

## Hermetic Triacs

6A to 40A RMS Up to 600 Volts

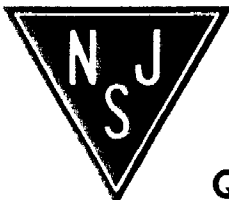
<b>STUD/ TO-3 FLANGE</b>
<b>SC240</b>
<b>SC245</b>
<b>SC250</b>
<b>SC260</b>
<b>SC265</b>

<b>PRESS-FIT</b>
<b>SC241</b>
<b>SC246</b>
<b>SC251</b>
<b>SC261</b>
<b>SC266</b>

### MAXIMUM ALLOWABLE RATINGS

TYPE	RMS ON-STATE CURRENT $I_T$ (RMS) (1) AMPERES	REPETITIVE PEAK OFF-STATE VOLTAGE, $V_{DRM}$ (2)				PEAK ONE FULL CYCLE SURGE (NON-REP) ON-STATE CURRENT, $I_{TSM}$ AMPERES		$I^2t$ FOR FUSING FOR TIMES AT(3)	
		B	D	E	M	50 Hz	60 Hz	(RMS AMPERE) <sup>2</sup> SECONDS, 1.0 MILLISECONDS	(RMS AMPERE) <sup>2</sup> SECONDS, 8.3 MILLISECONDS
		VOLTS	VOLTS	VOLTS	VOLTS	AMPERES	AMPERES		
SC240/241	6	200	400	500	600	74	80	18	26.5
SC245/246	10	200	400	500	600	90	100	20	41.5
SC250/251	15	200	400	500	600	90	100	20	41.5
SC260/261	25	200	400	500	600	230	250	150	260.0
SC265/266	40	200	400	500	600	275	300	300	375.0

- Peak Gate Power Dissipation,  $P_{GM}$  (4)  
 SC240/SC241, SC245/SC246, SC250/SC251, SC260/SC261 . . . . . 10 Watts for 10 Microseconds (See Figure 5A)  
 SC265/SC266 . . . . . 10 Watts for 20 Microseconds (See Figure 5B)
- Average Gate Power Dissipation,  $P_{G(AV)}$  . . . . . 0.5 Watts  
 (See Figures 6A, 6B, 6C)
- Peak Gate Current,  $I_{GM}$  (4) . . . . . (See Figures 6A, 6B, 6C)
- Peak Gate Voltage,  $V_{GM}$  (4) . . . . . (See Figures 6A, 6B, 6C)
- Storage Temperature,  $T_{STG}$  . . . . . -40°C to +125°C
- Operating Temperature,  $T_J$   
 SC240/SC241, SC245/SC246 . . . . . -40°C to +100°C  
 SC250/SC251, SC260/SC261, SC265/SC266 . . . . . -40°C to +115°C
- Stud Torque (Isolated and Non-Isolated Stud Types) . . . . . 25 Lb.-In. (29 Kg-Cm) (2.8 N-M)
- Insertion Pressure (Press-Fit Types) . . . . . (3.56 N x 10<sup>3</sup>) 800 Lbs. (364 Kg)
- Surge Isolation Voltage (5) . . . . . 1800 Volts RMS



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STUD/TO-3 FLANGE	PRESS-FIT
SC240, 45, 50, 60, 65	SC241, 46, 51, 61, 66

