

## Product Summary

$V_{DRM}$ $V_{RRM}$	$I_{T(RMS)}$	$I_{GT}$	$T_J$
800V	8A	10mA 35mA	+125°C

## Mechanical Data

- Package: TO220AB
- 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: 2.08 grams (Approximate)

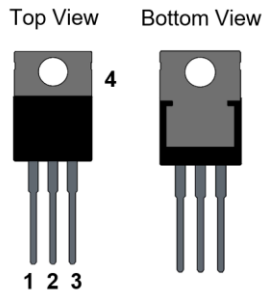
## Features

- 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](https://www.diodes.com/quality/product-definitions/) or your local Diodes representative.**  
<https://www.diodes.com/quality/product-definitions/>

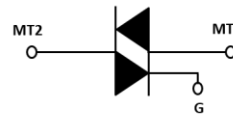
## Applications

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

TO220AB (Type WX)



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



## Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
T8M10T800UB	TO220AB (Type WX)	50pcs	Tube
T8M35T800UB	TO220AB (Type WX)	50pcs	Tube

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

## Marking Information



T8MxxT800UB = Product Type Marking Code (xx = 10 or 35)  
 D|| = Manufacturer's Code Marking  
 Y = Last Digit of Year (ex: 3 = 2023)  
 WW = Week Code (01 to 53)

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Test Conditions	Symbol	Value	Unit
Repetitive Peak Off-State Voltage	I <sub>DRM</sub> , I <sub>RRM</sub> = 5μA	V <sub>DRM</sub> V <sub>RRM</sub>	800	V
RMS On-State Current	T <sub>J</sub> = +125°C	I <sub>T(RMS)</sub>	8	A
Non-Repetitive Surge Peak On-State Current	Full cycle, t = 20ms, f = 50Hz	I <sub>TSM</sub>	55	A
	Full cycle, t = 16.7ms, f = 60Hz		60	
I <sup>2</sup> t Value for Fusing	t <sub>P</sub> = 10ms	I <sup>2</sup> t	15.1	A/μs
Rate of Rise of On-State Current	V <sub>AK</sub> = V <sub>DRM</sub>	di/dts	100	A/μs
Storage and Operating Junction Temperature		T <sub>STG</sub> , T <sub>J</sub>	-40 to +125	°C

**ON Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Test Condition	Symbol	T8M10T800UB	T8M35T800UB	Unit
			Max	Max	
On-State Voltage	I <sub>T</sub> = 8A, I <sub>GT</sub> = 70mA	V <sub>T</sub>	1.6	1.6	V
Gate Trigger Current	V <sub>AK</sub> = 12V, R <sub>L</sub> = 100Ω	I <sub>GT1</sub> I <sub>GT2</sub> I <sub>GT3</sub>	10	35	mA
Holding Current	V <sub>AK</sub> = 12V, R <sub>L</sub> = 100Ω, I <sub>GT</sub> = 70mA I <sub>T</sub> = 100mA	I <sub>H1</sub> I <sub>H3</sub>	15	50	mA
Latching Current	V <sub>AK</sub> = 12V, R <sub>L</sub> = 100Ω, I <sub>GT</sub> = 70mA	I <sub>L1</sub> I <sub>L1</sub> I <sub>L3</sub>	25 40 25	50 80 50	mA
Gate Trigger Voltage	V <sub>AK</sub> = 12V, R <sub>L</sub> = 100Ω	V <sub>GT1</sub> V <sub>GT2</sub> V <sub>GT3</sub>	1.5	1.5	V

**Dynamic Electrical Characteristics** (@T<sub>J</sub> = +125°C, unless otherwise specified.)

Characteristic	Test Condition	Symbol	T8M10T800UB		T8M35T800UB		Unit
			Max	Min	Max	Min	
Rate of Rise of Off-State Voltage	V <sub>D</sub> = 536V, gate open T <sub>J</sub> = +125°C	dV/dt	40	—	2000	—	V/μs
Rate of Change of Commutating Current	Without snubber T <sub>J</sub> = +125°C (dV/dt) <sub>c</sub> = 10V/μs T <sub>J</sub> = +125°C	(di/dt) <sub>c</sub>	—	—	—	4.5	A/ms
			—	2.8	—	—	A/ms

**OFF Characteristics**

Characteristic	Test Condition	Symbol	Max	Unit
Forward and Reverse Leakage Current	Gate open, rated V <sub>DRM</sub> and V <sub>RRM</sub>	T <sub>J</sub> = +25°C	I <sub>DRM</sub>	5 μA
		T <sub>J</sub> = +125°C	I <sub>RRM</sub>	2 mA

**Thermal Characteristics**

Characteristic	Symbol	Typ	Unit
Thermal Resistance (Note 5)	R <sub>θJA</sub>	10.5	°C/W
	R <sub>θJC</sub>	1.9	
	R <sub>θJL</sub>	1.7	

Note: 5. Thermal resistance junction to case, lead and ambient in accordance with JESD-51. Unit mounted on aluminum pad 45mm x 30mm x 24mm fin type heatsink.

