

# 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.

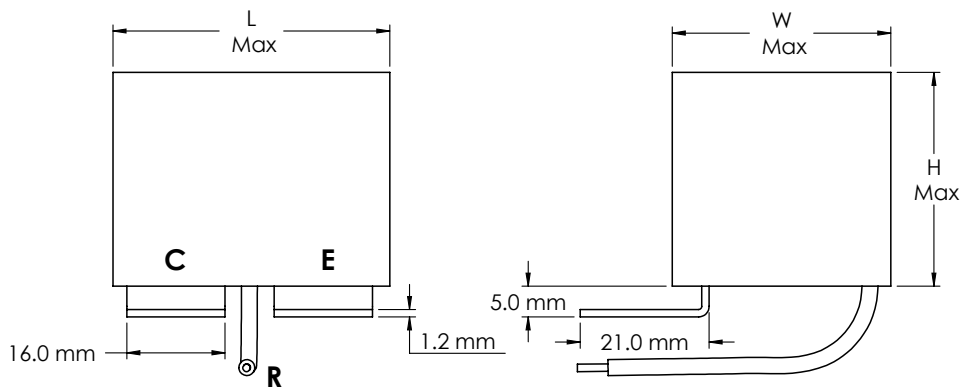
### Specifications

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	-55 $^{\circ}$ C to 70 $^{\circ}$ C

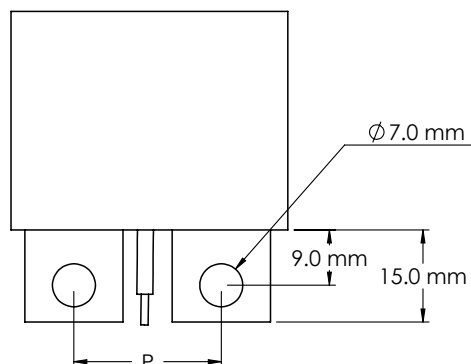
#### Regulatory Information

### Dimensions

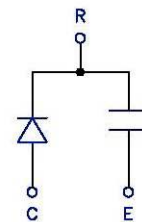
Construction Details	
Case Material	Plastic UL94V-0
Resin Material	Dry Resin UL94V-0
Terminal Material	Tin Plated Copper



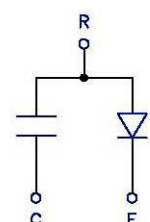
Wire: UL1015  
AWG 18  
200 mm Min



#### N Type



#### P Type



# Type SCM Single/Dual IGBT Snubber Capacitor Modules

## High Peak Current Snubber with Integrated Hyperfast Diode

### 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.

# Type SCM Single/Dual IGBT Snubber Capacitor Modules

## High Peak Current Snubber with Integrated Hyperfast Diode

### 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.

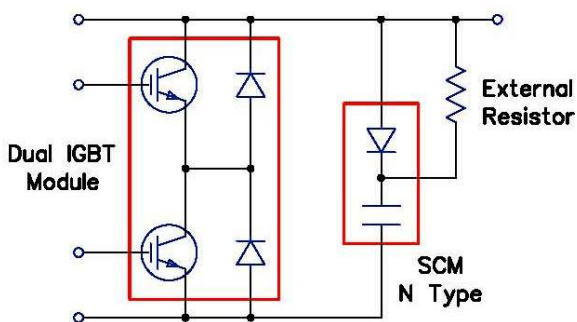


Figure 1  
Style SCM Discharge restrictive decoupling used to protect dual IGBT modules

#### 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.

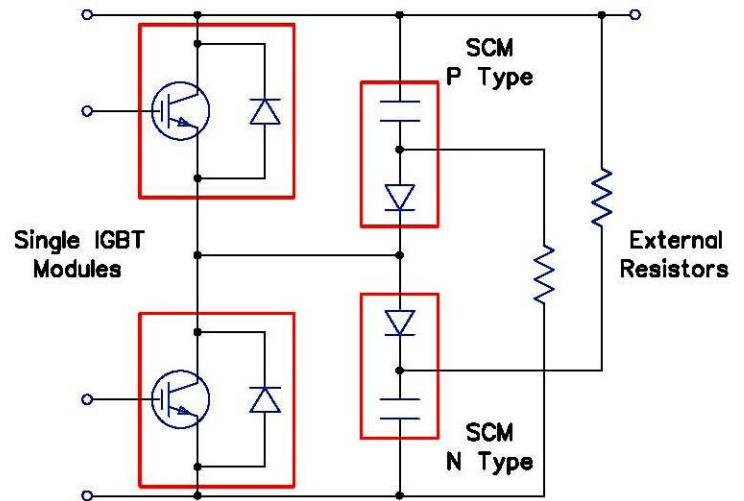


Figure 2  
Style SCM "P" type and "N" type used as a clamp to protect an inverter using two "single" IGBT modules

**Notice and Disclaimer:** All product drawings, descriptions, specifications, statements, information and data (collectively, the "Information") in this datasheet or other publication are subject to change. The customer is responsible for checking, confirming and verifying the extent to which the Information contained in this datasheet or other publication is applicable to an order at the time the order is placed. All Information given herein is believed to be accurate and reliable, but it is presented without any guarantee, warranty, representation or responsibility of any kind, expressed or implied. Statements of suitability for certain applications are based on the knowledge that the Cornell Dubilier company providing such statements ("Cornell Dubilier") has of operating conditions that such Cornell Dubilier company regards as typical for such applications, but are not intended to constitute any guarantee, warranty or representation regarding any such matter – and Cornell Dubilier specifically and expressly disclaims any guarantee, warranty or representation concerning the suitability for a specific customer application, use, storage, transportation, or operating environment. The Information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this Information or otherwise provided by Cornell Dubilier with reference to the use of any Cornell Dubilier products is given gratis (unless otherwise specified by Cornell Dubilier), and Cornell Dubilier assumes no obligation or liability for the advice given or results obtained. Although Cornell Dubilier strives to apply the most stringent quality and safety standards regarding the design and manufacturing of its products, in light of the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies or other appropriate protective measures) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage. Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated in such warnings, cautions and notes, or that other safety measures may not be required.