DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

2N6342-2N6349

SILICON BIDIRECTIONAL 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] (Gate open, T_J = -40 to 110°C, ½ sine wave 50 to 60Hz) 2N6342, 2N6346 2N6343, 2N6347 2N6344, 2N6348 2N6345, 2N6349		V_{DRM}	 200 400 600 800	Volts
RMS on-state current Full cycle sine wave 50 to 60Hz	T_C = 80°C T_C = 90°C	$I_{T(RMS)}$	8 4	Amps
Peak non-repetitive surge current (One full cycle, 60Hz, T_C = 80°C) Preceded and followed by rated current		I_{TSM}	100	Amps
Circuit fusing (t = 8.3ms)		I^2t	40	A^2s
Peak gate power (T_C = 80°C, pulse width = 2µs)		P_{GM}	20	Watts
Average gate power (T_C = 80°C, t = 8.3ms)		$P_{G(AV)}$	0.5	Watts
Peak gate current		I_{GM}	2	Amps
Peak gate voltage		V_{GM}	10	Volts
Operating temperature range		T_J	-40 to 125	°C
Storage temperature range		T_{stg}	-40 to 150	°C

Note 1: V_{DRM} for all types can be applied on a continuous basis. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal resistance, junction to case	$R_{\Theta JC}$	2.2	°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 blocking current (V_D = rated V_{DRM}, gate open)	T_J = 25°C T_J = 100°C	I_{DRM}	 -	 -	10 2	µA mA
Peak on-state voltage (I_{TM} = 11A peak, pulse width = 1 to 2ms, duty cycle ≤ 2%)		V_{TM}	-	1.3	1.55	Volts

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Gate trigger current (continuous dc)						
(V_D = 12Vdc, R_L = 100ohms)						
(Minimum gate pulse width = 2µs)						
MT2+, G+ All types			-	12	50	
MT2+, G- 2N6346-2N6349		I_{GT}	-	12	75	mA
MT2-, G- All types			-	20	50	
MT2-, G+ 2N6346-2N6349			-	35	75	
MT2+, G+:MT2-, G-, T_C = -40°C All types			-	-	100	
MT2+, G-:MT2-, G+, T_C = -40°C, 2N6346-2N6349			-	-	125	
Gate trigger voltage (continuous dc)		V_{GT}				Volts
(V_D = 12Vdc, R_L = 100ohms)						
(Minimum gate pulse width = 2µs)						
MT2+, G+ All types						
MT2+, G- 2N6346-2N6349			-	0.9	2.0	
MT2-, G- All types			-	0.9	2.5	
MT2-, G+ 2N6346-2N6349			-	1.1	2.0	
MT2+, G+:MT2-, G-, T_C = -40°C All types			-	1.4	2.5	
MT2+, G-:MT2-, G+, T_C = -40°C, 2N6346-2N6349			-	-	2.5	
(V_D = rated V_{DRM}, R_L = 10kohms, T_J = 100°C)			-	-	3.0	
MT2+, G+; MT2-, G- All types			0.2	-	-	
MT2+, G-;MT2-, G-, 2N6346-2N6349			0.2	-	-	
Holding current		I_H				mA
(V_D = 12Vdc, gate open)	T_C = 25°C		-	6	40	
(I_T = 200mA)	T_C = -40°C		-	-	75	
Turn-on time		t_{gt}				µs
(V_D = rated V_{DRM}, I_{TM} = 11A, I_{GT} = 120mA, rise time = 0.1µs, pulse width = 2µs)			-	1.5	2	
Critical rate of rise of commutation voltage		dv/dt				V/µs
(V_D = rated V_{DRM}, I_{TM} = 11A, commutating di/dt = 4.0A/ms, gate unenergized, T_C = 80°C)			-	5	-	

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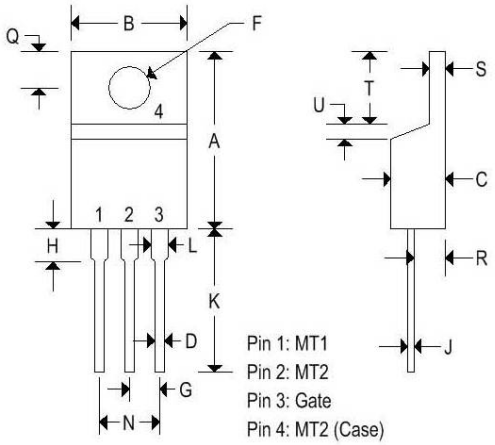
MECHANICAL CHARACTERISTICS

Case	TO-220AB
Marking	Alpha-numeric
Pin out	See below



	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

FIGURE 1 – RMS CURRENT DERATING

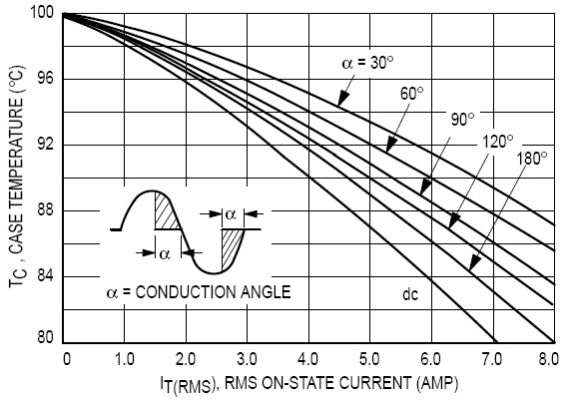


FIGURE 2 – ON-STATE POWER DISSIPATION

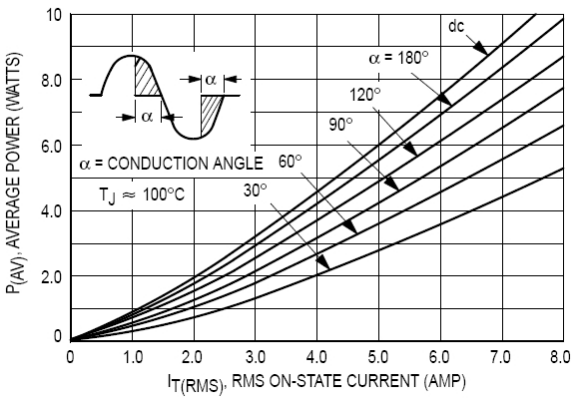


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FIGURE 3 – TYPICAL GATE TRIGGER VOLTAGE