**Rating and Characteristic Curves – T8M10T800UB**

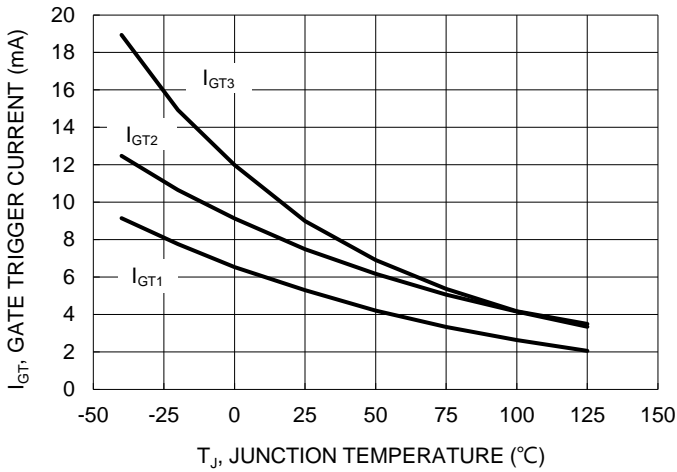


Figure 1. Typical Gate Trigger Current vs. Junction Temperature

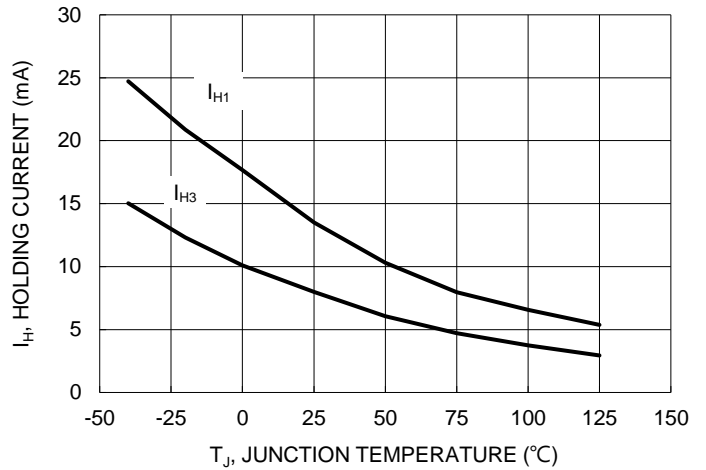


Figure 2. Typical Holding Current vs. Junction Temperature

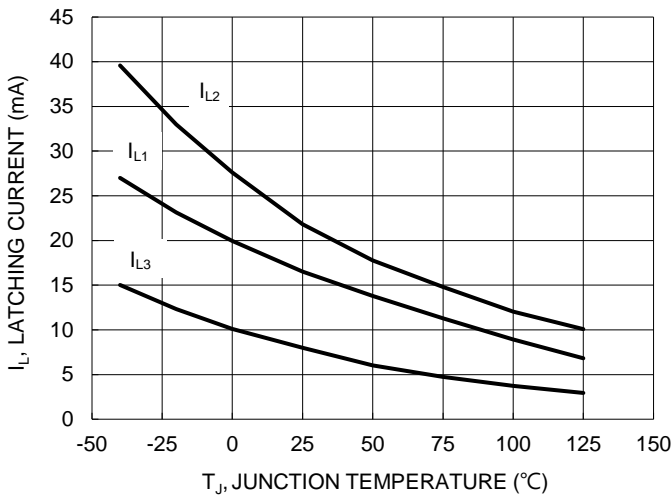


Figure 3. Typical Latching Current vs. Junction Temperature

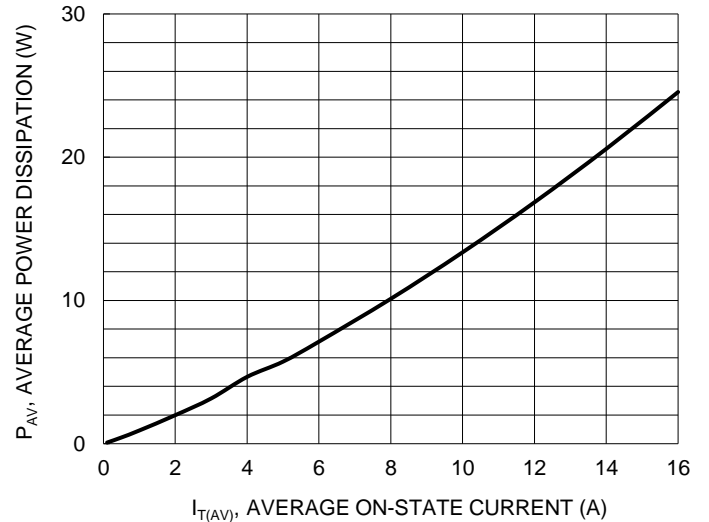


Figure 4. On-State Power Dissipation

