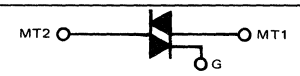
2N5571 thru 2N5574 (SILICON)
2N6145 thru 2N6147
MAC40797, MAC40798

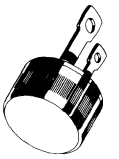


TRIACS
(THYRISTORS)
15 AMPERES RMS
200-600 VOLTS

SILICON BIDIRECTIONAL THYRISTORS

. . . designed primarily for industrial and military applications for the control of ac loads in applications such as light dimmers, power supplies, heating controls, motor controls, welding equipment and power switching systems; or wherever full-wave, silicon gate controlled solid-state devices are needed.

- All Diffused and Passivated Junctions for Greater Stability
- Pressfit, Stud and Isolated Stud Packages
- Gate Triggering Guaranteed In All 4 Quadrants

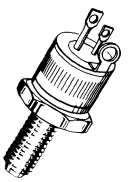


2N5571
2N5572
MAC40797

CASE 174
TO-203

2N5573
2N5574
MAC40798

CASE 175



2N6145
2N6146
2N6147

CASE 235

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
*Repetitive Peak Off-State Voltage (1) (T_J = -65 to +125°C) 1/2 Sine Wave 50 to 60 Hz, Gate Open	V_{DRM} and V_{RRM}		Volts
2N5571, 2N5573, 2N6145		200	
2N5572, 2N5574, 2N6146		400	
MAC40797, MAC40798, 2N6147		600	
*Peak Gate Voltage	V_{GM}	10	Volts
*On-State Current RMS (T_C = -65 to +80°C)	$I_{T(RMS)}$	15	Amp
(T_C = +85°C)		10	
*Peak Surge Current (One Full cycle of surge current at 60 Hz, preceeded and followed by 15 A current, T_C = +80°C)	I_{TSM}	100	Amp
Circuit Fusing Considerations (T_C = -65 to +80°C, t = 1.0 to 8.3 ms)	I^2t	40	A^2s
*Peak Gate Power (2) (T_C = +80°C, Pulse Width = 2.0 μs)	P_{GM}	20	Watts
*Average Gate Power (T_C = +80°C, Pulse Width = 8.3 ms)	$P_{G(AV)}$	0.5	Watt
*Peak Gate Current	I_{GM}	2.0	Amp
*Operating Junction Temperature Range	T_J	-65 to +100	°C
*Storage Temperature Range	T_{stg}	-65 to +150	°C
*Stud Torque 2N5573, 2N5574 2N6145, 2N6146, 2N6147	—	30	in.lb.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
*Thermal Resistance, Junction to Case	$R\theta_{JC}$	1.0	°C/W

*Indicates JEDEC Registered Data.

(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.

(2) 2N5571 thru 2N5574, P_{GM} Rating = 16 Watts.

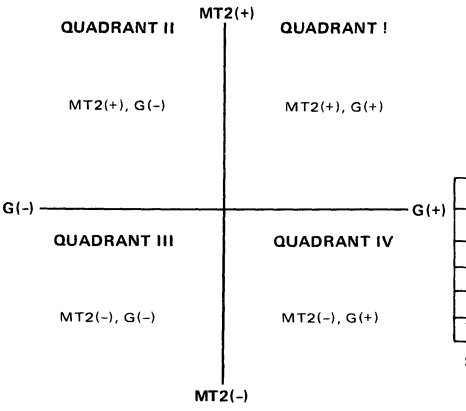
ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
*Peak Blocking Current (Either Direction) Rated V_{DRM} @ T_C = 100°C	I_{DRM}	–	–	2.0	mA
*On-State Voltage (Either Direction) I_{TM} = 21 A Peak, Pulse Width = 1.0 to 2.0 ms, Duty Cycle ≤ 2.0%	V_{TM}	–	1.3	1.8	Volts
Gate Trigger Current, Continuous dc (1) Main Terminal Voltage = 12 Vdc, R_L = 30 ohms	I_{GT}				mA
MT2 (+), G(+); MT2(–), G(–)		–	–	50	
MT2 (+), G(–); MT2(–), G(+)		–	–	80	
*MT2 (+), G(+); MT2(–), G(–) T_C = -65°C		–	–	150	
*MT2 (+), G(–); MT2(–), G(+) T_C = -65°C		–	–	200	
Gate Trigger Voltage, Continuous dc (All Quadrants) Main Terminal Voltage = 12 Vdc, R_L = 30 ohms	V_{GT}				Volts
T_C = 25°C		–	–	2.5	
*T_C = -65°C		–	–	4.0	
*Main Terminal Voltage = Rated V_{DRM}, R_L = 10 k ohms, T_C = +100°C		0.2	–	–	
Holding Current Main Terminal Voltage = 12 Vdc, Gate Open Initiating Current = 500 mA	I_H				mA
T_C = 25°C		–	–	75	
*T_C = -65°C		–	–	300	
*Turn-On Time Rated V_{DRM}, I_{TM} = 21 A Peak, I_{GT} = 160 mA, Rise Time = 0.1 μs, Pulse Width = 2.0 μs	t_{gt}	–	1.0	2.0	μs
*Critical Rate-of-Rise of Commutation Voltage Rated V_{DRM}, I_{TM} = 21 A Peak, Commutating di/dt = 8 A/ms, gate unenergized	dv/dt				V/μs
T_C = 80°C 2N5571 thru 2N5574, MAC40797, MAC40798		2.0	10	–	
T_C = 75°C 2N6145 thru 2N6147		2.0	10	–	
*Critical Rate-of-Rise of Off-State Voltage Rated V_{DRM}, Exponential Voltage Rise, Gate Open, T_C = 100°C:	dv/dt				V/μs
2N5571, 2N5573, 2N6145		30	150	–	
2N5572, 2N5574, 2N6146		20	100	–	
MAC40797, MAC40798, 2N6147		10	75	–	

