

Type SCR, Commutating Capacitors

Type SCRN Film-Paper/Extended Foil Commutating Capacitor



Type SCRN capacitors are for SCR (silicon controlled rectifier) commutating applications that require high peak and rms current capability. These capacitors are ideal for other high frequency and pulsed applications. The SCRN is supplied in oval or rectangular metal cases with 1/4 x 20 threaded stud and insulated terminals to withstand high current and high peak voltages.

Highlights

- Conforms to EIA RS401 for power semiconductor applications
- Non ferrous covers available for high frequency applications
- 40,000 hours life at full rated voltage and temperature
- High voltage, high current and high frequency
- Custom designs available

Specifications

Capacitance Range	0.25 μ F to 50.0 μ F
Capacitance Tolerance	$\pm 10\%$
Rated Voltage	200 Vpk to 2000 Vpk
Operating Temperature Range with Ripple	-40 °C to +80 °C
Maximum rms Current	Case codes: A, B, C, D = 60 Irms max. E and F = 100 Irms max.
Maximum rms Voltage	see application guide
Test Voltage between Terminal @ 25°C	DC voltage 2 x rated peak for 60 s
Test Voltage between Terminals & Case @ 25°C	2 x reference AC voltage +1000 Vac for 60 s
Life Test	EIA RS401
Life Expectancy	40,000 h life at full rated voltage, current, case temperature and VA
Reliability	Minimum of 95% survival
Standards	EIA RS401
Rohs Compliant	

Dimensions

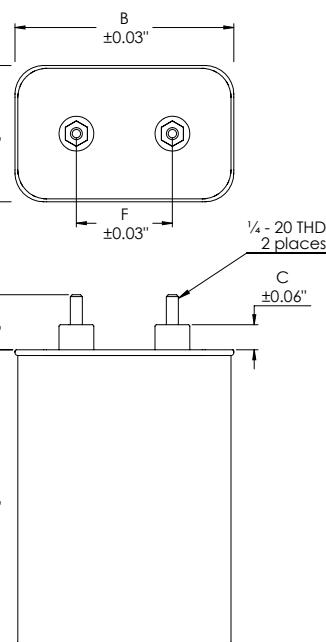
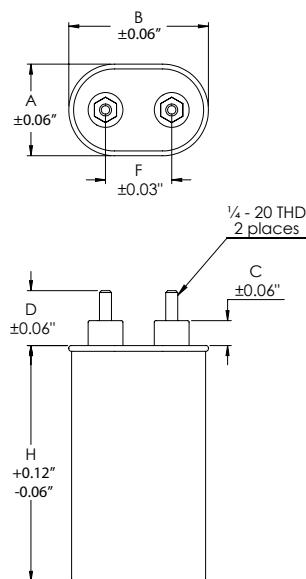


Figure 1

Figure 2

Construction Details	
Case Material	Tin Plated Steel or Aluminum
Encapsulation	Biodegradeable, Environmentally Compatible Fluid
Terminal Material	Electro-tin plated copper stud and molded pillar insulator

Case Code	Dimensions Inches						Figure
	A	B	C	D	F	H	
A	1.31	2.16	0.56	1.19	0.81	see table	Fig. 1
B	1.56	2.69	0.50	1.13	1.25	see table	Fig. 1
C	1.91	2.91	0.50	1.13	1.38	see table	Fig. 1
D	1.97	3.66	0.50	1.13	1.38	see table	Fig. 1
E	2.84	4.56	0.50	1.13	2.00	see table	Fig. 2
F	3.75	4.56	0.56	1.19	2.00	see table	Fig. 2

