

### T10B Series - DO-201



#### Agency Approvals

Agency	Agency File Number
	E128662

#### Pinout Designation

Not Applicable

#### Schematic Symbol



#### Description

T10B Series are SIDACtor® thyristors designed to protect baseband equipment such as modems, line cards, CPE and DSL equipment from damaging overvoltage transients.

This series provides a robust and cost effective through-hole solution that enables equipment to comply with global regulatory standards.

#### Features and Benefits

- Low voltage overshoot
- Low on-state voltage
- Surge capability does not degrade after multiple surges events that are within its limits
- Fails in a short circuit mode when surged beyond its ratings
- High Surge Current Rating
- RoHS Compliant
- Pb-free E3 means 2nd level interconnect is Pb-free and the terminal finish material is tin(Sn) (IPC/JEDEC J-STD-609A.01)

#### Applicable Global Standards

- TIA-968-A
- TIA-968-B
- ITU K.20/21/45 Enhanced Level
- ITU K.20/21/45 Basic Level
- GR 1089 Intra-building
- IEC 61000-4-5, 2nd Edition
- YD/T 1082
- YD/T 993
- YD/T 950
- GR 1089 Inter-building

#### Electrical Characteristics

Part Number	Marking	$V_{DRM}$ @ $I_{DRM}=5\mu A$	$V_S$ @ 100V/ $\mu s$	$I_H$	$I_S$	$I_T$	$V_T$ @ $I_T=2.2$ Amp	Capacitance @ 1MHz, 2V Bias
		V Min	V Max	mA Min	mA Max	A Max	V Max	pF
T10B080Bxx	T10B080B	70	125	120	800	2.2	4	60
T10B110Bxx	T10B110B	100	142	120	800	2.2	4	55
T10B140Bxx	T10B140B	120	178	120	800	2.2	4	48
T10B180Bxx	T10B180B	170	220	120	800	2.2	4	44
T10B220Bxx	T10B220B	200	275	120	800	2.2	4	41
T10B270Bxx	T10B270B	240	370	120	800	2.2	4	36
T10B080Exx	T10B080E	70	125	180	800	2.2	4	60
T10B110Exx	T10B110E	100	142	180	800	2.2	4	55
T10B140Exx	T10B140E	120	178	180	800	2.2	4	48
T10B180Exx	T10B180E	170	220	180	800	2.2	4	44
T10B220Exx	T10B220E	200	275	180	800	2.2	4	41
T10B270Exx	T10B270E	240	370	180	800	2.2	4	36

#### Notes:

- Absolute maximum ratings measured at  $T_A=25^\circ C$  (unless otherwise noted).
- Components are bi-directional.
- **XX** Part Number Suffix: '**RP**' (Reel Pack), '**Blank**' (Bulk Pack), or '**60**' (Type 60 lead form, Bulk Pack)

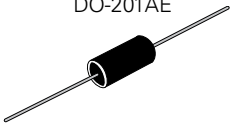
### Surge Ratings

Series	$I_{PP}$			$I_{TSM}$ 50/60 Hz	di/dt
	8/20 <sup>1</sup> 1.2/50 <sup>2</sup>	5/310 <sup>1</sup> 10/700 <sup>2</sup>	10/1000 <sup>1</sup> 10/1000 <sup>2</sup>		
	A min	A min	A min		
B	250	125	100	30	500

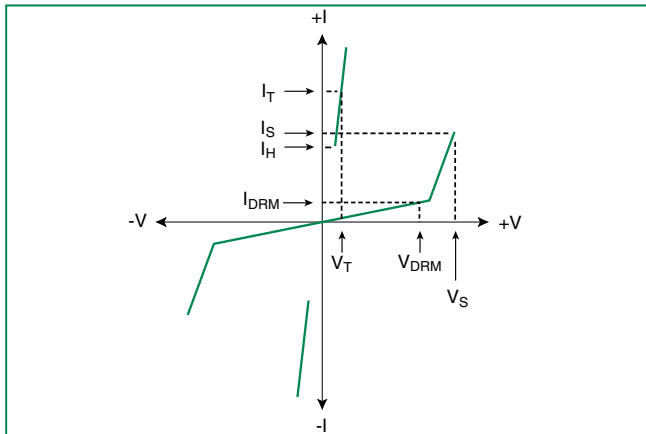
Notes:

- 1 Current waveform in  $\mu s$
  - 2 Voltage waveform in  $\mu s$
- Peak pulse current rating ( $I_{pp}$ ) is repetitive and guaranteed for the life of the product that remains in thermal equilibrium.
  - $I_{pp}$  ratings applicable over temperature range of  $-40^{\circ}C$  to  $+85^{\circ}C$
  - The component must initially be in thermal equilibrium with  $-40^{\circ}C \leq T_j \leq +150^{\circ}C$

