Bi-Directional Triode Thyristor

Hermetic Triacs

6A to 40A RMS Up to 600 Volts

STUD/TO-3 FLANGE
SC240
SC245
SC250
SC260
SC265
PRESS-FIT
SC241
SC246
SC251
SC261
SC266

The triac is a silicon AC switch which may be gate triggered from an OFF-State to an ON-State for either polarity of applied voltage. These triacs are hermetically sealed devices which incorporate General Electric's patented POWER-GLAS™ process that improves upon normal passivation techniques. It provides an intimate bond between the silicon chip and the glass coating. The resulting stable, low-level leakage current provides excellent performance and demonstrated reliability.

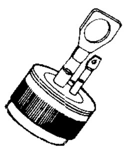
FEATURES:

- POWER-GLAS™ passivated silicon chip for maximum reliability.
- Very low off-state (leakage) current at room and elevated temperatures.
- Inherent immunity from non-repetitive transient voltage damage (max. critical rate-of-rise of on-state current subsequent to voltage breakover triggering, di/dt = 10 A/μsec.)
- Low on-state voltage at high current levels.
- Excellent surge current capability.
- 1800 volts RMS Surge Isolation Voltage on Isolated Triacs.
- Selected types available from factory for use where circuit requires operation:
  - with popular zero voltage triggering IC's
  - at 400 Hz
  - with low gate trigger current
  - at higher voltage levels
  - at higher commutating dv/dt levels.

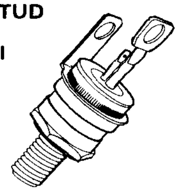
SIX BASIC PACKAGES

- Other packages available upon request.

PRESS-FIT

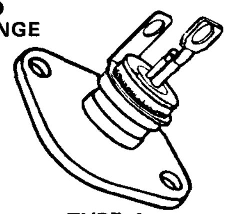


ISOLATED STUD
With Press-on MT2 Terminal



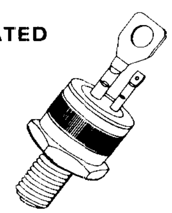
TYPE 2

ISOLATED TO-3 FLANGE



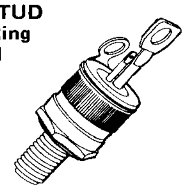
TYPE 4

NON-ISOLATED STUD



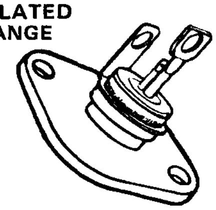
TYPE 1

ISOLATED STUD
With Solder Ring MT2 Terminal



TYPE 3

NON-ISOLATED TO-3 FLANGE



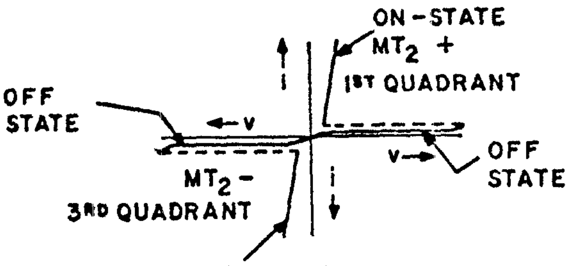
TYPE 5

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

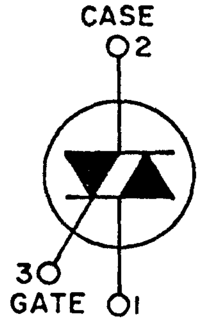
MAXIMUM ALLOWABLE RATINGS

TYPE	RMS ON-STATE CURRENT $I_{T(RMS)}$ (1)	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)	
	AMPERES	B	D	E	M	50 Hz	60 Hz	(RMS AMPERE)^2 SECONDS, 1.0 MILLISECONDS	(RMS AMPERE)^2 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
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 10^3) 800 Lbs. (364 Kg)
Surge Isolation Voltage (5) .... 1800 Volts RMS



TYPICAL CHARACTERISTICS
VOLT-AMPERES



TERMINAL ARRANGEMENT

NOTES:

1. $I_{T(RMS)}$ ratings apply for 50 and 60 Hz with 360° conduction and at case reference point (see outline drawings) temperature as indicated in the following chart:

CASE REFERENCE POINT TEMPERATURE CHART

Device	A RMS	Stud/ Press-Fit	Isolated Stud	Non-Isolated TO-3 Flange	Isolated TO-3 Flange
SC240/SC241	6	82°C	80°C	80°C	79°C
SC245/SC246	10	80°C	78°C	78°C	76°C
SC250/SC251	15	86°C	83°C	83°C	80°C
SC260/SC261	25	80°C	75°C	75°C	71°C
SC265/SC266	40	81°C	74°C	74°C	68°C

2. V_{DRM} ratings apply for zero gate voltage only. Ratings apply for either polarity of main terminal 2 referenced to main terminal 1.
3. I^2t ratings apply for either polarity of main terminal 2 referenced to main terminal 1.
4. Ratings apply for either polarity of gate terminal referenced to main terminal 1.
5. Surge isolation voltage rating applies to isolated triacs only. Rating applies from main terminals 1, 2 and gate terminal to device mounting surface. Test voltage is 50 or 60 Hz sinusoidal waveform applied for one minute. Rating applies over the entire device operating temperature range.

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 SC245/SC246 SC250/SC251		– –	– –	0.1 0.5		T_C = +25°C T_C = T_J (Max.)	
SC260/SC261 SC265/SC266		– –	– –	0.2 1.0		T_C = +25°C T_C = T_J (Max.)	
Peak On-State Voltage	V_{TM}	–	–	–	Volts	T_C = +25°C, I_{TM} = 1 msec., Wide Pulse. Duty Cycle ≤ 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/μsec	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/μsec	$I_{T(RMS)}$ = 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	–	–			

TEST	SYMBOL	MIN.	TYP.	MAX.	UNITS	TRIGGER MODE	R_L	T_C	REF. NOTE
DC Gate Trigger Current	I_{GT}				mAdc	V_D = 12Vdc			2
SC240/SC241 SC245/SC246 SC250/SC251 SC260/SC261		–	–	50		MT2+ Gate+	100 Ohms	+25°C	
		–	–	50		MT2– Gate–	100 Ohms	+25°C	
		–	–	50		MT2+ Gate–	50 Ohms	+25°C	
		–	–	80		MT2+ Gate+	50 Ohms	-40°C	
		–	–	80		MT2– Gate–	50 Ohms	-40°C	
		–	–	80		MT2+ Gate–	25 Ohms	-40°C	
SC265/SC266		–	–	80		MT2+ Gate+	100 Ohms	+25°C	
		–	–	80		MT2– Gate–	100 Ohms	+25°C	
		–	–	80		MT2+ Gate–	50 Ohms	+25°C	
		–	–	120		MT2+ Gate+	50 Ohms	-40°C	
		–	–	120		MT2– Gate–	50 Ohms	-40°C	
		–	–	120		MT2+ Gate–	25 Ohms	-40°C	

