

## Product Summary

<b>V<sub>DRM</sub></b> <b>V<sub>RRM</sub></b>	<b>I<sub>T(RMS)</sub></b>	<b>I<sub>GT</sub></b>	<b>T<sub>J</sub></b>
800V	4A	10mA	+125°C

## Applications

- General-purpose motor controls
- Power control tools, electric drills, heating systems
- Home applications, fan controls, light dimmers, food processors, coffee machines

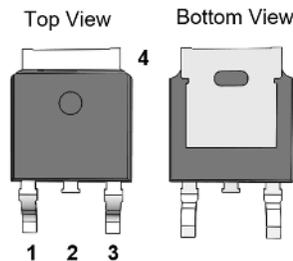
## Features

- Glass Passivated for Voltage Ruggedness and Reliability
- High Voltage Capability
- High Junction Operating Temperature Capability
- Triggering in Three Quadrants Only
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

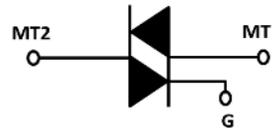
## Mechanical Data

- Package: TO252
- Package Material: Molded Plastic, "Green" Molding Compound  
UL Flammability Classification Rating 94V-0
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 Ⓔ
- Weight: 0.32 grams (Approximate)

TO252 (Type WX)



PIN ASSIGNMENT	
1	Main Terminal 1
2	Main Terminal 2
3	Gate
4	Main Terminal 2



## Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
T4M10T800UE-13	TO252 (Type WX)	2500pcs	Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



T4M10T800UE = Product Type Marking Code  
 DII = Manufacturer's Code Marking  
 Y = Last Digit of Year (ex: 4 = 2024)  
 WW = Week Code (01 to 53)

**Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Test Condition	Symbol	Value	Unit
Repetitive Peak Off-State Voltage	$I_{DRM}, I_{RRM} = 5\mu\text{A}$	$V_{DRM}$ $V_{RRM}$	800	V
RMS On-State Current	$T_J = +125^\circ\text{C}$	$I_{T(RMS)}$	4	A
Non-Repetitive Surge Peak On-State Current	Full cycle, $t = 20\text{ms}$ , $f = 50\text{Hz}$	$I_{TSM}$	30	A
	Full cycle, $t = 16.7\text{ms}$ , $f = 60\text{Hz}$		31	
$I^2t$ Value for Fusing	$t_P = 10\text{ms}$	$I^2t$	4.5	A/ $\mu\text{s}$
Rate of Rise of On-State Current	$T_J = +125^\circ\text{C}$ , $V_{AK} = V_{DRM}$	$di/dts$	100	A/ $\mu\text{s}$
Operating Junction Temperature		$T_J$	-40 to +125	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-40 to +150	$^\circ\text{C}$

**ON Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
On-State Voltage	$I_T = 4\text{A}$	$V_T$	—	1.25	1.5	V
	$I_T = 5\text{A}$		—	1.3	1.55	
Gate Trigger Current	$V_{AK} = 12\text{V}$ , $R_L = 100\Omega$	$I_{GT1}$ $I_{GT2}$ $I_{GT3}$	—	—	10 10 10	mA
Holding Current	$V_{AK} = 12\text{V}$ , $R_L = 100\Omega$ $I_{GT} = 70\text{mA}$ , $I_T = 100\text{mA}$	$I_{H1}$ $I_{H3}$	—	—	12	mA
Latching Current	$V_{AK} = 12\text{V}$ , $R_L = 100\Omega$ , $I_{GT} = 70\text{mA}$	$I_{L1}$ $I_{L2}$ $I_{L3}$	—	—	12 18 12	mA
Gate Trigger Voltage	$V_{AK} = 12\text{V}$ , $R_L = 100\Omega$	$V_{GT1}$ $V_{GT2}$ $V_{GT3}$	—	0.7	1.0	V

