NYE08-10B6TG

Protected TRIAC
Silicon Bidirectional Thyristor

Designed for use in solid state relays, MPU interface, TTL logic and any other light industrial or consumer application. Supplied in an inexpensive TO−92 package which is readily adaptable for use in automatic insertion equipment.

Features

- One−Piece, Injection−Molded Package
- Blocking Voltage to 600 V
- Sensitive Gate Triggering in Two Trigger Modes (Quadrants)
- Improved Noise Immunity (dv/dt Minimum of 500 V/μsec at 125°C)
- Compliant with IEC6100−4−5
- High Surge Current of 8 A
- These are Pb−Free Devices

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Peak Repetitive Off−State Voltage (Note 1) (Sine Wave, 50 to 60 Hz, Gate Open, T_J = 25 to 125°C)	V_{DRM}, V_{RRM}	600	V
On−State Current RMS (T_C = 80°C) (Full Sine Wave 50 to 60 Hz)	$I_{T(RMS)}$	0.8	A
Peak Non−repetitive Surge Current (One Full Cycle Sine Wave, 60 Hz, T_C = 25°C)	I_{TSM}	8.0	A
Circuit Fusing Considerations (Pulse Width = 8.3 ms)	I^2t	0.4	A^2s
Peak Gate Power (T_C = 80°C, Pulse Width ≤ 1.0 μs)	P_{GM}	5.0	W
Average Gate Power (T_C = 80°C, t = 8.3 ms)	$P_{G(AV)}$	0.1	W
Non−Repetitive Line Peak Voltage (IEC6100−4−5)	V_{PP}	2.0	kV
Critical Rate of Rise of All−State Current (I_G = 2 x I_{GT}, t_r < 100 μs, T_J = 125°C)	di/dt	100	A/μs
Operating Junction Temperature Range	T_J	−40 to +125	°C
Storage Temperature Range	T_{stg}	−40 to +150	°C

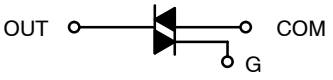
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

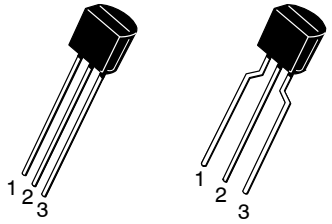
1. V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

ON Semiconductor

http://onsemi.com

PROTECTED TRIAC
0.8 AMPERE RMS
600 VOLTS



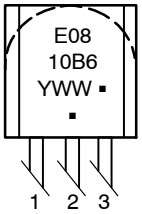


STRAIGHT LEAD
BULK PACK

BENT LEAD
TAPE & REEL
AMMO PACK

TO−92 (TO−226AA)
CASE 029−11

MARKING DIAGRAM



x = 3,7,9
Y = Year
WW = Work Week
▪ = Pb−Free Package
(Note: Microdot may be in either location)

PIN ASSIGNMENT	
1	OUT
2	Gate
3	COM

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 6 of this data sheet.

THERMAL CHARACTERISTICS

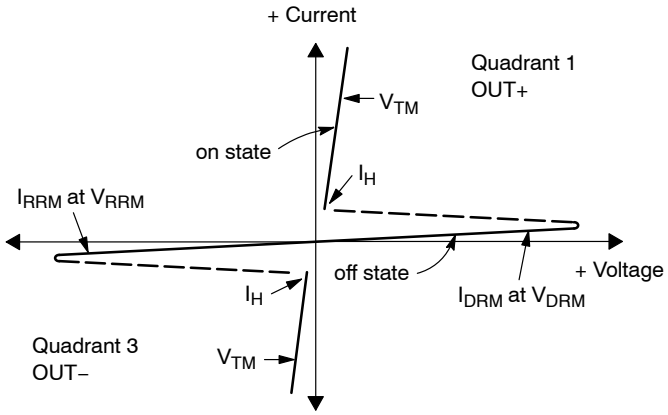
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction−to−Ambient PCB Mounted per Figure TBD	$R_{\theta JA}$	156	°C/W
Thermal Resistance, Junction−to−Tab Measured on OUT Tab Adjacent to Epoxy	$R_{\theta JT}$	25	°C/W
Maximum Device Temperature for Soldering Purposes for 10 Secs Maximum	T_L	260	°C

