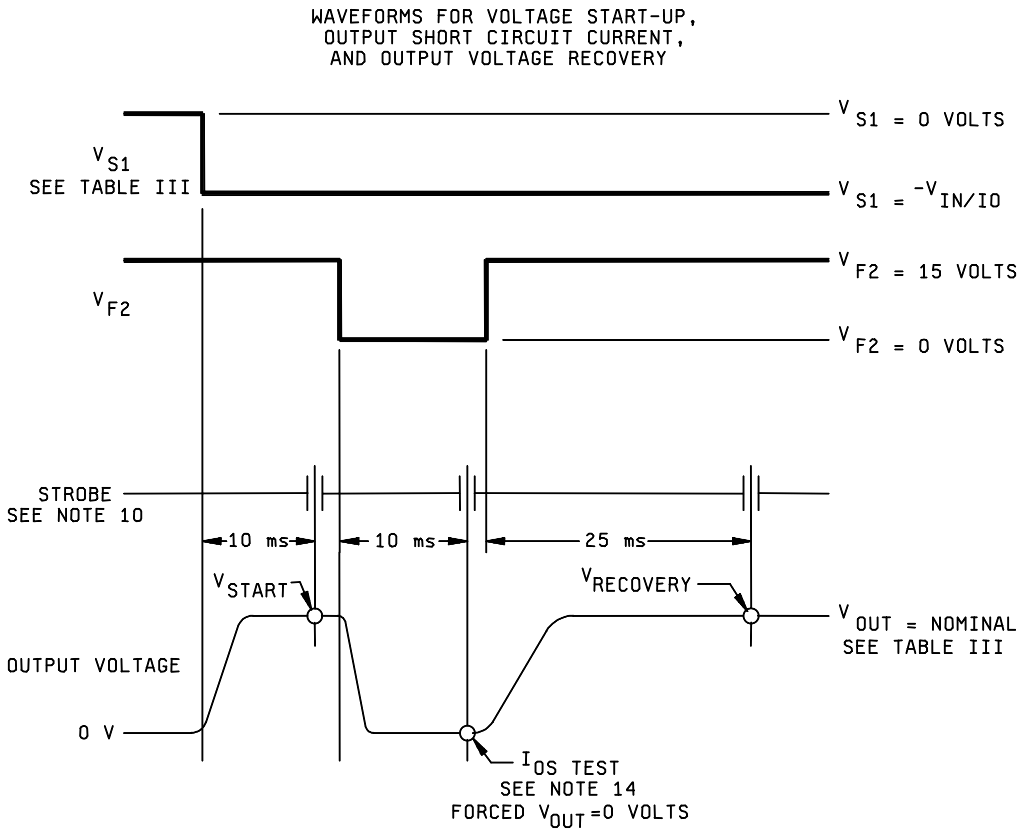
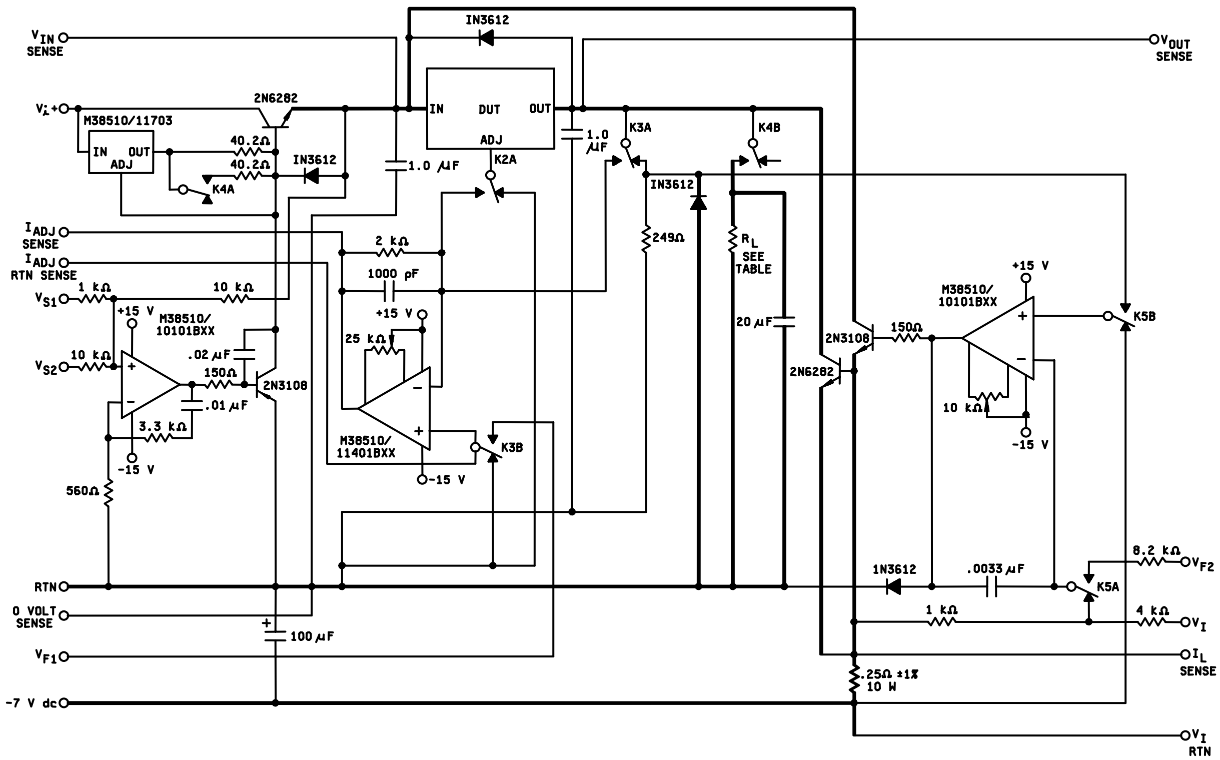


FIGURE 9. Test circuit for static tests for device types 01, 02, 03, and 04 – Continued.

NOTES:

1. Heavy current paths ($I \geq 0.05$ A) are indicated by bold lines.
2. Kelvin connections must be used for all output current and voltage measurements. For device types 03 and 04, output voltage measurements should be made at the case. For device type 03 only. If output voltage measurements are not made at the case but instead at the output lead, an error will result in the measurement due to internal lead resistance. The amount of error depends on the magnitude of the load current and the distance from the case to where the output voltage measurement is taken on the output pin.
3. The output offset voltage shall be adjusted to zero with the device under test (DUT) removed. The operational amplifier stabilization networks may vary with test adapter construction. Alternate drive circuits for the 2N6294 may be used to develop the proper load current and input voltage pulses.
4. Relay switch positions are defined in table III.
5. Load currents of 5 mA may be established via the load resistors R_1 and R_2. All other load currents shall be established via the pulse load circuits. Resistors R_1 and R_2 shall have a tolerance ≤ 0.1 % for device types 01 and 02.
6. The pulse generator for the pulse load circuit shall have the following characteristics:
   a. Pulse amplitude = -10 ($|I_L|$ - V_O / ($R_1 + R_2$)) volts (referenced to –5 volts).
   b. Pulse width = 1.0 ms (unless otherwise stated).
   c. Duty cycle = 2% (maximum).
7. Load currents shall be determined by the voltage measured across the 1 Ω resistor. Measurements shall be made 0.5 ms after the start of the pulse.
8. V_{IN} (LOW) and V_{IN} (HIGH) per table III herein.
9. $V_{RLINE} = V_B - V_A$.
10. The output voltage is sampled at specified intervals. Strobe pulse width is 100 µs maximum.
11. $|I_L|$ (minimum) and $|I_L|$ (maximum) per table III herein.
12. $V_{RLOAD} = V_D - V_C$.
13. $V_{RTH} = V_D - V_E$.
14. $I_{OS} = (I_L)$ amps.
15. For device types 01 and 02, t = 10.5 ms. For device types 03 and 04, t = 20.5 ms.
16. For static test V_{RLOAD} 1, I_L = 500 mA, device type 03 only the following may apply. If output voltage measurements are taken from the output lead and not the case, the maximum limit shall be allowed to increase by 5 mV to account for the error due to internal lead resistance.

FIGURE 9. Test circuit for static tests for device types 01, 02, 03, and 04 – Continued.



Device table		
Device type	05	06
R_L	0.416 Ω	0.25 Ω

FIGURE 10. Test circuit for static tests for device types 05 and 06 .

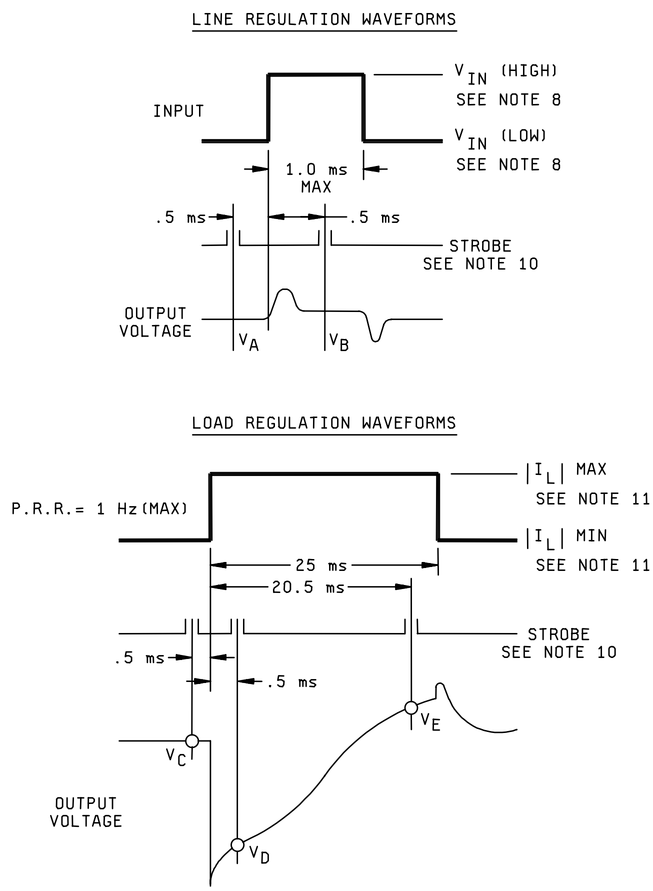


FIGURE 10. Test circuit for static tests for device types 05 and 06 - Continued.

WAVEFORMS FOR VOLTAGE START-UP, OUTPUT SHORT CIRCUIT CURRENT, AND OUTPUT VOLTAGE RECOVERY

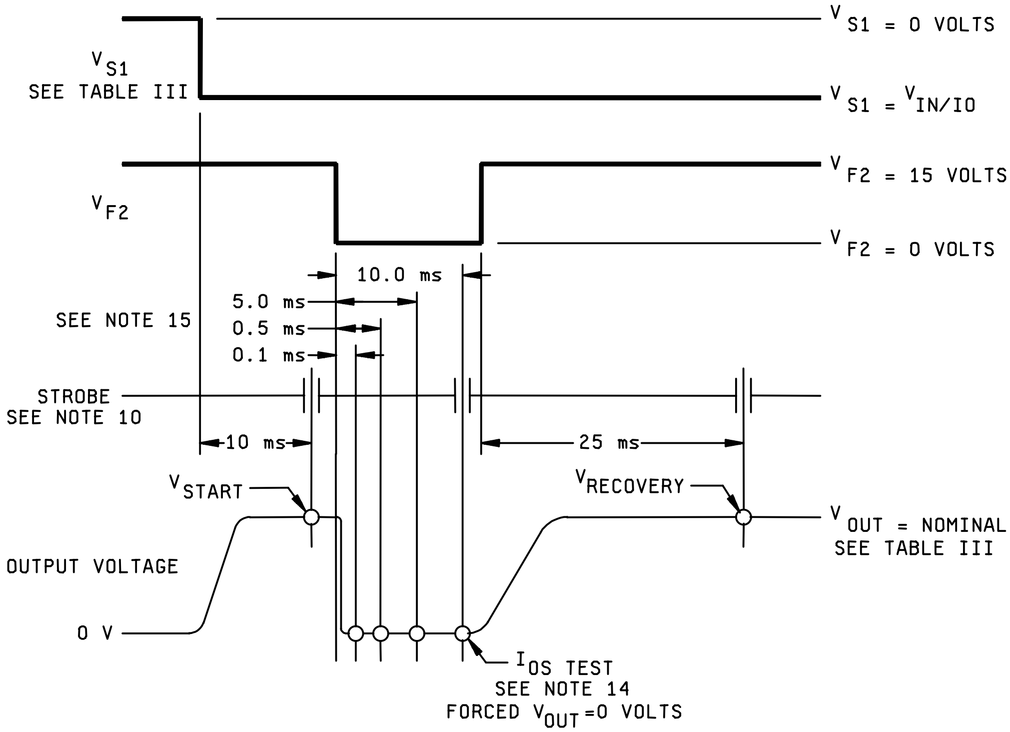
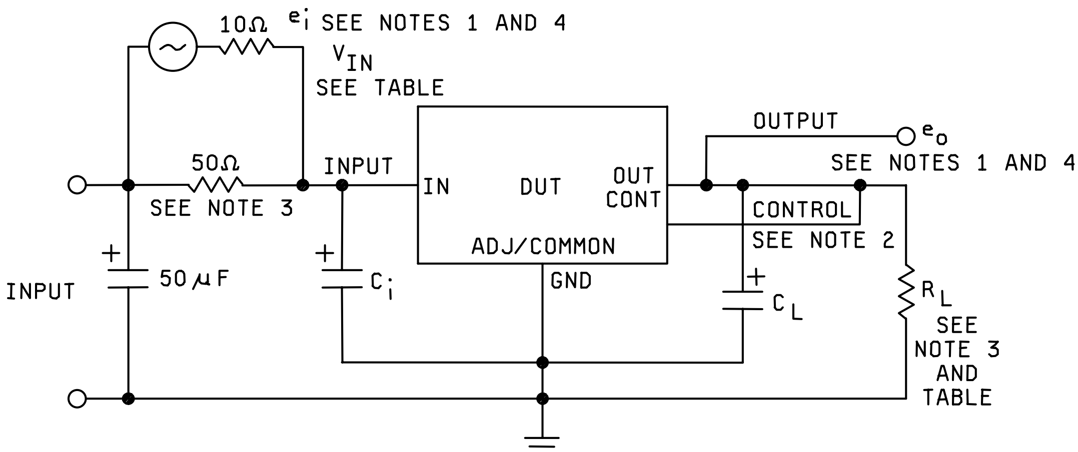


FIGURE 10. Test circuit for static tests for device types 05 and 06 - Continued.