**Dynamic Electrical Characteristics** (@ $T_J = +125^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Rate of Rise of Off-State Voltage	$V_D = 536\text{V}$ , gate open, $T_J = +125^\circ\text{C}$	$dV/dt$	18	—	—	V/ $\mu\text{s}$
Rate of Change of Commutating Current	$(dV/dt)_c = 10\text{V}/\mu\text{s}$ , $T_J = +125^\circ\text{C}$	$(di/dt)_c$	0.9	—	—	A/ms
	Without snubber		—	—	—	A/ms

**OFF Characteristics**

Characteristic	Test Condition	Symbol	Max	Unit
Forward and Reverse Leakage Current	Gate open, rated $V_{DRM}$ and $V_{RRM}$	$T_J = +25^\circ\text{C}$	5	$\mu\text{A}$
		$T_J = +125^\circ\text{C}$	0.5	mA

**Thermal Characteristics**

Characteristic	Symbol	Typ	Unit
Thermal Resistance (Note 5)	$R_{\theta JA}$	12	$^\circ\text{C}/\text{W}$
	$R_{\theta JC}$	4	
	$R_{\theta JL}$	3.5	

Note: 5. Thermal resistance junction to case, lead and ambient in accordance with JESD-51.  
Unit mounted on aluminum pad 34mm x 34mm x 15mm fin type heatsink.

