DIGITRON™ Semiconductors

High-reliability discrete products and engineering services since 1977

SC260, SC26()3, SC261 (MAC261)

THYRISTORS

FEATURES:

- Available as “HR” (high reliability) screened per MIL-PRF-19500, JANTX level. Add “HR” suffix to base part number
- Available Non-RoHS (standard) or RoHS compliant (add PBF suffix)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Repetitive Peak Off-Stage Voltage (T_C = -40°C to +115°C) SC260B, SC260B3, SC261B (MAC261B) SC260D, SC260D3, SC261D (MAC261D) SC260E, SC260E3, SC261E (MAC261E) SC620M, SC260M3, SC261M (MAC261M)	V_{DRM}	 200 400 500 600	Volts
RMS On-State Current	$I_{T(RMS)}$	25	Amps
Peak Non-Repetitive Surge Current (One Cycle, 60Hz)	I_{TSM}	250	Amps
Circuit Fusing Considerations t = 1ms t = 8.3ms	I^2t	 150 260	A^2s
Peak Gate Power (Pulse Width = 10µs)	P_{GM}	10	Watts
Average Gate Power	$P_{G(AV)}$	0.5	Watt
Peak Gate Power	I_{GM}	2	Amps
Operating Junction Temperature Range	T_J	-40 to +115	°C
Storage Temperature Range	T_{stg}	-40 to +125	°C
Stud Torque	-	30	in. lb.

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction to Case SC260, SC261 SC260()3	$R_{\Theta JC}$	 1.8 1.95	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 250°C unless otherwise noted. Values apply for either polarity of Main Terminal 2. Characteristics referenced to Main Terminal 1)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (Rated V_{DRM} or V_{RRM}, gate open) T_C = 25°C T_C = +115°C	I_{DRM}, I_{RRM}	 - -	 - -	 10 1	 µA mA
Peak On-State Voltage (I_{TM} = 35 A Peak, Pulse Width = 1 ms, Duty Cycle ≤ 2%)	V_{TM}	-	-	1.58	Volts
Critical Rate of Rise of Off-State Voltage (Rated V_{DRM}, Gate Open-Circuited, Exponential Waveform) T_C = +115°C	dv/dt	50	-	-	V/µs
Critical Rate-of-Rise of Commutating Off-State Voltage ($I_{T(RMS)}$ = Rated RMS On-State Current, V_{DRM} = Rated Peak Off-State Voltage, Gate Open-Circuited, Commutating di/dt = 13.5 A/ms, T_C = +80°C)	dv/dt(c)	5	-	-	V/µs

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DC Gate Trigger Current (Continuous dc)					
(V_D = 12 Vdc)	I_{GT}				mAdc
MT2(+), G(+); MT2(-), G(-); R_L = 100 Ohms		-	-	50	
MT2(+), G(-); R_L = 50 Ohms		-	-	50	
DC Gate Trigger Current (Continuous dc)					
(V_D = 12 Vdc, T_C = -40°C)	I_{GT}				mAdc
MT2(+), G(+); MT2(-), G(-); R_L = 50 Ohms		-	-	80	
MT2(+), G(-); R_L = 25 Ohms		-	-	80	
DC Gate Trigger Voltage (Continuous dc) (V_D = 12 Vdc)	V_{GT}			2.5	Vdc
MT2(+), G(+); MT2(-), G(-); R_L = 100 Ohms		—	—	2.5	
MT2(+), G(-); R_L = 50 Ohms		—	—		
DC Gate Trigger Voltage (Continuous dc)	V_{GT}				Vdc
(V_D = 12 Vdc, T_C = -40°C)					
MT2(+), G(+); MT2(-), G(-); R_L = 50 Ohms		-	-	3.5	
MT2(+), G(-); R_L = 25 Ohms		-	-	3.5	
DC Gate Non-Trigger Voltage	V_{GD}				Vdc
(V_D = Rated V_{DRM}, R_L = 1k Ohms, T_C = 115°C), all trigger modes		0.25	-	-	
Holding Current	I_H				mAdc
(V_D = 24 Vdc, Peak Initiating Current = 0.5 A,					
Pulse Width = 0.1 to 10 ms, Gate Trigger Source = 7 V, 20 Ohms					
T_C = +25°C		-	-	75	
T_C = -40°C		-	-	100	
Latching Current	I_L				mAdc
(V_D = 24 Vdc, Gate Trigger Source = 15 V, 100 Ohms,					
Pulse Width = 50 µs, 5 µs Maximum Rise and Fall Times)					
MT2(+), G(+); MT2(-), G(-), T_C = 25°C		-	-	100	
MT2(+), G(-), T_C = 25°C		-	-	200	
MT2(+), G(+); MT2(-), G(-), T_C = -40°C		-	-	200	
MT2(+), G(-), T_C = -40°C		-	-	400	

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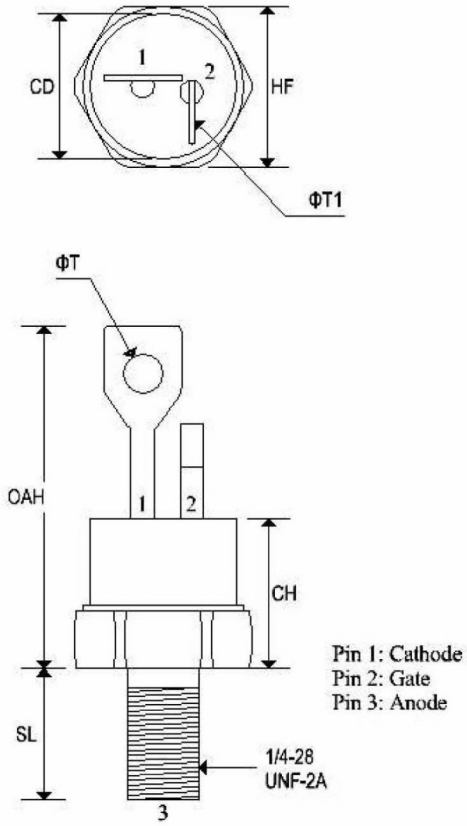
THYRISTORS

