

New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8980

2N5442

SILICON BIDIRECTIONAL TRIODE THYRISTOR

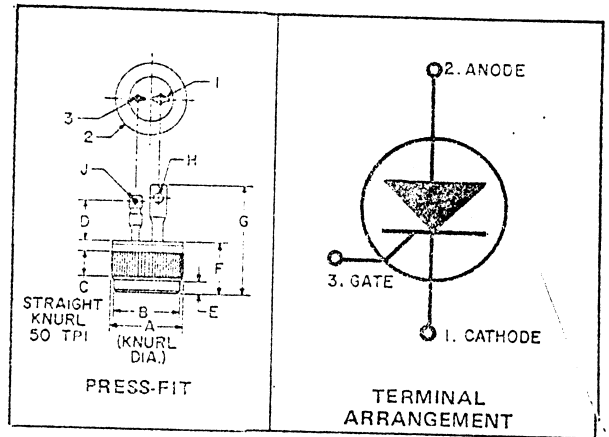
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
*Peak Repetitive Off-State Voltage ($T_J = -65$ to $+110^\circ\text{C}$)	V_{DRM}		Volts
1/2 Sine Wave 50 to 60 Hz, Gate Open		400	
*Peak Principal Voltage			
*RMS On-State Current (T_C per Fig. 2)	$I_T(\text{RMS})$	40	Amp
($T_C = +100^\circ\text{C}$)		20	
Full Sine Wave, 50 to 60 Hz			
*Peak Non-Repetitive Surge Current (One Full Cycle of surge current at 60 Hz, preceded and followed by a 40 A RMS current, $T_J = +110^\circ\text{C}$)	I_{TSM}	360	Amp
*Peak Gate Power (Pulse Width = 10 μs Max)	P_{GM}	40	Watts
*Average Gate Power	$P_{G(AV)}$	0.75	Watt
*Peak Gate Current (10 μs Max)	I_{GM}	4.0	Amp
*Peak Gate Voltage	V_{GM}	30	Volts
*Operating Junction Temperature Range	T_J	-65 to +110	$^\circ\text{C}$
*Storage Temperature Range	T_{stg}	-65 to +150	$^\circ\text{C}$
*Stud Torque		30	in. lb.

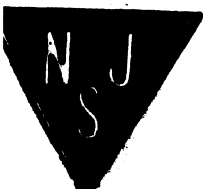
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
*Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.8	$^\circ\text{C/W}$

*Indicates JEDEC Registered Data



SYMBOL	INCHES		METRIC MM		SYMBOL	INCHES		METRIC MM	
	MIN.	MAX.	MIN.	MAX.		MIN.	MAX.	MIN.	MAX.
A	.501	.505	12.73	12.82	Y	.580	.610	14.74	15.49
B	.467	.475	11.87	12.06	Z	—	.973	—	24.72
C	—	.177 REF.	—	4.50 REF.	AB	—	.585	—	14.81
D	.260	.301	6.60	7.65	AC	—	.220 REF.	—	5.59 REF.
E	.083	.097	2.11	2.46	AD	.012	.023	.31	.58
F	.340	.376	8.64	9.55	AE	.140	.150	3.56	3.81
G	—	.782	—	19.86	AF	.229	.251	5.82	6.38
H	.081	.089	2.05	2.26	AG	1.182	1.192	30.03	30.28
J	.060	.062	1.53	1.75	AH	.150	—	4.07	—
N	—	.353	—	8.94	AJ	1.507	1.567	38.20	39.76
P	—	.475	—	12.06	AK	.975	1.025	24.77	26.16
Q	.432	.442	10.96	11.22	AL	.150	.161	3.81	4.09
R (S)	1/4-26, UNF2A	—	—	—	AM	—	1.018	—	25.65
S	.036	.098	2.19	2.48	AN	—	.630	—	16.01
T	.552	.562	14.03	14.27	AP	.119	.131	3.03	3.33
V	.240	.260	6.10	6.60	AQ	—	.913	—	23.18
W	.145	.160	3.68	4.06	AR	—	.25	—	6.35



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

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

Characteristic	Symbol	Min	Typ	Max	Unit
*Peak On-State Voltage Rated V_{DRM} @ $T_J = 110^\circ\text{C}$	i_{DRM}	—	0.5	4.0	mA
*Peak On-State Voltage $I_{TM} = 56$ A Peak, Pulse Width ≤ 1.0 ms, Duty Cycle $\leq 2.0\%$	V_{TM}	—	1.65	1.85	Volts
Gate Trigger Current (1) Main Terminal Voltage = 12 Vdc, $R_L = 50$ Ohms	i_{GT}				mA
MT2 (+), G(+)		—	—	70	
MT2 (+), G(-)		—	—	70	
MT2 (-), G(-)		—	—	70	
MT2 (-), G(+)		—	—	100	
*MT2 (+), G(+); MT2 (-), G (-) $T_C = -65^\circ\text{C}$		—	—	125	
*MT2 (+), G(-); MT2 (-), G(+) $T_C = -65^\circ\text{C}$		—	—	240	
*Gate Trigger Voltage Main Terminal Voltage = 12 Vdc, $R_L = 50$ Ohms	V_{GT}				Volts
MT2 (+), G(+)		—	—	2.0	
MT2 (+), G(-)		—	—	2.0	
MT2 (-), G(-)		—	—	2.0	
MT2 (-), G(+)		—	—	2.5	
*All Quadrants, $T_C = -65^\circ\text{C}$		—	—	3.4	
*Main Terminal Voltage = Rated $V_{DRM} = R_L = 10$ k ohms, $T_J = +110^\circ\text{C}$		0.2	—	—	
*Holding Current Main Terminal Voltage = 12 Vdc, Gate Open Initiating Current = 150 mA	I_H				mA
$T_C = 25^\circ\text{C}$		—	—	70	
$T_C = -65^\circ\text{C}$		—	—	100	
*Turn-On Time Main Terminal Voltage = Rated V_{DRM} , $I_{TM} = 56$ A, Gate Source Voltage = 12 V, $R_G = 12$ Ohms, 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} , $I_{TM} = 40$ A, Commutating $di/dt = 22$ A/ms, gate energized	$dv/dt(c)$				V/ μs
Critical Rate of Rise of Off State Voltage Rated V_{DRM} , Exponential Voltage Rise, Gate Open, $T_C = 110^\circ\text{C}$	dv/dt				V/ μs
		30			

*Indicates JEDEC Registered Data for 2N5441 thru 2N5446.