CONTINUED:

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

CHARACTERISTICS (Continued)

TEST	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS			REF. NOTE
DC Gate Trigger Voltage	V_{GT}				Vdc	V_D = 12 Vdc			2
						TRIGGER MODE	R_L	T_C	
		–	–	2.5		MT2+ Gate+	100 Ohms	+25°C	
		–	–	2.5		MT2– Gate–	100 Ohms	+25°C	
		–	–	2.5		MT2+ Gate–	50 Ohms	+25°C	
		–	–	3.5		MT2+ Gate+	50 Ohms	-40°C	
		–	–	3.5		MT2– Gate–	50 Ohms	-40°C	
		–	–	3.5		MT2+ Gate–	25 Ohms	-40°C	
DC Gate Non-Trigger Voltage	V_{GD}				Vdc				2, 3
						TRIGGER MODE	R_L	T_C	
		0.2	–	–		MT2+ Gate+	1000 Ohms	Max. T_J	
		0.2	–	–		MT2– Gate–	1000 Ohms	Max. T_J	
		0.2	–	–		MT2+ Gate–	1000 Ohms	Max. T_J	
		0.2	–	–		MT2– Gate+	1000 Ohms	Max. T_J	
DC Holding Current	I_H				mAdc	Main Terminal Source Voltage = 24 Vdc. Peak Initiating On-State Current = 0.5Amps, 0.1 milliseconds to 10 milliseconds wide pulse. Gate Trigger Source = 7 Volts, 20 Ohms			1
SC240/SC241 SC245/SC246 SC250/SC251		–	–	50		T_C = +25°C			
		–	–	100		T_C = -40°C			
SC260/SC261 SC265/SC266		–	–	75		T_C = +25°C			
		–	–	150		T_C = -40°C			
DC Latching Current	I_L				mAdc	Main Terminal Source Voltage = 24 Vdc. Gate Trigger Source = 15 Volts, 100 Ohms, 50μsec pulse width, 5 μsec rise and fall times maximum.			2
						TRIGGER MODE	T_C		
		–	–	100		MT2+ Gate–	+25°C		
		–	–	100		MT2– Gate–	+25°C		
		–	–	200		MT2+ Gate–	+25°C		
		–	–	200		MT2+ Gate+	-40°C		
		–	–	200		MT2– Gate–	-40°C		
		–	–	400		MT2+ Gate–	-40°C		
Steady State Thermal Resistance	$R_{\theta JA}$	–	–	45	°C/Watt	Junction-to-Ambient			1, 4
Steady State Thermal Resistance	$R_{\theta JC}$				°C/Watt	Junction-to-Case. This characteristic is useful as an acceptance test at an incoming inspection station.			1, 5
SC240/SC241		–	–	2.80		Non-Isolated Stud/Press-Fit			
		–	–	2.95		Isolated Stud			
		–	–	2.95		Non-Isolated TO-3 Flange			
		–	–	3.10		Isolated TO-3 Flange			
SC245/SC246		–	–	2.00		Non-Isolated Stud/Press-Fit			
		–	–	2.15		Isolated Stud			
		–	–	2.15		Non-Isolated TO-3 Flange			
		–	–	2.30		Isolated TO-3 Flange			
SC250/SC251		–	–	2.00		Non-Isolated Stud/Press-Fit			
		–	–	2.15		Isolated Stud			
		–	–	2.15		Non-Isolated TO-3 Flange			
		–	–	2.30		Isolated TO-3 Flange			

CONTINUED:

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

CHARACTERISTICS (Continued)

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 EIA-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:

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

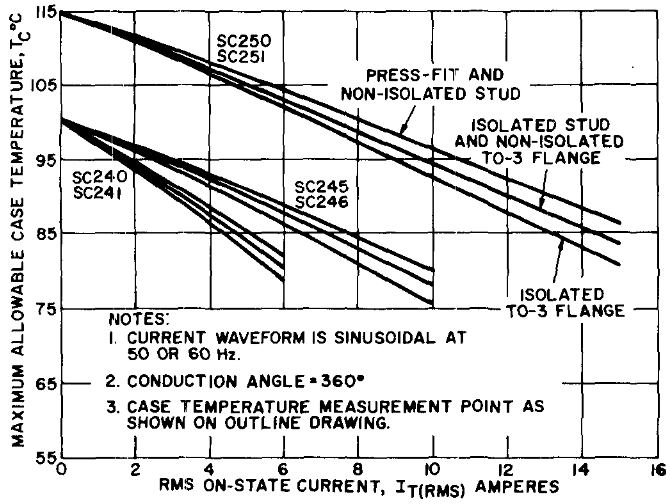
where: $T_{J(max)}$ = maximum junction temperature
T_C = case temperature
$P_{T(AV)}$ = average on-state power

See Figure 7 for Maximum Apparent Transient Thermal Impedance.

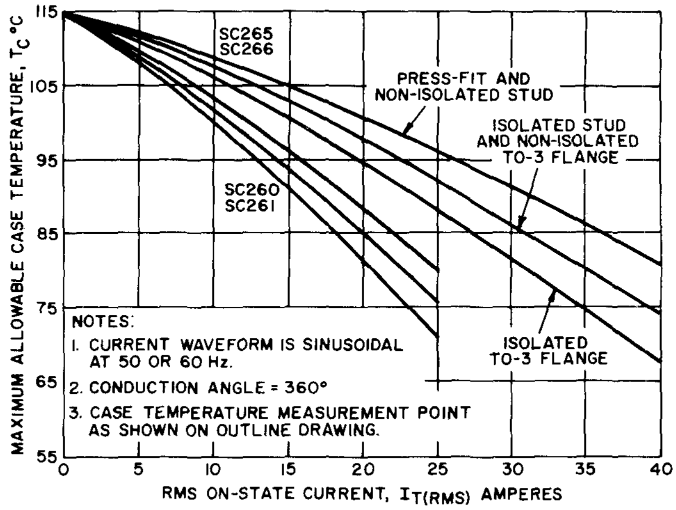
7. Values for these test conditions are:

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

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

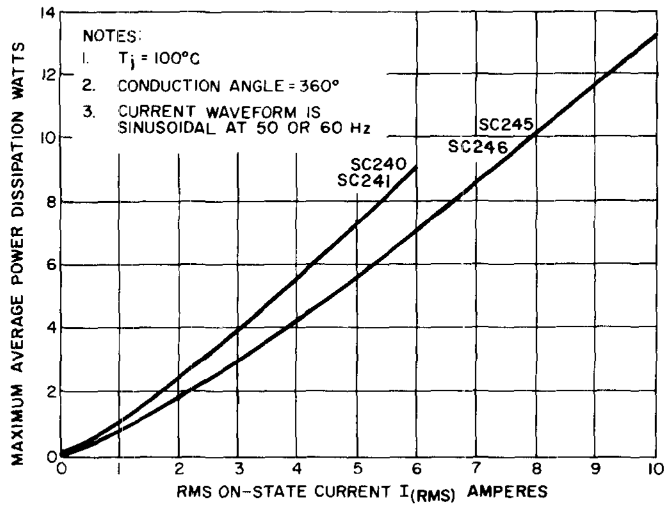


SC240/SC241, SC245/SC246, SC250/SC251

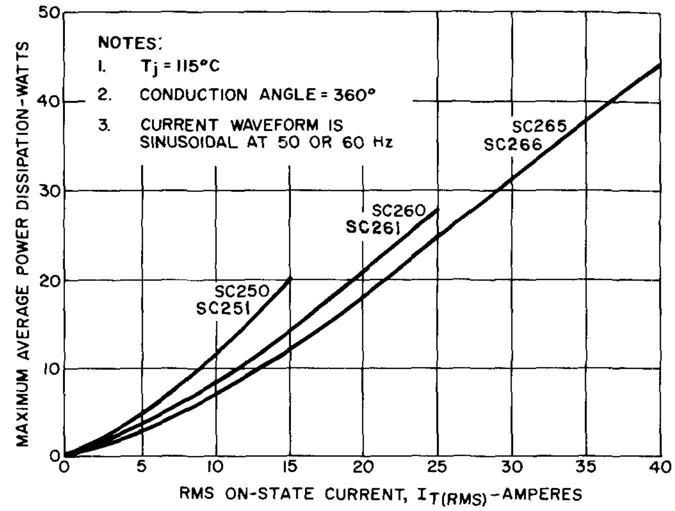


SC260/SC261, SC265/SC266

1. MAXIMUM ALLOWABLE CASE TEMPERATURE VS. RMS ON-STATE CURRENT

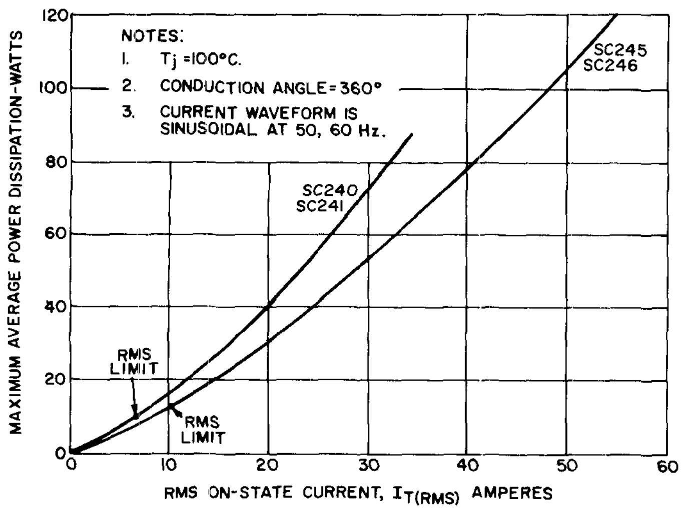


SC240/SC241, SC245/SC246

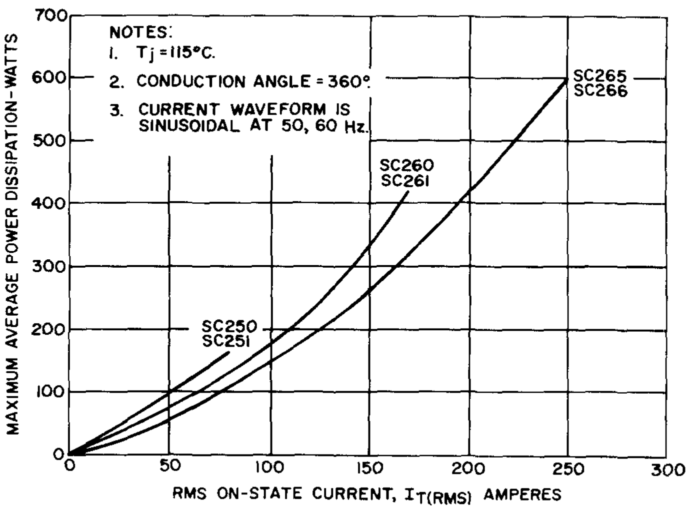


SC250/SC251, SC260/SC261, SC265/SC266

2. MAXIMUM AVERAGE POWER DISSIPATION VS. RMS ON-STATE CURRENT



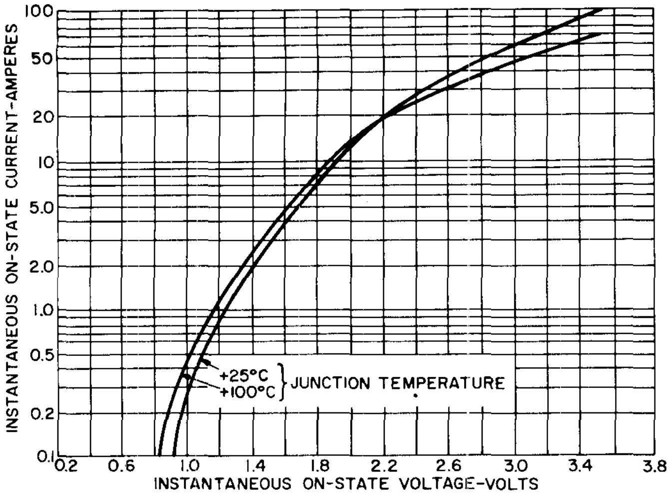