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted; Electricals apply in both directions)

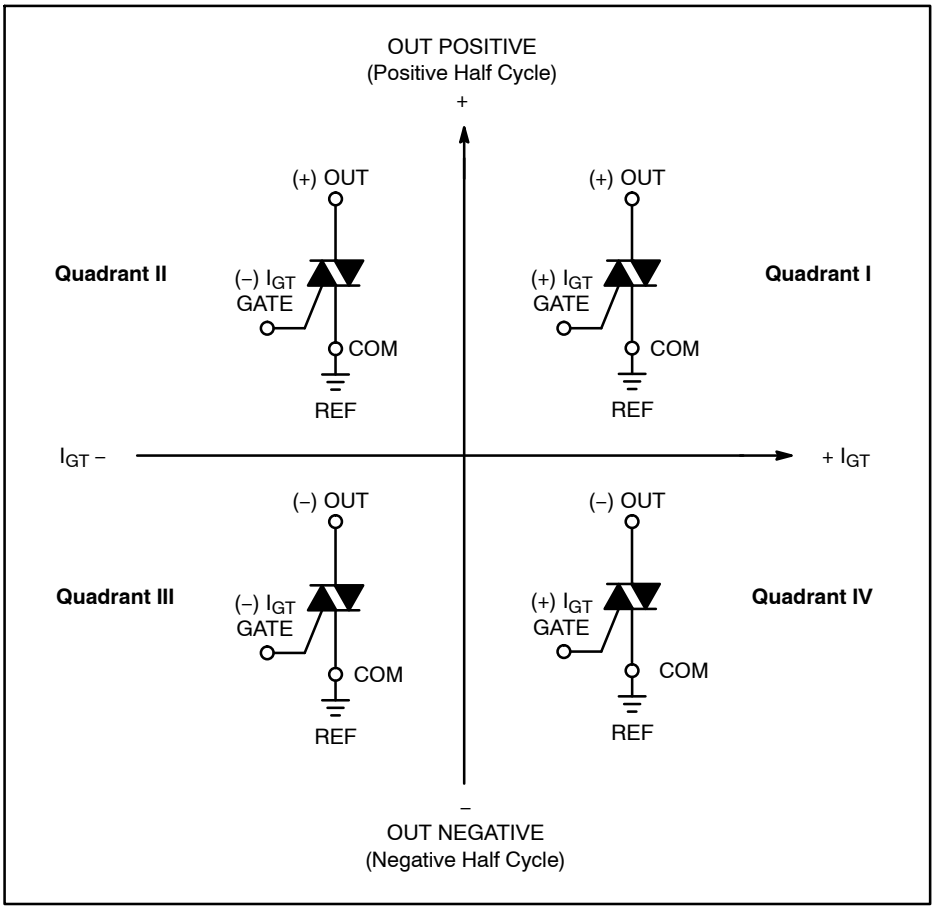
Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Peak Repetitive Blocking Current	T_J = 25°C	I_{DRM}, I_{RRM}	−	−	2.0	μA
(V_D = Rated V_{DRM}/V_{RRM}; Gate Open)	T_J = +125°C		−	−	200	μA
ON CHARACTERISTICS						
Peak On−State Voltage (I_{TM} = ±1.1 A Peak; Pulse Width ≤ 2.0 ms, Duty Cycle ≤ 2.0%)		V_{TM}	−	−	1.3	V
Gate Trigger Current (dc) (V_D = 12 Vdc, R_L = 30 Ω)		I_{GT}				mA
OUT(+), G(−)			0.15	−	10	
OUT(−), G(−)			0.15	−	10	
Latching Current (V_D = 12 V, I_G = 1.2 x I_{GT})		I_L				mA
OUT(+), G(−) All Types			−	−	30	
OUT(−), G(−) All Types			−	−	30	
Gate Trigger Voltage (dc) (V_D = 12 Vdc, R_L = 30 Ω)		V_{GT}	−	−	1.0	V
Gate Non−Trigger Voltage (V_D = 12 V, R_L = 30 Ω, T_J = 125°C) Quadrants 2, 3		V_{GD}	0.15	−	−	V
Dynamic Resistance		R_D	−	−	300	mΩ
Holding Current (V_D = 12 Vdc, Initiating Current = 50 mA, Gate Open)		I_H	−	−	25	mA
DYNAMIC CHARACTERISTICS						
Rate of Change of Commutating Current (Commutating dv/dt = 15 V/μs, Gate Open, T_J = 125°C, f = 250 Hz, without Snubber)		di/dt(c)	0.3	−	−	A/ms
Critical Rate of Rise of Off−State Voltage (V_D = 67% V_{DRM}, Exponential Waveform, Gate Open, T_J = 125°C)		dv/dt	500	−	−	V/μs
Clamping Voltage (I_{CL} = 1.0 mA, t_p = 1 ms, T_J = 125°C)		V_{CL}	650	−	−	V