**Rating and Characteristic Curves**

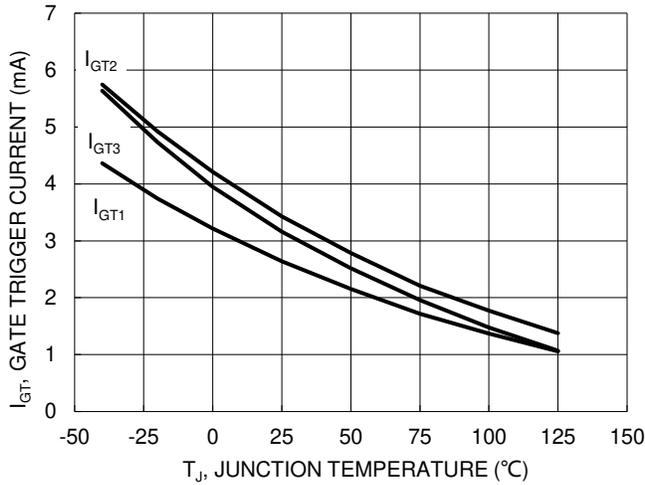


Figure 1. Typical Gate Trigger Current vs. Junction Temperature

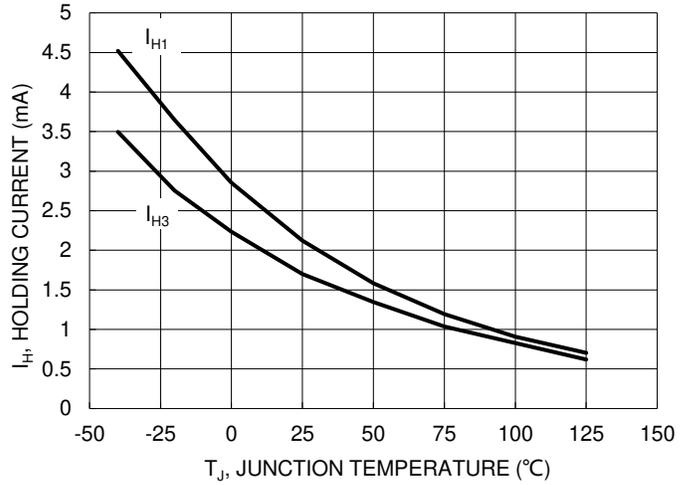


Figure 2. Typical Holding Current vs. Junction Temperature

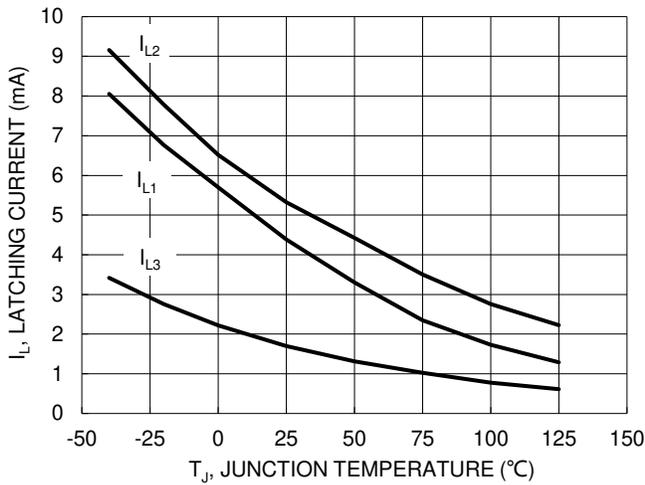


Figure 3. Typical Latching Current vs. Junction Temperature

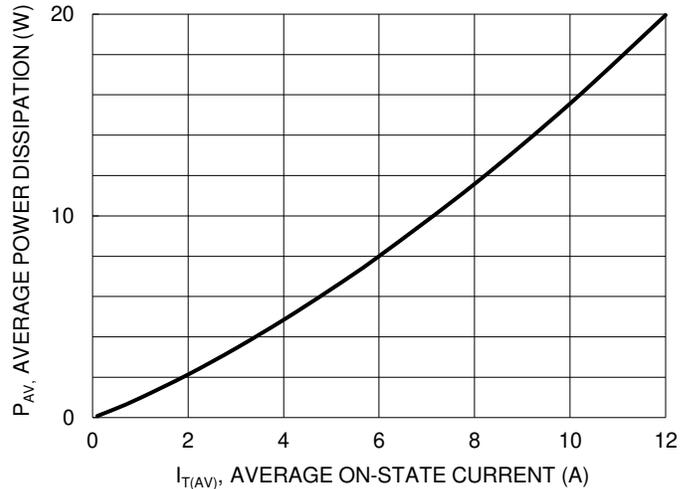


Figure 4. On-State Power Dissipation

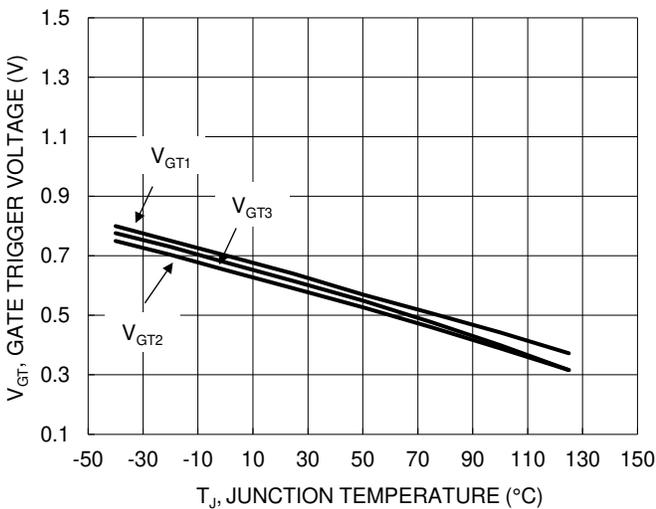


Figure 5. Typical Gate Trigger Voltage vs. Junction Temperature

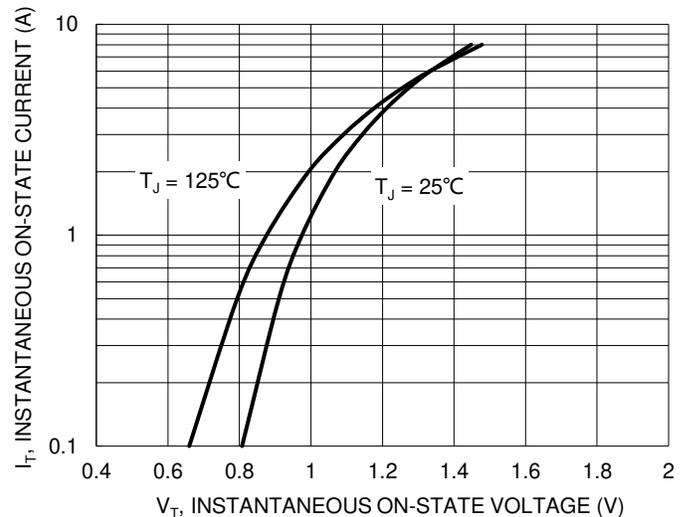
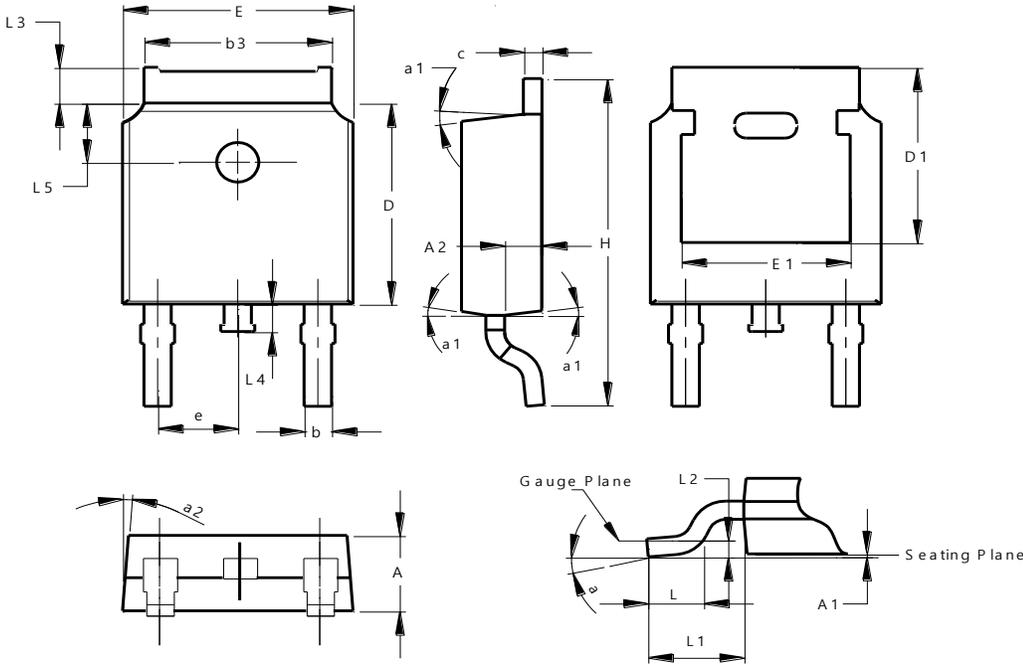


Figure 6. On-State Characteristics