NOTES:

1. Heavy current paths (I ≥ 0.1 A) are indicated by bold lines.
2. Kelvin connections must be used for all output current and voltage measurements. For device types 05 and 06, output voltage measurements shall be made at the case.
3. The output offset voltage shall be adjusted to zero with the device under test (DUT) removed. The operational amplifier stabilization networks may vary with test adapter construction. Alternate drive circuits for the 2N6282 may be used to develop the proper load current and input voltage pulses. These circuits shall require the approval of the qualifying activity.
4. Relay switch positions are defined in table III.
5. Load currents of 5 mA may be established via the 249 Ω load resistor. All other load currents shall be established via the pulse load circuit.
6. The pulse generator for the pulse load circuit shall have the following characteristics:
    a. Pulse amplitude = - ($|I_L|$ - .005) volts. (referenced to –7 volts)
    b. Pulse width = 1.0 ms (unless otherwise stated).
    c. Duty cycle = 2% (maximum).
    d. Rise time = 30 µs (minimum).
7. Load currents shall be determined by the voltage measured across the 0.25 Ω resistor. Measurements shall be made 0.5 ms after the start of the pulse.
8. V_{IN} (LOW) and V_{IN} (HIGH) per table III herein.
9. $V_{RLINE} = V_B – V_A$.
10. The output voltage is sampled at specified intervals. Strobe pulse width is 100 µs maximum.
11. $|I_L|$ (minimum) and $|I_L|$ (maximum) per table III herein.
12. $V_{RLOAD} = V_D – V_C$.
13. $V_{RTH} = V_D – V_E$.
14. $I_{OS} = (I_L)$ amps.
15. Output short circuit current measurements at t = 0.1, t = 0.5, and t = 5.0, are to be made on device type 06 only.

FIGURE 10. Test circuit for static tests for device types 05 and 06 – Continued.

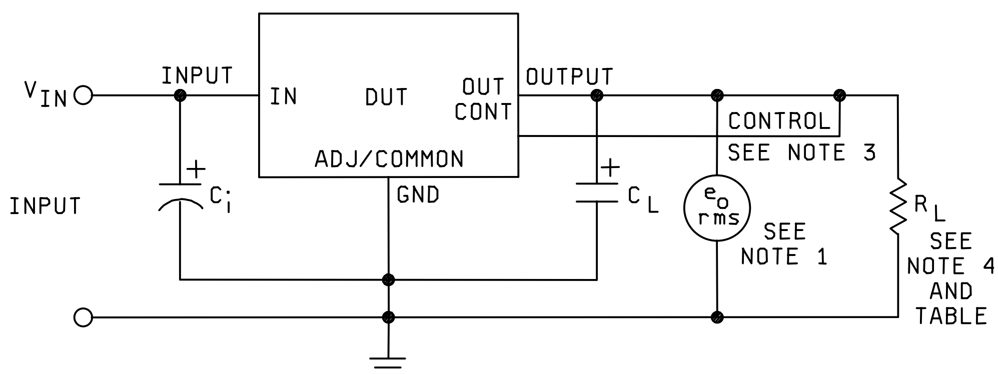


Device table						
Device types	01	02	03	04	05	06
V_{IN}	10 V	10 V	6.25 V	6.25 V	6.25 V	6.25 V
R_L	40.2 Ω	14.3 Ω	10 Ω	2.5 Ω	2.5 Ω	2.5 Ω
C_i	0.33 µF	0.33 µF	1.0 µF	1.0 µF	1.0 µF	1.0 µF
C_L	0.1 µF	0.1 µF	1.0 µF	1.0 µF	1.0 µF	1.0 µF

NOTES:

1. e_i = 1 Vrms at f = 2400 Hz (measured at the input terminals of the DUT).
   Ripple rejection = 20 log (e_{irms} / e_{orms}).
2. The control pin connection is required for device types 01 and 02 only.
3. The input 50 Ω resistor and R_L shall be type RER 70 or equivalent.
4. The meter for e_i and e_o shall have a minimum bandwidth from 10 Hz to 10 kHz for devices 01 – 05 and 300 Hz to 10 kHz for device type 06 shall measure true rms voltages.

FIGURE 11. Ripple rejection test circuit.

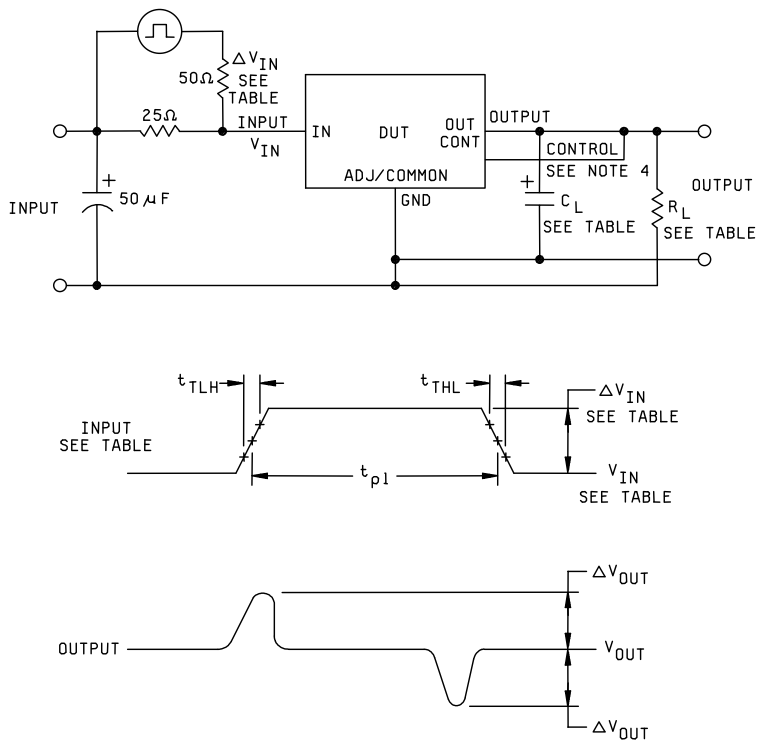


Device table						
Device type	01	02	03	04	05	06
V_{IN}	10 V	10 V	6.25 V	6.25 V	6.25 V	6.25 V
R_L	100 Ω	50 Ω	25 Ω	12.5 Ω	12.5 Ω	12.5 Ω
C_i	0.33 μF	0.33 μF	1.0 μF	1.0 μF	1.0 μF	1.0 μF
C_L	0.1 μF	0.1 μF	1.0 μF	1.0 μF	1.0 μF	1.0 μF

NOTES:

1. The meter for measuring e_{orms} shall have a minimum bandwidth from 10 Hz to 10 kHz and shall measure true rms voltages.
2. $V_{NO} = e_{orms}$
3. The control pin connection is required for device types 01 and 02 only.
4. R_L shall be type RER 70 or equivalent.

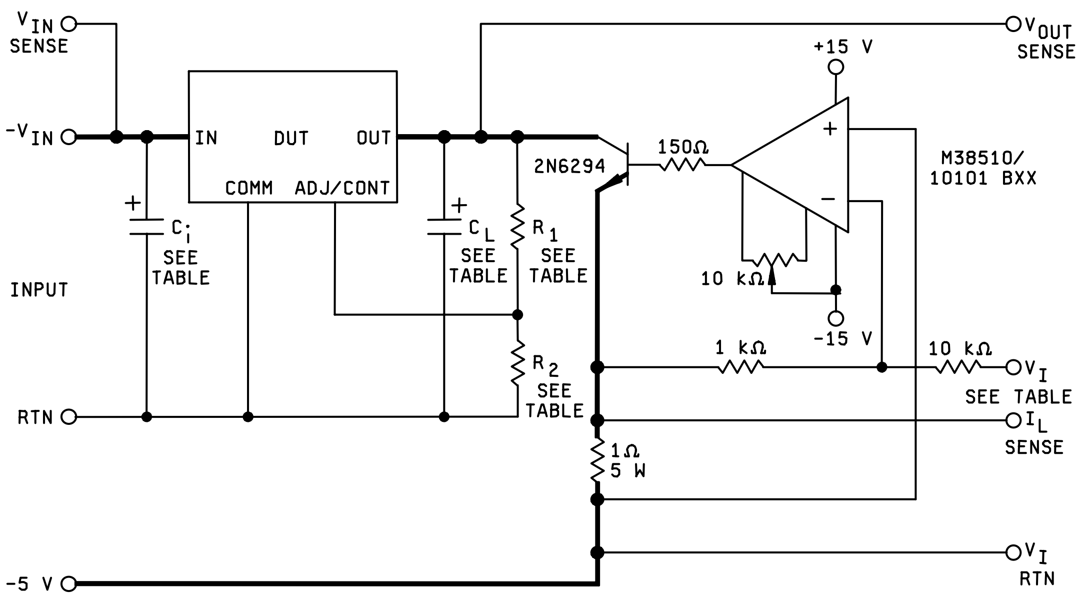
FIGURE 12. Noise test circuit.



Device table							
Device type	01	02	03	04	05	06	Notes
V_{IN}	10 V	10 V	6.25 V	6.25 V	6.25 V	6.25 V	1
ΔV_{IN}	3.0 V	3.0 V	3.0 V	3.0 V	3.0 V	3.0 V	1
R_L	1.25 kΩ	1.25 kΩ	120 Ω	120 Ω	120 Ω	120 Ω	
$t_{THL} = t_{TLH}$	5.0 µs	5.0 µs	5.0 µs	5.0 µs	5.0 µs	5.0 µs	1
C_L	0.1 µF	0.1 µF	1.0 µF	1.0 µF	1.0 µF	1.0 µF	

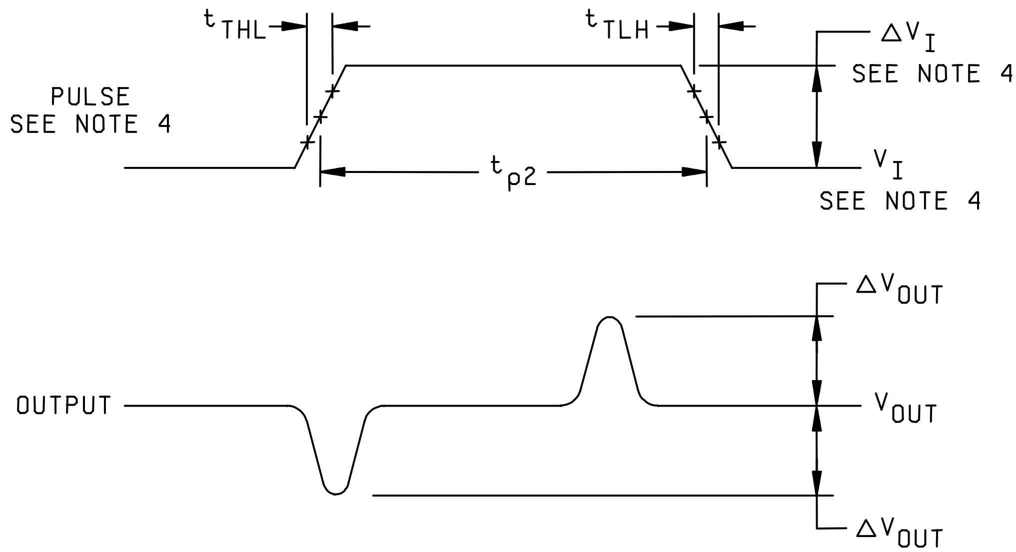
NOTES:
1. Measured at device input.
2. Pulse width t_{p1} = 25 µs; duty cycle = 3% (maximum).
3. Oscilloscope bandwidth = 5 MHz to 15 MHz.
4. The control pin connection is required for device types 01 and 02 only.
5. The input 25 Ω resistor and R_L shall be type RER 70 or equivalent.

FIGURE 13. Line transient response test circuit.



Device table						
Device type	01	02	03	04	05	06
R_1	0	0	249 Ω	249 Ω	249 Ω	249 Ω
R_2	1.0 kΩ	1.0 kΩ	0	0	0	0
I_L	-50 mA	-100 mA	-50 mA	-100 mA	-100 mA	-100 mA
ΔI_L	-200 mA	-400 mA	-200 mA	-400 mA	-400 mA	-400 mA
V_I	-0.45 V	-0.95 V	-0.45 V	-0.95 V	-0.95 V	-0.95 V
ΔV_I	-2.0 V	-4.0 V	-2.0 V	-4.0 V	-4.0 V	-4.0 V
C_i	0.33 µF	0.33 µF	1.0 µF	1.0 µF	1.0 µF	1.0 µF
C_L	0.1 µF	0.1 µF	1.0 µF	1.0 µF	1.0 µF	1.0 µF

FIGURE 14. Load transient response test circuit.



NOTES:

1. Heavy current paths (I ≥ 1.0 A) are indicated by bold lines.
2. Kelvin connections must be used for all output current and voltage measurements.
3. The operational amplifier stabilization networks may vary with test adapter construction. Alternate drive circuits for the 2N6294 may be used to develop the proper load current and input voltage pulses.
4. The pulse generator for the pulse load circuit shall have the following characteristics. (See device table III.)
   a. Voltage level (V_I) = -10[$|I_L|$ - (V_{OUT} / (R_1 + R_2)] volts. (Referenced to –5 volts).
   b. Pulse width (t_{p2}) = 25 µs.
   c. Duty cycle = 3% (maximum).
   d. t_{THL} = t_{TLH} = 1.0 µs for device types 01 and 02.
   e. t_{THL} = t_{TLH} = 5.0 µs for device types 03, 04, 05, and 06.
   f. Difference voltage level (ΔV_I) = 10 (I_L) volts.
5. a. ΔV_{OUT} = 500 mV maximum for device type 01.
   b. ΔV_{OUT} = 1,000 mV maximum for device type 02.
   c. ΔV_{OUT} = 120 mV maximum for device types 03, 04, 05, and 06.
   (These values guarantee the specified limits for load transient response.)
6. The oscilloscope shall have a bandwidth between 5 and 15 MHz.
7. Resistors R1 and R2 shall be type RER 70 or equivalent.

FIGURE 14. Load transient response test circuit – Continued.

TABLE III. Group A inspection for all device type 01.

