DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

SC136 SERIES

BIDIRECTIONAL TRIODE THYRISTORS

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Repetitive peak off-stage voltage (T_C = 110°C) SC136B SC136C SC136D SC136E SC136M	V_{DRM}	 200 300 400 500 600	Volts
RMS on-state current (T_C = 65°C)	$I_{T(RMS)}$	3.0	Amps
Peak non-repetitive surge current (One Cycle, 60Hz)	I_{TSM}	30	Amps
Circuit fusing considerations (t = 1ms to 8.3ms)	I^2t	 3.6	A^2s
Circuit rate of rise of on-state current	di/dt	5.0	A/µs
Peak gate power	P_{GM}	5.0	Watts
Average gate power	$P_{G(AV)}$	0.1	Watts
Peak gate voltage	V_{GM}	5.0	Volts
Operating junction temperature range	T_J	-40 to +110	°C
Storage temperature range	T_{stg}	-40 to +150	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal resistance, junction to case	$R_{\Theta JC}$	10	°C/W
Thermal resistance, junction to ambient	$R_{\Theta JA}$	75	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C and either polarity of MT2 to MT1 voltage, unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak off state current (Rated V_{DRM} or V_{RRM}, gate open) T_C = 25°C T_C = 110°C	I_{DRM}, I_{RRM}	 - -	 - -	 10 500	µA
Peak on-state voltage (I_{TM} = 5A peak, pulse width = 1 ms, duty cycle ≤ 2%)	V_{TM}	-	-	1.8	Volts
DC gate trigger current (continuous dc) (V_D = 6V, R_L = 50Ω) MT2(+), G(+); MT2(-), G(-); MT2(+), G(-), T_C = 25°C (V_D = 12V, R_L = 50Ω) MT2(+), G(+); MT2(-), G(-); MT2(+), G(-),T_C = -40°C	I_{GT}	 - -	 - -	 25 50	mA
DC gate trigger voltage (continuous dc) (V_D = 12V, R_L = 50Ω) MT2(+), G(+); MT2(-), G(-); MT2(+), G(-), T_C = 25°C MT2(+), G(+); MT2(-), G(-); MT2(+), G(-), T_C = -40°C (V_D = rated V_{DRM}, all mode, T_C = 110°C)	V_{GT}	 - - 0.2	 - - -	 2.0 3.0 -	Volts

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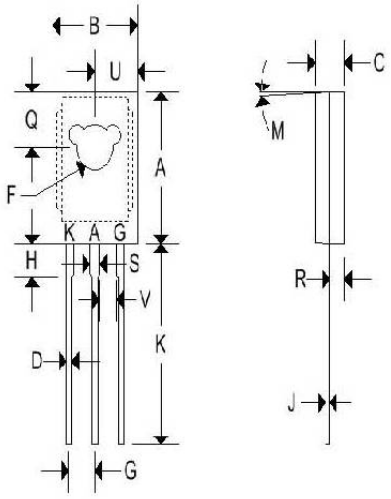
Holding current (V_D = 24V, R_L = 200Ω, gate open) T_C = 25°C T_C = -40°C	I_H	 - -	 - -	 50 100	mA
Latching current (V_D = 24V) Trigger source: 5V, 50Ω) MT2(+), G(+); MT2(-), G(-), T_C = 25°C MT2(+), G(-), T_C = 25°C Trigger source: 10V, 50Ω) MT2(+), G(+); MT2(-), G(-), T_C = -40°C MT2(+), G(-), T_C = -40°C	I_L	 - - - -	 - - - -	 50 100 100 200	mA
Critical rate of rise of off-state voltage (V_D = Rated V_{DRM}, gate open, T_C = 110°C)	dv/dt	 -	 15	 -	V/µs
Critical rate of rise of commutating voltage (V_D = Rated V_{DRM}, $I_{T(RMS)}$ = 3A, di/dt = 1.6A/ms,gate open, T_C = 65°C)	dv/dt	 -	 5	 -	V/µs

Note 1: Torque rating applies with use of compression washer. Mounting torque in excess of 6 in. lb. does not appreciably lower case-to-sink thermal resistance. Node lead and heatsink contact pad are common. Soldering temperatures shall not exceed +200°C.

MECHANICAL CHARACTERISTICS

Case	TO-126
Marking	Alpha-numeric
Polarity	Cathode is stud



	TO-126			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.425	0.435	10.80	11.050
B	0.295	0.305	7.490	7.750
C	0.095	0.105	2.410	2.670
D	0.020	0.026	0.510	0.660
F	0.115	0.125	2.920	3.180
G	0.091	0.097	2.310	2.460
H	0.050	0.095	1.270	2.410
J	0.015	0.025	0.380	0.640
K	0.595	0.655	15.110	16.640
M	3° TYP		3° TYP	
Q	0.148	0.158	3.760	4.010
R	0.045	0.055	1.140	1.400
S	0.025	0.035	0.640	0.890
U	0.145	0.155	3.680	3.940
V	0.040	-	1.020	-

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FIGURE 1 – RMS CURRENT DERATING

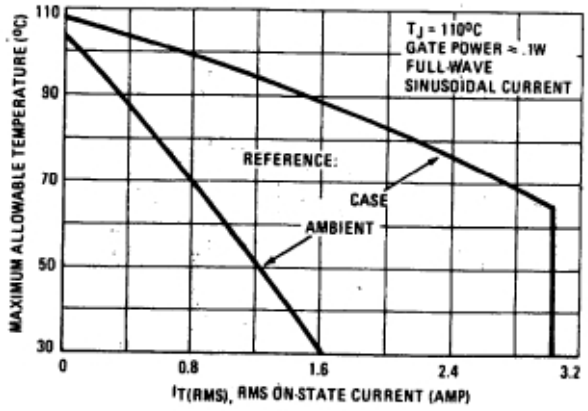

FIGURE 2 – MAXIMUM POWER DISSIPATION