**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**TO252 (Type WX)**

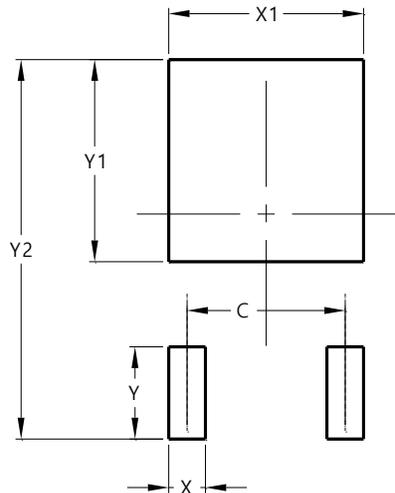


TO252 (Type WX)			
Dim	Min	Max	Typ
A	2.20	2.40	2.30
A1	0.00	0.15	--
A2	0.97	1.17	1.07
b	0.68	0.90	0.78
b3	5.20	5.50	5.33
c	0.43	0.63	0.53
D	5.98	6.22	6.10
D1	5.30 REF		
e	2.286 REF		
E	6.40	6.80	6.60
E1	4.63	5.03	4.83
H	9.40	10.50	10.10
L	1.38	1.75	1.50
L1	2.90 REF		
L2	0.51 BSC		
L3	0.88	1.28	--
L4	--	1.00	--
L5	1.65	1.95	1.80
a	0°	8°	-
a1	5°	9°	7°
a2	5°	9°	7°
<b>All Dimensions in mm</b>			

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**TO252 (Type WX)**



Dimensions	Value (in mm)
C	4.572
X	1.060
X1	5.632
Y	2.600
Y1	5.700
Y2	10.700

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