SC240/SC241, SC245/SC246



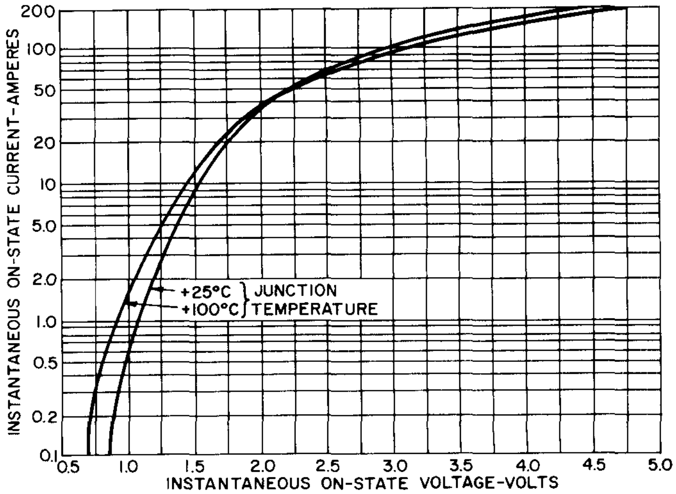
SC250/SC251, SC260/SC261, SC265/SC266

3. MAXIMUM AVERAGE POWER DISSIPATION VS. RMS ON-STATE CURRENT (HIGH LEVEL)

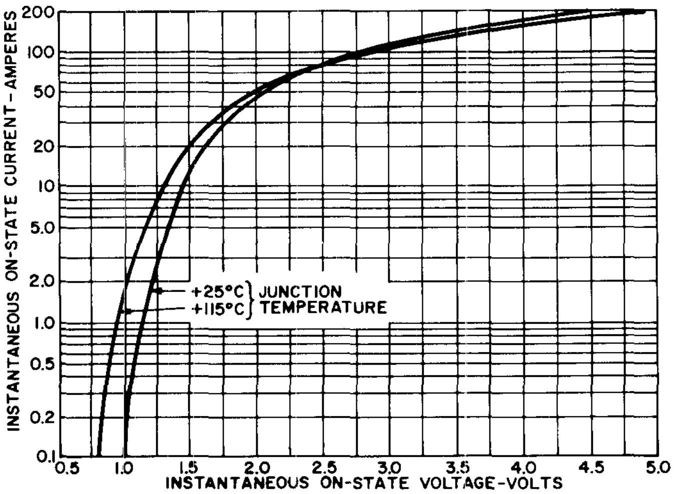
STUD/TO-3 FLANGE	PRESS-FIT
SC240, 45, 50, 60, 65	SC241, 46, 51, 61, 66



SC240/SC241



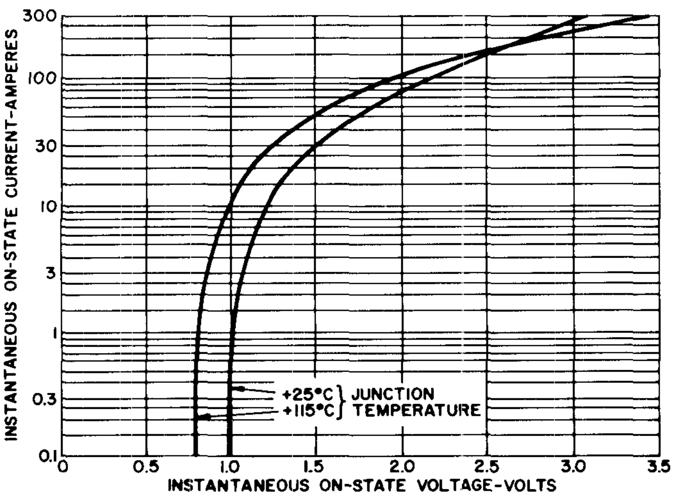
SC245/SC246



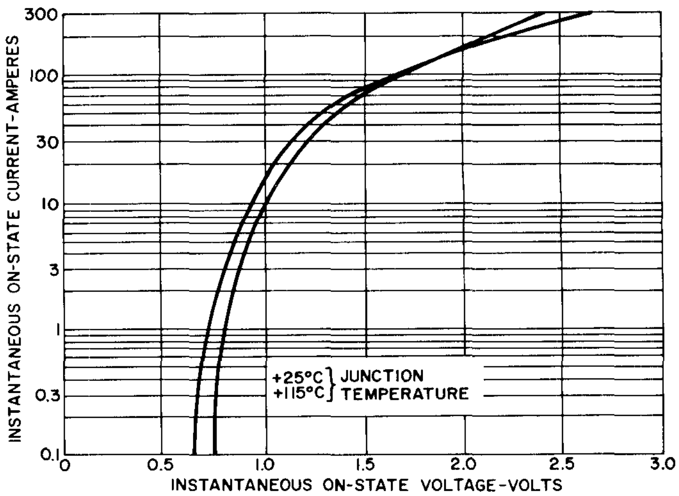
SC250/SC251

NOTES:

1. I_{TM} = 1 msec. wide pulse, duty cycle ≤ 2%.
2. Curves apply for either polarity of main terminal 2 referenced to main terminal 1.