*Indicates JEDEC Registered Data.

(1)All Voltage polarity reference to main terminal 1.

QUADRANT DEFINITIONS



Trigger devices are recommended for gating on Triacs. They provide:

1. Consistent predictable turn-on points.
2. Simplified circuitry.
3. Fast turn-on time for cooler, more efficient and reliable operation.

ELECTRICAL CHARACTERISTICS of RECOMMENDED BIDIRECTIONAL SWITCHES

USAGE	General		Lamp Dimmer
PART NUMBER	MBS4991	MBS4992	MBS100
V_S	6.0 – 10 V	7.5 – 9.0 V	3.0 – 5.0 V
I_S	350 μA Max	120 μA Max	100 – 400 μA
$V_{S1} - V_{S2}$	0.5 V Max	0.2 V Max	0.35 V Max
Temperature Coefficient = 0.02%/°C Typ			

See AN-526 for Theory and Characteristics of Silicon Bidirectional Switches.

FIGURE 1 – AVERAGE CURRENT DERATING

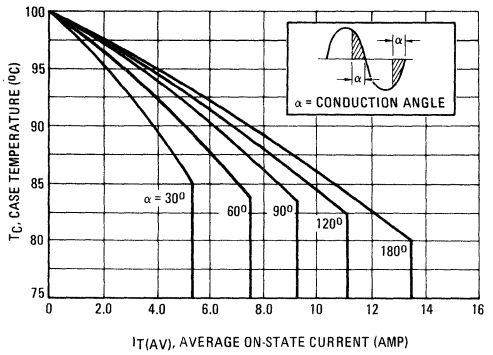


FIGURE 2 – RMS CURRENT DERATING

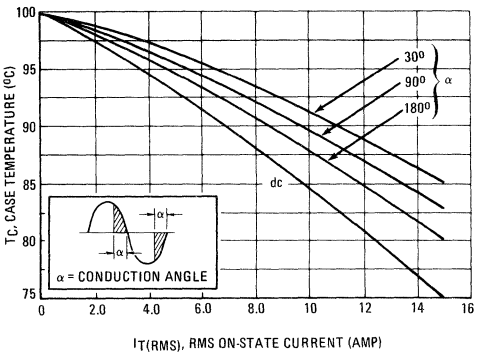


FIGURE 3 – ON-STATE POWER DISSIPATION

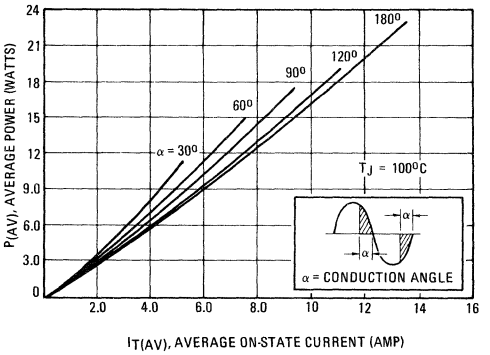