Voltage Current Characteristic of Triacs (Bidirectional Device)

Symbol	Parameter
V_{DRM}	Peak Repetitive Forward Off State Voltage
I_{DRM}	Peak Forward Blocking Current
V_{RRM}	Peak Repetitive Reverse Off State Voltage
I_{RRM}	Peak Reverse Blocking Current
V_{TM}	Maximum On State Voltage
I_H	Holding Current



Quadrant Definitions for a Triac



All polarities are referenced to COM.

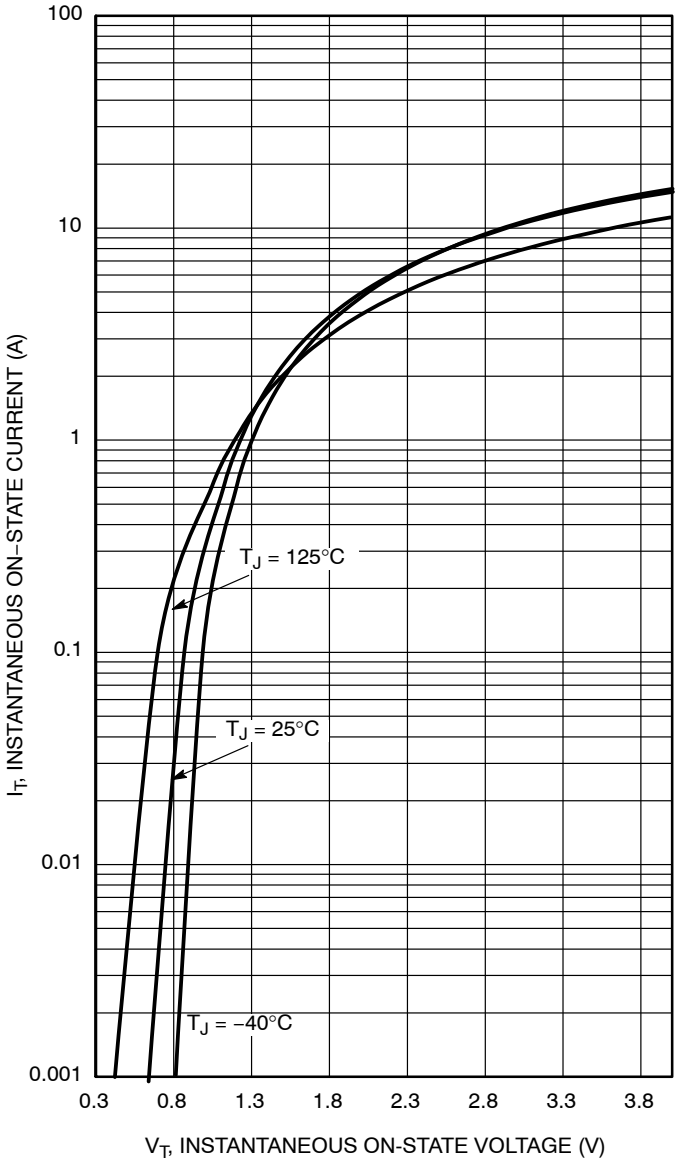


Figure 1. Maximum On−State Voltage Characteristics

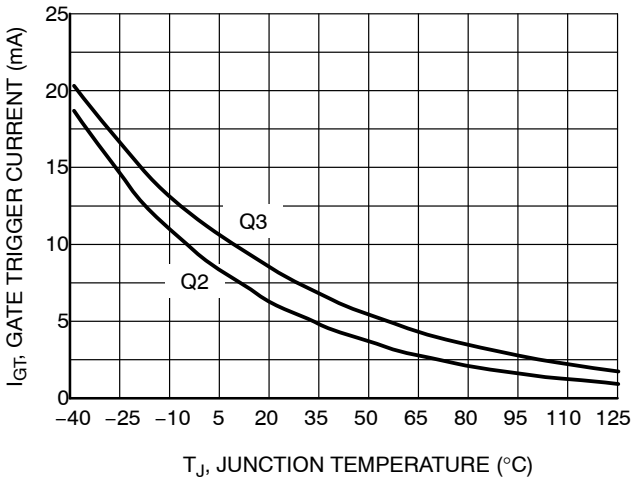


Figure 2. Typical Gate Trigger Current

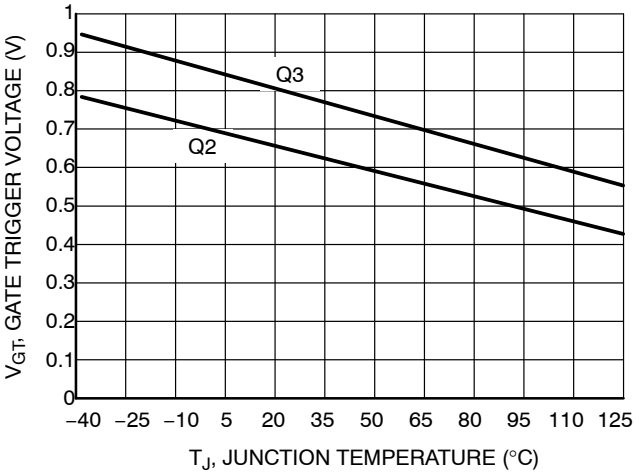


Figure 3. Typical Gate Trigger Voltage