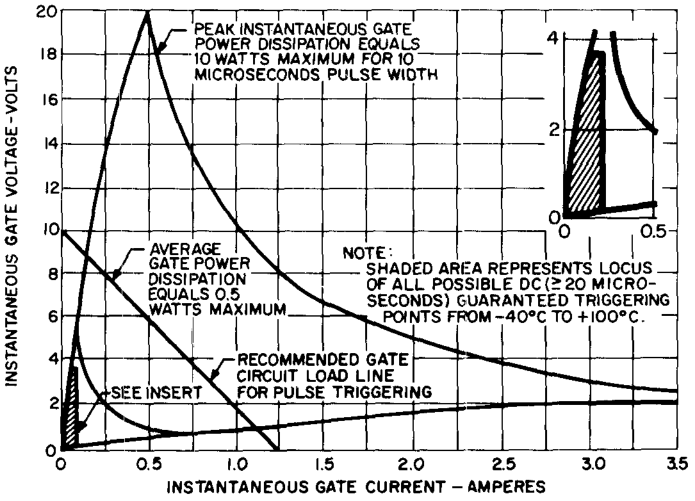
SC260/SC261



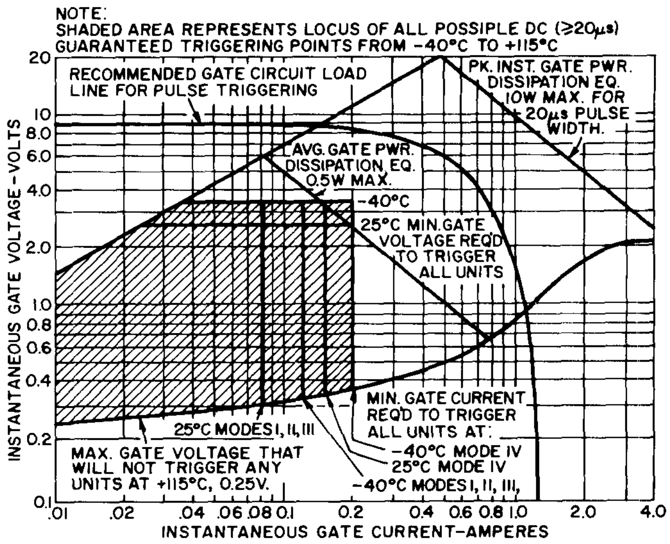
SC265/SC266

4. MAXIMUM ON-STATE VOLTAGE VS. ON-STATE CURRENT

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

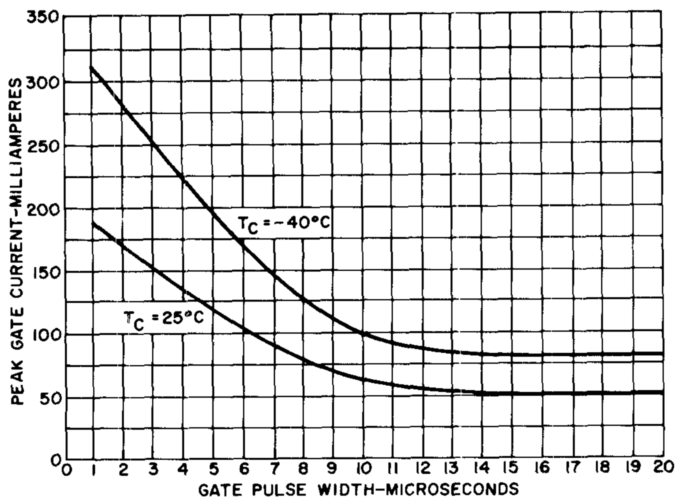


SC240/SC241, SC245/SC246, SC250/SC251, SC260/SC261

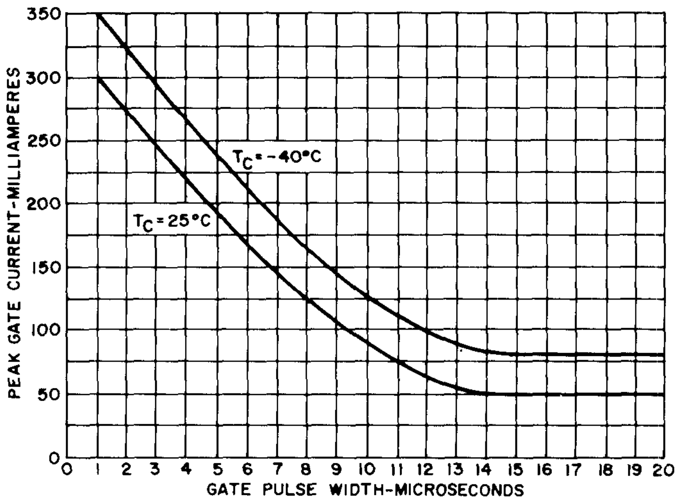


SC265/SC266

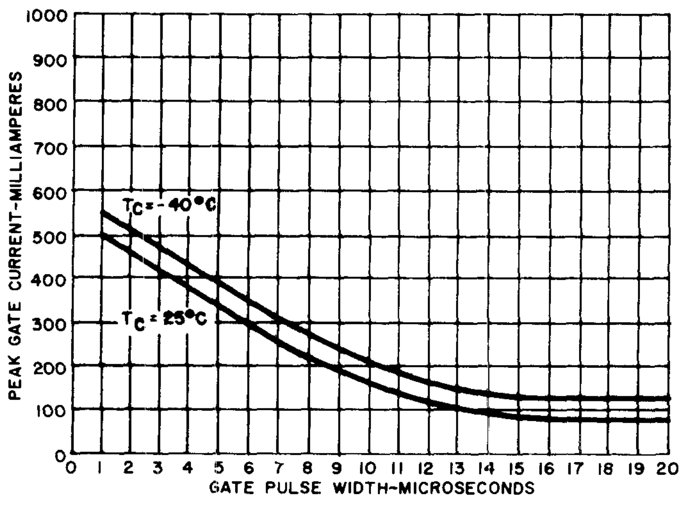
5. GATE CHARACTERISTICS AND RATINGS



SC240/SC241, SC245/SC246, SC250/SC251



SC260/SC261



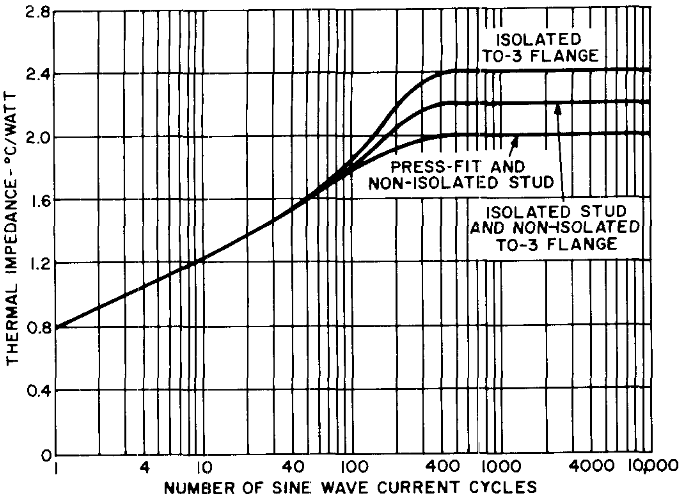
SC265/SC266

NOTES:

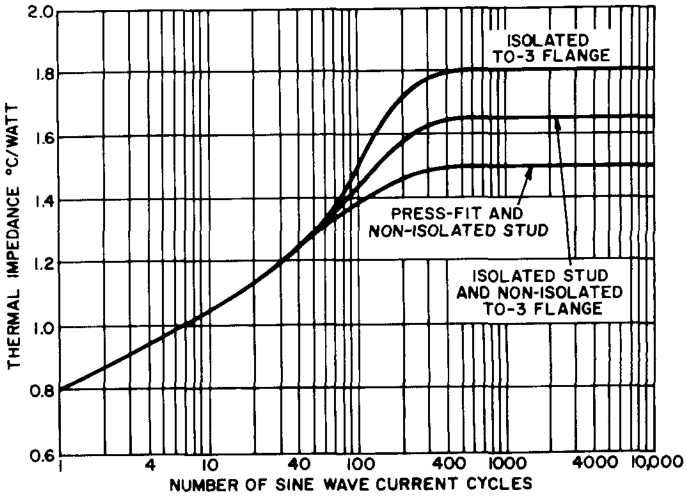
1. Rectangular gate current pulse applied.
2. Rise and fall times equal to or less than 10% of gate pulse width.
3. Main terminal voltage = 12 vdc, load resistor (see characteristic table).
4. Applies for all three guaranteed trigger modes.

6. MAXIMUM GATE TRIGGER CURRENT VS. GATE PULSE WIDTH

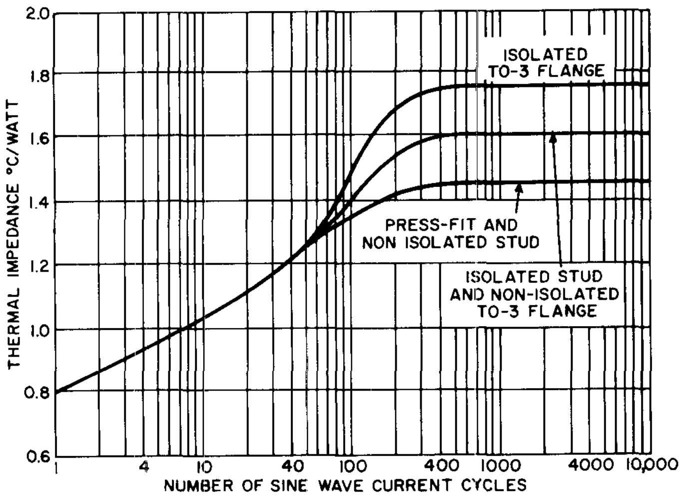
STUD/TO-3 FLANGE	PRESS-FIT
SC240, 45, 50, 60, 65	SC241, 46, 51, 61, 66



