

DIGITRON SEMICONDUCTORS

SC141 SERIES

BIDIRECTIONAL TRIODE THYRISTORS

Available Non-RoHS (standard) or RoHS compliant (add PBF suffix).

Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Repetitive peak off-stage voltage, gate open SC141A SC141B SC141D SC141E SC141M SC141N	V_{DRM}	100 200 400 500 600 700	Volts
RMS on-state current ($T_C = 80^\circ\text{C}$)	$I_{T(RMS)}$	6	Amps
Peak non-repetitive surge current (One Cycle, 60Hz)	I_{TSM}	80	Amps
Circuit fusing considerations ($t = 8.3\text{ms}$)	I^2t	26.5	A^2s
Peak gate power (pulse width = $10\mu\text{s}$)	P_{GM}	10	Watts
Average gate power ($T_C = 80^\circ\text{C}$, $t = 8.3\text{ms}$)	$P_{G(AV)}$	0.5	Watts
Peak gate current (pulse width = $10\mu\text{s}$)	I_{GM}	3.5	Amps
Peak gate voltage	V_{GM}	10	Volts
Operating junction temperature range	T_J	-40 to +100	$^\circ\text{C}$
Storage temperature range	T_{stg}	-40 to +125	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal resistance, junction to case	$R_{\theta JC}$	2.2	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted, either polarity of MT2 to MT1, unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak off state current ($V_D = V_{DRM}$, gate open) $T_C = 25^\circ\text{C}$ $T_C = 110^\circ\text{C}$	I_{DRM}	- -	- -	0.1 0.5	mA
Peak on-state voltage ($I_{TM} = 8.5\text{A}$ peak, pulse width $\leq 1\text{ms}$, duty cycle $\leq 2\%$)	V_{TM}	-	-	1.83	Volts
Critical rate of rise of off-state voltage ($V_D = \text{Rated } V_{DRM}$, gate open, exponential waveform, $T_C = 100^\circ\text{C}$)	dv/dt	-	50	-	$\text{V}/\mu\text{s}$
Critical rate of rise of commutating voltage ($I_{T(RMS)} = \text{Rated } I_{T(RMS)}$, $V_D = \text{Rated } V_{DRM}$, commutating $di/dt = 3.2\text{A/ms}$, gate open, $T_C = 80^\circ\text{C}$)	$dv/dt(c)$	4	-	-	$\text{V}/\mu\text{s}$
DC gate trigger current (continuous dc) ($V_D = 12\text{V}$, trigger mode) MT2(+), G(+); MT2(-), G(-); $R_L = 100\Omega$ MT2(+), G(-); $R_L = 50\Omega$ MT2(+), G(+); MT2(-), G(-); $R_L = 50\Omega$, $T_C = -40^\circ\text{C}$ MT2(+), G(-); $R_L = 25\Omega$, $T_C = -40^\circ\text{C}$	I_{GT}	- - - -	- - - -	50 50 80 80	mA
DC gate trigger voltage (continuous dc) ($V_D = 12\text{V}$, trigger mode) MT2(+), G(+); MT2(-), G(-); $R_L = 100\Omega$ MT2(+), G(-); $R_L = 50\Omega$ MT2(+), G(+); MT2(-), G(-); $R_L = 50\Omega$, $T_C = -40^\circ\text{C}$ MT2(+), G(-); $R_L = 25\Omega$, $T_C = -40^\circ\text{C}$ ($V_D = \text{Rated } V_{DRM}$, $R_L = 1000\Omega$, $T_C = 100^\circ\text{C}$) all polarities	V_{GT}	- - - - 0.2	- - - - -	2.5 2.5 3.5 3.5 -	Volts

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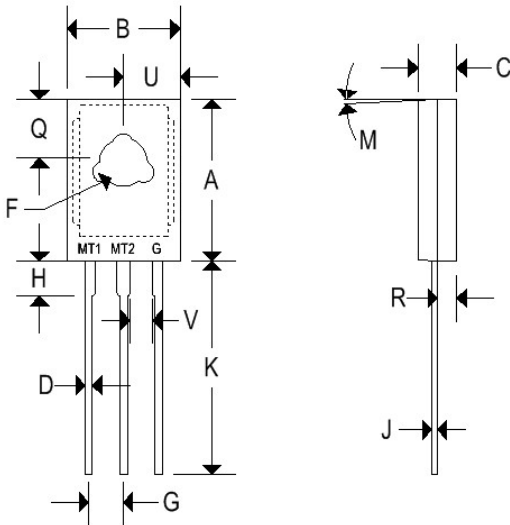
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Characteristic	Symbol	Min	Typ	Max	Unit
Holding current ($V_D = 24V$, $I_T = 0.5A$, pulse width = 1ms, duty cycle $\leq 2\%$, gate trigger source 7V, 20 Ω) $T_C = 25^\circ C$ $T_C = -40^\circ C$	I_H	-	-	50 100	mA
Latching current ($V_D = 24V$) Trigger source: 15V, 100 Ω , trigger mode) MT2(+), G(+); MT2(-), G(-) MT2(+), G(-) MT2(+), G(+); MT2(-), G(-), $T_C = -40^\circ C$ MT2(+), G(-), $T_C = -40^\circ C$	I_L	-	-	100 200 200 400	mA

MECHANICAL CHARACTERISTICS

Case	TO-220AB
Marking	Alpha-numeric
Polarity	Cathode is stud



	TO-220AB			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.575	0.620	14.600	15.750
B	0.380	0.405	9.650	10.290
C	0.160	0.190	4.060	4.820
D	0.025	0.035	0.640	0.890
F	0.142	0.147	3.610	3.730
G	0.095	0.105	2.410	2.670
H	0.110	0.155	2.790	3.930
J	0.014	0.022	0.360	0.560
K	0.500	0.562	12.700	14.270
L	0.045	0.055	1.140	1.390
N	0.190	0.210	4.830	5.330
Q	0.100	0.120	2.540	3.040
R	0.080	0.110	2.040	2.790
S	0.045	0.055	1.140	1.390
T	0.235	0.255	5.970	6.480
U	-	0.050	-	1.270
V	0.045	-	1.140	-
Z	-	0.080	-	2.030