Subgroup	Symbol	Test no.	See figure 9							Relays energized	Measurement sense lines			Equation	Notes	Limits		Unit
			Test conditions		Applied test voltages (volts) (Hi – Lo pin potential)													
			V_{IN} (volts)	I_L (mA)	1-2	4-5	6-11	7-2	8-2		Pins	Value	Units			Min	Max	
1	V_{OUT1}	1	8	-5	8	---	---	---	---	None	9-11	E_1	V	$V_{OUT1} = E_1$		4.75	5.25	V
	V_{OUT2}	2	8	-500	8	-4.95	---	---	---	"	"	E_2	"	$V_{OUT2} = E_2$		"	"	"
T_A = +25°C	V_{OUT3}	3	30	-5	30	---	---	---	---	"	"	E_3	"	$V_{OUT3} = E_3$		"	"	"
	V_{OUT4}	4	30	-50	30	-0.45	---	---	---	"	"	E_4	"	$V_{OUT4} = E_4$		"	"	"
	V_{RLINE1}	5	8	-50	8	-0.45	---	---	---	"	"	E_5	"	$V_{RLINE1} = E_5 – E_4$	See	-150	150	mV
	V_{RLINE2}	6	8	-350	8	-3.45	---	---	---	"	"	E_6	"	---	figure 9	---	---	"
	V_{RLINE2}	7	25	-350	25	-3.45	---	---	---	"	"	E_7	"	$V_{RLINE2} = E_6 – E_7$	waveforms	-50	50	"
	V_{RLOAD1}	8	10	-5	10	---	---	---	---	"	"	E_8	"	---	See	---	---	"
	V_{RLOAD1}	9	10	-500	10	-4.95	---	---	---	"	"	E_9	"	$V_{RLOAD1} = E_8 – E_9$	figure 9	-100	100	"
	V_{RLOAD2}	10	---	---	---	---	---	---	---	"	---	---	"	$V_{RLOAD2} = E_3 – E_4$	waveforms	-150	150	"
	V_{RTH}	11	15	-500	15	-4.95	---	---	---	"	9-11	E_{10}	"	$V_{RTH} = E_{10}$	See figure 9 waveforms t = 10.5 ms	-50	50	"
	I_{SCD1}	12	10	-5	10	---	---	---	---	"	12-13	E_{11}	"	$I_{SCD1} = E_{11} / 2000$		-7.0	-0.5	mA
	I_{SCD2}	13	30	-5	30	---	---	---	---	"	"	E_{12}	"	$I_{SCD2} = E_{12} / 2000$		-8.0	-0.5	"
	ΔI_{SCD} (LINE)	14	8	-5	8	---	---	---	---	"	"	E_{13}	"	$\Delta I_{SCD} = E_{13} – E_{12} / 2000$ (LINE)		-1.0	1.0	"
	ΔI_{SCD} (LOAD)	15	10	-500	10	-4.95	---	---	---	"	"	E_{14}	"	$\Delta I_{SCD} = E_{11} – E_{14} / 2000$ (LOAD)		-0.5	0.5	"
	I_{OS1}	16	10	---	15	---	---	-1.0	0	K4,K5	10-5	E_{15}	"	$I_{OS1} = E_{15}$	See figure 9	-2.00	-0.50	A
	V_{OUT5} (RECOV)	17	10	---	15	---	---	-1.0	15	K4,K5	9-11	E_{16}	"	$V_{OUT5} = E_{16}$	waveforms	4.75	5.25	V
	I_{OS2}	18	30	---	30	---	---	---	0	K5	10-5	E_{17}	"	$I_{OS2} = E_{17}$		-1.00	-0.01	A
	V_{OUT6} (RECOV)	19	30	---	30	---	---	---	15	K5	9-11	E_{18}	"	$V_{OUT6} = E_{18}$		4.75	5.25	V
	I_{CTL}	20	10	-350	10	-3.45	---	---	---	K1,K2	12-13	E_{19}	"	I_{CTL} = E19 / 33200		-5.00	-0.01	μA
	V_{START}	21	8	-500	15	---	---	-0.8	---	K4	9-11	E_{20}	"	$V_{OUT} = E_{20}$	See figure 9 waveforms	4.75	5.25	V
	V_{OUT7}	22	38	-500	38	-4.95	---	---	---	None	"	E_{21}	"	$V_{OUT7} = E_{21}$	R1 = 4.99 kΩ ±0.1%	28.5	31.5	V
2	V_{OUT1}	23	8	-5	8	---	---	---	---	None	9-11	E_{22}	V	$V_{OUT1} = E_{22}$		4.75	5.25	V
	V_{OUT2}	24	8	-500	8	-4.95	---	---	---	"	"	E_{23}	"	$V_{OUT2} = E_{23}$		"	"	"
T_A = +125°C	V_{OUT3}	25	30	-5	30	---	---	---	---	"	"	E_{24}	"	$V_{OUT3} = E_{24}$		"	"	"
	V_{OUT4}	26	30	-50	30	-0.45	---	---	---	"	"	E_{25}	"	$V_{OUT4} = E_{25}$		"	"	"
	V_{RLINE1}	27	8	-50	8	-0.45	---	---	---	"	"	E_{26}	"	$V_{RLINE1} = E_{26} – E_{25}$	See	-150	150	mV
	V_{RLINE2}	28	8	-350	8	-3.45	---	---	---	"	"	E_{27}	"	---	figure 9	---	---	"
	V_{RLINE2}	29	25	-350	25	-3.45	---	---	---	"	"	E_{28}	"	$V_{RLINE2} = E_{27} – E_{28}$	waveforms	-50	50	"
	V_{RLOAD1}	30	10	-5	10	---	---	---	---	"	"	E_{29}	"	---	See	---	---	"
	V_{RLOAD1}	31	10	-500	10	-4.95	---	---	---	"	"	E_{30}	"	$V_{RLOAD1} = E_{29} – E_{30}$	figure 9	-100	100	"
	V_{RLOAD2}	32	---	---	---	---	---	---	---	"	---	---	"	$V_{RLOAD2} = E_{24} – E_{25}$	waveforms	-150	150	"
	I_{SCD1}	33	10	-5	10	---	---	---	---	"	12-13	E_{31}	"	$I_{SCD1} = E_{31} / 2000$		-7.0	-0.5	mA
	I_{SCD2}	34	30	-5	30	---	---	---	---	"	12-13	E_{32}	"	$I_{SCD2} = E_{32} / 2000$		-8.0	-0.5	"

TABLE III. Group A inspection for all device type 01 – Continued.

Subgroup	Symbol	Test no.	See figure 9 Test conditions		Applied test voltages (volts) (Hi – Lo pin potential)					Relays energized	Measurement sense lines			Equation	Notes	Limits		Unit
			V_{IN} (volts)	I_L (mA)	1-2	4-5	6-11	7-2	8-2		Pins	Value	Units			Min	Max	
2 T_A = +125°C	ΔI_{SCD} (LINE)	35	8	-5	8	---	---	---	---	None	12-13	E_{33}	V	$\Delta I_{SCD} = E_{33} – E_{32} / 2000$ (LINE)		-1.0	1.0	mA
	ΔI_{SCD} (LOAD)	36	10	-500	10	-4.95	---	---	---	“	12-13	E_{34}	“	$\Delta I_{SCD} = E_{31} – E_{34} / 2000$ (LOAD)		-0.5	0.5	“
	I_{OS1}	37	10	---	15	---	---	-1.0	0	K4,K5	10-5	E_{35}	“	$I_{OS1} = E_{35}$	See figure 9 waveforms	-2.00	-0.50	A
	V_{OUT5} (RECOV)	38	10	---	15	---	---	-1.0	15	K4,K5	9-11	E_{36}	“	$V_{OUT5} = E_{36}$		4.75	5.25	V
	I_{OS2}	39	30	---	30	---	---		0	K5	10-5	E_{37}	“	$I_{OS2} = E_{37}$		-1.00	-0.01	A
	V_{OUT6} (RECOV)	40	30	---	30	---	---		15	K5	9-11	E_{38}	“	$V_{OUT6} = E_{38}$		4.75	5.25	V
	I_{CTL}	41	10	-350	10	-3.45	---	---	---	K1,K2	12-13	E_{39}	“	I_{CTL} = E39 / 33200		-8.00	-0.01	µA
	V_{START}	42	8	-500	15	---	---	-0.8	---	K4	9-11	E_{40}	“	$V_{OUT} = E_{40}$	See figure 9 waveforms	4.75	5.25	V
	V_{OUT7}	43	38	-500	38	-4.95	---	---	---	None	“	E_{41}	“	$V_{OUT7} = E_{41}$	R1 = 4.99 kΩ ±0.1%	28.5	31.5	V
T_A = +150°C	V_{OUT8}	44	10	-5	10	---	---	---	---	“	“	E_{42}	“	$V_{OUT8} = E_{42}$		4.70	5.30	“
3 T_A = -55°C	V_{OUT1}	45	8	-5	8	---	---	---	---	None	9-11	E_{43}	V	$V_{OUT1} = E_{43}$		4.75	5.25	V
	V_{OUT2}	46	8	-500	8	-4.95	---	---	---	“	“	E_{44}	“	$V_{OUT2} = E_{44}$		“	“	“
	V_{OUT3}	47	30	-5	30	---	---	---	---	“	“	E_{45}	“	$V_{OUT3} = E_{45}$		“	“	“
	V_{OUT4}	48	30	-50	30	-0.45	---	---	---	“	“	E_{46}	“	$V_{OUT4} = E_{46}$		“	“	“
	V_{RLINE1}	49	8	-50	8	-0.45	---	---	---	“	“	E_{47}	“	$V_{RLINE1} = E_{47} – E_{46}$	See figure 9 waveforms	-150	150	mV
	V_{RLINE2}	50	8	-350	8	-3.45	---	---	---	“	“	E_{48}	“	---		---	---	“
	V_{RLINE2}	51	25	-350	25	-3.45	---	---	---	“	“	E_{49}	“	$V_{RLINE2} = E_{48} – E_{49}$		-50	50	“
	V_{RLOAD1}	52	10	-5	10	---	---	---	---	“	“	E_{50}	“	---	See figure 9 waveforms	---	---	“
	V_{RLOAD1}	53	10	-500	10	-4.95	---	---	---	“	“	E_{51}	“	$V_{RLOAD1} = E_{50} – E_{51}$		-100	100	“
	V_{RLOAD2}	54	---	---	---	---	---	---	---	“	---	---	“	$V_{RLOAD2} = E_{45} – E_{46}$		-150	150	“
	I_{SCD1}	55	10	-5	10	---	---	---	---	“	12-13	E_{52}	“	$I_{SCD1} = E_{52} / 2000$		-7.0	-0.5	mA
	I_{SCD2}	56	30	-5	30	---	---	---	---	“	“	E_{53}	“	$I_{SCD2} = E_{53} / 2000$		-8.0	-0.5	“
	ΔI_{SCD} (LINE)	57	8	-5	8	---	---	---	---	None	12-13	E_{54}	V	$\Delta I_{SCD} = E_{54} – E_{53} / 2000$ (LINE)		-1.0	1.0	mA
	ΔI_{SCD} (LOAD)	58	10	-500	10	-4.95	---	---	---	“	“	E_{55}	“	$\Delta I_{SCD} = E_{52} – E_{55} / 2000$ (LOAD)		-0.5	0.5	“
	I_{OS1}	59	10	---	15	---	---	-1.0	0	K4,K5	10-5	E_{56}	“	$I_{OS1} = E_{56}$	See figure 9 waveforms	-2.00	-0.50	A
	V_{OUT5} (RECOV)	60	10	---	15	---	---	-1.0	15	K4,K5	9-11	E_{57}	“	$V_{OUT5} = E_{57}$		4.75	5.25	V
	I_{OS2}	61	30	---	30	---	---		0	K5	10-5	E_{58}	“	$I_{OS2} = E_{58}$		-1.00	-0.01	A
	V_{OUT6} (RECOV)	62	30	---	30	---	---		15	K5	9-11	E_{59}	“	$V_{OUT6} = E_{59}$		4.75	5.25	V
	I_{CTL}	63	10	-350	10	-3.45	---	---	---	K1,K2	12-13	E_{60}	“	I_{CTL} = E60 / 33200		-8.00	-0.01	µA
	V_{START}	64	8	-500	15	---	---	-0.8	---	K4	9-11	E_{61}	“	$V_{OUT} = E_{61}$	See figure 9 waveforms	4.75	5.25	V
	V_{OUT7}	65	38	-500	38	-4.95	---	---	---	None	“	E_{62}	“	$V_{OUT7} = E_{62}$	R1 = 4.99 kΩ ±0.1%	28.5	31.5	V

TABLE III. Group A inspection for all device type 01 – Continued.

Subgroup	Symbol	Test no.	Test conditions		Measurement sense lines			Equation	Notes	Limits		Unit
			Input voltage	Load current	Symbol	Value	Units			Min	Max	
4 T_A = +25°C	ΔV_{IN} / ΔV_{OUT}	66	V_{IN} = 10 V e_i = 1.0 Vrms at 2400 Hz	I_L = -125 mA	e_{orms}	E_{63}	Vrms	$\Delta V_{IN} / \Delta V_{OUT} = -20 \log E_{63}$	See figure 11	45	---	dB
7 T_A = +25°C	V_{NO}	67	V_{IN} = 10 V	I_L = -50 mA	e_{orms}	E_{64}	Vrms	$V_{NO} = E_{64}$	See figure 12	---	125	µVrms
	ΔV_{OUT} / ΔV_{IN}	68	V_{IN} = 10 V ΔV_{IN} = 3.0 V	I_L = -5 mA	V_{OUT}	E_{65}	V	$\Delta V_{OUT} / \Delta V_{IN} = E_{65} / 3$	See figure 13	---	30	mV/V
	ΔV_{OUT} / ΔI_L	69	V_{IN} = 10 V	I_L = -50 mA ΔI_L = -200 mA	V_{OUT}	E_{66}	V	$\Delta V_{OUT} / \Delta I_L = E_{66} / 200$	See figure 14	---	2.5	mV/mA

TABLE III. Group A inspection for all device type 02.

Subgroup	Symbol	Test no.	See figure 9							Relays energized	Measurement sense lines			Equation	Notes	Limits		Unit
			Test conditions		Applied test voltages (volts) (Hi – Lo pin potential)													
			V_{IN} (volts)	I_L (mA)	1-2	4-5	6-11	7-2	8-2		Pins	Value	Units			Min	Max	
1	V_{OUT1}	1	8	-5	8	---	---	---	---	None	9-11	E_1	V	$V_{OUT1} = E_1$		4.75	5.25	V
	V_{OUT2}	2	8	-1000	8	-9.95	---	---	---	"	"	E_2	"	$V_{OUT2} = E_2$		"	"	"
T_A =	V_{OUT3}	3	30	-5	30	---	---	---	---	"	"	E_3	"	$V_{OUT3} = E_3$		"	"	"
+25°C	V_{OUT4}	4	30	-100	30	-0.95	---	---	---	"	"	E_4	"	$V_{OUT4} = E_4$		"	"	"
	V_{RLINE1}	5	8	-100	8	-0.95	---	---	---	"	"	E_5	"	$V_{RLINE1} = E_5 - E_4$	See	-150	150	mV
	V_{RLINE2}	6	8	-500	8	-4.95	---	---	---	"	"	E_6	"	---	figure 9	---	---	"
	V_{RLINE2}	7	25	-500	25	-4.95	---	---	---	"	"	E_7	"	$V_{RLINE2} = E_6 - E_7$	waveforms	-50	50	"
	V_{RLOAD1}	8	10	-5	10	---	---	---	---	"	"	E_8	"	---	See	---	---	"
	V_{RLOAD1}	9	10	-1000	10	-9.95	---	---	---	"	"	E_9	"	$V_{RLOAD1} = E_8 - E_9$	figure 9	-100	100	"
	V_{RLOAD2}	10	---	---	---	---	---	---	---	"	---	---	"	$V_{RLOAD2} = E_3 - E_4$	waveforms	-150	150	"
	V_{RTH}	11	15	-1000	15	-9.95	---	---	---	"	9-11	E_{10}	"	$V_{RTH} = E_{10}$	See figure 9 waveforms	-50	50	"
	I_{SCD1}	12	10	-5	10	---	---	---	---	"	12-13	E_{11}	"	$I_{SCD1} = E_{11} / 2000$		-7.0	-0.5	mA
	I_{SCD2}	13	30	-5	30	---	---	---	---	"	"	E_{12}	"	$I_{SCD2} = E_{12} / 2000$		-8.0	-0.5	"
	ΔI_{SCD} (LINE)	14	8	-5	8	---	---	---	---	"	"	E_{13}	"	$\Delta I_{SCD} = E_{13} - E_{12} / 2000$ (LINE)		-1.0	1.0	"
	ΔI_{SCD} (LOAD)	15	10	-1000	10	-9.95	---	---	---	"	"	E_{14}	"	$\Delta I_{SCD} = E_{11} - E_{14} / 2000$ (LOAD)		-0.5	0.5	"
	I_{OS1}	16	10	---	15	---	---	-1.0	0	K4,K5	10-5	E_{15}	"	$I_{OS1} = E_{15}$	See figure 9	-4.00	-1.00	A
	V_{OUT5} (RECOV)	17	10	---	15	---	---	-1.0	15	K4,K5	9-11	E_{16}	"	$V_{OUT5} = E_{16}$	waveforms	4.75	5.25	V
	I_{OS2}	18	30	---	30	---	---	-0	0	K5	10-5	E_{17}	"	$I_{OS2} = E_{17}$		-2.00	-0.02	A
	V_{OUT6} (RECOV)	19	30	---	30	---	---	-0	15	K5	9-11	E_{18}	"	$V_{OUT6} = E_{18}$		4.75	5.25	V
	I_{CTL}	20	10	-500	10	-4.95	---	---	---	K1,K2	12-13	E_{19}	"	I_{CTL} = E19 / 33200		-5.00	-0.01	µA
	V_{START}	21	8	-1000	15	---	---	-0.8	---	K4	9-11	E_{20}	"	$V_{OUT} = E_{20}$	See figure 9 waveforms	4.75	5.25	V
	V_{OUT7}	22	38	-1000	38	---	---	---	---	None	"	E_{21}	"	$V_{OUT7} = E_{21}$	R1 = 4.99 kΩ ±0.1%	28.5	31.5	V
2	V_{OUT1}	23	8	-5	8	---	---	---	---	None	9-11	E_{22}	V	$V_{OUT1} = E_{22}$		4.75	5.25	V
	V_{OUT2}	24	8	-1000	8	-9.95	---	---	---	"	"	E_{23}	"	$V_{OUT2} = E_{23}$		"	"	"
T_A =	V_{OUT3}	25	30	-5	30	---	---	---	---	"	"	E_{24}	"	$V_{OUT3} = E_{24}$		"	"	"
+125°C	V_{OUT4}	26	30	-100	30	-0.95	---	---	---	"	"	E_{25}	"	$V_{OUT4} = E_{25}$		"	"	"
	V_{RLINE1}	27	8	-100	8	-0.95	---	---	---	"	"	E_{26}	"	$V_{RLINE1} = E_{26} - E_{25}$	See	-150	150	mV
	V_{RLINE2}	28	8	-500	8	-4.95	---	---	---	"	"	E_{27}	"	---	figure 9	---	---	"
	V_{RLINE2}	29	25	-500	25	-4.95	---	---	---	"	"	E_{28}	"	$V_{RLINE2} = E_{27} - E_{28}$	waveforms	-50	50	"
	V_{RLOAD1}	30	10	-5	10	---	---	---	---	"	"	E_{29}	"	---	See	---	---	"
	V_{RLOAD1}	31	10	-1000	10	-9.95	---	---	---	"	"	E_{30}	"	$V_{RLOAD1} = E_{29} - E_{30}$	figure 9	-100	100	"
	V_{RLOAD2}	32	---	---	---	---	---	---	---	"	---	---	"	$V_{RLOAD2} = E_{24} - E_{25}$	waveforms	-150	150	"
	I_{SCD1}	33	10	-5	10	---	---	---	---	"	12-13	E_{31}	"	$I_{SCD1} = E_{31} / 2000$		-7.0	-0.5	mA
	I_{SCD2}	34	30	-5	30	---	---	---	---	"	12-13	E_{32}	"	$I_{SCD2} = E_{32} / 2000$		-8.0	-0.5	"

