DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

SC245, SC245()3, SC246 (MAC245) SERIES

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
Peak repetitive off-state voltage[1] (T_C = -40 to +100°C) SC245B, SC246B, S245B3, MAC245B SC245D, SC246D, S245D3, MAC245D SC245E, SC246E, S245E3, MAC245M SC245M, SC246M, S245M3, MAC245N	V_{DRM}	 200 400 500 600	Volts
Forward on-state current RMS	$I_{T(RMS)}$	10	Amps
Peak forward surge current (one cycle, sine wave, 60Hz)	I_{TSM}	 100	Amps
Circuit fusing considerations (t = 1ms) (t = 8.3ms)	I^2t	 20 41.5	A^2s
Peak gate power	P_{GM}	10	Watts
Average gate power	$P_{G(AV)}$	0.5	Watts
Operating junction temperature range	T_J	-40 to +100	°C
Storage temperature range	T_{stg}	-40 to +125	°C
Stud torque		30	In. lb.

Note 1: Ratings apply for open gate conditions. Thyristor devices shall not be tested with a constant current source for blocking capability such that the voltage applied exceeds the rated blocking voltage.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Maximum	Unit
Thermal resistance, junction to case	$R_{\Theta JC}$	2.0	°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 [2] (V_D = rated V_{DRM}, gate open) T_C = 25°C T_C = 115°C	I_{DRM}	 - -	 - -	 0.1 0.5	mA
Peak on-state voltage[2] (I_{TM} = 14A peak, pulse width = 1ms, duty cycle ≤ 2%)	V_T	-	-	1.65	Volts
Critical rate of rise of off-state voltage[2] (Rated V_{DRM}, gate open, exponential waveform, T_C = 100°C)	dv/dt	-	50	-	V/µs
Critical rate of rise of commutating off-state voltage [2] ($I_{T(RMS)}$ = Rated RMS on state current, V_D = V_{DRM}, gate open, commutating di/dt = 5.4A/ms, T_C = 78.5°C)	dv/dt(c)	4	-	-	V/µs

Gate trigger current [3]					
(V_D = 12V), trigger mode					
MT2(+), G(+),R_L = 100Ω	I_{GT}	-	-	50	mA
MT2(-), G(-), R_L = 100Ω		-	-	50	
MT2(+), G(-), R_L = 50Ω		-	-	50	
MT2(+), G(+), R_L = 50Ω, T_C = -40°C		-	-	80	
MT2(-), G(-), R_L = 50Ω, T_C = -40°C		-	-	80	
MT2(+), G(-), R_L = 25Ω, T_C = -40°C		-	-	80	
Gate trigger voltage [3]					Volts
(V_D = 12V), trigger mode	V_{GT}				
MT2(+), G(+),R_L = 100Ω		-	-	2.5	
MT2(-), G(-), R_L = 100Ω		-	-	2.5	
MT2(+), G(-), R_L = 50Ω		-	-	2.5	
MT2(+), G(+), R_L = 50Ω, T_C = -40°C		-	-	3.5	
MT2(-), G(-), R_L = 50Ω, T_C = -40°C		-	-	3.5	
MT2(+), G(-), R_L = 25Ω, T_C = -40°C		-	-	3.5	
MT2(+), G(+), R_L = 1000Ω, T_C = 100°C [4]		0.2	-	-	
MT2(-), G(-), R_L = 1000Ω, T_C = 100°C [4]		0.2	-	-	
MT2(+), G(-), R_L = 1000Ω, T_C = 100°C [4]		0.2	-	-	
MT2(-), G(+), R_L = 1000Ω, T_C = 100°C [4]		0.2	-	-	
Holding current [2]	I_H				mA
(main terminal voltage = 24V, peak initiating current = 0.5A, pulse width = 0.1 to 10ms, gate trigger source = 7V, 20Ω)					
T_C = 25°C		-	-	50	
T_C = -40°C		-	-	100	
Latching current [2]	I_L				mA
(main terminal voltage = 24V, gate trigger source = 15V, 100Ω, pulse width = 50µs, rise and fall times maximum = 5µs)					
MT2(+), G(+)		-	-	100	
MT2(-), G(-)		-	-	100	
MT2(+), G(-)		-	-	200	
MT2(+), G(+),T_C = -40°C		-	-	200	
MT2(-), G(-), T_C = -40°C		-	-	200	
MT2(+), G(-), T_C = -40°C		-	-	400	

Note 2: Values apply for either polarity of Main Terminal 2 characteristics referenced to Main Terminal 1.
Note 3: Main Terminal 1 is the reference terminal.
Note 4: With V_D to rated off-state voltage.