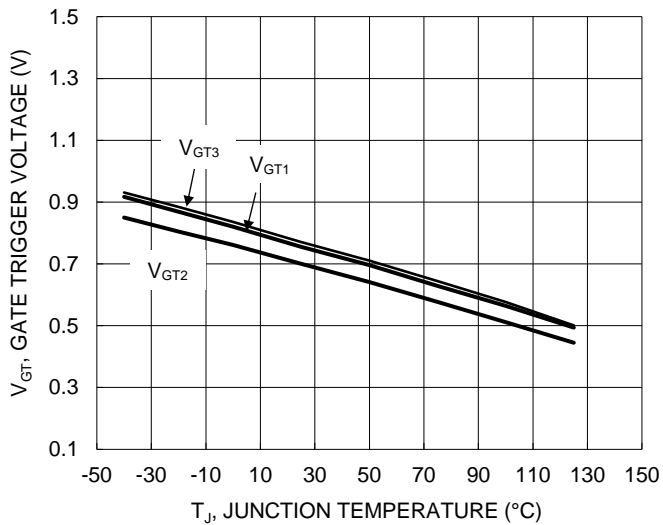


Figure 5. Typical Gate Trigger Voltage vs. Junction Temperature

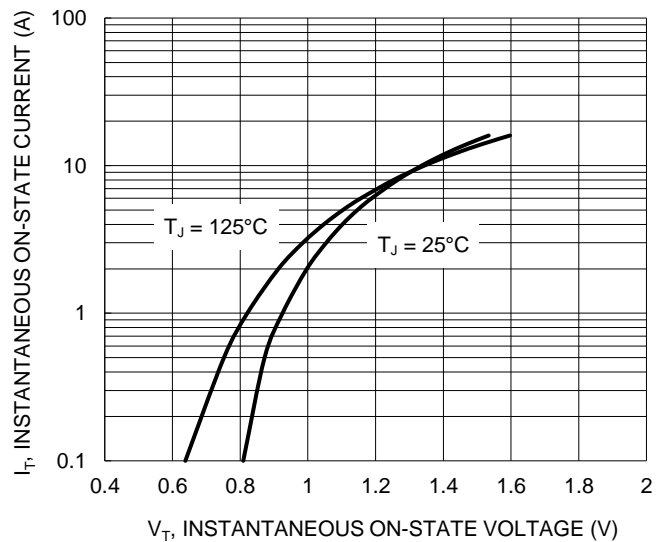


Figure 6. On-State Characteristics

**Rating and Characteristic Curves – T8M35T800UB**

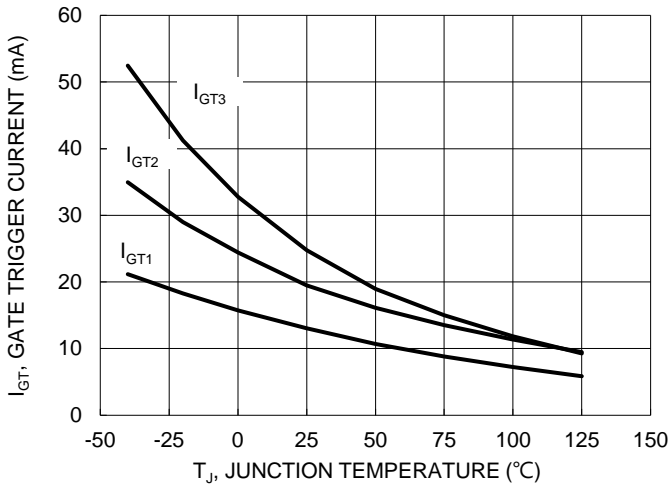


Figure 7. Typical Gate Trigger Current vs. Junction Temperature

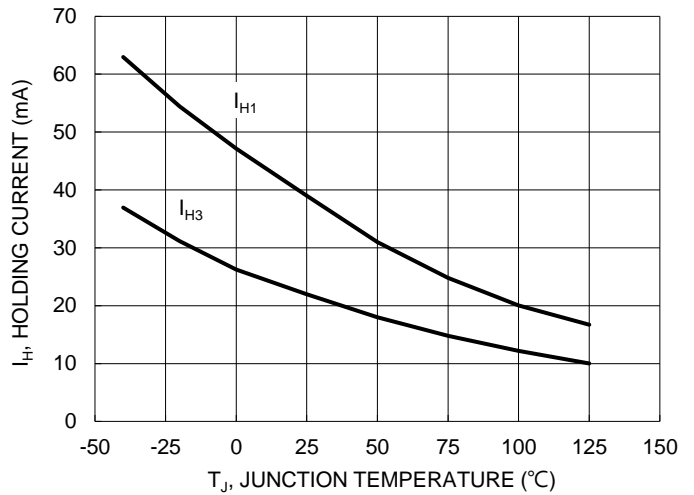


Figure 8. Typical Holding Current vs. Junction Temperature