TABLE III. Group A inspection for all device type 02 – Continued.

Subgroup	Symbol	Test no.	See figure 9							Relays energized	Measurement sense lines			Equation	Notes	Limits		Unit
			Test conditions		Applied test voltages (volts) (Hi - Lo pin potential)													
			V_{IN} (volts)	I_L (mA)	1-2	4-5	6-11	7-2	8-2		Pins	Value	Units			Min	Max	
2 T_A = +125°C	ΔI_{SCD} (LINE)	35	8	-5	8	---	---	---	---	None	12-13	E_{33}	V	$\Delta I_{SCD} = E_{33} – E_{32} / 2000$ (LINE)		-1.0	1.0	mA
	ΔI_{SCD} (LOAD)	36	10	-1000	10	-9.95	---	---	---	"	"	E_{34}	"	$\Delta I_{SCD} = E_{31} – E_{34} / 2000$ (LOAD)		-0.5	0.5	"
	I_{OS1}	37	10	---	15	---	---	1.0	0	K4,K5	10-5	E_{35}	"	$I_{OS1} = E_{35}$	See figure 9 waveforms	-4.00	-1.00	A
	V_{OUT5} (RECOV)	38	10	---	15	---	---	1.0	15	K4,K5	9-11	E_{36}	"	$V_{OUT5} = E_{36}$		4.75	5.25	V
	I_{OS2}	39	30	---	30	---	---	-0	0	K5	10-5	E_{37}	"	$I_{OS2} = E_{37}$		-2.00	-0.02	A
	V_{OUT6} (RECOV)	40	30	---	30	---	---	-0	15	K5	9-11	E_{38}	"	$V_{OUT6} = E_{38}$		4.75	5.25	V
	I_{CTL}	41	10	-500	10	-4.95	---	---	---	K1,K2	12-13	E_{39}	"	I_{CTL} = E39 / 33200		-8.00	-0.01	µA
	V_{START}	42	8	-1000	15	---	---	-0.8	---	K4	9-11	E_{40}	"	$V_{OUT} = E_{40}$	See figure 9 waveforms	4.75	5.25	V
	V_{OUT7}	43	38	-1000	38	---	---	---	---	None	"	E_{41}	"	$V_{OUT7} = E_{41}$	R1 = 4.99 kΩ ±0.1%	28.5	31.5	V
T_A = +150°C	V_{OUT8}	44	10	-5	10	---	---	---	---	"	"	E_{42}	"	$V_{OUT8} = E_{42}$		4.70	5.30	"
3 T_A = -55°C	V_{OUT1}	45	8	-5	8	---	---	---	---	None	9-11	E_{43}	V	$V_{OUT1} = E_{43}$		4.75	5.25	V
	V_{OUT2}	46	8	-1000	8	-9.95	---	---	---	"	"	E_{44}	"	$V_{OUT2} = E_{44}$		"	"	"
	V_{OUT3}	47	30	-5	30	---	---	---	---	"	"	E_{45}	"	$V_{OUT3} = E_{45}$		"	"	"
	V_{OUT4}	48	30	-100	30	-0.95	---	---	---	"	"	E_{46}	"	$V_{OUT4} = E_{46}$		"	"	"
	V_{RLINE1}	49	8	-100	8	-0.95	---	---	---	"	"	E_{47}	"	$V_{RLINE1} = E_{47} – E_{46}$	See figure 9 waveforms	-150	150	mV
	V_{RLINE2}	50	8	-500	8	-4.95	---	---	---	"	"	E_{48}	"	---		---	---	"
	V_{RLINE2}	51	25	-500	25	-4.95	---	---	---	"	"	E_{49}	"	$V_{RLINE2} = E_{48} – E_{49}$		-50	50	"
	V_{RLOAD1}	52	10	-5	10	---	---	---	---	"	"	E_{50}	"	---	See figure 9 waveforms	---	---	"
	V_{RLOAD1}	53	10	-1000	10	-9.95	---	---	---	"	"	E_{51}	"	$V_{RLOAD1} = E_{50} – E_{51}$		-100	100	"
	V_{RLOAD2}	54	---	---	---	---	---	---	---	"	---	---	"	$V_{RLOAD2} = E_{45} – E_{46}$		-150	150	"
	I_{SCD1}	55	10	-5	10	---	---	---	---	"	12-13	E_{52}	"	$I_{SCD1} = E_{52} / 2000$		-7.0	-0.5	mA
	I_{SCD2}	56	30	-5	30	---	---	---	---	"	"	E_{53}	"	$I_{SCD2} = E_{53} / 2000$		-8.0	-0.5	"
	ΔI_{SCD} (LINE)	57	8	-5	8	---	---	---	---	None	12-13	E_{54}	V	$\Delta I_{SCD} = E_{54} – E_{53} / 2000$ (LINE)		-1.0	1.0	mA
	ΔI_{SCD} (LOAD)	58	10	-1000	10	-9.95	---	---	---	"	"	E_{55}	"	$\Delta I_{SCD} = E_{52} – E_{55} / 2000$ (LOAD)		-0.5	0.5	"
	I_{OS1}	59	10	---	15	---	---	-1.0	0	K4,K5	10-5	E_{56}	"	$I_{OS1} = E_{56}$	See figure 9 waveforms	-4.00	-1.00	A
	V_{OUT5} (RECOV)	60	10	---	15	---	---	-1.0	15	K4,K5	9-11	E_{57}	"	$V_{OUT5} = E_{57}$		4.75	5.25	V
	I_{OS2}	61	30	---	30	---	---	---	0	K5	10-5	E_{58}	"	$I_{OS2} = E_{58}$		-2.00	-0.02	A
	V_{OUT6} (RECOV)	62	30	---	30	---	---	---	15	K5	9-11	E_{59}	"	$V_{OUT6} = E_{59}$		4.75	5.25	V
	I_{CTL}	63	10	-500	10	-4.95	---	---	---	K1,K2	12-13	E_{60}	"	I_{CTL} = E60 / 33200		-8.00	-0.01	µA
	V_{START}	64	8	-1000	15	---	---	-0.8	---	K4	9-11	E_{61}	"	$V_{OUT} = E_{61}$	See figure 9 waveforms	4.75	5.25	V
	V_{OUT7}	65	38	-1000	38	---	---	---	---	None	"	E_{62}	"	$V_{OUT7} = E_{62}$	R1 = 4.99 kΩ ±0.1%	28.5	31.5	V

TABLE III. Group A inspection for all device type 02 – Continued.

Subgroup	Symbol	Test no.	Test conditions		Measurement sense lines			Equation	Notes	Limits		Unit
			Input voltage	Load current	Symbol	Value	Units			Min	Max	
4 T_A = +25°C	ΔV_{IN} / ΔV_{OUT}	66	V_{IN} = 10 V e_i = 1.0 Vrms at 2400 Hz	I_L = -350 mA	e_{orms}	E_{63}	Vrms	$\Delta V_{IN} / \Delta V_{OUT} = -20 \log E_{63}$	See figure 11	45	---	dB
7 T_A = +25°C	V_{NO}	67	V_{IN} = 10 V	I_L = -100 mA	e_{orms}	E_{64}	Vrms	$V_{NO} = E_{64}$	See figure 12	---	250	µVrms
	ΔV_{OUT} / ΔV_{IN}	68	V_{IN} = 10 V ΔV_{IN} = 3.0 V	I_L = -5 mA	V_{OUT}	E_{65}	V	$\Delta V_{OUT} / \Delta V_{IN} = E_{65} / 3$	See figure 13	---	30	mV/V
	ΔV_{OUT} / ΔI_L	69	V_{IN} = 10 V	I_L = -100 mA ΔI_L = -400 mA	V_{OUT}	E_{66}	V	$\Delta V_{OUT} / \Delta I_L = E_{66} / 400$	See figure 14	---	2.5	mV/mA

TABLE III. Group A inspection for all device type 03.

Subgroup	Symbol	Test no.	See figure 9: Test conditions V_{IN} (volts)	I_L (mA)	Applied test voltages (volts) (Hi – Lo pin potential) 1-2	4-5	6-11	7-2	8-2	Relays energized	Measurement sense lines: Pins	Value	Units	Equation	Notes	Limits: Min	Max	Unit
1	V_{OUT1}	1	4.25	-5	4.25	0	---	---	---	None	9-11	E_1	V	$V_{OUT1} = E_1$		1.20	1.30	V
	V_{OUT2}	2	4.25	-500	4.25	-4.95	---	---	---	"	"	E_2	"	$V_{OUT2} = E_2$		"	"	"
T_A =	V_{OUT3}	3	41.25	-5	41.25	0	---	---	---	"	"	E_3	"	$V_{OUT3} = E_3$		"	"	"
+25°C	V_{OUT4}	4	41.25	-50	41.25	-0.45	---	---	---	"	"	E_4	"	$V_{OUT4} = E_4$		"	"	"
	V_{RLINE}	5	---	---	---	---	---	---	---	"	"	---	"	$V_{RLINE} = E_1 – E_3$	See figure 9 waveforms	-9	9	mV
	V_{RLOAD1}	6	6.25	-5	6.25	0	---	---	---	"	"	E_5	"	---	See			"
	V_{RLOAD1}	7	6.25	-500	6.25	-4.95	---	---	---	"	"	E_6	"	$V_{RLOAD1} = E_5 – E_6$	figure 9	-12	-12	"
	V_{RLOAD2}	8	---	---	---	---	---	---	---	"	"		"	$V_{RLOAD2} = E_3 – E_4$	waveforms	-12	12	"
	V_{RTH}	9	14.6	-500	14.6	-7.45	---	---	---	"	"	E_7	"	$V_{RTH} = E_7$	See figure 9 waveforms t = 20.5 ms	-12	12	"
	I_{ADJ}	10	4.25	-5	4.25	0	---	---	---	K2	12-13	E_8	mV	$I_{ADJ} = E_8 / 2000$		-100	-15	μA
	I_{ADJ}	11	41.25	-5	41.25	0	---	---	---	"	"	E_9	"	$I_{ADJ} = E_9 / 2000$		-100	-15	"
	ΔI_{ADJ} (LINE)	12	---	---	---	---	---	---	---	"	"	---	"	$\Delta I_{ADJ} = (E_8 – E_9) / 2000$ (LINE)		-5	5	"
	ΔI_{ADJ} (LOAD)	13	6.25	-5	6.25	0	---	---	---	"	"	E_{10}	"	$\Delta I_{ADJ} = (E_{10} – E_{11}) / 2000$ (LOAD)		-5	5	"
	ΔI_{ADJ} (LOAD)	14	6.25	-500	6.25	-4.95	---	---	---	"	"	E_{11}	"					
	I_{OS1}	15	4.25	---	10	---	---	-0.425	0	K4,K5	10-5	E_{12}	V	$I_{OS1} = E_{12}$	See figure 9	-1.8	-0.5	A
	V_{OUT5} (RECOV)	16	4.25	---	10	---	---	-0.425	15	K4,K5	9-11	E_{13}	"	$V_{OUT5} = E_{13}$ (RECOV)	waveforms	1.20	1.30	V
	I_{OS2}	17	40	---	40	---	---	---	0	K5	10-5	E_{14}	"	$I_{OS2} = E_{14}$		-0.5	-0.05	A
	V_{OUT6} (RECOV)	18	40	---	40	---	---	---	15	K5	9-11	E_{15}	"	$V_{OUT6} = E_{15}$ (RECOV)		1.20	1.30	V
	I_{Q1}	19	4.25	---	4.25	0	1.4	---	---	K3	12-13	E_{16}	"	$I_{Q1} = E_{16} / 2000$		-3.0	-0.05	mA
	I_{Q2}	20	14.25	---	14.25	0	1.4	---	---	K3	12-13	E_{17}	"	$I_{Q2} = E_{17} / 2000$		-3.0	-0.05	"
	I_{Q3}	21	41.25	---	41.25	0	1.4	---	---	K3	12-13	E_{18}	"	$I_{Q3} = E_{18} / 2000$		-5.0	-0.2	"
	V_{START}	22	4.25	-500	10	0	---	-0.425	---	K4	9-11	E_{19}	"	$V_{START} = E_{19}$	See figure 9 waveforms	1.20	1.30	V
2	V_{OUT1}	23	4.25	-5	4.25	0	---	---	---	None	9-11	E_{20}	V	$V_{OUT1} = E_{20}$		1.20	1.30	V
	V_{OUT2}	24	4.25	-500	4.25	-4.95	---	---	---	"	"	E_{21}	"	$V_{OUT2} = E_{21}$		"	"	"
T_A =	V_{OUT3}	25	41.25	-5	41.25	0	---	---	---	"	"	E_{22}	"	$V_{OUT3} = E_{22}$		"	"	"
+125°C	V_{OUT4}	26	41.25	-50	41.25	-0.45	---	---	---	"	"	E_{23}	"	$V_{OUT4} = E_{23}$		"	"	"
	V_{RLINE1}	27	---	---	---	---	---	---	---	"	"	---	"	$V_{RLINE} = E_{20} – E_{22}$	See figure 9 waveforms	-23	23	mV
	V_{RLOAD1}	28	6.25	-5	6.25	0	---	---	---	"	"	E_{24}	"	---	See	---	---	"
	V_{RLOAD1}	29	6.25	-500	6.25	-4.95	---	---	---	"	"	E_{25}	"	$V_{RLOAD1} = E_{24} – E_{25}$	figure 9	-12	12	"
	V_{RLOAD2}	30	---	---	---	---	---	---	---	"	"	---	"	$V_{RLOAD2} = E_{22} – E_{23}$		-12	12	"

TABLE III. Group A inspection for all device type 03 – Continued.