FIGURE 4 – ON-STATE POWER DISSIPATION

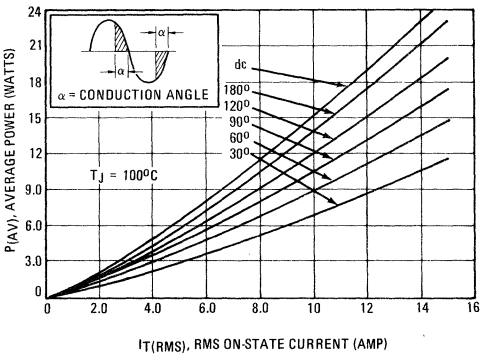


FIGURE 5 – TYPICAL GATE TRIGGER VOLTAGE

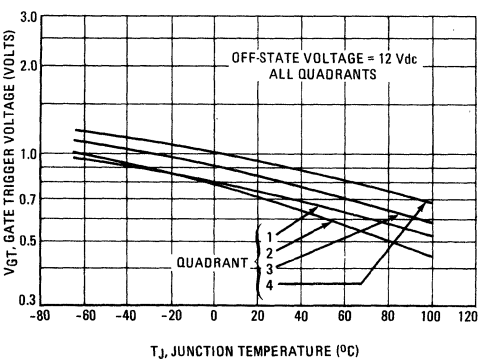


FIGURE 6 – TYPICAL GATE TRIGGER CURRENT

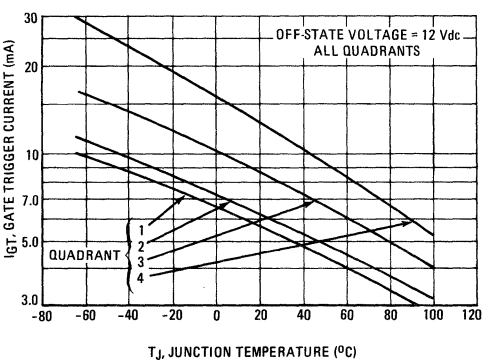


FIGURE 7 – MAXIMUM ON-STATE CHARACTERISTICS

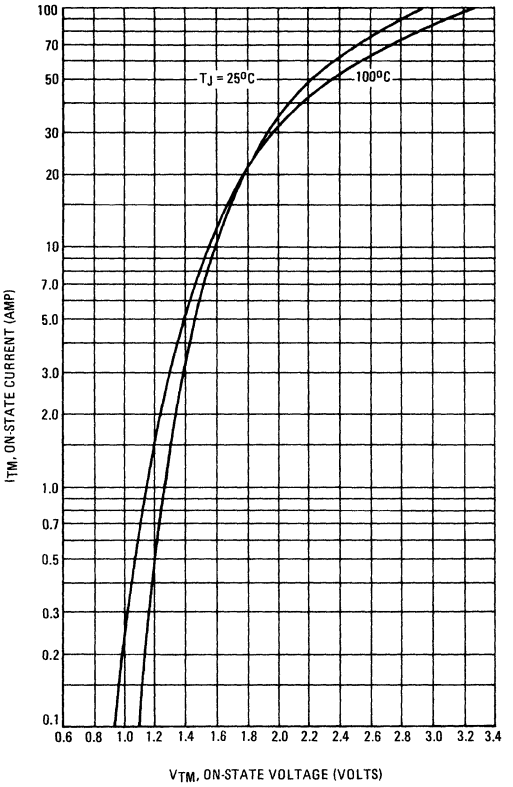


FIGURE 8 – TYPICAL HOLDING CURRENT

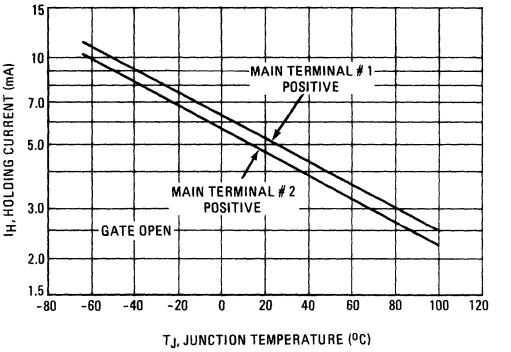


FIGURE 9 – MAXIMUM ALLOWABLE SURGE CURRENT

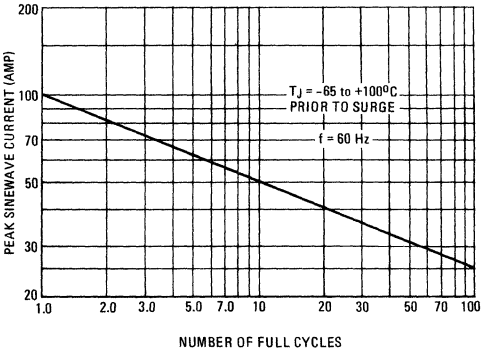
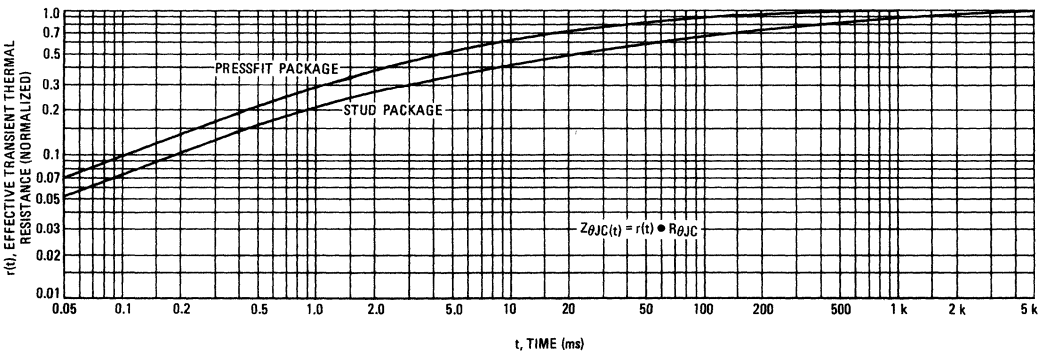
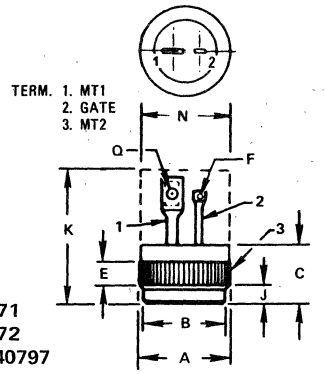


FIGURE 10 – TYPICAL THERMAL RESPONSE



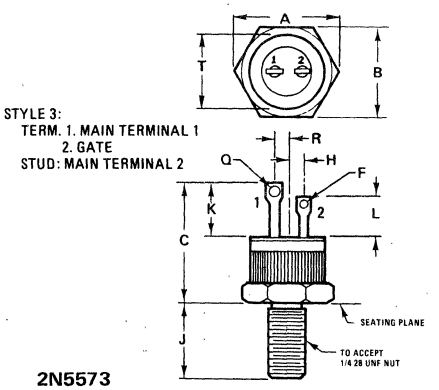


2N5571
2N5572
MAC40797

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	12.726	12.827	0.501	0.505
B	11.811	12.065	0.465	0.475
C	8.39	9.65	0.330	0.380
E	2.54	–	0.100	–
F	0.89	1.72	0.035	0.068
J	2.04	2.46	0.080	0.097
K	–	20.32	–	0.800
N	–	12.95	–	0.510
Q	1.66	2.28	0.065	0.090

