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2N3899 (SILICON)

THYRISTOR
SILICON CONTROLLED RECTIFIER

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
*Repetitive Peak Reverse Blocking Voltage (1) (T_J = -40 to +100°C, 1/2 Sine Wave, 50 to 400 Hz, Gate Open)	V_{RRM}	600	Volts
*Non-Repetitive Peak Reverse Blocking Voltage (t ≤ 5.0 ms)	V_{RSM}	700	Volts
*Average On-State Current (T_C = -40 to +65°C) (T_C = +85°C)	$I_{T(AV)}$	22 11	Amp
Peak Non-Repetitive Surge Current (One cycle, 60 Hz) (T_C = +65°C)	I_{TSM}	350	Amp
Circuit Fusing Considerations (T_J = -40 to +100°C) (t = 1.0 to 8.3 ms)	I^2t	510	A^2s
*Peak Gate Power	P_{GM}	20	Watts
*Average Gate Power	$P_{G(AV)}$	0.5	Watt
*Peak Forward Gate Current	I_{GM}	2.0	Amp
Peak Gate Voltage	V_{GM}	10	Volts
*Operating Junction Temperature Range	T_J	-40 to +100	°C
*Storage Temperature Range	T_{stg}	-40 to +150	°C
Stud Torque 2N3896 thru 2N3899 2N6171 thru 2N6174		30	in-lb

*THERMAL CHARACTERISTICS

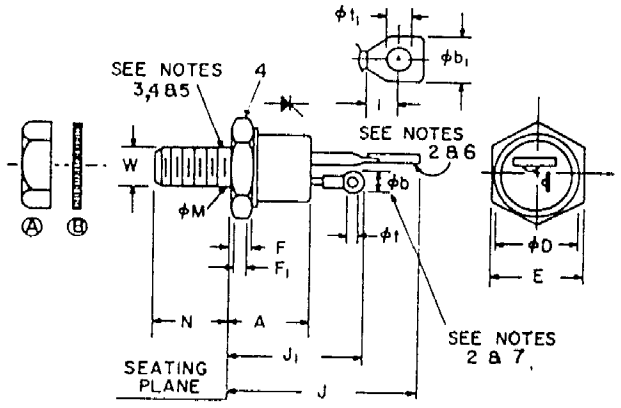
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	3.0	°C/W

*Indicates JEDEC Registered Data.

(1) Ratings apply for zero or negative gate voltage. Devices shall not have a positive bias applied to the gate concurrently with a negative potential on the anode. Devices should not be tested with a constant current source for forward or reverse blocking capability such that the voltage applied exceeds the rated blocking voltage.

OUTLINE DRAWING
(COMPLIES WITH JEDEC TO-48)

(COMPLIES WITH JEDEC TO-48)



NOTES:
1. Complete threads to extend to within 2½ threads of seating plane. Diameter of unthreaded portion .249" (6.32MM) Maximum, .220" (5.59MM) Minimum.
2. Angular orientation of these terminals is undefined.
3. ¼-28 UNF-2A. Maximum pitch diameter of plated threads shall be basic pitch diameter .2268" (5.76MM), minimum pitch diameter .2225" (5.66MM), reference: screw thread standards for Federal Service 1957, Handbook H28, 1957, P1.
4. A chamfer (or undercut) on one or both ends of hexagonal portions is optional.
5. Case is anode connection.
6. Large terminal is cathode connection.
7. Small terminal is gate connection.
8. Insulating kit available upon request.
A. ¼-28 steel nut, Ni. plated, .178 min. thk.
B. Ext. tooth lockwasher, steel, Ni. plated, .023 min. thk.

SYMBOL	INCHES MIN.	INCHES MAX.	MILLIMETERS MIN.	MILLIMETERS MAX.	NO
A	.330	.505	8.38	12.83	
ϕb	.115	.140	2.92	3.56	2
ϕb_1	.210	.300	5.33	7.62	2
ϕD		.544		13.82	
E	.544	.562	13.82	14.27	
F	.113	.200	2.87	5.08	4
F_1	.060		1.52		
J		1.193		30.30	
J_1		.875		22.23	
l	.120		3.05		
ϕM					
N	.422	.453	10.72	11.51	
ot	.060	.075	1.52	1.91	
ot_1	.125	.165	3.18	4.19	
W					

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

Characteristic		Symbol	Min	Typ	Max	Unit
*Peak Forward Blocking Voltage (T_J = 100°C)		V_{DRM}	600			Volts
*Peak Forward Blocking Current (Rated V_{DRM}, with gate open, T_J = 100°C)		I_{DRM}		1.0	4.0	mA
*Peak Reverse Blocking Current (Rated V_{RRM}, with gate open, T_J = 100°C)		I_{RRM}		1.0	4.0	mA
*Peak On-State Voltage (I_{TM} = 69 A Peak)		V_{TM}		1.5	1.85	Volts
Gate Trigger Current, Continuous dc (V_{AK} = 12 V, R_L = 24 ohms)	*T_C -40°C T_C 25°C	I_{GT}		9.0 4.0	80 40	mA
Gate Trigger Voltage, Continuous dc (V_{AK} = 12 V, R_L = 24 ohms)	*T_C -40°C T_C 25°C	V_{GT}		0.9 0.69	3.0 1.6	Volts
Holding Current (Gate Open) (V_{AK} = 12 V, I_{TM} = 200 mA)	*T_C -40°C T_C 25°C	I_H		14 4.2	90 50	mA
*Gate Controlled Turn-On Time (t_d + t_r) (I_{TM} = 41 Adc, V_{AK} = rated V_{DRM}, I_{GT} = 40 mAdc, Rise Time = 0.05 μs, Pulse Width = 10 μs)		t_{gt}			1.5	μs
Circuit Commutated Turn Off Time (I_{TM} = 10 A, I_R = 10 A) (I_{TM} = 10 A, I_R = 10 A, T_J = 100°C)		t_q		15 25		μs
Forward Voltage Application Rate (T_J = 100°C)		dv/dt		50		V/μs

*Indicates JEDEC Registered Data