Subgroup	Symbol	Test no.	See figure 9 Test conditions V_{IN} (volts)	I_L (mA)	Applied test voltages (volts) (Hi – Lo pin potential) 1-2	4-5	6-11	7-2	8-2	Relays energized	Measurement sense lines Pins	Value	Units	Equation	Notes	Limits Min	Max	Unit
2	I_{ADJ}	31	4.25	-5	4.25	0	---	---	---	K2	12-13	E_{26}	mV	$I_{ADJ} = E_{26} / 2000$		-100	-15	µA
	I_{ADJ}	32	41.25	-5	41.25	0	---	---	---	"	"	E_{27}	"	$I_{ADJ} = E_{27} / 2000$		-100	-15	"
T_A = +125°C	ΔI_{ADJ} (LINE)	33	---	---	---	---	---	---	---	"	"	---	"	$I_{ADJ} = (E_{26} – E_{27}) / 2000$ (LINE)		-5	5	"
	ΔI_{ADJ} (LOAD)	34	6.25	-5	6.25	0	---	---	---	"	"	E_{28}	"	$I_{ADJ} = (E_{28} – E_{29}) / 2000$ (LOAD)		-5	5	"
	ΔI_{ADJ} (LOAD)	35	6.25	-500	6.25	-4.95	---	---	---	"	"	E_{29}	"					
	I_{OS1}	36	4.25	---	10	---	---	0.425	0	K4,K5	10-5	E_{30}	V	$I_{OS1} = E_{30}$	See figure 9 waveforms	-1.8	-0.5	A
	V_{OUT5} (RECOV)	37	4.25	---	10	---	---	0.425	15	K4,K5	9-11	E_{31}	"	$V_{OUT5} = E_{31}$ (RECOV)		1.20	1.30	V
	I_{OS2}	38	40	---	40	---	---	---	0	K5	10-5	E_{32}	"	$I_{OS2} = E_{32}$		-0.5	-0.05	A
	V_{OUT6} (RECOV)	39	40	---	40	---	---	---	15	K5	9-11	E_{33}	"	$V_{OUT6} = E_{33}$ (RECOV)		1.20	1.30	V
	I_{Q1}	40	4.25	---	4.25	0	1.4	---	---	K3	12-13	E_{34}	"	$I_{Q1} = E_{34} / 2000$		-3.0	-0.05	mA
	I_{Q2}	41	14.25	---	14.25	0	1.4	---	---	K3	12-13	E_{35}	"	$I_{Q2} = E_{35} / 2000$		-3.0	-0.05	"
	I_{Q3}	42	41.25	---	41.25	0	1.4	---	---	K3	12-13	E_{36}	"	$I_{Q3} = E_{36} / 2000$		-5.0	-0.2	"
	V_{START}	43	4.25	-500	10	0	---	-0.425	---	K4	9-11	E_{37}	"	$V_{START} = E_{37}$	See figure 9 waveforms	1.20	1.30	V
T_A = +150°C	V_{OUT7}	44	6.25	-5	6.25	0	---	---	---	None	"	E_{38}	"	$V_{OUT7} = E_{38}$		1.20	1.30	V
3	V_{OUT1}	45	4.25	-5	4.25	0	---	---	---	None	9-11	E_{39}	V	$V_{OUT1} = E_{39}$		1.20	1.30	V
	V_{OUT2}	46	4.25	-500	4.25	-4.95	---	---	---	"	"	E_{40}	"	$V_{OUT2} = E_{40}$		"	"	"
T_A = -55°C	V_{OUT3}	47	41.25	-5	41.25	0	---	---	---	"	"	E_{41}	"	$V_{OUT3} = E_{41}$		"	"	"
	V_{OUT4}	48	41.25	-50	41.25	-0.45	---	---	---	"	"	E_{42}	"	$V_{OUT4} = E_{42}$		"	"	"
	V_{RLINE1}	49	---	---	---	---	---	---	---	"	"	---	"	$V_{RLINE} = E_{39} – E_{41}$	See figure 9 waveforms	-23	23	mV
	V_{RLOAD1}	50	6.25	-5	6.25	0	---	---	---	"	"	E_{43}	"	---	See figure 9	---	---	"
	V_{RLOAD1}	51	6.25	-500	6.25	-4.95	---	---	---	"	"	E_{44}	"	$V_{RLOAD1} = E_{43} – E_{44}$		-12	12	"
	V_{RLOAD2}	52	---	---	---	---	---	---	---	"	"	---	"	$V_{RLOAD2} = E_{41} – E_{42}$		-12	12	"
	I_{ADJ}	53	4.25	-5	4.25	0	---	---	---	K2	12-13	E_{45}	mV	$I_{ADJ} = E_{45} / 2000$		-100	-15	µA
	I_{ADJ}	54	41.25	-5	41.25	0	---	---	---	"	"	E_{46}	"	$I_{ADJ} = E_{46} / 2000$		-100	-15	"
	ΔI_{ADJ} (LINE)	55	---	---	---	---	---	---	---	"	"	---	"	$\Delta I_{ADJ} = (E_{45} – E_{46}) / 2000$ (LINE)		-5	5	"
	ΔI_{ADJ} (LOAD)	56	6.25	-5	6.25	0	---	---	---	"	"	E_{47}	"	$\Delta I_{ADJ} = (E_{47} – E_{48}) / 2000$ (LINE)		-5	5	"
	ΔI_{ADJ} (LOAD)	57	6.25	-500	6.25	-4.95	---	---	---	"	"	E_{48}	"					

TABLE III. Group A inspection for all device type 03 – Continued.

Subgroup	Symbol	Test no.	See figure 9: Test conditions		Applied test voltages (volts) (Hi – Lo pin potential)					Relays energized	Measurement sense lines			Equation	Notes	Limits		Unit
			V_{IN} (volts)	I_L (mA)	1-2	4-5	6-11	7-2	8-2		Pins	Value	Units			Min	Max	
3	I_{OS1}	58	4.25	---	10	---	---	-0.425	0	K4,K5	10-5	E_{49}	V	$I_{OS1} = E_{49}$	See figure 9 waveforms	-1.8	-0.5	A
T_A = -55°C	V_{OUT5} (RECOV)	59	4.25	---	10	---	---	-0.425	15	K4,K5	9-11	E_{50}	"	$V_{OUT5} = E_{50}$ (RECOV)		1.20	1.30	V
	I_{OS2}	60	40	---	40	---	---	---	0	K5	10-5	E_{51}	"	$I_{OS2} = E_{51}$		-0.5	-0.05	A
	V_{OUT6} (RECOV)	61	40	---	40	---	---	---	15	K5	9-11	E_{52}	"	$V_{OUT6} = E_{52}$ (RECOV)		1.20	1.30	V
	I_{Q1}	62	4.25	---	4.25	0	1.4	---	---	K3	12-13	E_{53}	"	$I_{Q1} = E_{53} / 2000$		-3.0	-0.05	mA
	I_{Q2}	63	14.25	---	14.25	0	1.4	---	---	K3	12-13	E_{54}	"	$I_{Q2} = E_{54} / 2000$		-3.0	-0.05	"
	I_{Q3}	64	41.25	---	41.25	0	1.4	---	---	K3	12-13	E_{55}	"	$I_{Q3} = E_{55} / 2000$		-5.0	-0.2	"
	V_{START}	65	4.25	-500	10	0	---	-0.425	---	K4	9-11	E_{56}	"	$V_{START} = E_{56}$	See figure 9 waveforms	1.20	1.30	V

Subgroup	Symbol	Test no.	Test conditions: Input voltage	Test conditions: Load current	Measurement sense lines: Symbol	Value	Units	Equation	Notes	Limits: Min	Max	Unit
4 T_A = +25°C	ΔV_{IN} / ΔV_{OUT}	66	V_{IN} = 6.25 V e_i = 1.0 Vrms at 2400 Hz	I_L = -125 mA	e_{orms}	E_{57}	Vrms	$\Delta V_{IN} / \Delta V_{OUT} = -20 \log E_{57}$	See figure 11	65	---	dB
7	V_{NO}	67	V_{IN} = 6.25 V	I_L = -50 mA	e_{orms}	E_{58}	Vrms	$V_{NO} = E_{58}$	See figure 12	---	120	µVrms
T_A = +25°C	ΔV_{OUT} / ΔV_{IN}	68	V_{IN} = 6.25 V ΔV_{IN} = 3.0 V	I_L = -10 mA	V_{OUT}	E_{59}	V	$\Delta V_{OUT} / \Delta V_{IN} = E_{59} / 3$	See figure 13	---	6	mV/V
	ΔV_{OUT} / ΔI_L	69	V_{IN} = 6.25 V	I_L = -50 mA ΔI_L = -200 mA	V_{OUT}	E_{60}	V	$\Delta V_{OUT} / \Delta I_L = E_{60} / 200$	See figure 14	---	0.60	mV/mA

TABLE III. Group A inspection for all device type 04.

Subgroup	Symbol	Test no.	See figure 9 Test conditions V_{IN} (volts)	I_L (mA)	Applied test voltages (volts) (Hi – Lo pin potential) 1-2	4-5	6-11	7-2	8-2	Relays energized	Measurement sense lines Pins	Value	Units	Equation	Notes	Limits Min	Max	Unit
1	V_{OUT1}	1	4.25	-5	4.25	0	---	---	---	None	9-11	E_1	V	$V_{OUT1} = E_1$		1.20	1.30	V
	V_{OUT2}	2	4.25	-1500	4.25	-14.95	---	---	---	“	“	E_2	“	$V_{OUT2} = E_2$		“	“	“
T_A =	V_{OUT3}	3	41.25	-5	41.25	0	---	---	---	“	“	E_3	“	$V_{OUT3} = E_3$		“	“	“
+25°C	V_{OUT4}	4	41.25	-200	41.25	-1.95	---	---	---	“	“	E_4	“	$V_{OUT4} = E_4$		“	“	“
	V_{RLINE}	5	---	---	---	---	---	---	---	“	“	---	“	$V_{RLINE} = E_1 – E_3$	See figure 9 waveforms	-9	9	mV
	V_{RLOAD1}	6	6.25	-5	6.25	0	---	---	---	“	“	E_5	“	---	See	---	---	“
	V_{RLOAD1}	7	6.25	-1500	6.25	-14.95	---	---	---	“	“	E_6	“	$V_{RLOAD1} = E_5 – E_6$	figure 9	-3.5	3.5	“
	V_{RLOAD2}	8	---	---	---	---	---	---	---	“	“	---	“	$V_{RLOAD2} = E_3 – E_4$	waveforms	-3.5	3.5	“
	V_{RTH}	9	14.6	-1500	14.6	-14.95	---	---	---	“	“	E_7	“	$V_{RTH} = E_7$	See figure 9 waveforms, t = 20.5 ms	-12	12	“
	I_{ADJ}	10	4.25	-5	4.25	0	---	---	---	K2	12-13	E_8	mV	$I_{ADJ} = E_8 / 2000$		-100	-15	µA
	I_{ADJ}	11	41.25	-5	41.25	0	---	---	---	“	“	E_9	“	$I_{ADJ} = E_9 / 2000$		-100	-15	“
	ΔI_{ADJ} (LINE)	12	---	---	---	---	---	---	---	“	“	---	“	$\Delta I_{ADJ} = (E_8 – E_9) / 2000$ (LINE)		-5	5	“
	ΔI_{ADJ} (LOAD)	13	6.25	-5	6.25	0	---	---	---	“	“	E_{10}	“	$\Delta I_{ADJ} = (E_{10} – E_{11}) / 2000$ (LOAD)		-5	5	“
	ΔI_{ADJ} (LOAD)	14	6.25	-1500	6.25	-14.95	---	---	---	“	“	E_{11}	“					
	I_{OS1}	15	4.25	---	10	---	---	-0.425	0	K4,K5	10-5	E_{12}	V	$I_{OS1} = E_{12}$	See figure 9	-3.5	-1.5	A
	V_{OUT5} (RECOV)	16	4.25	---	10	---	---	-0.425	15	K4,K5	9-11	E_{13}	“	$V_{OUT5} = E_{13}$ (RECOV)	waveforms	1.20	1.30	V
	I_{OS2}	17	40	---	40	---	---	---	0	K5	10-5	E_{14}	“	$I_{OS2} = E_{14}$		-1.00	-0.18	A
	V_{OUT6} (RECOV)	18	40	---	40	---	---	---	15	K5	9-11	E_{15}	“	$V_{OUT6} = E_{15}$ (RECOV)		1.20	1.30	V
	I_{Q1}	19	4.25	---	4.25	0	1.4	---	---	K3	12-13	E_{16}	“	$I_{Q1} = E_{16} / 2000$		-3.0	-0.05	mA
	I_{Q2}	20	14.25	---	14.25	0	1.4	---	---	K3	12-13	E_{17}	“	$I_{Q2} = E_{17} / 2000$		-3.0	-0.05	“
	I_{Q3}	21	41.25	---	41.25	0	1.4	---	---	K3	12-13	E_{18}	“	$I_{Q3} = E_{18} / 2000$		-5.0	-0.2	“
	V_{START}	22	4.25	-1500	10	0	---	-0.425	---	K4	9-11	E_{19}	“	$V_{START} = E_{19}$	See figure 9 waveforms	1.20	1.30	V
2	V_{OUT1}	23	4.25	-5	4.25	0	---	---	---	None	9-11	E_{20}	V	$V_{OUT1} = E_{20}$		1.20	1.30	V
	V_{OUT2}	24	4.25	-1500	4.25	-14.95	---	---	---	“	“	E_{21}	“	$V_{OUT2} = E_{21}$		“	“	“
T_A =	V_{OUT3}	25	41.25	-5	41.25	0	---	---	---	“	“	E_{22}	“	$V_{OUT3} = E_{22}$		“	“	“
+125°C	V_{OUT4}	26	41.25	-200	41.25	-1.95	---	---	---	“	“	E_{23}	“	$V_{OUT4} = E_{23}$		“	“	“
	V_{RLINE1}	27	---	---	---	---	---	---	---	“	“	---	“	$V_{RLINE} = E_{20} – E_{22}$	See figure 9 waveforms	-23	23	mV
	V_{RLOAD1}	28	6.25	-5	6.25	0	---	---	---	“	“	E_{24}	“	---	See	---	---	“
	V_{RLOAD1}	29	6.25	-1500	6.25	-14.95	---	---	---	“	“	E_{25}	“	$V_{RLOAD1} = E_{24} – E_{25}$	figure 9	-12	12	“
	V_{RLOAD2}	30	---	---	---	---	---	---	---	“	“	---	“	$V_{RLOAD2} = E_{22} – E_{23}$	waveforms	-12	12	“

TABLE III. Group A inspection for all device type 04 – Continued.