Type SCR, Commutating Capacitors

Type SCRN Film-Paper/Extended Foil Commutating Capacitor

Ratings

Cap (μ F)	Catalog Part Number	Case Code	H (Inches)	Max VA (65 °C)	Max (Arms)	Cap (μ F)	Catalog Part Number	Case Code	H (Inches)	Max VA (65 °C)	Max (Arms)						
200 Vpk (Paper Dielectric)																	
3	SCRN201R-F	A	2.13	400	60	1	SCRN262R-F	A	2.38	2200	60						
5	SCRN202R-F	A	2.63	465	60	2	SCRN263R-F	A	2.38	2060	60						
10	SCRN203R-F	A	3.88	625	60	3	SCRN264R-F	A	3.88	3190	60						
15	SCRN205R-F	A	4.75	765	60	5	SCRN265R-F	A	4.25	4380	60						
20	SCRN206R-F	B	4.25	875	60	10	SCRN266R-F	C	4.25	6060	60						
30	SCRN208R-F	C	5.25	1200	60	600 Vpk (Film Dielectric for Low-loss)											
40	SCRN209R-F	C	6.75	1500	60	1000 Vpk (Film and Paper Dielectric)											
50	SCRN210R-F	D	5.75	1590	60	1	SCRN233R-F	A	2.13	790	60						
400 Vpk (Film and Paper Dielectric)																	
2	SCRN211R-F	A	2.63	790	60	2	SCRN234R-F	A	3.13	1070	60						
3	SCRN212R-F	A	2.63	970	60	3	SCRN235R-F	A	3.88	1455	60						
5	SCRN213R-F	A	3.88	1130	60	5	SCRN236R-F	B	4.25	1785	60						
10	SCRN214R-F	B	4.75	1930	60	10	SCRN237R-F	C	5.75	2570	60						
15	SCRN215R-F	C	4.75	2240	60	15	SCRN238R-F	D	5.75	3170	60						
20	SCRN216R-F	C	6.25	2800	60	20	SCRN239R-F	E	5.13	5200	100						
30	SCRN217R-F	D	6.75	3720	60	1500 Vpk (Film and Paper Dielectric)											
40	SCRN218R-F	D	8.00	4330	60	.5	SCRN240R-F	A	2.13	990	60						
50	SCRN219R-F	E	6.25	6050	100	1	SCRN241R-F	A	2.88	1240	60						
600 Vpk (Film and Paper Dielectric)																	
2	SCRN220R-F	A	2.63	815	60	2	SCRN242R-F	B	3.50	1890	60						
3	SCRN221R-F	A	3.13	1200	60	3	SCRN243R-F	C	4.25	2550	60						
5	SCRN222R-F	A	4.25	1420	60	5	SCRN244R-F	C	5.75	3250	60						
10	SCRN224R-F	C	4.25	2040	60	10	SCRN245R-F	E	5.13	6500	100						
15	SCRN226R-F	C	5.75	2800	60	2000 Vpk (Film and Paper Dielectric)											
20	SCRN227R-F	D	5.75	3260	60	.25	SCRN246R-F	A	2.13	990	60						
25	SCRN229R-F	D	6.75	3720	60	.33	SCRN257R-F	A	2.13	1000	60						
30	SCRN230R-F	D	8.00	4330	60	.5	SCRN247R-F	A	2.63	1180	60						
40	SCRN231R-F	E	6.25	6060	100	1	SCRN248R-F	A	3.13	1300	60						
50	SCRN232R-F	E	7.25	6850	100	2	SCRN249R-F	B	4.25	2230	60						
						3	SCRN251R-F	C	4.75	2800	60						
						5	SCRN253R-F	D	5.75	4020	60						
						10	SCRN256R-F	F	5.75	7600	100						

Type SCR, Commutating Capacitors

Type SCRN Film-Paper/Extended Foil Commutating Capacitor

Application Guide

How to Choose a Commutating Capacitor

1. From circuit analysis or measurement, determine application values for these six parameters:

Nominal capacitance in μF
Current pulse width in μs
Current pulse period in μs
Maximum peak voltage
Continuous AC voltage in VRms
Maximum volt-amps (VA)

2. Choose a capacitor from the ratings table of the desired nominal capacitance with a peak voltage rating no less than your maximum peak voltage.

3. Check that your application's rms current is no more than the capacitor's Max. Amps RMS. You can calculate the current from your VRms using the equations in the following section.