DIGITRON™ Semiconductors

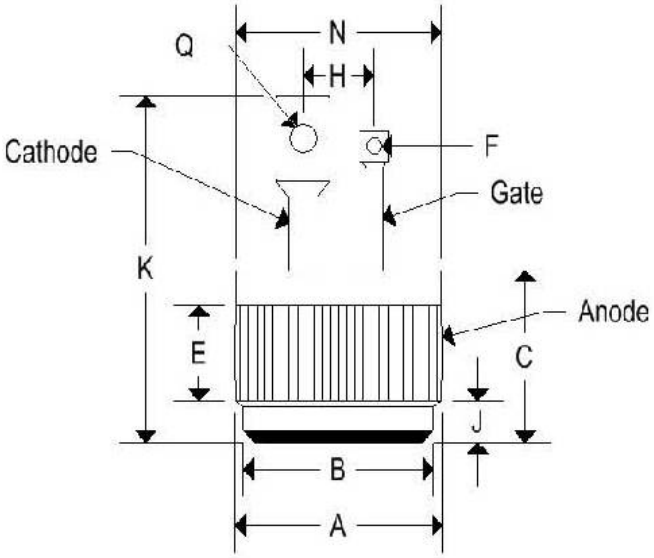
High-reliability discrete products and engineering services since 1977

SC245, SC245()3, SC246 (MAC245) SERIES

THYRISTORS

MECHANICAL CHARACTERISTICS

Case	Digi PF1 (SC246 Series)
Marking	Body painted, alpha-numeric
Polarity	Cathode is stud



	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

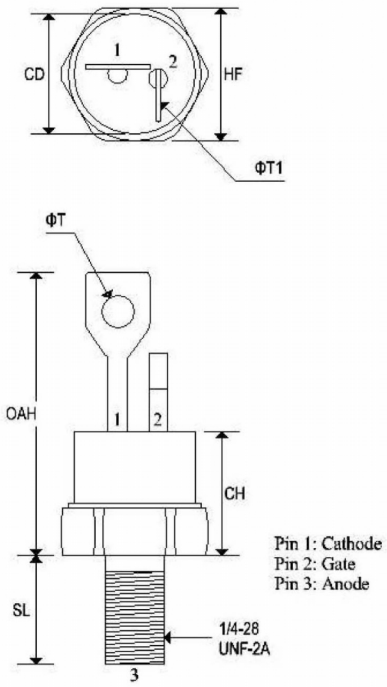
DIGITRON™ Semiconductors

High-reliability discrete products and engineering services since 1977

SC245, SC245()3, SC246 (MAC245) SERIES

THYRISTORS

Case	TO-48 (SC245 & MAC245 Series)
Marking	Body painted, 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.

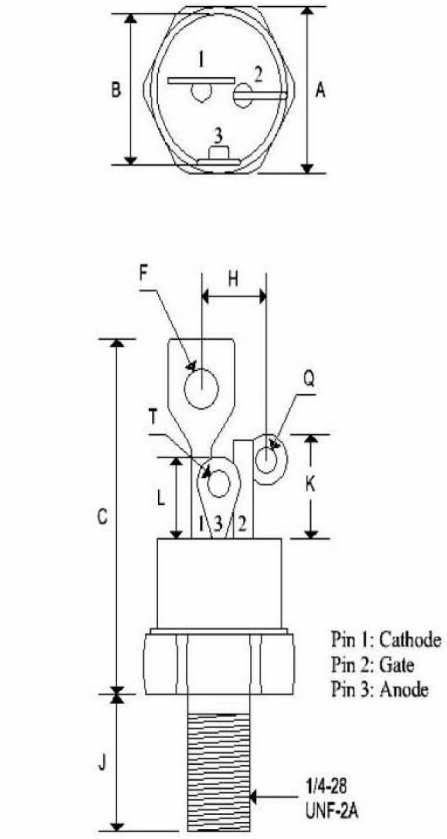
DIGITRON™ Semiconductors

High-reliability discrete products and engineering services since 1977

SC245, SC245()3, SC246 (MAC245) SERIES

THYRISTORS

Case	TO-48 ISO (SC245()3 Series)
Marking	Body painted, 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