Subgroup	Symbol	Test no.	See figure 9							Relays energized	Measurement sense lines			Equation	Notes	Limits		Unit
			Test conditions		Applied test voltages (volts) (Hi – Lo pin potential)													
			V_{IN} (volts)	I_L (mA)	1-2	4-5	6-11	7-2	8-2		Pins	Value	Units			Min	Max	
2	I_{ADJ}	31	4.25	-5	4.25	0	---	---	---	K2	12-13	E_{26}	mV	$I_{ADJ} = E_{26} / 2000$		-100	-15	µA
	I_{ADJ}	32	41.25	-5	41.25	0	---	---	---	"	"	E_{27}	"	$I_{ADJ} = E_{27} / 2000$		-100	-15	"
T_A = +125°C	ΔI_{ADJ} (LINE)	33	---	---	---	---	---	---	---	"	"	---	"	$\Delta I_{ADJ} = (E_{26} - E_{27}) / 2000$ (LINE)		-5	5	"
	ΔI_{ADJ} (LOAD)	34	6.25	-5	6.25	0	---	---	---	"	"	E_{28}	"	$\Delta I_{ADJ} = (E_{28} - E_{29}) / 2000$ (LOAD)		-5	5	"
	ΔI_{ADJ} (LOAD)	35	6.25	-1500	6.25	-14.95	---	---	---	"	"	E_{29}	"					
	I_{OS1}	36	4.25	---	10	---	---	-0.425	0	K4,K5	10-5	E_{30}	V	$I_{OS1} = E_{30}$	See figure 9 waveforms	-3.5	-1.5	A
	V_{OUT5} (RECOV)	37	4.25	---	10	---	---	-0.425	15	K4,K5	9-11	E_{31}	"	$V_{OUT5} = E_{31}$ (RECOV)		1.20	1.30	V
	I_{OS2}	38	40	---	40	---	---	---	0	K5	10-5	E_{32}	"	$I_{OS2} = E_{32}$		-1.00	-0.18	A
	V_{OUT6} (RECOV)	39	40	---	40	---	---	---	15	K5	9-11	E_{33}	"	$V_{OUT6} = E_{33}$ (RECOV)		1.20	1.30	V
	I_{Q1}	40	4.25	---	4.25	0	1.4	---	---	K3	12-13	E_{34}	"	$I_{Q1} = E_{34} / 2000$		-3.0	-0.05	mA
	I_{Q2}	41	14.25	---	14.25	0	1.4	---	---	K3	12-13	E_{35}	"	$I_{Q2} = E_{35} / 2000$		-3.0	-0.05	"
	I_{Q3}	42	41.25	---	41.25	0	1.4	---	---	K3	12-13	E_{36}	"	$I_{Q3} = E_{36} / 2000$		-5.0	-0.2	"
	V_{START}	43	4.25	-1500	10	0	---	-0.425	---	K4	9-11	E_{37}	"	$V_{START} = E_{37}$	See figure 9 waveforms	1.20	1.30	V
T_A = +150°C	V_{OUT7}	44	6.25	-5	6.25	0	---	---	---	None	"	E_{38}	"	$V_{OUT7} = E_{38}$		1.20	1.30	V
3	V_{OUT1}	45	4.25	-5	4.25	0	---	---	---	None	9-11	E_{39}	V	$V_{OUT1} = E_{39}$		1.20	1.30	V
	V_{OUT2}	46	4.25	-1500	4.25	-14.95	---	---	---	"	"	E_{40}	"	$V_{OUT2} = E_{40}$		"	"	"
T_A = -55°C	V_{OUT3}	47	41.25	-5	41.25	0	---	---	---	"	"	E_{41}	"	$V_{OUT3} = E_{41}$		"	"	"
	V_{OUT4}	48	41.25	-200	41.25	-1.95	---	---	---	"	"	E_{42}	"	$V_{OUT4} = E_{42}$		"	"	"
	V_{RLINE1}	49	---	---	---	---	---	---	---	"	"	---	"	$V_{RLINE} = E_{39} - E_{41}$	See figure 9 waveforms	-23	23	mV
	V_{RLOAD1}	50	6.25	-5	6.25	0	---	---	---	"	"	E_{43}	"	---	See figure 9 waveforms	---	---	"
	V_{RLOAD1}	51	6.25	-1500	6.25	-14.95	---	---	---	"	"	E_{44}	"	$V_{RLOAD1} = E_{43} - E_{44}$		-12	12	"
	V_{RLOAD2}	52	---	---	---	---	---	---	---	"	"	---	"	$V_{RLOAD2} = E_{41} - E_{42}$		-12	12	"
	I_{ADJ}	53	4.25	-5	4.25	0	---	---	---	K2	12-13	E_{45}	mV	$I_{ADJ} = E_{45} / 2000$		-100	-15	µA
	I_{ADJ}	54	41.25	-5	41.25	0	---	---	---	"	"	E_{46}	"	$I_{ADJ} = E_{46} / 2000$		-100	-15	"
	ΔI_{ADJ} (LINE)	55	---	---	---	---	---	---	---	"	"	---	"	$\Delta I_{ADJ} = (E_{45} - E_{46}) / 2000$ (LINE)		-5	5	"
	ΔI_{ADJ} (LOAD)	56	6.25	-5	6.25	0	---	---	---	"	"	E_{47}	"	$\Delta I_{ADJ} = (E_{47} - E_{48}) / 2000$ (LOAD)		-5	5	"
	ΔI_{ADJ} (LOAD)	57	6.25	-1500	6.25	-14.95	---	---	---	"	"	E_{48}	"					

TABLE III. Group A inspection for all device type 04 – Continued.

Subgroup	Symbol	Test no.	See figure 9 Test conditions V_{IN} (volts)	I_L (mA)	Applied test voltages (volts) (Hi – Lo pin potential) 1-2	4-5	6-11	7-2	8-2	Relays energized	Measurement sense limts Pins	Value	Units	Equation	Notes	Limits Min	Max	Unit
3 T_A = -55°C	I_{OS1}	58	4.25	---	10	---	---	-0.425	0	K4,K5	10-5	E_{49}	V	$I_{OS1} = E_{49}$	See figure 9 waveforms	-3.5	-1.5	A
	V_{OUT5} (RECOV)	59	4.25	---	10	---	---	-0.425	15	K4,K5	9-11	E_{50}	"	$V_{OUT5} = E_{50}$ (RECOV)		1.20	1.30	V
	I_{OS2}	60	40	---	40	---	---	---	0	K5	10-5	E_{51}	"	$I_{OS2} = E_{51}$		-1.00	-0.18	A
	V_{OUT6} (RECOV)	61	40	---	40	---	---	---	15	K5	9-11	E_{52}	"	$V_{OUT6} = E_{52}$ (RECOV)		1.20	1.30	V
	I_{Q1}	62	4.25	---	4.25	0	1.4	---	---	K3	12-13	E_{53}	"	$I_{Q1} = E_{53} / 2000$		-3.0	-0.05	mA
	I_{Q2}	63	14.25	---	14.25	0	1.4	---	---	K3	12-13	E_{54}	"	$I_{Q2} = E_{54} / 2000$		-3.0	-0.05	"
	I_{Q3}	64	41.25	---	41.25	0	1.4	---	---	K3	12-13	E_{55}	"	$I_{Q3} = E_{55} / 2000$		-5.0	-0.2	"
	V_{START}	65	4.25	-1500	10	0	---	-0.425	---	K4	9-11	E_{56}	"	$V_{START} = E_{56}$	See figure 9 waveforms	1.20	1.30	V

Subgroup	Symbol	Test no.	Test conditions Input voltage	Load current	Measurement sense lines Symbol	Value	Units	Equation	Notes	Limits Min	Max	Unit
4 T_A = +25°C	ΔV_{IN} / ΔV_{OUT}	66	V_{IN} = 6.25 V e_i = 1.0 Vrms at 2400 Hz	I_L = -500 mA	e_{orms}	E_{57}	Vrms	$\Delta V_{IN} / \Delta V_{OUT} = -20 \log E_{57}$	See figure 11	65	---	dB
7 T_A = +25°C	V_{NO}	67	V_{IN} = 6.25 V	I_L = -100 mA	e_{orms}	E_{58}	Vrms	$V_{NO} = E_{58}$	See figure 12	---	120	µVrms
	ΔV_{OUT} / ΔV_{IN}	68	V_{IN} = 6.25 V ΔV_{IN} = 3.0 V	I_L = -10 mA	V_{OUT}	E_{59}	V	$\Delta V_{OUT} / \Delta V_{IN} = E_{59} / 3$	See figure 13	---	6	mV/V
	ΔV_{OUT} / ΔI_L	69	V_{IN} = 6.25 V	I_L = -100 mA ΔI_L = -400 mA	V_{OUT}	E_{60}	V	$\Delta V_{OUT} / \Delta I_L = E_{60} / 200$	See figure 14	---	0.30	mV/mA

TABLE III. Group A inspection for all device type 05.

Subgroup	Symbol	Test no.	See figure 10							Relays energized	Measurement sense lines			Equation	Notes	Limits		Unit
			Test conditions		Applied test voltages (volts) (Hi – Lo pin potential)													
			V_{IN} (volts)	I_L (mA)	1-2	4-5	6-11	7-2	8-2		Pins	Value	Units			Min	Max	
1	V_{OUT1}	1	4.25	-5	15	0	---	-0.425	---	None	9-11	E_1	V	$V_{OUT1} = E_1$		1.20	1.30	V
	V_{OUT2}	2	4.25	-3000	15	-2.995	---	-0.425	---	"	"	E_2	"	$V_{OUT2} = E_2$		"	"	"
T_A =	V_{OUT3}	3	36.25	-5	42.5	0	---	-3.625	---	"	"	E_3	"	$V_{OUT3} = E_3$		"	"	"
+25°C	V_{OUT4}	4	36.25	-150	42.5	-0.145	---	-3.625	---	"	"	E_4	"	$V_{OUT4} = E_4$		"	"	"
	V_{RLINE}	5	---	---	---	---	---	---	---	"	"	---	"	$V_{RLINE} = E_1 - E_3$	See figure 10 waveforms	-4	4	mV
	V_{RLOAD1}	6	6.25	-5	15	0	---	-0.625	---	"	"	E_5	"	---	See			"
	V_{RLOAD1}	7	6.25	-3000	15	-2.995	---	-0.625	---	"	"	E_6	"	$V_{RLOAD1} = E_5 - E_6$	figure 10	-3.5	3.5	"
	V_{RLOAD2}	8	---	---	---	---	---	---	---	"	"	---	"	$V_{RLOAD2} = E_3 - E_4$	waveforms	-3.5	3.5	"
	V_{RTH}	9	11.25	-1000	25	-0.995	---	-1.125	---	"	"	E_7	"	$V_{RTH} = E_7$	See figure 10 waveforms, t = 20.5 ms	-5	5	"
	I_{ADJ}	10	4.25	-5	15	0	---	-0.425	---	K2	12-13	E_8	mV	$I_{ADJ} = E_8 / 2000$		-100	-15	μA
	I_{ADJ}	11	36.25	-5	42.5	0	---	-3.625	---	"	"	E_9	"	$I_{ADJ} = E_9 / 2000$		-100	-15	"
	ΔI_{ADJ} (LINE)	12	---	---	---	---	---	---	---	"	"	---	"	$\Delta I_{ADJ} = (E_8 - E_9) / 2000$ (LINE)		-5	5	"
	ΔI_{ADJ} (LOAD)	13	6.25	-5	15	0	---	-0.625	---	"	"	E_{10}	"	$\Delta I_{ADJ} = (E_{10} - E_{11}) / 2000$ (LOAD)		-5	5	"
	ΔI_{ADJ} (LOAD)	14	6.25	-3000	15	-2.995	---	-0.625	---	"	"	E_{11}	"					
	I_{OS1}	15	4.25	---	15	---	---	-0.425	0	K4,K5	10-5	E_{12}	V	$I_{OS1} = 4E_{12}$	See figure 10	-5.2	-3.0	A
	V_{OUT5} (RECOV)	16	4.25	---	15	---	---	-0.425	15	K4,K5	9-11	E_{13}	"	$V_{OUT5} = E_{13}$ (RECOV)	waveforms	1.20	1.30	V
	I_{OS2}	17	35	---	42.5	---	---	-3.5	0	K5	10-5	E_{14}	"	$I_{OS2} = 4E_{14}$		-2.00	-0.15	A
	V_{OUT6} (RECOV)	18	35	---	42.5	---	---	-3.5	15	K5	9-11	E_{15}	"	$V_{OUT6} = E_{15}$ (RECOV)		1.20	1.30	V
	I_{Q1}	19	4.25	---	15	0	1.4	-0.425	---	K3	12-13	E_{16}	"	$I_{Q1} = E_{16} / 2000$		-3.0	-0.05	mA
	I_{Q2}	20	14.25	---	25	0	1.4	-1.425	---	K3	12-13	E_{17}	"	$I_{Q2} = E_{17} / 2000$		-3.0	-0.05	"
	I_{Q3}	21	36.25	---	42.5	0	1.4	-3.625	---	K3	12-13	E_{18}	"	$I_{Q3} = E_{18} / 2000$		-5.0	-0.2	"
	V_{START}	22	4.25	-3000	15	0	---	-0.425	---	K4	9-11	E_{19}	"	V_{START} = E19	See figure 10 waveforms	1.20	1.30	V
2	V_{OUT1}	23	4.25	-5	15	0	---	-0.425	---	None	9-11	E_{20}	V	$V_{OUT1} = E_{20}$		1.20	1.30	V
	V_{OUT2}	24	4.25	-3000	15	-2.995	---	-0.425	---	"	"	E_{21}	"	$V_{OUT2} = E_{21}$		"	"	"
T_A =	V_{OUT3}	25	36.25	-5	42.5	0	---	-3.625	---	"	"	E_{22}	"	$V_{OUT3} = E_{22}$		"	"	"
+125°C	V_{OUT4}	26	36.25	-150	42.5	-0.145	---	-3.625	---	"	"	E_{23}	"	$V_{OUT4} = E_{23}$		"	"	"
	V_{RLINE1}	27	---	---	---	---	---	---	---	"	"	---	"	$V_{RLINE} = E_{20} - E_{22}$	See figure 10 waveforms	-20	20	mV
	V_{RLOAD1}	28	6.25	-5	15	0	---	-0.625	---	"	"	E_{24}	"	---	See	---	---	"
	V_{RLOAD1}	29	6.25	-3000	15	-2.995	---	-0.625	---	"	"	E_{25}	"	$V_{RLOAD1} = E_{24} - E_{25}$	figure 10	-12	12	"
	V_{RLOAD2}	30	---	---	---	---	---	---	---	"	"	---	"	$V_{RLOAD2} = E_{22} - E_{23}$	waveforms	-12	12	"

TABLE III. Group A inspection for all device type 05 – Continued.