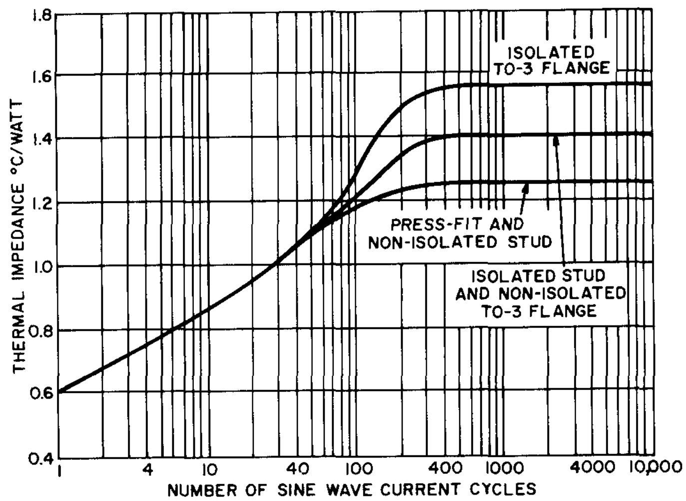
SC240/SC241



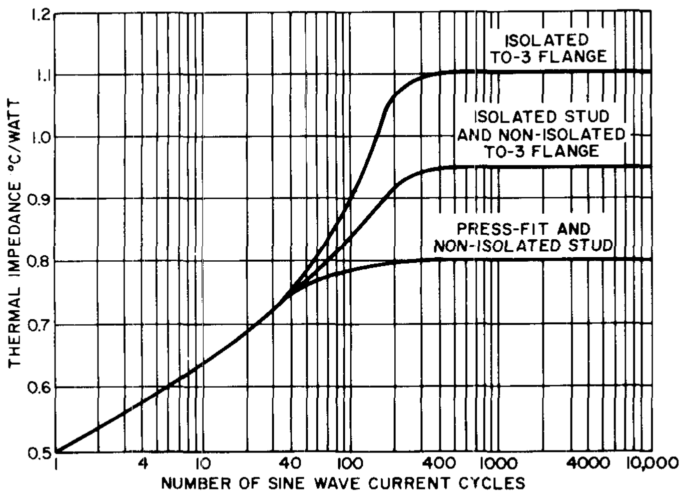
SC245/SC246



SC250/SC251



SC260/SC261



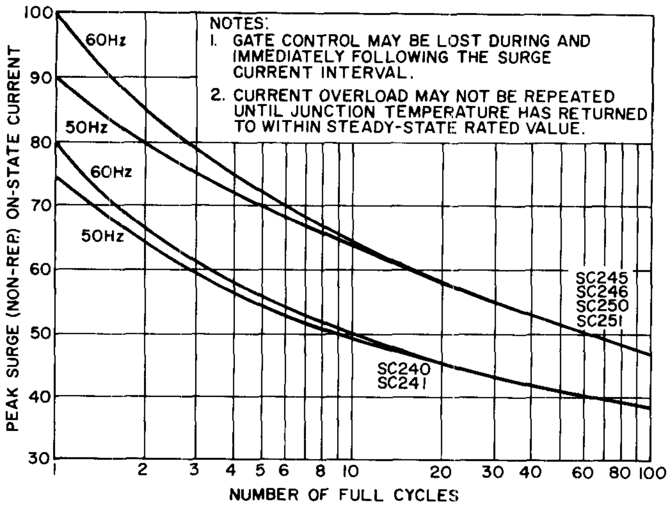
SC265/SC266

NOTES:

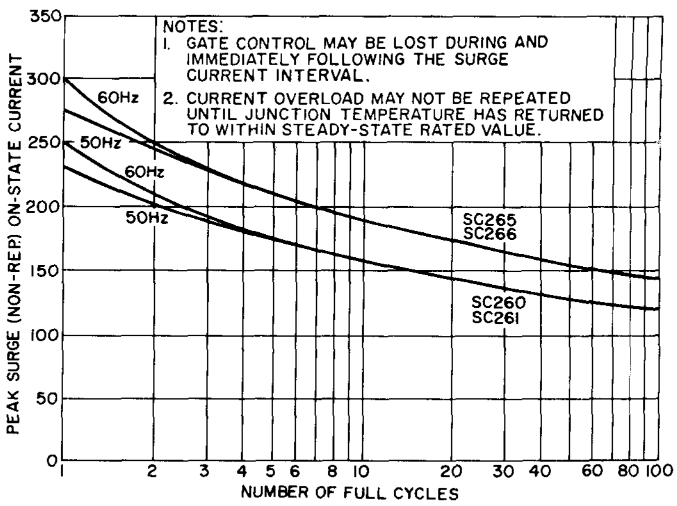
1. Curves define temperature rise of either junction above case temperature for equal amplitudes symmetrical sine wave current at 50 and 60 Hz.
2. Curve considers junction temperature measured immediately after the final cycle of current.
3. Gate will regain control if temperature is maintained below rated value and load current is reduced or maintained at RMS value.
4. For more than 100 cycles of current the case temperature rise must be observed and used in calculating the total junction temperature.
5. Junction temperature rise above case is defined as apparent transient thermal impedance times average conduction power dissipated during full cycle conduction.
6. Apparent steady-state value is not the same as JEDEC value listed as steady-state in characteristics table.

