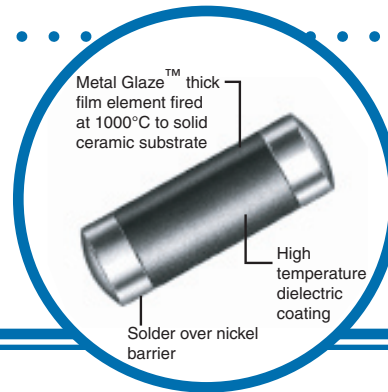


# High Reliability Surface Mount Resistor



## MCHP Series

- DESC Approved
- Excellent surge capability
- Reliable Metal Glaze™ technology
- Superb solderability - reflow and wave
- Operating temperature -55°C to +150°C
- Minimum board real estate requirements
- Established SPC and continuous improvement programs



The MCHP High Reliability Surface Mount Resistors are part of the RG product family of precision resistors developed by IRC in 1960 to meet the stringent demands of the military market. In leaded form, these resistors are qualified to level S under MIL-R-39017 and MIL-R-55182. The MCHP resistor utilizes the core element from this series, but with modified contacts and encapsulation.

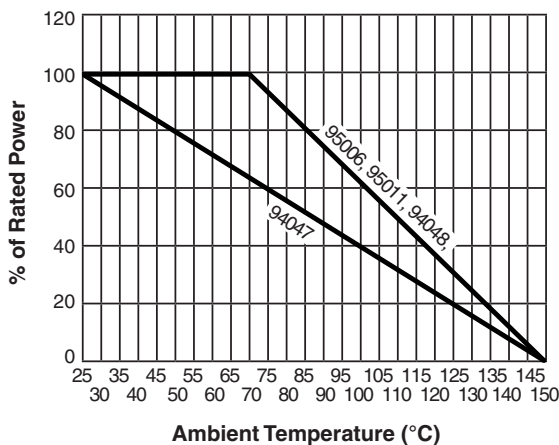
The MCHP High Reliability Surface Mount Resistors are in compliance to DESC drawings 85083 (MCHP 1/8) and 87037 (MCHP 1) and are supplied in accordance to the requirements of MIL-R-55342. Under this specification, all resistors are subjected to "Thermal Shock". Samples are selected from each lot and tested to "TCR", "STOL", "Terminal adhesion", "Solderability", and "Visual" to ensure the lot is in conformance to specified requirements.

## Electrical Data

Size Code <sup>1</sup>	Industry Footprint	IRC Type	DESC Drawing	Rated Power <sup>2</sup> (watts)	Working Voltage <sup>3</sup>	Maximum Voltage	Resistance Range (ohms)	Tolerance (±%)	TCR (ppm/°C)
B	1206	MCHP 1/8	95011 <sup>4</sup>	0.125 @ 70°C	200	400	0.1 to 1.0M	1, 2, 5	100
D	2010	MCHP 1/2	94048	0.5 @ 70°C	300	600	0.1 to 1.6M	1, 2, 5	100
F	2512	MCHP 1	95006 <sup>5</sup>	1.0 @ 70°C	350	700	0.1 to 2.2M	1, 2, 5	100
H	3610	MCHP 2	94047	2.0 @ 25°C	500	1000	0.2 to 2.2M	1, 2, 5	100

<sup>1</sup> See page 8 for product dimensions, recommended solder pads, and standard packaging. <sup>2</sup> For operation above 70°C, use power derating curve. <sup>3</sup> Not to exceed  $\sqrt{P \times R}$   
<sup>4</sup> Formerly 85083 <sup>5</sup> Formerly 87037

## Power Derating Curve



### General Note

IRC reserves the right to make changes in product specification without notice or liability. All information is subject to IRC's own data and is considered accurate at time of going to print.

# High Reliability Surface Mount Resistor

## Environmental Data

Characteristics	Maximum Change	Test Method
Temperature Coefficient	±100 ppm/°C	MIL-R-55342E Par 4.7.9 (-55°C + 125°C)
Thermal Shock	±0.5% + 0.01 ohm	MIL-R-55342E Par 4.7.3 (-65°C + 150°C, 5 cycles)
Low Temperature Operation	±0.25% + 0.01 ohm	MIL-R-55342E Par 4.7.4 (-65°C @ working voltage)
Short Time Overload	±0.25% + 0.01 ohm ±1% for R>100K ohm	MIL-R-55342E Par 4.7.5 2.5 x √P x R for 5 seconds
High Temperature Exposure	±0.5% + 0.01 ohm	MIL-R-55342E Par 4.7.6 (+150°C for 100 hours)
Resistance to Bonding Exposure	±0.25% + 0.01 ohm	MIL-R-55342E Par 4.7.7 (Reflow soldered to board at 260°C for 10 seconds)
Solderability	95% minimum coverage	MIL-STD-202, Method 208 (245°C for 5 seconds)
Moisture Resistance	±0.5% 0.01 ohm	MIL-R-55342E Par 4.7.8 (10 cycles, total 240 hours)
Life Test	±0.5% 0.01 ohm	MIL-R-55342E Par 4.7.10 (2000 hours at 70°C intermittent)
Terminal Adhesion Strength	±1% + 0.01 ohm no mechanical damage	1200 gram push from underside of mounted chip for 60 seconds
Resistance to Board Bending	±1% + 0.01 ohm no mechanical damage	Chip mounted in center of 90mm long board, deflected 5mm so as to exert pull on chip contacts for 10 seconds

## Ordering Data

Sample Part No. .... **95011** - **2213** - **F** - **13**

DESC Drawing Number .....  
(CHP 1/8, CHP 1/2, CHP 1, or CHP 2)

Resistance Value .....  
(100 ohms and greater - First 3 significant digits plus 4th digit multiplier)  
Example: 100 ohms = 1000, 1000 ohms = 1001, 150,000 ohms = 1503  
(Less than 100 ohms - "R" is used to designate decimal)  
Example: 51 ohms = 51R0, 1.6 ohm = 1R60, 0.25 ohms = R250

Tolerance .....  
(F = 1.0%; G = 2.0%; J = 5.0%)

Packaging Code\* .....  
(BLK = Bulk, 7 = 7" Reel, 13 = 13" Reel)