

# Type SCM Single/Dual IGBT Snubber Capacitor Modules

## High Peak Current Snubber with Integrated Hyperfast Diode



Use style SCM as a discharge restrictive de-coupling to protect dual IGBT modules from overvoltage, Figure 1. Style SCM may also be used as an "N" or "P" type snubber component for a clamp snubber where single IGBT modules are used, figure 2.

### Highlights

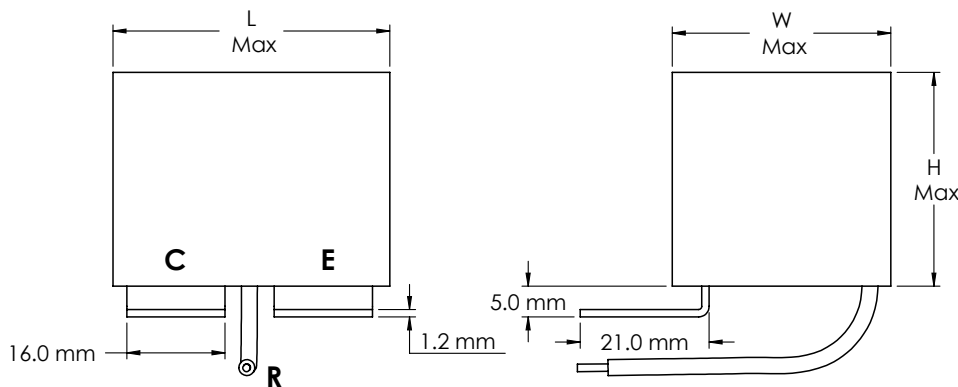
- Direct mount to the IGBT module
- Low inductance
- Low Loss
- Hyperfast diodes integrated into package
- Self healing
- Other terminal spacing, capacitance values and voltage ratings, also available upon request.

### Specifications

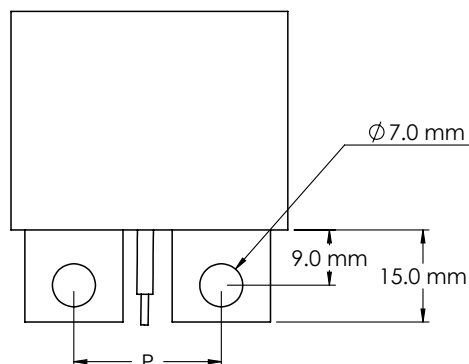
Capacitance Range	0.47 to 2.0 $\mu$ F
Capacitance Tolerance	$\pm$ 10% (K) standard, $\pm$ 5% (J) optional
Rated Voltage	600 to 1200 Vdc
Operating Temperature Range with Ripple	-55 $^{\circ}$ C to 70 $^{\circ}$ C
<b>RoHS Compliant</b>	

### Dimensions

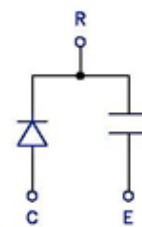
Construction Details	
Case Material	Plastic UL94V-0
Resin Material	Dry Resin UL94V-0
Terminal Material	Tin Plated Copper



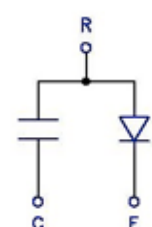
Wire: UL1015  
AWG 18  
200 mm Min



**N Type**



**P Type**



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### Part Numbering System

SCM	105	K	122	H1	N	24	-F
Series Type Designation	Capacitance in $\mu\text{F}$	Tolerance Code	Voltage	Diode Rating	Polarity	Lug Spacing	RoHS Compliant Indicator
	104=0.1 $\mu\text{F}$	J = $\pm 5\%$	601 = 600 Vdc		N or P Type	24=24mm	
	105=1 $\mu\text{F}$	K = $\pm 10\%$	122 = 1200 Vdc			28=28mm	
	225=2.2 $\mu\text{F}$		202 = 2000 Vdc			29=29mm	