### CHARACTERISTICS

TEST	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS	REF. NOTE
Repetitive Peak Off-State Current	$I_{DRM}$				mA	$V_{DRM}$ = Maximum Allowable Repetitive Peak Off-State Voltage Rating. Gate Open Circuited.	1
SC240/SC241				0.1		$T_C = +25^\circ C$	
SC245/SC246				0.5		$T_C = T_J$ (Max.)	
SC250/SC251							
SC260/SC261				0.2		$T_C = +25^\circ C$	
SC265/SC266				1.0		$T_C = T_J$ (Max.)	
Peak On-State Voltage	$V_{TM}$				Volts	$T_C = +25^\circ C$ , $I_{TM} = 1$ msec., Wide Pulse. Duty Cycle $\leq 2\%$ .	1
SC240/SC241				1.83		$I_{TM} = 8.5$ A Peak	
SC245/SC246				1.65		$I_{TM} = 14$ A Peak	
SC250/SC251				1.65		$I_{TM} = 21$ A Peak	
SC260/SC261				1.58		$I_{TM} = 35$ A Peak	
SC265/SC266				1.38		$I_{TM} = 56$ A Peak	
Critical Rate-of-Rise of Off-State Voltage (Higher Values May Cause Device Switching.)	$dv/dt$				Volts/ $\mu$ sec	$T_C = T_J$ Max. Rated $V_{DRM}$ . Gate Open Circuited. Exponential Voltage Waveform.	1
SC240/SC241		30	100	—			
SC245/SC246		100	150	—			
SC250/SC251		100	250	—			
SC260/SC261		50	150	—			
SC265/SC266		50	150	—			
Critical Rate-of-Rise of Commutating Off-State Voltage (Commutating $dv/dt$ )	$dv/dt_{(c)}$				Volts/ $\mu$ sec	$I_{T(RMS)}$ = Rated Maximum Allowable RMS On-State Current, $V_{DRM}$ = Maximum Rated Peak Off-State Voltage. Gate Open Circuited.	1,7
SC240/SC241		4	—	—			
SC245/SC246		4	—	—			
SC250/SC251		4	—	—			
SC260/SC261		5	—	—			
SC265/SC266		5	—	—			
DC Gate Trigger Current	$I_{GT}$				mAdc	$V_D = 12V_{dc}$	2
						TRIGGER MODE	
						$R_L$	
						$T_C$	
SC240/SC241		—	—	50		MT2+ Gate+	100 Ohms
SC245/SC246		—	—	50		MT2- Gate-	100 Ohms
SC250/SC251		—	—	50		MT2+ Gate-	50 Ohms
SC260/SC261		—	—	80		MT2+ Gate+	50 Ohms
		—	—	80		MT2- Gate-	50 Ohms
		—	—	80		MT2+ Gate-	25 Ohms
		—	—	80		MT2+ Gate+	100 Ohms
		—	—	80		MT2- Gate-	100 Ohms
SC265/SC266		—	—	80		MT2+ Gate-	50 Ohms
		—	—	120		MT2+ Gate+	50 Ohms
		—	—	120		MT2- Gate-	50 Ohms
		—	—	120		MT2+ Gate-	25 Ohms

<b>STUD/TO-3 FLANGE</b>	<b>PRESS-FIT</b>
<b>SC240, 45, 50, 60, 65</b>	<b>SC241, 46, 51, 61, 66</b>

TEST	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS	REF. NOTE		
SC260/SC261	$R_{\theta JC}$	-	-	1.80	°C/Watt	Non-Isolated Stud/Press-Fit	1,5		
		-	-	1.95		Isolated Stud			
		-	-	1.95		Non-Isolated TO-3 Flange			
		-	-	2.10		Isolated TO-3 Flange			
		SC265/SC266	-	-		-		1.00	Non-Isolated Stud/Press-Fit
				-		-		1.15	Isolated Stud
				-		-		1.15	Non-Isolated TO-3 Flange
				-		-		1.30	Isolated TO-3 Flange
Apparent Thermal Resistance	$R_{\theta JC(AC)}$				°C/Watt	Junction-to-Case. This characteristic is useful in the calculation of junction temperature rise above case temperature for AC current conduction.	6		
SC240/SC241	-	-	-	2.00	Non-Isolated Stud/Press-Fit				
		-	-	2.20	Isolated Stud				
		-	-	2.20	Non-Isolated TO-3 Flange				
		-	-	2.40	Isolated TO-3 Flange				
SC245/SC246	-	-	-	1.50	Non-Isolated Stud/Press-Fit				
		-	-	1.65	Isolated Stud				
		-	-	1.65	Non-Isolated TO-3 Flange				
		-	-	1.80	Isolated TO-3 Flange				
SC250/SC251	-	-	-	1.45	Non-Isolated Stud/Press-Fit				
		-	-	1.60	Isolated Stud				
		-	-	1.60	Non-Isolated TO-3 Flange				
		-	-	1.75	Isolated TO-3 Flange				
SC260/SC261	-	-	-	1.25	Non-Isolated Stud/Press-Fit				
		-	-	1.40	Isolated Stud				
		-	-	1.40	Non-Isolated TO-3 Flange				
		-	-	1.55	Isolated TO-3 Flange				
SC265/SC266	-	-	-	0.80	Non-Isolated Stud/Press-Fit				
		-	-	0.95	Isolated Stud				
		-	-	0.95	Non-Isolated TO-3 Flange				
		-	-	1.10	Isolated TO-3 Flange				