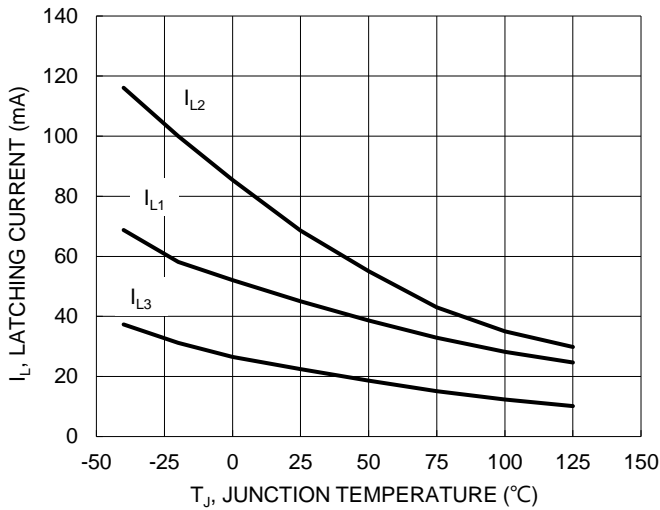


Figure 9. Typical Latching Current vs. Junction Temperature

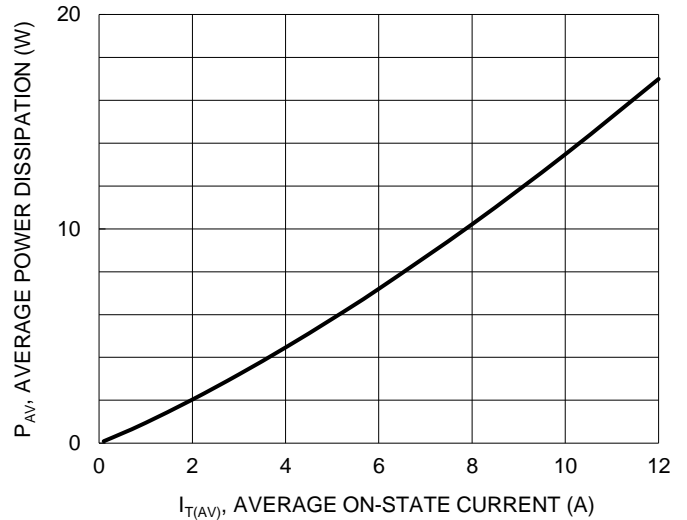


Figure 10. On-State Power Dissipation

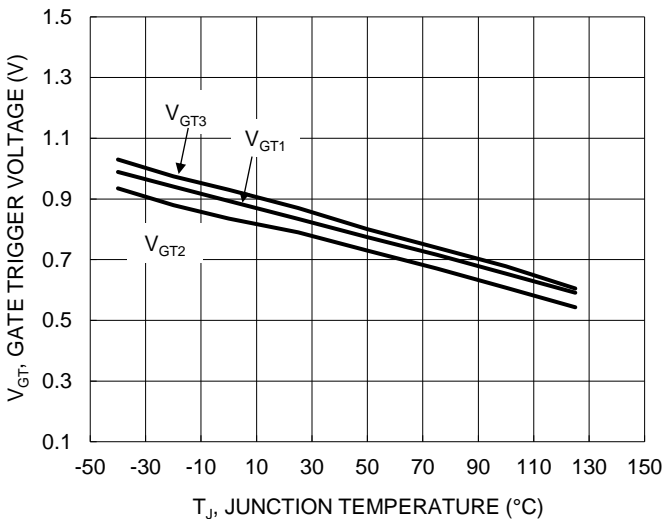


Figure 11. Typical Gate Trigger Voltage vs. Junction Temperature

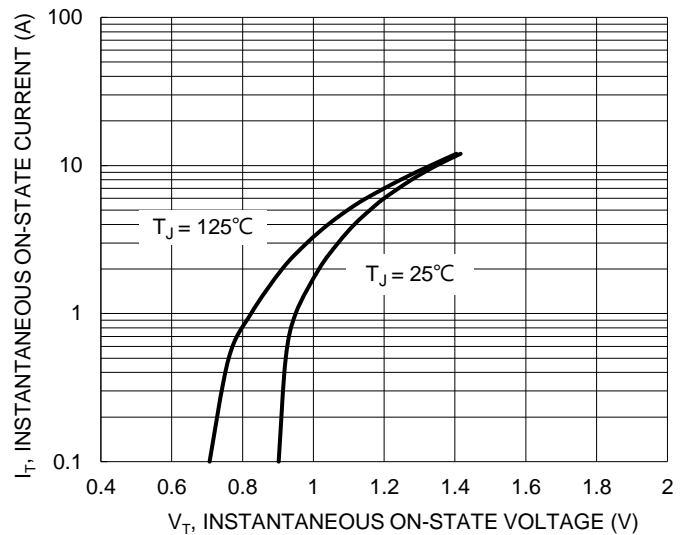
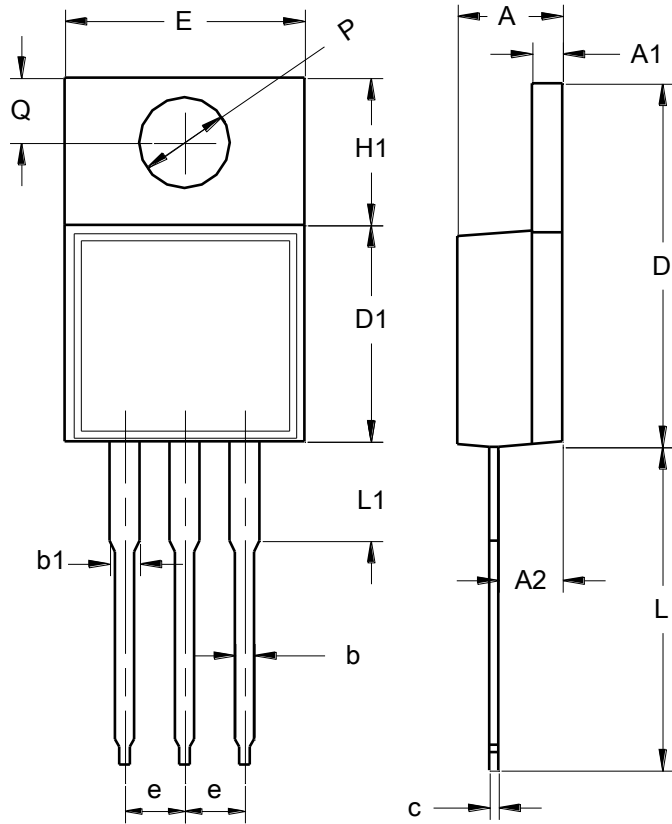


Figure 12. On-State Characteristics

**Package Outline Dimensions**

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

**TO220AB (Type WX)**



TO220AB (Type WX)		
Dim	Min	Max
A	3.56	4.83
A1	1.14	1.40
A2	2.03	2.92
b	0.51	1.14
b1	1.14	1.70
c	0.30	0.64
D	14.40	15.20
D1	8.26	9.28
E	9.65	10.67
e	2.29	2.79
H1	5.84	6.86
L	12.70	14.73
L1	--	4.20
P $\varnothing$	3.53	4.09
Q	2.54	3.43
All Dimensions in mm		

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