

## Bi-Directional Triode Thyristor

### Power Pac™ Triacs

6A to 15A RMS Up to 600 Volts  
Isolated and Non-Isolated Tab

#### ISOLATED TAB

SC140

SC142

SC147

#### NON- ISOLATED TAB

SC141

SC143

SC146

SC149

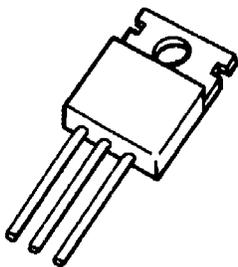
SC151

#### FEATURES:

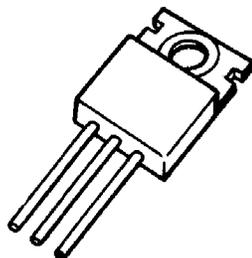
- POWER-GLAST™ passivated silicon chip for maximum reliability.
- Very low off-state (leakage) current at room and elevated temperatures.
- Inherent immunity from non-repetitive transient voltage damage (max. critical rate-of-rise of on-state current subsequent to voltage breakover triggering,  $di/dt = 10 \text{ A}/\mu\text{sec.}$ ).
- Low on-state voltage at high current levels.
- Excellent surge current capability.
- 1600 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

#### POWER PAC PACKAGE

- Meets JEDEC TO-220AB specifications.
- Round leads – greatly simplifies assembly.
- Six standard lead forming configurations available from factory (including TO-66 compatibility.)

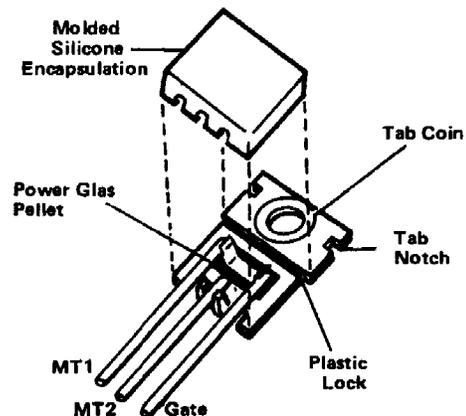


ISOLATED (RED)



NON-ISOLATED (BLUE)

- Rugged, industry-proven packaging.



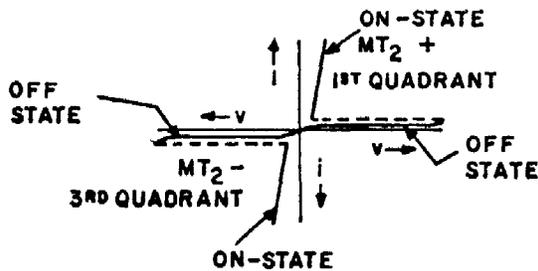
PICTORIAL ASSEMBLY

<b>ISOLATED TAB</b>	<b>NON-ISOLATED TAB</b>
SC140, 2, 7	SC141, 3, 6, 9, SC151

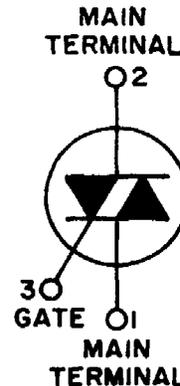
**MAXIMUM ALLOWABLE RATINGS**

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 <sup>(3)</sup>	
		B	D	E	M	50 Hz	60 Hz	(RMS AMPERE) <sup>2</sup> SECONDS 1.0 MILLISECOND	(RMS AMPERE) <sup>2</sup> SECONDS 8.3 MILLISECONDS
		VOLTS	VOLTS	VOLTS	VOLTS	AMPERES	AMPERES		
<b>ISOLATED TAB</b>									
SC140	6.5	200	400	500	600	74	80	18	26.5
SC142	8	200	400	500	600	104	110	20	50
SC147	10	200	400	500	600	104	110	20	50
<b>NON-ISOLATED TAB</b>									
SC141	6	200	400	500	600	74	80	18	26.5
SC143	8	200	400	500	600	110	120	20	60
SC146	10	200	400	500	600	110	120	20	60
SC149	12	200	400	500	600	110	120	20	60
SC151	15	200	400	500	600	110	120	20	60

Peak Gate Power Dissipation,  $P_{GM}$  (4) ..... 10 Watts for 10 Microseconds (See Chart 4)  
Average Gate Power Dissipation,  $P_{G(AV)}$  ..... 0.5 Watts  
Peak Gate Current,  $I_{GM}$  (4) ..... See Chart 4  
Peak Gate Voltage,  $V_{GM}$  (4) ..... See Chart 4  
Storage Temperature,  $T_{stg}$  ..... -40°C to +125°C  
Operating Temperature,  $T_J$  ..... -40°C to +100°C  
Surge Isolation Voltage (5) ..... 1600 Volts RMS