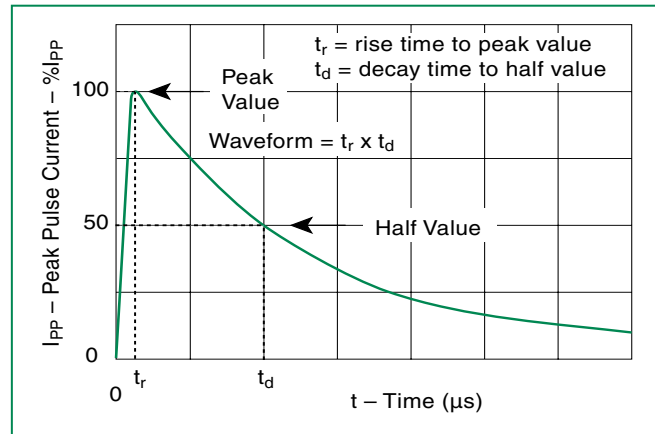
### Thermal Considerations

Package	Symbol	Parameter	Value	Unit
 DO-201AE	$T_j$	Operating Junction Temperature Range	-40 to +150	$^{\circ}C$
	$T_s$	Storage Temperature Range	-65 to +150	$^{\circ}C$
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	120	$^{\circ}C/W$

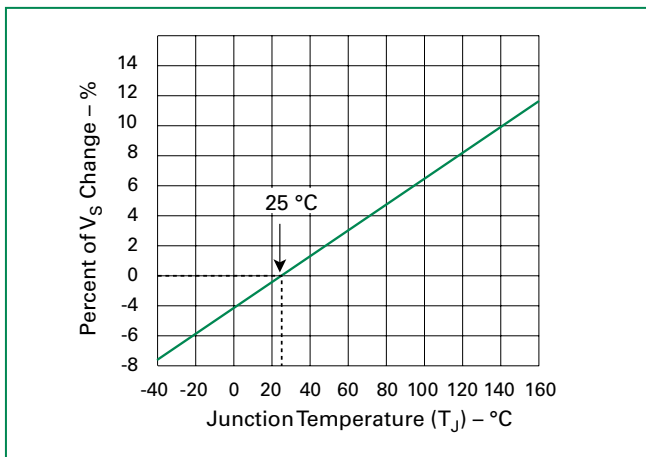
### V-I Characteristics



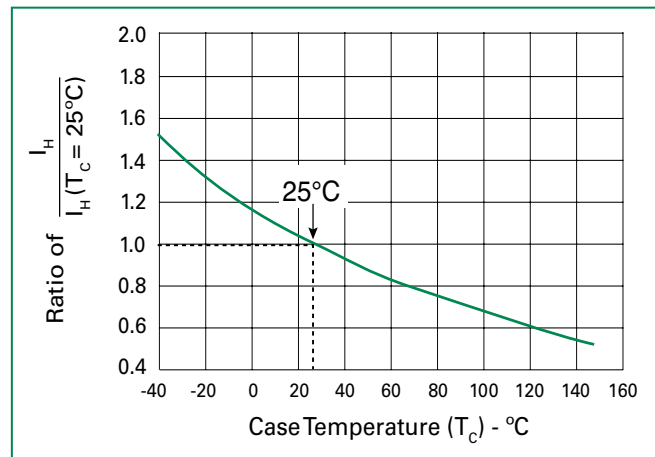
### $t_r \times t_d$ Pulse Waveform



### Normalized $V_S$ Change vs. Junction Temperature

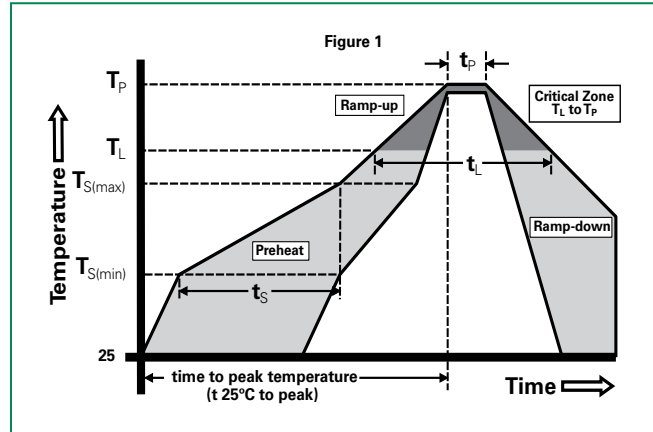


### Normalized DC Holding Current vs. Case Temperature



**Soldering Parameters**

Reflow Condition	Pb-Free assembly (see Fig. 1)	
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max ( $T_{s(max)}$ )	+200°C
	-Time (Min to Max) ( $t_s$ )	60-180 secs.
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)	3°C/sec. Max.	
$T_{s(max)}$ to $T_L$ - Ramp-up Rate	3°C/sec. Max.	
Reflow	-Temperature ( $T_L$ ) (Liquidus)	+217°C
	-Temperature ( $t_L$ )	60-150 secs.
Peak Temp ( $T_p$ )	+260(+0/-5)°C	
Time within 5°C of actual Peak Temp ( $t_p$ )	30 secs. Max.	
Ramp-down Rate	6°C/sec. Max.	
Time 25°C to Peak Temp ( $T_p$ )	8 min. Max.	
Do not exceed	+260°C	