All JEDEC dimensions and notes apply

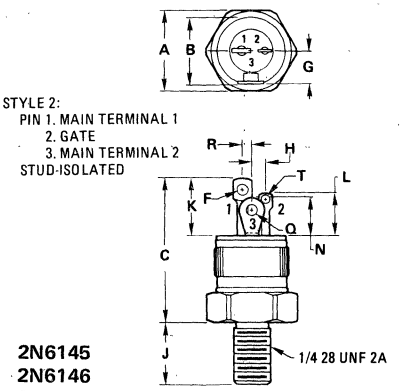
CASE 174-02
TO-203AA



2N5573
2N5574
MAC40798

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	15.34	15.60	0.604	0.614
B	14.00	14.20	0.551	0.559
C	20.70	24.13	0.815	0.950
F	1.40	1.65	0.055	0.065
H	2.29 REF		0.090 REF	
J	10.67	11.56	0.420	0.455
K	9.78	10.54	0.385	0.415
L	6.99	7.75	0.275	0.305
Q	2.03	2.41	0.080	0.095
R	1.65 REF		0.065 REF	
T	12.70	12.83	0.500	0.505

CASE 175



2N6145
2N6146
2N6147

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	14.00	14.20	0.551	0.559
B	12.73	12.83	0.501	0.505
C	–	26.16	–	1.030
F	2.03	2.41	0.080	0.095
G	–	6.48	–	0.255
H	2.16	2.41	0.085	0.095
J	10.67	11.56	0.420	0.455
K	9.78	10.54	0.385	0.415
L	6.99	7.75	0.275	0.305
N	6.48	6.99	0.255	0.275
Q	3.43	3.81	0.135	0.150
R	1.52	1.78	0.060	0.070
T	1.40	1.65	0.055	0.065

CASE 235

2N5581, 2N5582 (SILICON)

For Specifications, See 2N2218S,AS Data, Volume I.