### Ratings

**Note:** Other ratings, sizes and performance specification available upon request. Contact us.

Catalog Part Number	Typical Application					Diode Characteristics								
	IGBT Module									Dimensions				
	Cap	S=Single	Ic	Vce	Type	Vrrm	If	Trr	Ipk surge	Ipk rep	W	L	H	P
( $\mu\text{F}$ )	D=Dual	(A)	(V)		(V)	(A)	( $\mu\text{s}$ )	(A)	(A)	(mm)	(mm)	(mm)	(mm)	
SCM474K601H7N29-F	0.47	S	200-300	600	N	600	30	0.040	300	70	43.82	55.88	34.04	29
SCM474K601H7P29-F	0.47	S	200-300	600	P	600	30	0.040	300	70	43.82	55.88	34.04	29
SCM105K601H7N24-F	1.00	D	100-200	600	N	600	30	0.040	300	70	38.10	47.63	31.75	24
SCM105K601H7P24-F	1.00	D	100-200	600	P	600	30	0.040	300	70	38.10	47.63	31.75	24
SCM105K601H5N29-F	1.00	S	300-400	600	N	600	50	0.045	500	100	46.36	56.52	38.10	29
SCM105K601H5P29-F	1.00	S	300-400	600	P	600	50	0.045	500	100	46.36	56.52	38.10	29
SCM155K601H7N24-F	1.50	D	200-300	600	N	600	30	0.040	300	70	34.29	55.88	30.48	24
SCM155K601H7P24-F	1.50	D	200-300	600	P	600	30	0.040	300	70	38.10	47.63	31.75	24
SCM205K601H5N24-F	2.00	D	300-400	600	N	600	50	0.045	500	100	43.82	55.88	34.04	24
SCM205K601H5P24-F	2.00	D	300-400	600	P	600	50	0.045	500	100	43.82	55.88	34.04	24
SCM205K601H2N29-F	2.00	S	400-600	600	N	600	100	0.050	1000	200	46.36	56.52	38.10	29
SCM205K601H2P29-F	2.00	S	400-600	600	P	600	100	0.050	1000	200	46.36	56.52	38.10	29
SCM474K122H8N29-F	0.47	S	200-300	1200	N	1200	30	0.065	300	60	34.29	55.88	30.48	29
SCM474K122H8P29-F	0.47	S	200-300	1200	P	1200	30	0.065	300	60	38.10	47.63	31.75	29
SCM105K122H8N24-F	1.00	D	100-200	1200	N	1200	30	0.065	300	60	44.45	63.50	37.34	24
SCM105K122H8P24-F	1.00	D	100-200	1200	P	1200	30	0.065	300	60	44.45	63.50	37.34	24
SCM105K122H4N29-F	1.00	S	300-400	1200	N	1200	50	0.085	500	100	43.82	55.88	34.04	29
SCM105K122H4P29-F	1.00	S	300-400	1200	P	1200	50	0.085	500	100	46.36	56.52	38.10	29
SCM155K122H8N24-F	1.50	D	200-300	1200	N	1200	30	0.065	300	60	44.45	63.50	37.34	24
SCM155K122H8P24-F	1.50	D	200-300	1200	P	1200	30	0.065	300	60	46.36	56.52	38.10	24
SCM205K122H4N24-F	2.00	D	300-400	1200	N	1200	50	0.065	500	100	53.98	63.50	43.18	24
SCM205K122H4P24-F	2.00	D	300-400	1200	P	1200	50	0.065	500	100	53.98	63.50	43.18	24
SCM205K122H1N29-F	2.00	S	400-600	1200	N	1200	100	0.090	1000	200	53.98	63.50	43.18	29
SCM205K122H1P29-F	2.00	S	400-600	1200	P	1200	100	0.090	1000	200	53.98	63.50	43.18	29

Ipk surge at 25 °C and Ipk repetitive at 25 °C and 20 kHz.

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### Typical Applications

#### Discharge Restrictive De-coupling

The circuit in Figure 1 operates on the same principles as the de-coupling capacitor, but only during turn-off switching. As the IGBT turns off, energy trapped in the loop inductance is transferred to the capacitor. The diode blocks oscillations from occurring and excess charge on the capacitor is discharged through the external resistor.

- 1 or 2 wire taps for connecting external resistor
- Flame resistant case and epoxy, meets UL 94V0
- Other terminal pitches and capacitance values available.

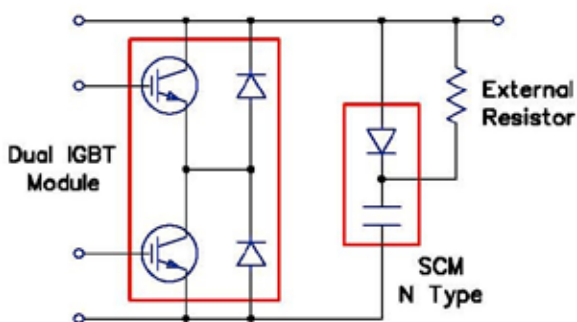


Figure 1

Style SCM Discharge restrictive decoupling used to protect dual IGBT modules

#### RCD Clamp

The function of this snubber is similar to a clamp, Figure 2. At turn-off, the snubber diode is forward biased and the snubber is activated. The energy trapped in the stray inductance is absorbed by the snubber capacitor. During turn-on the snubber caps that were fully charged to bus voltage have a discharge path through the forward biased free-wheel diode, the IGBT, and the snubber resistors. This reduces the reverse recovery voltage transient.

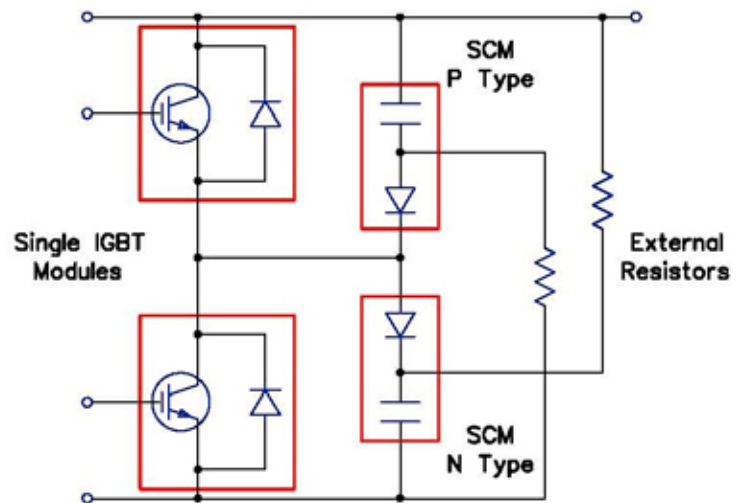


Figure 2

Style SCM "P" type and "N" type used as a clamp to protect an inverter using two "single" IGBT modules

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