7. MAXIMUM APPARENT TRANSIENT THERMAL IMPEDANCE

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

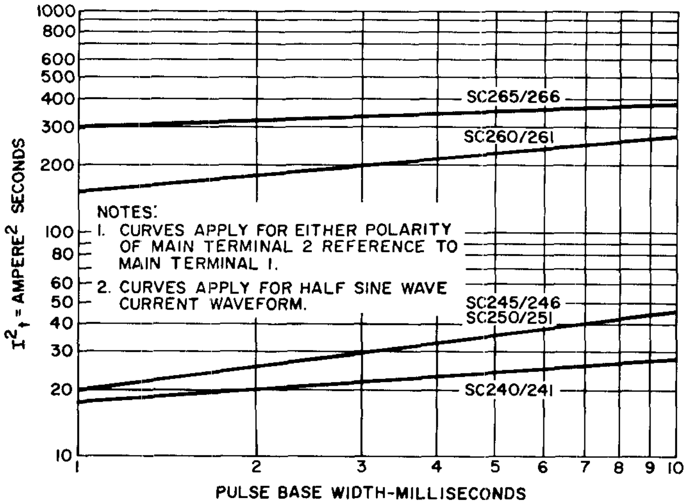


SC240/SC241, SC245/SC246, SC250/SC251

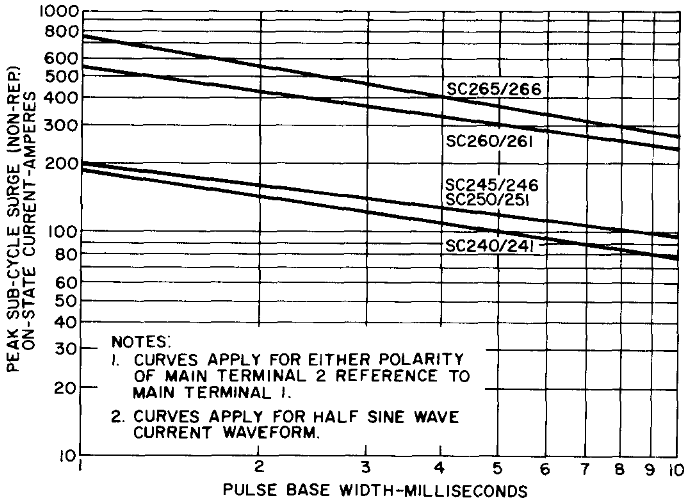


SC260/SC261, SC265/SC266

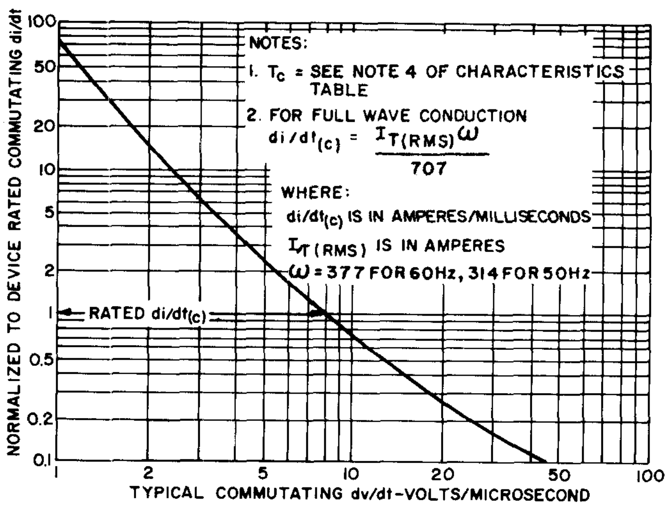
8. MAXIMUM ALLOWABLE FULL CYCLE SURGE CURRENT FOLLOWING RATED LOAD CONDITIONS



9. I^2t RATING FOLLOWING RATED LOAD CONDITIONS



10. SUB-CYCLE SURGE FOLLOWING RATED LOAD CONDITIONS



11. NORMALIZED DEVICE RATED COMMUTATING di/dt VS. COMMUTATING dv/dt (Typical Values)

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

OUTLINE DRAWINGS

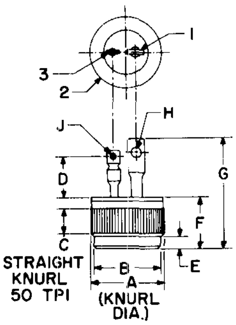


FIGURE A
(Pierced MT1 Terminal)

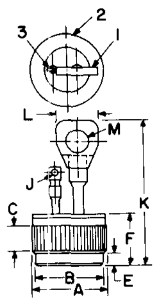
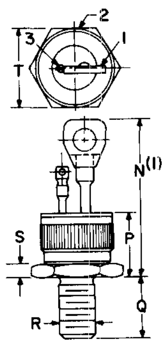


FIGURE B
(Flag MT1 Terminal)

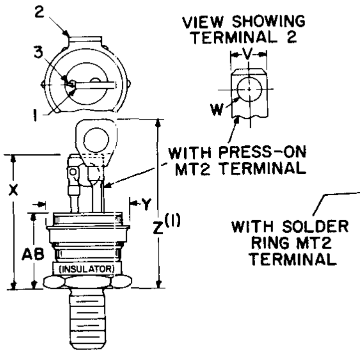
MT1 TERMINAL SPECIFICATION

Device	Amperes RMS	MT1 Terminal
SC240/SC241	6	See Figure A
SC245/SC246	10	See Figure A
SC250/SC251	15	See Figure A
SC260/SC261	25	See Figure B
SC265/SC266	40	See Figure B

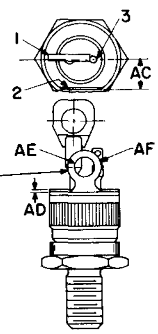
Device current rating determines the standard MT1 terminal supplied on all hermetic triac package variations. Devices rated less than 25 Amperes RMS will be supplied with a pierced terminal as shown in Figure A. Devices rated 25 Amperes RMS and above will be supplied with a flag terminal as shown in Figure B (1).



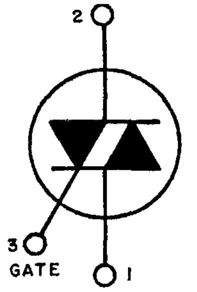
STUD
TYPE 1



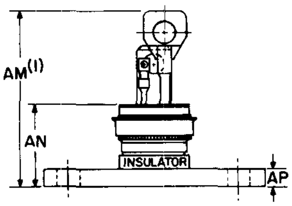
ISOLATED STUD
TYPE 2



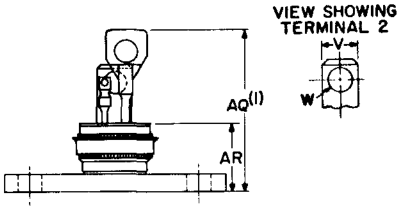
ISOLATED STUD
TYPE 3



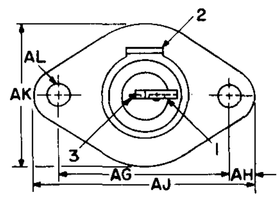
TERMINAL ARRANGEMENT



ISOLATED TO-3 FLANGE
TYPE 4



NON-ISOLATED TO-3 FLANGE
TYPE 5



SYMBOL	INCHES		METRIC MM	
	MIN.	MAX.	MIN.	MAX.
A	.501	.505	12.73	12.82
B	.467	.475	11.87	12.06
C	.177 REF.		4.50 REF.	
D	.260	.301	6.60	7.65
E	.083	.097	2.11	2.46
F	.340	.376	8.64	9.55
G	—	.782	—	19.86
H	.081	.089	2.06	2.26
J	.060	.069	1.53	1.75
K	—	1.064	—	27.02
L	.284	.302	7.22	7.67
M	.146	.160	3.71	4.06
N(1)	—	1.150	—	29.21
P	—	.475	—	12.06
Q	.432	.442	10.98	11.22
R(6)	1/4-28, UNF2A		—	—
S	.086	.098	2.19	2.48
T	.552	.562	14.03	14.27
V	.240	.260	6.10	6.60
W	.145	.160	3.68	4.06