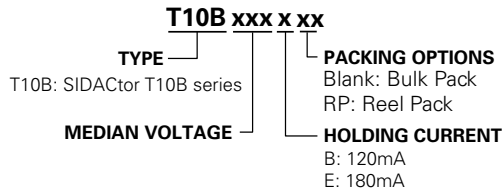
**Physical Specifications**

<b>Lead Material</b>	Copper Alloy
<b>Terminal Finish</b>	100% Matte-Tin Plated
<b>Body Material</b>	UL Recognized epoxy with a V-0 flammability rating per ANSI/UL 94

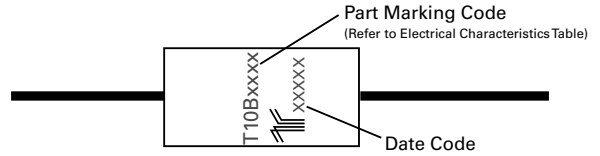
**Environmental Specifications**

<b>High Temp Voltage Blocking</b>	80% Rated $V_{DRM}$ ( $V_{AC}$ Peak) +125°C or +150°C, 504 or 1008 hrs. MIL-STD-750 (Method 1040) JEDEC, JESD22-A-101
<b>Temp Cycling</b>	-65°C to +150°C, 15 min. dwell, 10 up to 100 cycles. MIL-STD-750 (Method 1051) EIA/JEDEC, JESD22-A-104
<b>Biased Temp &amp; Humidity</b>	52 $V_{DC}$ (+85°C) 85%RH, 504 up to 1008 hrs. EIA/JEDEC, JESD22-A-101
<b>High Temp Storage</b>	+150°C 1008 hrs. MIL-STD-750 (Method 1031) JEDEC, JESD22-A-101
<b>Low Temp Storage</b>	-65°C, 1008 hrs.
<b>Thermal Shock</b>	0°C to +100°C, 5 min. dwell, 10 sec. transfer, 10 cycles. MIL-STD-750 (Method 1056) JEDEC, JESD22-A-106
<b>Autoclave (Pressure Cooker Test)</b>	+121°C, 100%RH, 2atm, 24 up to 168 hrs. EIA/JEDEC, JESD22-A-102
<b>Resistance to Solder Heat</b>	+260°C, 30 secs. MIL-STD-750 (Method 2031)
<b>Moisture Sensitivity Level</b>	85%RH, +85°C, 168 hrs., 3 reflow cycles (+260°C Peak). JEDEC-J-STD-020, Level 1

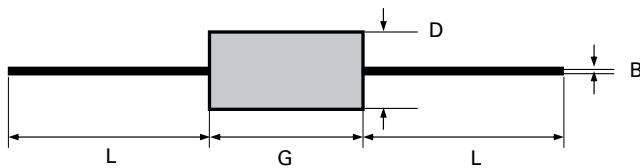
### Part Numbering



### Part Marking



### Dimensions — DO-201AE

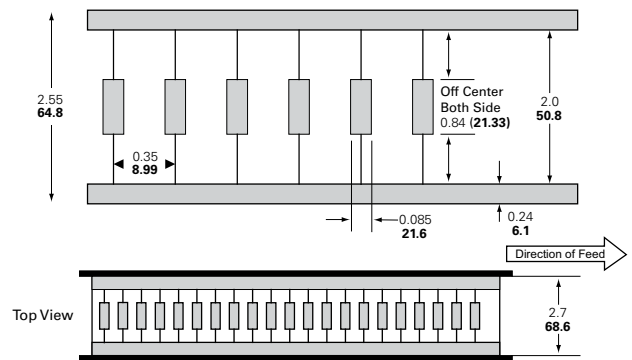


Dimension	Inches		Millimeters	
	MIN	MAX	MIN	MAX
<b>B</b>	0.037	0.042	0.94	1.067
<b>D</b>	0.190	0.205	4.826	5.207
<b>G</b>	0.360	0.375	9.146	9.527
<b>L</b>	1		25.4	

### Packing Options

Package Type	Description	Quantity	Added Suffix	Industry Standard
T10B	DO-201AE Tape and Reel Pack	1000	RP	EIA-RS-296-D
	DO-201AE Bulk Pack	500	N/A	N/A

### Tape and Reel Specification — DO-201AE



### Additional Information



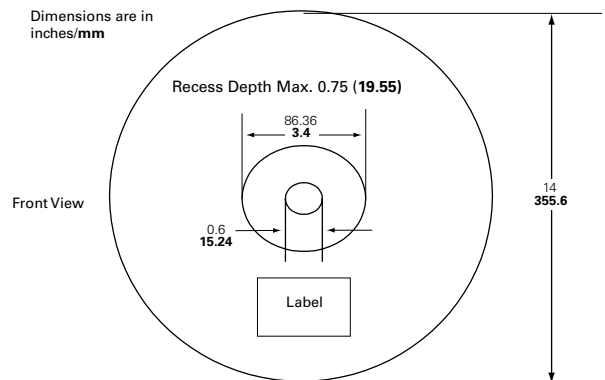
Datasheet



Resources



Samples



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