4. Check that your application's volt-amperes is not more than the capacitor's VA capability. The VA capability is the max VA rating times the Volt-Ampere multiplier from Figure 2 (Current Pulse Width) and that times the Volt-Ampere Multiplier from Figure 3 (Ambient Temperature). See the following section for more on using volt-ampere multipliers.

If you need a greater VA capability, repeat these steps for a higher peak voltage capacitor or consider connecting units in parallel to divide the VA required. For up to peak voltage of 600 V, you may also consider polypropylene film dielectric units, Catalog Numbers SCRN262R through SCRN266R, with higher VA capability.

Using Volt-Ampere Ratings

The capacitors maximum VA rating is the maximum product of the sine wave voltage and current that may be applied at 65 °C without overheating the capacitor and reducing its expected life. For other temperatures and pulsed current, use the multipliers of Figures 2 and 3 to derate the Max VA rating.

The Max Amps RMS rating is set by the capability of the capacitor terminals. Exceeding this limit can damage the terminals and cause capacitor failure.

Calculate the capacitor's actual VA load as the product of the rms voltage across the capacitor and the rms current through the capacitor. To calculate rms current for an applied sine wave or squarewave voltage, use these equations.

For a sinewave voltage the current is:

$$I_{\text{rms}} = 2\pi f C V_{\text{rms}} \times 10^{-6}$$

and for a squarewave the current is:

$$I_{\text{rms}} = C \Delta V / [0.64(tT)^{0.5}] = I_{\text{peak}}(t/T)^{0.5}$$

where (f) is repetition frequency in Hz, C is nominal capacitance in μF , ΔV the peak-to-peak squarewave amplitude in volts, (t) is the pulse width in μs and T is the pulse period in μs .

The peak current for the square wave voltage is:

$$I_{\text{peak}} = C \Delta V / 0.64t$$

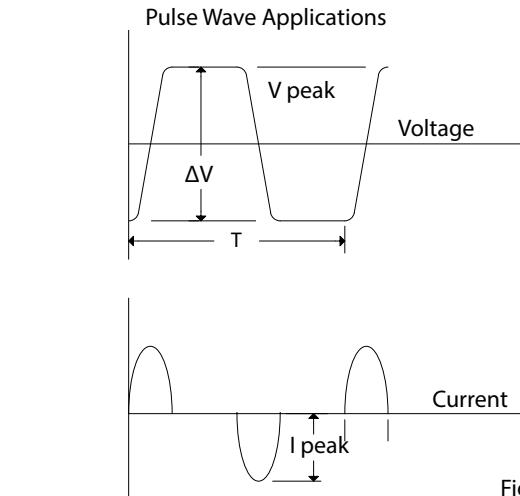


Figure 1

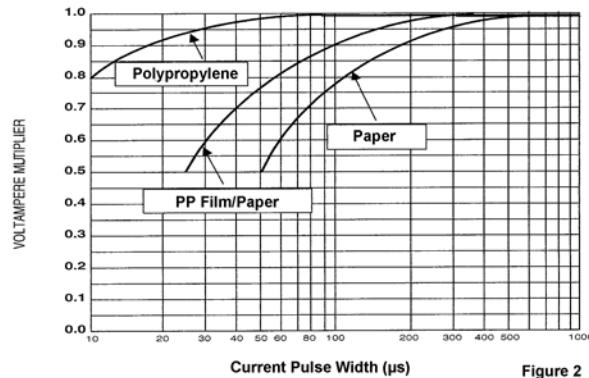


Figure 2

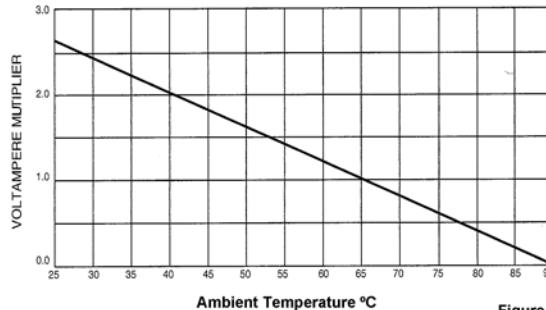


Figure 3

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.