Subgroup	Symbol	Test no.	See figure 10 Test conditions V_{IN} (volts)	I_L (mA)	Applied test voltages (volts) (Hi – Lo pin potential) 1-2	4-5	6-11	7-2	8-2	Relays energized	Measurement sense lines Pins	Value	Units	Equation	Notes	Limits Min	Max	Unit
2	I_{ADJ}	31	4.25	-5	15	0	---	-0.425	---	K2	12-13	E_{26}	mV	$I_{ADJ} = E_{26} / 2000$		-100	-15	µA
	I_{ADJ}	32	36.25	-5	42.5	0	---	-3.625	---	“	“	E_{27}	“	$I_{ADJ} = E_{27} / 2000$		-100	-15	“
T_A = +125°C	ΔI_{ADJ} (LINE)	33	---	---	---	---	---	---	---	“	“	---	“	$\Delta I_{ADJ} = (E_{26} – E_{27}) / 2000$ (LINE)		-5	5	“
	ΔI_{ADJ} (LOAD)	34	6.25	-5	15	0	---	-0.625	---	“	“	E_{28}	“	$\Delta I_{ADJ} = (E_{28} – E_{29}) / 2000$ (LOAD)		-5	5	“
	ΔI_{ADJ} (LOAD)	35	6.25	-3000	15	-2.995	---	-0.625	---	“	“	E_{29}	“					
	I_{OS1}	36	4.25	---	15	---	---	-0.425	0	K4,K5	10-5	E_{30}	V	$I_{OS1} = 4E_{30}$	See figure 10 waveforms	-5.2	-3.0	A
	V_{OUT5} (RECOV)	37	4.25	---	15	---	---	-0.425	15	K4,K5	9-11	E_{31}	“	$V_{OUT5} = E_{31}$ (RECOV)		1.20	1.30	V
	I_{OS2}	38	35	---	42.5	---	---	-3.5	0	K5	10-5	E_{32}	“	$I_{OS2} = 4E_{32}$		-2.0	-0.15	A
	V_{OUT6} (RECOV)	39	35	---	42.5	---	---	-3.5	15	K5	9-11	E_{33}	“	$V_{OUT6} = E_{33}$ (RECOV)		1.20	1.30	V
	I_{Q1}	40	4.25	---	15	0	1.4	-0.425	---	K3	12-13	E_{34}	“	$I_{Q1} = E_{34} / 2000$		-3.0	-0.05	mA
	I_{Q2}	41	14.25	---	25	0	1.4	-1.425	---	K3	12-13	E_{35}	“	$I_{Q2} = E_{35} / 2000$		-3.0	-0.05	“
	I_{Q3}	42	36.25	---	42.5	0	1.4	-3.625	---	K3	12-13	E_{36}	“	$I_{Q3} = E_{36} / 2000$		-5.0	-0.2	“
	V_{START}	43	4.25	-3000	15	0	---	-0.425	---	K4	9-11	E_{37}	“	$V_{START} = E_{37}$	See figure 10 waveforms	1.20	1.30	V
T_A = +150°C	V_{OUT7}	44	6.25	-5	15	0	---	-0.625	---	None	“	E_{38}	“	$V_{OUT7} = E_{38}$		1.20	1.30	V
3	V_{OUT1}	45	4.25	-5	15	0	---	-0.425	---	None	9-11	E_{39}	V	$V_{OUT1} = E_{39}$		1.20	1.30	V
	V_{OUT2}	46	4.25	-3000	15	-2.995	---	-0.425	---	“	“	E_{40}	“	$V_{OUT2} = E_{40}$		“	“	“
T_A = -55°C	V_{OUT3}	47	36.25	-5	42.5	0	---	-3.625	---	“	“	E_{41}	“	$V_{OUT3} = E_{41}$		“	“	“
	V_{OUT4}	48	36.25	-150	42.5	-0.145	---	-3.625	---	“	“	E_{42}	“	$V_{OUT4} = E_{42}$		“	“	“
	V_{RLINE1}	49	---	---	---	---	---	---	---	“	“	---	“	$V_{RLINE} = E_{39} – E_{41}$	See figure 10 waveforms	-20	20	mV
	V_{RLOAD1}	50	6.25	-5	15	0	---	-0.625	---	“	“	E_{43}	“	---	See figure 10 waveforms	---	---	“
	V_{RLOAD1}	51	6.25	-3000	15	-2.995	---	-0.625	---	“	“	E_{44}	“	$V_{RLOAD1} = E_{43} – E_{44}$		-12	12	“
	V_{RLOAD2}	52	---	---	---	---	---	---	---	“	“	---	“	$V_{RLOAD2} = E_{41} – E_{42}$		-12	12	“
	I_{ADJ}	53	4.25	-5	15	0	---	-0.425	---	K2	12-13	E_{45}	mV	$I_{ADJ} = E_{45} / 2000$		-100	-15	µA
	I_{ADJ}	54	36.25	-5	42.5	0	---	-3.625	---	“	“	E_{46}	“	$I_{ADJ} = E_{46} / 2000$		-100	-15	“
	ΔI_{ADJ} (LINE)	55	---	---	---	---	---	---	---	“	“	---	“	$\Delta I_{ADJ} = (E_{45} – E_{46}) / 2000$ (LINE)		-5	5	“
	ΔI_{ADJ} (LOAD)	56	6.25	-5	15	0	---	-0.625	---	“	“	E_{47}	“	$\Delta I_{ADJ} = (E_{47} – E_{48}) / 2000$ (LOAD)		-5	5	“
	ΔI_{ADJ} (LOAD)	57	6.25	-3000	15	-2.995	---	-0.625	---	“	“	E_{48}	“					“

TABLE III. Group A inspection for all device type 05 – Continued.

Subgroup	Symbol	Test no.	See figure 10: Test conditions: V_{IN} (volts)	I_L (mA)	Applied test voltages (volts) (Hi – Lo pin potential): 1-2	4-5	6-11	7-2	8-2	Relays energized	Measurement sense limts: Pins	Value	Units	Equation	Notes	Limits: Min	Max	Unit
3 T_A = -55°C	I_{OS1}	58	4.25	---	15	---	---	-0.425	0	K4,K5	10-5	E_{49}	V	$I_{OS1} = 4E_{49}$	See figure 10	-5.2	-3.0	A
	V_{OUT5} (RECOV)	59	4.25	---	15	---	---	-0.425	15	K4,K5	9-11	E_{50}	"	$V_{OUT5} = E_{50}$ (RECOV)	waveforms	1.20	1.30	V
	I_{OS2}	60	35	---	42.5	---	---	-3.5	0	K5	10-5	E_{51}	"	$I_{OS2} = 4E_{51}$		-2.0	-0.15	A
	V_{OUT6} (RECOV)	61	35	---	42.5	---	---	-3.5	15	K5	9-11	E_{52}	"	$V_{OUT6} = E_{52}$ (RECOV)		1.20	1.30	V
	I_{Q1}	62	4.25	---	15	0	1.4	-0.425	---	K3	12-13	E_{53}	"	$I_{Q1} = E_{53} / 2000$		-3.0	-0.05	mA
	I_{Q2}	63	14.25	---	25	0	1.4	-1.425	---	K3	12-13	E_{54}	"	$I_{Q2} = E_{54} / 2000$		-3.0	-0.05	"
	I_{Q3}	64	36.25	---	42.5	0	1.4	-3.625	---	K3	12-13	E_{55}	"	$I_{Q3} = E_{55} / 2000$		-5.0	-0.2	"
	V_{START}	65	4.25	-3000		0	---	-0.425	---	K4	9-11	E_{56}	"	$V_{START} = E_{56}$	See figure 10 waveforms	1.20	1.30	V

Subgroup	Symbol	Test no.	Test conditions: Input voltage	Load current	Measurement sense lines: Symbol	Value	Units	Equation	Notes	Limits: Min	Max	Unit
4 T_A = +25°C	$\Delta V_{IN} / \Delta V_{OUT}$	66	V_{IN} = 6.25 V e_i = 1.0 Vrms at 2400 Hz	I_L = -500 mA	e_{orms}	E_{57}	Vrms	$\Delta V_{IN} / \Delta V_{OUT} = -20 \log E_{57}$	See figure 11	65	---	dB
7 T_A = +25°C	V_{NO}	67	V_{IN} = 6.25 V	I_L = -100 mA	e_{orms}	E_{58}	Vrms	$V_{NO} = E_{58}$	See figure 12	---	120	µVrms
	$\Delta V_{OUT} / \Delta V_{IN}$	68	V_{IN} = 6.25 V ΔV_{IN} = 3.0 V	I_L = -10 mA	V_{OUT}	E_{59}	V	$\Delta V_{OUT} / \Delta V_{IN} = E_{59} / 3$	See figure 13	---	12	mV/V
	$\Delta V_{OUT} / \Delta I_L$	69	V_{IN} = 6.25 V	I_L = -100 mA ΔI_L = -400 mA	V_{OUT}	E_{60}	V	$\Delta V_{OUT} / \Delta I_L = E_{60} / 200$	See figure 14	---	0.30	mV/mA

TABLE III. Group A inspection for all device type 06 .

Subgroup	Symbol	Test no.	See figure 10: Test conditions V_{IN} (volts)	I_L (mA)	Applied test voltages (volts) (Hi – Lo pin potential) 1-2	4-5	6-11	7-2	8-2	Relays energized	Measurement sense lines: Pins	Value	Units	Equation	Notes	Limits: Min	Max	Unit
1	V_{OUT1}	1	4.25	-5	15	0	---	-0.425	---	None	9-11	E_1	V	$V_{OUT1} = E_1$		1.19	1.29	V
	V_{OUT2}	2	4.25	-5000	15	-4.995	---	-0.425	---	“	“	E_2	“	$V_{OUT2} = E_2$		“	“	“
T_A = +25°C	V_{OUT3}	3	36.25	-5	42.5	0	---	-3.625	---	“	“	E_3	“	$V_{OUT3} = E_3$		“	“	“
	V_{OUT4}	4	36.25	-0.150	42.5	-0.145	---	-3.625	---	“	“	E_4	“	$V_{OUT4} = E_4$		“	“	“
	V_{OUT5}	5	6.25	-7000	15	-6.995	---	-0.625	---	“	“	E_5		$V_{OUT5} = E_5$		“	“	“
	V_{RLINE}	6	---	---	---	---	---	---	---	“	“	---	“	$V_{RLINE} = E_1 – E_3$	See figure 10 waveforms	-4	4	mV
	V_{RLOAD1}	7	6.25	-5	15	0	---	-0.625	---	“	“	E_6	“	---	See	---	---	“
	V_{RLOAD1}	8	6.25	-5000	15	-4.995	---	-0.625	---	“	“	E_7	“	$V_{RLOAD1} = E_6 – E_7$	figure 10	-3.8	3.8	“
	V_{RLOAD2}	9	---	---	---	---	---	---	---	“	“	---	“	$V_{RLOAD2} = E_3 – E_4$	waveforms	-3.8	3.8	“
	V_{RTH}	10	11.25	-1000	25	-0.995	---	-1.125	---	“	“	E_8	“	$V_{RTH} = E_8$	See figure 10 waveforms t = 20.5 ms	-2	2	“
	I_{ADJ}	11	4.25	-5	15	0	---	-0.425	---	K2	12-13	E_9	mV	$I_{ADJ} = E_9 / 2000$		-100	-15	µA
	I_{ADJ}	12	36.25	-5	42.5	0	---	-3.625	---	“	“	E_{10}	“	$I_{ADJ} = E_{10} / 2000$		-100	-15	“
	ΔI_{ADJ} (LINE)	13	---	---	---	---	---	---	---	“	“	---	“	$\Delta I_{ADJ} = (E_9 – E_{10}) / 2000$ (LINE)		-5	5	“
	ΔI_{ADJ} (LOAD)	14	6.25	-5	15	0	---	-0.625	---	“	“	E_{11}	“	$\Delta I_{ADJ} = (E_{11} – E_{12}) / 2000$ (LOAD)		-5	5	“
	ΔI_{ADJ} (LOAD)	15	6.25	-5000	15	-4.995	---	-0.625	---	“	“	E_{12}	“					
	I_{OS1}	16	4.25	---	15	---	---	-0.425	0	K4,K5	10-5	E_{13}	V	$I_{OS1} = 4E_{13}$	t = 0.1 ms	-16.0	-7.0	A
	I_{OS2}	17	4.25	---	15	---	---	-0.425	0	K4,K5	10-5	E_{14}	“	$I_{OS2} = 4E_{14}$	t = 0.5 ms	-16.0	-7.0	A
	I_{OS3}	18	4.25	---	15	---	---	-0.425	0	K4,K5	10-5	E_{15}	“	$I_{OS3} = 4E_{15}$	t = 5.0 ms	-15.0	-5.0	A
	V_{OUT6} (RECOV)	19	4.25	---	15	---	---	-0.425	15	K4,K5	9-11	E_{16}	“	$V_{OUT6} = E_{16}$ (RECOV)		1.19	1.29	V
	I_{OS4}	20	35	---	42.5	---	---	-3.5	0	K5	10-5	E_{17}	“	$I_{OS4} = 4E_{17}$	See	-3.00	-0.20	A
	V_{OUT7} (RECOV)	21	35	---	42.5	---	---	-3.5	15	K5	9-11	E_{18}	“	$V_{OUT7} = E_{18}$ (RECOV)	figure 10 waveforms	1.19	1.29	V
	I_{Q1}	22	4.25	---	15	0	1.4	-0.425	---	K3	12-13	E_{19}	“	$I_{Q1} = E_{19} / 2000$		-3.0	-0.05	mA
	I_{Q2}	23	14.25	---	25	0	1.4	-1.425	---	K3	12-13	E_{20}	“	$I_{Q2} = E_{20} / 2000$		-3.0	-0.05	“
	I_{Q3}	24	36.25	---	42.5	0	1.4	-3.625	---	K3	12-13	E_{21}	“	$I_{Q3} = E_{21} / 2000$		-5.0	-0.2	“
	V_{START}	25	4.25	-5000	15	0	---	-0.425	---	K4	9-11	E_{22}	“	$V_{START} = E_{22}$	See figure 10 waveforms	1.19	1.29	V
2	V_{OUT1}	26	4.25	-5	15	0	---	-0.425	---	None	9-11	E_{23}	V	$V_{OUT1} = E_{23}$		1.19	1.29	V
	V_{OUT2}	27	4.25	-5000	15	-4.995	---	-0.425	---	“	“	E_{24}	“	$V_{OUT2} = E_{24}$		“	“	“
T_A = +125°C	V_{OUT3}	28	36.25	-5	42.5	0	---	-3.625	---	“	“	E_{25}	“	$V_{OUT3} = E_{25}$		“	“	“
	V_{OUT4}	29	36.25	-0.150	42.5	-0.145	---	-3.625	---	“	“	E_{26}	“	$V_{OUT4} = E_{26}$		“	“	“
	V_{OUT5}	30	6.25	-7000	15	-6.995	---	-0.625	---	“	“	E_{27}	“	$V_{OUT5} = E_{27}$		“	“	“
	V_{RLINE1}	31	---	---	---	---	---	---	---	“	“	E_{28}	“	$V_{RLINE} = E_{23} – E_{25}$	See figure 10 waveforms	-20	20	mV
	V_{RLOAD1}	32	6.25	-5	15	0	---	-0.625	---	“	“	E_{29}	“	---	See	---	---	“
	V_{RLOAD1}	33	6.25	-5000	15	-4.995	---	-0.625	---	“	“	E_{30}	“	$V_{RLOAD1} = E_{29} – E_{30}$	figure 10	-8	8	“
	V_{RLOAD2}	34	---	---	---	---	---	---	---	“	“	---	“	$V_{RLOAD2} = E_{25} – E_{26}$	waveforms	-8	8	“

TABLE III. Group A inspection for all device type 06 – Continued.