SYMBOL	INCHES		METRIC MM	
	MIN.	MAX.	MIN.	MAX.
X	—	.975	—	24.76
Y	.580	.610	14.74	15.49
Z(1)	—	1.260	—	32.00
AB		.585	—	14.85
AC	.220 REF.		5.59 REF.	
AD	.012	.023	.31	.58
AE	.140	.150	3.56	3.81
AF	.229	.251	5.82	6.37
AG	1.182	1.192	30.03	30.27
AH	.160	—	4.07	—
AJ	1.507	1.567	38.28	39.80
AK	.975	1.025	24.77	26.03
AL	.150	.161	3.81	4.08
AM(1)	—	1.300	—	33.02
AN	—	.630	—	16.00
AP	.119	.131	3.03	3.32
AQ(1)	—	1.195	—	30.35
AR	—	.515	—	13.08

NOTES:

1. Outline drawings and table dimensions are given for devices with the MT1 flag terminal (Fig. B). To calculate the height of devices with the MT1 pierced terminal (Fig. A), subtract 0.282 inches (7.100 mm) from table data.
2. Case temperature is measured for press-fit devices at the center of the base; for stud types 1, 2 and 3 at the center of any hex flat; for TO-3 outline mounting flange types 4 and 5 at the center of the bottom of the flange.
3. One external tooth lock washer and one nut (both steel, cadmium plated) are supplied with each stud and isolated stud unit.
4. Insulation hardware for stud devices consisting of solder terminal, mica washers and one nylon bushing are available at extra cost upon request.
5. Other standard package variations are available upon request.
6. Metric stud 8mm x 1.25 (.315 in. x .049 in.) is available upon request.

WARNING

Isolated products described in this specification sheet should be handled with care. The ceramic portion of these thyristors contains BERYLLIUM OXIDE as a major ingredient.

Do not crush, grind, or abrade these portions of the thyristors because the dust resulting from such action may be hazardous if inhaled.

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

HERMETIC TRIAC PART NUMBER DESIGNATION

SC2 40 B 2

- SC2 — HERMETIC TRIAC WITH POWER-GLAS™ CHIP
- 40 — CURRENT RATING & PACKAGE STYLE
- B — VOLTAGE RATINGS
- 2 — STUD/TO-3 FLANGE PACKAGE VARIATIONS

CURRENT RATING & PACKAGE STYLE

40 = 6 A RMS Stud/TO-3 Flange
41 = 6 A RMS Press-Fit
45 = 10 A RMS Stud/TO-3 Flange
46 = 10 A RMS Press-Fit
50 = 15 A RMS Stud/TO-3 Flange
51 = 15 A RMS Press-Fit
60 = 25 A RMS Stud/TO-3 Flange
61 = 25 A RMS Press-Fit
65 = 40 A RMS Stud/TO-3 Flange
66 = 40 A RMS Press-Fit

VOLTAGE RATINGS

B = 200 Volts
D = 400 Volts
E = 500 Volts
M = 600 Volts

STUD/TO-3 FLANGE PACKAGE VARIATIONS

None = Non-Isolated Stud Mount
2 = Isolated Stud Mount with Press on MT2 Terminal
3 = Isolated Stud Mount with Solder Ring MT2 Terminal
4 = Isolated on TO-3 Outline Mounting Flange
5 = Non-Isolated on TO-3 Outline Mounting Flange
6 – 9 = Other Standard Variations

MOUNTING CONSIDERATIONS

Installation of Press-Fit Device in Heat Sink

When press fitting a Triac into a heatsink, the following specifications and recommendations apply:

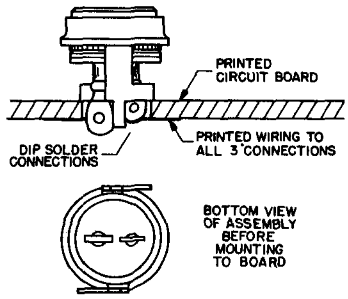
1. Heatsink materials may be copper, aluminum, or steel. For maximum heat transfer and minimum corrosion problems, copper is recommended. The heatsink thickness, or amount of heatsink wall, in contact with the Triac should be 1/8 inch.
2. The hole diameter into which the Triac is pressed must be 0.4975 ± .001 inch. A slight chamfer on the hole should be used. This hole may be punched in a flat plate and reamed, or extruded and sized in sheet metal.
3. The entire knurled section of the Triac should be in contact with the heatsink to insure maximum heat transfer. The Triac must not be inserted into a heatsink deeper than the knurl height.
4. The Triac insertion force must not exceed 800 pounds. If the insertion force approaches this value before complete insertion, either the Triac is misaligned with the hole or the Triac-to-hole interference is excessive. The insertion force must be uniformly applied to the top face (terminal end) of the Triac within an annular ring which has an inside diameter of not less than 0.370 inch and not larger than 0.390 inch; the outside diameter of the insertion force must not be less than 0.500 inch.
5. The thermal resistance between the Triac case and a copper heatsink will not exceed 0.5°C/W, if the Triac is inserted in the manner described.

Soldering of Press-Fit Package to Heat Sink

The press-fit package may be soldered directly to a heatsink using 60/40 (Pb-Sn) solder at a temperature of about 200°C.

Attachment of Press-Fit Device to Printed Circuit Board

For certain light load applications, the Triac can be inverted and, using a special brass bracket (A7149451), dip-soldered into a printed circuit board. The feet on the bracket act both as a mechanical support and Main Terminal 2 (case) electrical connection. For Triacs preassembled into the bracket, add –X24 to the type number, for example, SC251BX24.



Attachment of the Stud & Isolated Stud Device To a Heat Sink

These devices require certain precautions in order to insure good thermal transfer. The chassis hole must be drilled and deburred, and should be between .005 and .015 inches larger than the stud outside diameter. The use of a Torque wrench is highly recommended and must be used within the torque limits indicated on page 2. A good grade of silicone grease will minimize contact thermal resistance.

OTHER TRIAC, TRIGGER AND APPLICATION INFORMATION AVAILABLE FROM GENERAL ELECTRIC

PUBLICATION NUMBER	TRIAC SPECIFICATION SHEETS
175.13	SC136 (Power Tab Triac)
175.35	Power Pac Triacs
	TRIGGER SPECIFICATION SHEETS
175.30	ST2 (Diac)
175.32	ST4 (Asymmetrical AC Trigger)
65.32	2N4992 (Silicon Bilateral Switch)
	RELIABILITY REPORT
95.29	Glassivated Triac Reliability Report

PUBLICATION NUMBER	APPLICATION NOTES
200.32	A Variety of Mounting Techniques for Press Fit Devices
200.35	Using the Triac for Control of AC Power
200.51	Better Room Conditioning Via Solid State Controls
200.53	Solid State Incandescent Lighting Controls
201.12	500 Watt AC Line Voltage and Power
201.19	RF Filter Consideration for Triac & SCR Circuits
201.24	Thyristor Selection for Incandescent Lamp Loads