**NOTES:**

1. Characteristic values apply for either polarity of main terminal 2 referenced to main terminal 1.
2. Main terminal 1 is the reference terminal for main terminal 2 and gate terminal.
3. With  $V_D$  equal to maximum allowable off-state voltage.
4. The junction-to-ambient value is under worst case conditions; i.e., with No. 22 copper wire used for electrical contact to the terminals and natural convection cooling.
5. Junction-to-case steady-state thermal resistance ( $R_{\theta JC}$ ) is tested in accordance with FIA-NEMA Standard RS-397, Section 3.3.2, which states: "Thermal characteristics are to be measured with the device operating in only one direction." The values listed are the limiting value for either direction.
6. Apparent thermal resistance applies for a 50 or 60 Hz full sine wave of current. It can be calculated with the following formula:

$$\text{Apparent thermal resistance} = \frac{T_{J(\max)} - T_C}{P_{T(AV)}}$$

where:  $T_{J(\max)}$  = maximum junction temperature  
 $T_C$  = case temperature  
 $P_{T(AV)}$  = average on-state power

7. Values for these test conditions are:

Device	Package	Commutating di/dt	$T_C$ (°C)
SC240/SC241	Non-Isolated Stud/Press-Fit	3.2 A/msec.	82
	Isolated Stud		80
	Non-Isolated TO-3 Flange		80
	Isolated TO-3 Flange		79
SC245/SC246	Non-Isolated Stud/Press-Fit	5.4 A/msec.	80
	Isolated Stud		78
	Non-Isolated TO-3 Flange		78
	Isolated TO-3 Flange		76
SC250/SC251	Non-Isolated Stud/Press-Fit	8.0 A/msec.	86
	Isolated Stud		83
	Non-Isolated TO-3 Flange		83
	Isolated TO-3 Flange		80
SC260/SC261	Non-Isolated Stud/Press Fit	13.5 A/msec.	80
	Isolated Stud		75
	Non-Isolated TO-3 Flange		75
	Isolated TO-3 Flange		71
SC265/SC266	Non-Isolated Stud/Press-Fit	21.5 A/msec.	81
	Isolated Stud		74
	Non-Isolated TO-3 Flange		74
	Isolated TO-3 Flange		68

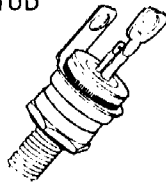
**SIX BASIC PACKAGES**

- Other packages available upon request.

**PRESS-FIT**

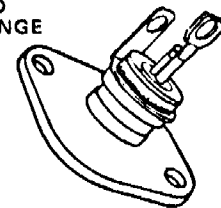


**ISOLATED STUD**  
With Press-on  
MT2 Terminal



TYPE 2

**ISOLATED TO-3 FLANGE**



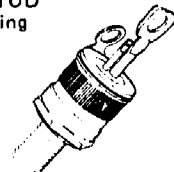
TYPE 4

**NON-ISOLATED STUD**



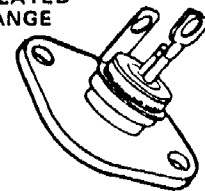
TYPE 1

**ISOLATED STUD**  
With Solder Ring  
MT2 Terminal



TYPE 3

**NON-ISOLATED TO-3 FLANGE**



TYPE 5