Subgroup	Symbol	Test no.	See figure 10 Test conditions V_{IN} (volts)	I_L (mA)	Applied test voltages (volts) (Hi – Lo pin potential) 1-2	4-5	6-11	7-2	8-2	Relays energized	Measurement sense lines Pins	Value	Units	Equation	Notes	Limits Min	Max	Unit
2	I_{ADJ}	35	4.25	-5	15	0	---	-0.425	---	K2	12-13	E_{31}	mV	$I_{ADJ} = E_{31} / 2000$		-100	-15	µA
	I_{ADJ}	36	36.25	-5	42.5	0	---	-3.625	---	“	“	E_{32}	“	$I_{ADJ} = E_{32} / 2000$		-100	-15	“
T_A = +125°C	ΔI_{ADJ} (LINE)	37	---	---	---	---	---	---	---	“	“	---	“	$\Delta I_{ADJ} = (E_{31} - E_{32}) / 2000$ (LINE)		-5	5	“
	ΔI_{ADJ} (LOAD)	38	6.25	-5	15	0	---	-0.625	---	“	“	E_{33}	“	$\Delta I_{ADJ} = (E_{33} - E_{34}) / 2000$ (LOAD)		-5	5	“
	ΔI_{ADJ} (LOAD)	39	6.25	-5000	15	-4.995	---	-0.625	---	“	“	E_{34}	“					
	I_{OS1}	40	4.25	---	15	---	---	-0.425	0	K4,K5	10-5	E_{35}	V	$I_{OS1} = 4E_{35}$	t = 0.1 ms	-16.0	-7.0	A
	I_{OS2}	41	4.25	---	15	---	---	-0.425	0	K4,K5	10-5	E_{36}	V	$I_{OS2} = 4E_{36}$	t = 0.5 ms	-16.0	-7.0	A
	I_{OS3}	42	4.25	---	15	---	---	-0.425	0	K4,K5	10-5	E_{37}	V	$I_{OS3} = 4E_{37}$	t = 5.0 ms	-15.0	-5.0	A
	V_{OUT6} (RECOV)	43	4.25	---	15	---	---	-0.425	15	K4,K5	9-11	E_{38}	“	$V_{OUT6} = E_{38}$ (RECOV)		1.19	1.29	V
	I_{OS4}	44	35	---	42.5	---	---	-3.5	0	K5	10-5	E_{39}	“	$I_{OS4} = 4E_{39}$	t = 10.0 ms	-3.0	-0.20	A
	V_{OUT7} (RECOV)	45	35	---	42.5	---	---	-3.5	15	K5	9-11	E_{40}	“	$V_{OUT7} = E_{40}$ (RECOV)	See figure 10 waveforms	1.19	1.29	V
	I_{Q1}	46	4.25	---	15	0	1.4	-0.425	---	K3	12-13	E_{41}	“	$I_{Q1} = E_{41} / 2000$		-3.0	-0.05	mA
	I_{Q2}	47	14.25	---	25	0	1.4	-1.425	---	K3	12-13	E_{42}	“	$I_{Q2} = E_{42} / 2000$		-3.0	-0.05	“
	I_{Q3}	48	36.25	---	42.5	0	1.4	-3.625	---	K3	12-13	E_{43}	“	$I_{Q3} = E_{43} / 2000$		-5.0	-0.2	“
	V_{START}	49	4.25	-5000	15	0	---	-0.425	---	K4	9-11	E_{44}	“	$V_{START} = E_{44}$	See figure 10 waveforms	1.19	1.29	V
T_A = +150°C	V_{OUT7}	50	6.25	-5	15	0	---	-0.625	---	None	“	E_{45}	“	$V_{OUT7} = E_{45}$		1.19	1.29	V
3	V_{OUT1}	51	4.25	-5	15	0	---	-0.425	---	None	9-11	E_{46}	V	$V_{OUT1} = E_{46}$		1.19	1.29	V
	V_{OUT2}	52	4.25	-5000	15	-4.995	---	-0.425	---	“	“	E_{47}	“	$V_{OUT2} = E_{47}$		“	“	“
T_A = -55°C	V_{OUT3}	53	36.25	-5	42.5	0	---	-3.625	---	“	“	E_{48}	“	$V_{OUT3} = E_{48}$		“	“	“
	V_{OUT4}	54	36.25	-0.150	42.5	-0.145	---	-3.625	---	“	“	E_{49}	“	$V_{OUT4} = E_{49}$		“	“	“
	V_{OUT5}	55	6.25	-7000	15	-6.995	---	-0.625	---	“	“	E_{50}	“	$V_{OUT5} = E_{50}$		“	“	“
	V_{RLINE1}	56	---	---	---	---	---	---	---	“	“	---	“	$V_{RLINE} = E_{46} - E_{48}$	See figure 10 waveforms	-17	17	mV
	V_{RLOAD1}	57	6.25	-5	15	0	---	-0.625	---	“	“	E_{51}	“	---	See	---	---	“
	V_{RLOAD1}	58	6.25	-5000	15	-4.995	---	-0.625	---	“	“	E_{52}	“	$V_{RLOAD1} = E_{51} - E_{52}$	figure 10	-8	8	“
	V_{RLOAD2}	59	---	---	---	---	---	---	---	“	“	---	“	$V_{RLOAD2} = E_{48} - E_{49}$	waveforms	-8	8	“
	I_{ADJ}	60	4.25	-5	15	0	---	-0.425	---	K2	12-13	E_{53}	mV	$I_{ADJ} = E_{53} / 2000$		-100	-15	µA
	I_{ADJ}	61	36.25	-5	42.5	0	---	-3.625	---	“	“	E_{54}	“	$I_{ADJ} = E_{54} / 2000$		-100	-15	“
	ΔI_{ADJ} (LINE)	62	---	---	---	---	---	---	---	“	“	---	“	$\Delta I_{ADJ} = (E_{53} - E_{54}) / 2000$ (LINE)		-5	5	“
	ΔI_{ADJ} (LOAD)	63	6.25	-5	15	0	---	-0.625	---	“	“	E_{55}	“	$\Delta I_{ADJ} = (E_{55} - E_{56}) / 2000$ (LOAD)		-5	5	“
	ΔI_{ADJ} (LOAD)	64	6.25	-5000	15	-4.995	---	-0.625	---	“	“	E_{56}	“					“

TABLE III. Group A inspection for all device type 06 – Continued.

Subgroup	Symbol	Test no.	See figure 10							Relays energized	Measurement sense limts			Equation	Notes	Limits		Unit
			Test conditions		Applied test voltages (volts) (Hi – Lo pin potential)													
			V_{IN} (volts)	I_L (mA)	1-2	4-5	6-11	7-2	8-2		Pins	Value	Units			Min	Max	
3	I_{OS1}	65	4.25	---	15	---	---	-0.425	0	K4,K5	10-5	E_{57}	V	$I_{OS1} = 4E_{57}$	t = 0.1 ms	-16.0	-7.0	A
	I_{OS2}	66	4.25	---	15	---	---	-0.425	0	K4,K5		E_{58}	“	$I_{OS2} = 4E_{58}$	t = 0.5 ms	-16.0	-7.0	A
T_A = -55°C	I_{OS3}	67	4.25	---	15	---	---	-0.425	0	K4,K5		E_{59}	“	$I_{OS3} = 4E_{59}$	t = 5.0 ms	-15.0	-5.0	A
	V_{OUT6} (RECOV)	68	4.25	---	15	---	---	-0.425	15	K4,K5	9-11	E_{60}	“	$V_{OUT6} = E_{60}$ (RECOV)		1.19	1.29	V
	I_{OS4}	69	35	---	42.5	---	---	-3.5	0	K5	10-5	E_{61}	“	$I_{OS4} = 4E_{61}$	t = 10.0 ms	-3.0	-0.20	A
	V_{OUT7} (RECOV)	70	35	---	42.5	---	---	-3.5	15	K5	9-11	E_{62}	“	$V_{OUT7} = E_{62}$ (RECOV)	See figure 10 waveforms	1.19	1.29	V
	I_{Q1}	71	4.25	---	15	0	1.4	-0.425	---	K3	12-13	E_{63}	“	$I_{Q1} = E_{63} / 2000$		-3.0	-0.05	mA
	I_{Q2}	72	14.25	---	25	0	1.4	-1.425	---	K3	12-13	E_{64}	“	$I_{Q2} = E_{64} / 2000$		-3.0	-0.05	“
	I_{Q3}	73	36.25	---	42.5	0	1.4	-3.625	---	K3	12-13	E_{65}	“	$I_{Q3} = E_{65} / 2000$		-5.0	-0.2	“
	V_{START}	74	4.25	-5000	15	0	---	-0.425	---	K4	9-11	E_{66}	“	$V_{START} = E_{66}$	See figure 10 waveforms	1.19	1.29	V

Subgroup	Symbol	Test no.	Test conditions		Measurement sense lines			Equation	Notes	Limits		Unit
			Input voltage	Load current	Symbol	Value	Units			Min	Max	
4 T_A = +25°C	ΔV_{IN} / ΔV_{OUT}	75	V_{IN} = 6.25 V e_i = 1.0 Vrms at 2400 Hz	I_L = -500 mA	e_{orms}	E_{67}	Vrms	$\Delta V_{IN} / \Delta V_{OUT} = -20 \log E_{67}$	See figure 11	65	---	dB
7	V_{NO}	76	V_{IN} = 6.25 V	I_L = -100 mA	e_{orms}	E_{68}	Vrms	$V_{NO} = E_{68}$	See figure 12	---	120	μVrms
T_A = +25°C	ΔV_{OUT} / ΔV_{IN}	77	V_{IN} = 6.25 V ΔV_{IN} = 3.0 V	I_L = -10 mA	V_{OUT}	E_{69}	V	$\Delta V_{OUT} / \Delta V_{IN} = E_{69} / 3$	See figure 13	---	12	mV/V
	ΔV_{OUT} / ΔI_L	78	V_{IN} = 6.25 V	I_L = -100 mA ΔI_L = -400 mA	V_{OUT}	E_{70}	V	$\Delta V_{OUT} / \Delta I_L = E_{70} / 200$	See figure 14	---	0.30	mV/mA

TABLE IV. Group C end point electrical parameters. (T_A = +25°C)

Device type	Characteristic	Symbol	Delta limits 1/	Limits		Units
				Min	Max	
01, 02	Output voltage	V_{OUT} 2/	±50 mV	4.75	5.25	V
	Standby current drain	I_{SCD}	±20 %	-8.0	-0.5	mA
03, 04, 05	Output voltage	V_{OUT} 2/	±10 mV	1.20	1.30	V
06	Output voltage	V_{OUT} 2/	±10 mV	1.19	1.29	V
03, 04, 05, 06	Adjust pin current	I_{ADJ} 3/	±10 μA	-100	-15	μA
03, 04	Line regulation	V_{RLINE}	±4 mV	-9	9	mV
05, 06	Line regulation	V_{RLINE}	±2 mV	-4	4	mV

1/ Delta limits apply to the measured value (see delta limit definition in MIL-PRF-38535).
2/ Delta limits apply to test number 3 for all device types.
3/ Delta limits apply to test number 11 for all device types 03, 04, 05 and test number 12 for device type 06.

5. PACKAGING

5.1 Packaging requirements. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the military service’s system command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use. Microcircuits conforming to this specification are intended for original equipment design applications and logistic support of existing equipment.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of the specification.

b. Pin and compliance identifier, if applicable (see 1.2).

c. Requirements for delivery of one copy of the conformance inspection data pertinent to the device inspection lot to be supplied with each shipment by the device manufacturer, if applicable.

d. Requirements for certificate of compliance, if applicable.

e. Requirements for notification of change of product or process to contracting activity in addition to notification to the qualifying activity, if applicable.

f. Requirements for failure analysis (including required test condition of method 5003 of MIL-STD-883), corrective action, and reporting of results, if applicable.

g. Requirements for product assurance options.

h. Requirements for special carriers, lead lengths, or lead forming, if applicable. These requirements should not affect the part number. Unless otherwise specified, these requirements will not apply to direct purchase by or direct shipment to the Government.

i. Requirements for "JAN" marking.

j. Packaging requirements (see 5.1).

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List QML-38535 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from DSCC-VQ, 3990 E. Broad Street, Columbus, Ohio 43218-3990.

6.4 Superseding information. The requirements of MIL-M-38510 have been superseded to take advantage of the available Qualified Manufacturer Listing (QML) system provided by MIL-PRF-38535. Previous references to MIL-M-38510 in this document have been replaced by appropriate references to MIL-PRF-38535. All technical requirements now consist of this specification and MIL-PRF-38535. The MIL-M-38510 specification sheet number and PIN have been retained to avoid adversely impacting existing government logistics systems and contractor’s parts lists.

6.5 Abbreviations, symbols, and definitions. The abbreviations, symbols, and definitions used herein are defined in MIL-PRF-38535, MIL-STD-1331, and as follows:

6.5.1 Line regulation. The change in output voltage for a specified change in input voltage (V_{RLINE}).

6.5.2 Load regulation. The change in output voltage for a specified change in load current (V_{RLOAD}).

6.5.3 Ripple rejection. The ratio of the peak to peak input ripple voltage to the peak to peak output ripple voltage ($\Delta V_{OUT} / \Delta V_{IN}$).

6.5.4 Output noise voltage. The rms output noise voltage with constant load and no input ripple (V_{NO}).

6.5.5 Standby current drain. The supply current drawn by the regulator with no output load or with a 1 k ohm output load.

6.5.6 Minimum load current. The minimum load current is that current required to maintain regulation.

6.5.7 Input voltage range. The range of supply voltage over which the regulator will operate.

6.5.8 Output voltage range. The range of output voltage over which the regulator will operate.

6.5.9 Transient response. The closed-loop step function response of the regulator under small-signal conditions.

6.6 Logistic support. Lead materials and finishes (see 3.4) are interchangeable. Unless otherwise specified, microcircuits acquired for Government logistic support will be acquired to device class B (see 1.2.2), lead material and finish A (see 3.4). Longer length leads and lead forming should not affect the part number.

6.7 Substitutability. The cross-reference information below is presented for the convenience of users. Microcircuits covered by this specification will functionally replace the listed generic-industry type. Generic-industry microcircuit types may not have equivalent operational performance characteristics across military temperature ranges or reliability factors equivalent to MIL-M-38510 device types and may have slight physical variations in relation to case size. The presence of this information should not be deemed as permitting substitution of generic-industry types for MIL-M-38510 types or as a waiver of any of the provisions of MIL-PRF-38535.

Military device type	Generic-industry type
01	78MG
02	78G
03	LM117H
04	LM117K
05	LM150K
06	LM138K

6.8 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Preparing activity:
DLA - CC

Project 5962-2005-027

Review activities:
Army – MI, SM
Navy – AS, CG, MC, SH, TD
Air Force – 03, 19, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at http://assist.daps.dla.mil.