MECHANICAL CHARACTERISTICS

Case	TO-48 (SC260 Series)
Marking	Alpha-numeric
Polarity	Cathode is stud



	TO-48			
	Inches		Millimeters	
	Min	Max	Min	Max
CD	-	0.543	-	13.793
CH	-	0.550	-	13.970
HF	0.544	0.563	13.817	14.301
OAH	-	1.193	-	30.303
SL	0.422	0.453	10.718	11.507
ΦT	0.125	0.165	3.175	4.191
ΦT_1	0.060	0.075	1.524	1.905

Note: Contour and angular orientation of terminals 1 and 2 with respect to hex portion and to each other are optional.

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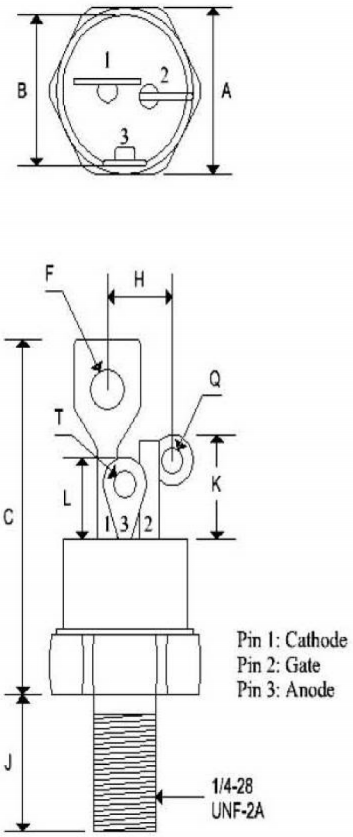
SC260, SC26()3, SC261 (MAC261)

THYRISTORS

Case	TO-48 ISO (SC260()3 Series)
Marking	Alpha-numeric
Polarity	Cathode is stud



	TO-48 ISO			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.551	0.559	14.000	14.200
B	0.501	0.505	12.730	12.830
C	-	1.280	-	32.510
F	-	0.160	-	4.060
H	-	0.265	-	6.730
J	0.420	0.455	10.670	11.560
K	0.300	0.350	7.620	8.890
L	0.255	0.275	6.480	6.990
Q	0.055	0.085	1.400	2.160
T	0.135	0.150	3.430	3.810

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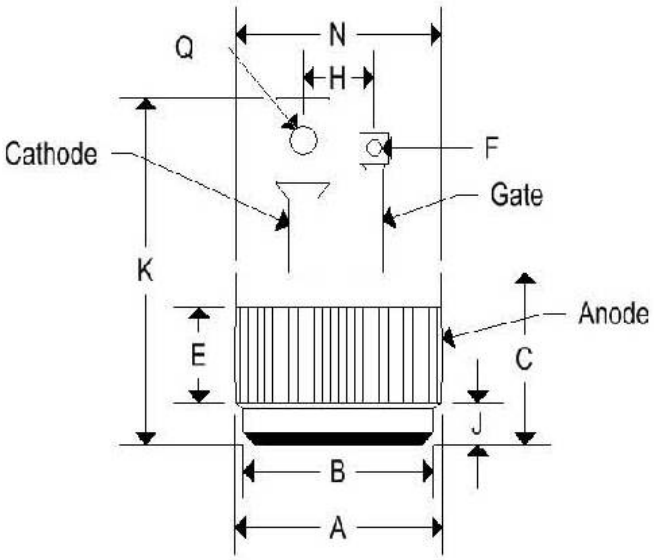
SC260, SC26()3, SC261 (MAC261)

THYRISTORS

Case	Digi PF1 (SC261(MAC261) Series)
Marking	Alpha-numeric



	DIGI PF1			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.501	0.505	12.730	12.830
F	-	0.160	-	4.060
G	0.085	0.095	2.160	2.410
H	0.060	0.070	1.520	1.780
J	0.300	0.350	7.620	8.890
K	-	1.050	-	26.670
L	-	0.670	-	17.020
Q	0.055	0.085	1.400	2.160

FIGURE 1 – CURRENT DERATING

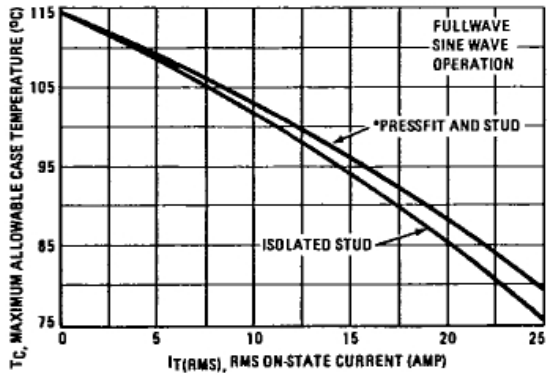


FIGURE 2 – MAXIMUM ON-STATE POWER DISSIPATION