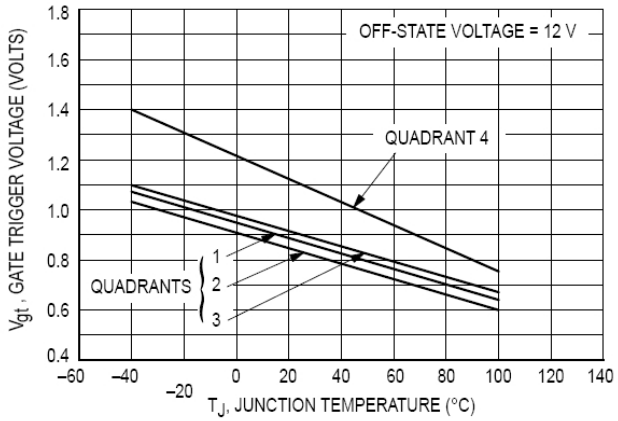

FIGURE 4 – TYPICAL GATE TRIGGER CURRENT

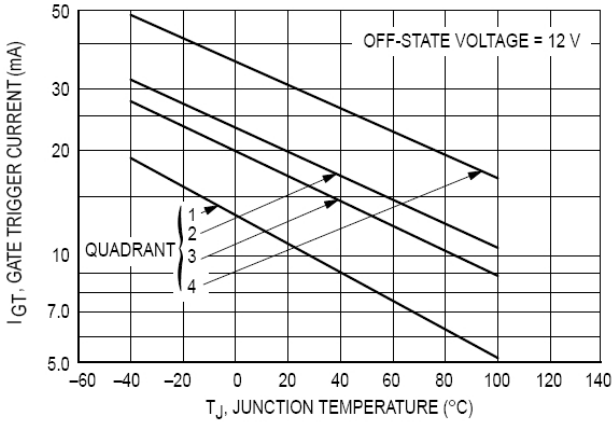

FIGURE 5 – ON-STATE CHARACTERISTICS

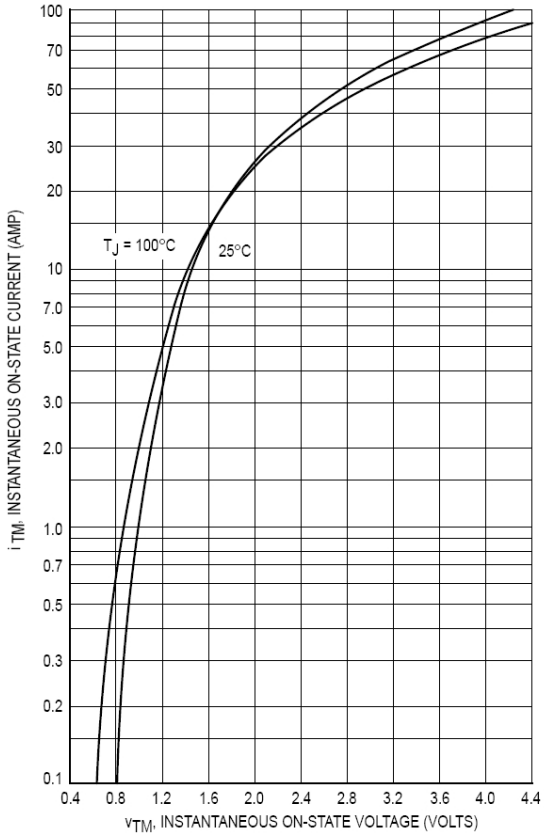

FIGURE 6 – TYPICAL HOLDING CURRENT

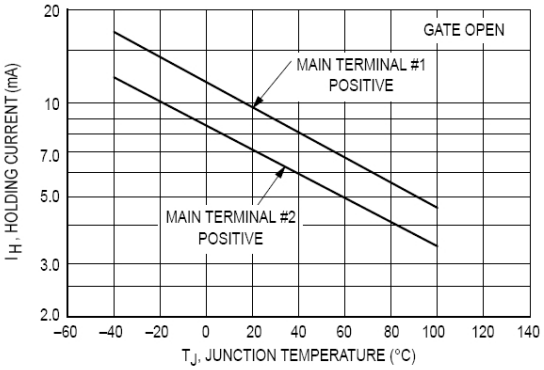

FIGURE 7 – MAXIMUM NON-REPETITIVE SURGE CURRENT

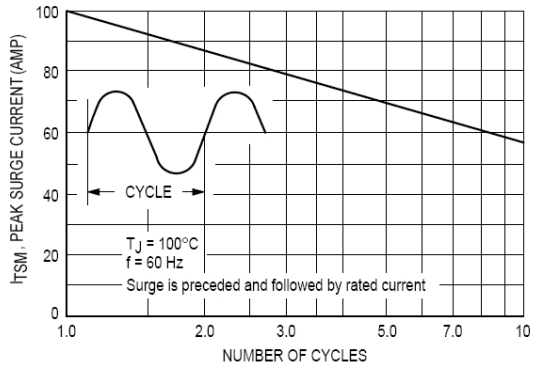

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FIGURE 8 – TYPICAL THERMAL RESPONSE