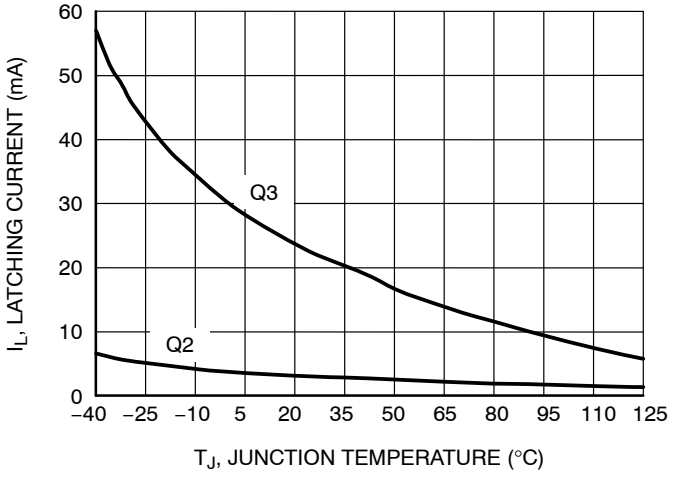


Figure 4. Typical Latching Current

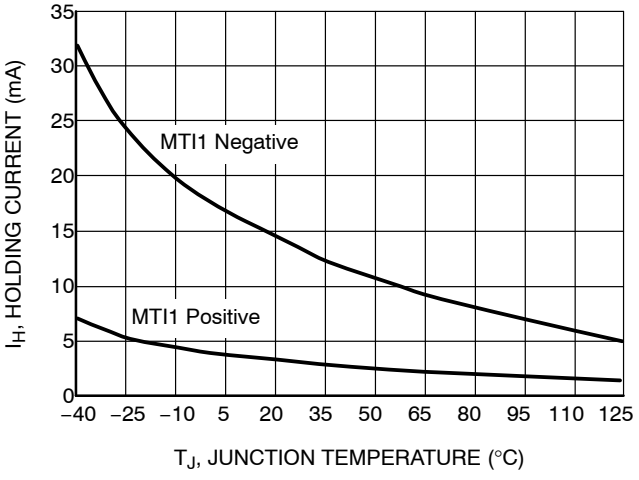


Figure 5. Typical Holding Current

TO−92 EIA RADIAL TAPE IN FAN FOLD BOX OR ON REEL

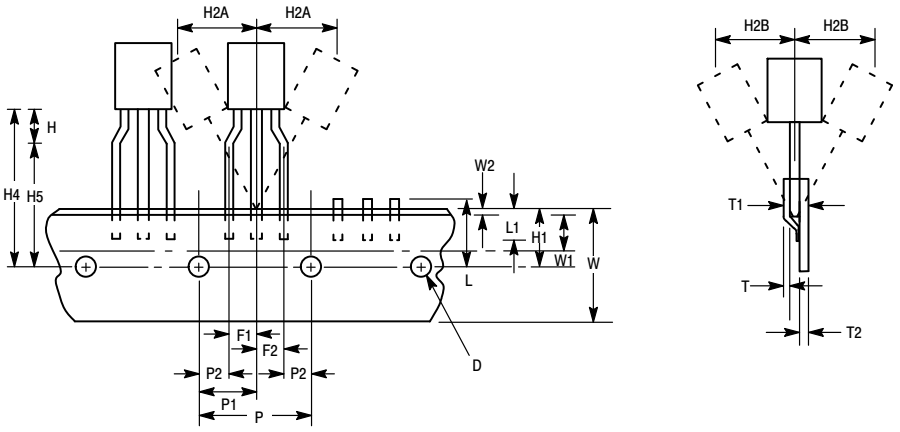


Figure 6. Device Positioning on Tape

Symbol	Item	Specification			
		Inches		Millimeter	
		Min	Max	Min	Max
D	Tape Feedhole Diameter	0.1496	0.1653	3.8	4.2
D2	Component Lead Thickness Dimension	0.015	0.020	0.38	0.51
F1, F2	Component Lead Pitch	0.0945	0.110	2.4	2.8
H	Bottom of Component to Seating Plane	0.059	0.156	1.5	4.0
H1	Feedhole Location	0.3346	0.3741	8.5	9.5
H2A	Deflection Left or Right	0	0.039	0	1.0
H2B	Deflection Front or Rear	0	0.051	0	1.0
H4	Feedhole to Bottom of Component	0.7086	0.768	18	19.5
H5	Feedhole to Seating Plane	0.610	0.649	15.5	16.5
L	Defective Unit Clipped Dimension	0.3346	0.433	8.5	11
L1	Lead Wire Enclosure	0.09842	–	2.5	–
P	Feedhole Pitch	0.4921	0.5079	12.5	12.9
P1	Feedhole Center to Center Lead	0.2342	0.2658	5.95	6.75
P2	First Lead Spacing Dimension	0.1397	0.1556	3.55	3.95
T	Adhesive Tape Thickness	0.06	0.08	0.15	0.20
T1	Overall Taped Package Thickness	–	0.0567	–	1.44
T2	Carrier Strip Thickness	0.014	0.027	0.35	0.65
W	Carrier Strip Width	0.6889	0.7481	17.5	19
W1	Adhesive Tape Width	0.2165	0.2841	5.5	6.3
W2	Adhesive Tape Position	.0059	0.01968	0.15	0.5