**TYPICAL CHARACTERISTICS  
VOLT-AMPERES**



**TERMINAL ARRANGEMENT**

**NOTES:**

1. At the case reference point (see outline drawing) temperature of 80°C maximum (except 75°C maximum for SC142 and SC149) and 360° conduction.
2. Ratings apply for zero gate voltage only. Ratings apply for either polarity of main terminal 2 voltage referenced to main terminal 1.
3. 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. Isolated tab triacs only. Rating applies from main terminals 1 and 2 and gate terminal to device mounting surface. Test voltage is 50 or 60 Hz sinusoidal wave form applied for one minute. Rating applies over the entire device operating temperature range.

ISOLATED TAB	NON-ISOLATED TAB
SC140, 2, 7	SC141, 3, 6, 9, SC151

### CHARACTERISTICS

TEST	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS	REF. NOTE	
Repetitive Peak Off-State Current	$I_{DRM}$				mA	$V_{DRM}$ = Maximum Allowable Repetitive Off-State Voltage Rating Gate Open Circuited	1	
		—	—	0.1		$T_C = +25^\circ C$		
		—	—	0.5		$T_C = +100^\circ C$		
Peak On-State Voltage	$V_{TM}$				Volts	$T_C = +25^\circ C$ , $I_{TM} = 1$ msec., Wide Pulse, Duty Cycle $\leq 2\%$	1	
		SC140	—	—		1.85		$I_{TM} = 9.2$ A Peak
		SC141	—	—		1.83		$I_{TM} = 8.5$ A Peak
		SC142	—	—		1.75		$I_{TM} = 11.5$ A Peak
		SC143	—	—		1.55		$I_{TM} = 11.5$ A Peak
		SC146	—	—		1.65		$I_{TM} = 14$ A Peak
		SC147	—	—		1.50		$I_{TM} = 14$ A Peak
		SC149	—	—		1.65		$I_{TM} = 17$ A Peak
		SC151	—	—		1.52		$I_{TM} = 21$ A Peak
Critical Rate-of-Rise of Off-State Voltage (Higher values may cause device switching)	dv/dt				Volts/ $\mu$ sec	$T_C = +100^\circ C$ , Rated $V_{DRM}$ Gate Open Circuited Exponential Voltage Waveform	1	
		SC140, SC141	30	100				—
		SC142, SC143	50	150				—
		SC146, SC147	100	150				—
		SC149	100	200				—
SC151	100	250	—					
Critical Rate-of-Rise of Commutating Off-State Voltage (Commutating dv/dt)	dv/dt <sub>(c)</sub>	4	—	—	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, 4	
DC Gate Trigger Current	$I_{GT}$				mAdc	$V_D = 12$ Vdc TRIGGER MODE $R_L$ $T_C$ MT2+ Gate +      100 Ohms      +25°C MT2- Gate -      100 Ohms      +25°C MT2+ Gate -      50 Ohms      +25°C MT2+ Gate +      50 Ohms      -40°C MT2- Gate -      50 Ohms      -40°C MT2+ Gate -      25 Ohms      -40°C	2	
		—	—	50				
		—	—	50				
		—	—	50				
		—	—	80				
		—	—	80				
		—	—	80				
DC Gate Trigger Voltage	$V_{GT}$				Vdc	$V_D = 12$ Vdc TRIGGER MODE $R_L$ $T_C$ MT2+ Gate +      100 Ohms      +25°C MT2- Gate -      100 Ohms      +25°C MT2+ Gate -      50 Ohms      +25°C MT2+ Gate +      50 Ohms      -40°C MT2- Gate -      50 Ohms      -40°C MT2+ Gate -      25 Ohms      -40°C	2	
		—	—	2.5				
		—	—	2.5				
		—	—	2.5				
		—	—	3.5				
		—	—	3.5				
		—	—	3.5				
DC Gate Non-Trigger Voltage	$V_{GD}$	0.2	—	—	Vdc	TRIGGER MODE $R_L$ $T_C$ MT2+ Gate +      1000 Ohms      +100°C MT2- Gate -      1000 Ohms      +100°C MT2+ Gate -      1000 Ohms      +100°C MT2- Gate +      1000 Ohms      +100°C	2, 3	