2. Maximum alignment deviation between leads not to be greater than 0.2 mm.
3. Defective components shall be clipped from the carrier tape such that the remaining protrusion (L) does not exceed a maximum of 11 mm.
4. Component lead to tape adhesion must meet the pull test requirements.
5. Maximum non−cumulative variation between tape feed holes shall not exceed 1 mm in 20 pitches.
6. Holddown tape not to extend beyond the edge(s) of carrier tape and there shall be no exposure of adhesive.
7. No more than 1 consecutive missing component is permitted.
8. A tape trailer and leader, having at least three feed holes is required before the first and after the last component.
9. Splices will not interfere with the sprocket feed holes.

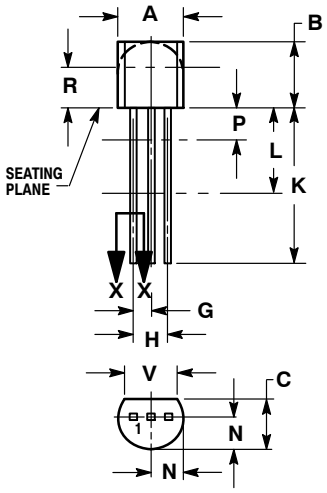
ORDERING & SHIPPING INFORMATION: Packaging Options, Device Suffix

Device		Description of TO−92 Tape Orientation	Package	Shipping
U.S.	Europe Equivalent			
	NYE08−10B6RL1G	Flat side of TO−92 and adhesive tape visible	TO−92 (Pb−Free)	Radial 2000 / Tape and Reel
NYE08−10B6TG		N/A, Bulk	TO−92 (Pb−Free)	5000 Units / Box
NYE08−10B6RLRPG		Round side of TO−92 and adhesive tape visible	TO−92 (Pb−Free)	Radial Tape and Fan Fold Box (2000 Units / Box)
NYE08−10B6RLRFG		Round side of TO−92 and adhesive tape on reverse side	TO−92 (Pb−Free)	Radial Tape and Fan Fold Box (2000 Units / Box)

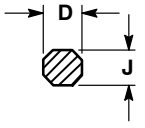
NYE08−10B6TG

PACKAGE DIMENSIONS

TO−92 (TO−226AA)
CASE 029−11
ISSUE AM



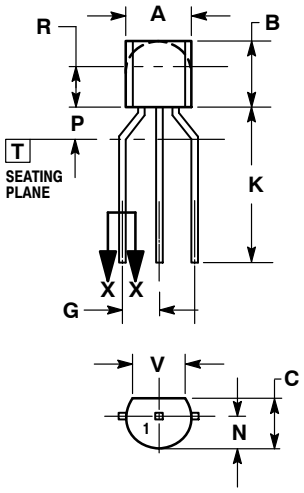
STRAIGHT LEAD
BULK PACK



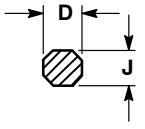
SECTION X−X

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---



BENT LEAD
TAPE & REEL
AMMO PACK



SECTION X−X

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

	MILLIMETERS	
DIM	MIN	MAX
A	4.45	5.20
B	4.32	5.33
C	3.18	4.19
D	0.40	0.54
G	2.40	2.80
J	0.39	0.50
K	12.70	---
N	2.04	2.66
P	1.50	4.00
R	2.93	---
V	3.43	---

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
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