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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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**RoHS T10A Series - DO-15**



**Agency Approvals**

Agency	Agency File Number
	E128662

**Pinout Designation**

Not Applicable

**Schematic Symbol**



**Description**

T10A Series are SIDACTor® devices designed protect baseband equipment such as modems, line cards, CPE and DSL from damaging overvoltage transients.

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

**Features and Benefits**

- Low voltage overshoot
- Low on-state voltage
- Does not degrade with use
- Fails short circuit when surged in excess of ratings
- Low Capacitance

**Applicable Global Standards**

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

\*A-rated parts require series resistance

**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 Typ
T10A060Bxx	T10A060B	50	84	120	800	2.2	4	50
T10A060Exx	T10A060E	50	84	180	800	2.2	4	50
T10A062xx	T10A062	56	86	150	800	2.2	4	50
T10A068xx	T10A068	61	94	150	800	2.2	4	50
T10A080Bxx	T10A080B	70	125	120	800	2.2	4	43
T10A080Exx	T10A080E	70	125	180	800	2.2	4	43
T10A100xx	T10A100	90	140	150	800	2.2	4	43
T10A110Bxx	T10A110B	100	142	120	800	2.2	4	38
T10A110Exx	T10A110E	100	142	180	800	2.2	4	38
T10A120xx	T10A120	108	168	150	800	2.2	4	38
T10A130xx	T10A130	117	178	150	800	2.2	4	38
T10A140Bxx	T10A140B	120	178	120	800	2.2	4	34
T10A140Exx	T10A140E	120	178	180	800	2.2	4	34
T10A180xx	T10A180	170	220	150	800	2.2	4	34
T10A180Bxx	T10A180B	170	220	120	800	2.2	4	32
T10A180Exx	T10A180E	170	220	180	800	2.2	4	32
T10A200xx	T10A200	180	275	150	800	2.2	4	30
T10A220xx	T10A220	200	275	150	800	2.2	4	30

Table continues on next page.

**Electrical Characteristics** (continued)

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 Typ
T10A220Bxx	T10A220B	200	275	120	800	2.2	4	30
T10A220Exx	T10A220E	200	275	180	800	2.2	4	30
T10A240xx	T10A240	216	330	150	800	2.2	4	30
T10A270xx	T10A270	245	370	150	800	2.2	4	30
T10A270Bxx	T10A270B	245	370	120	800	2.2	4	30
T10A270Exx	T10A270E	245	370	180	800	2.2	4	30

Notes:

- Absolute maximum ratings measured at  $T_A = 25^\circ C$  (unless otherwise noted).
- Devices are bi-directional (unless otherwise noted).
- **XX** Part Number Suffix: "**RP**" (Reel Pack) or **Blank** (Bulk Pack)

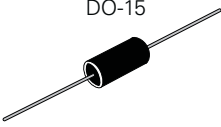
**Surge Ratings**

Series	$I_{PP}$			$I_{TSM}$ 50/60 Hz	di/dt
	8x20 <sup>1</sup> 1.2x50 <sup>2</sup>	5x310 <sup>1</sup> 10x700 <sup>2</sup>	10x1000 <sup>1</sup> 10x1000 <sup>2</sup>		
	A min	A min	A min		
A	100	37.5	50	20	100

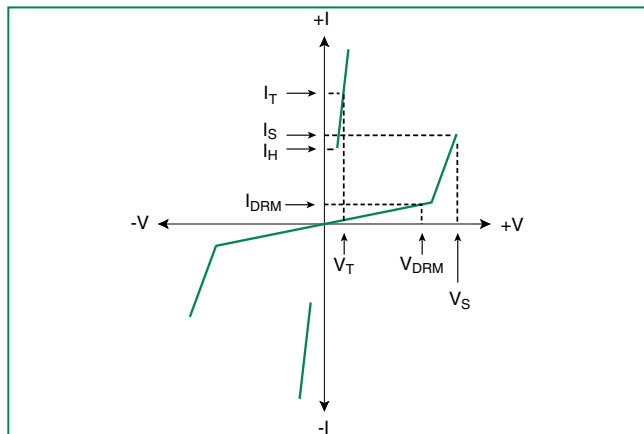
Notes:

- 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.
- $I_{PP}$  ratings applicable over temperature range of  $-40^\circ C$  to  $+85^\circ C$
- The device must initially be in thermal equilibrium with  $-40^\circ C \leq T_j \leq +150^\circ C$

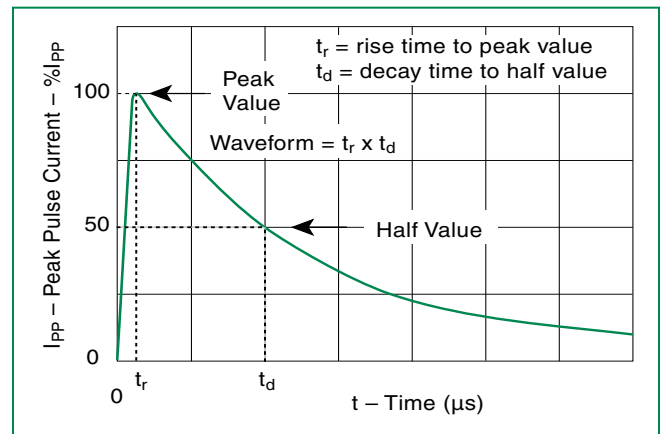
**Thermal Considerations**

Package	Symbol	Parameter	Value	Unit
 DO-15	$T_J$	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	$^\circ C/W$

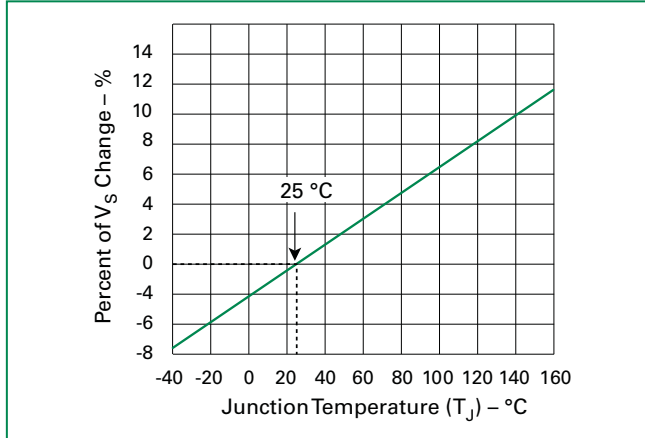
**V-I Characteristics**



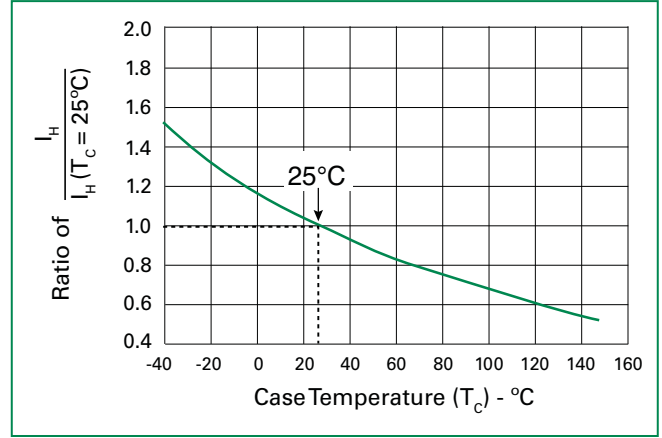
**$t_r \times t_d$  Pulse Waveform**



**Normalized  $V_s$  Change vs. Junction Temperature**

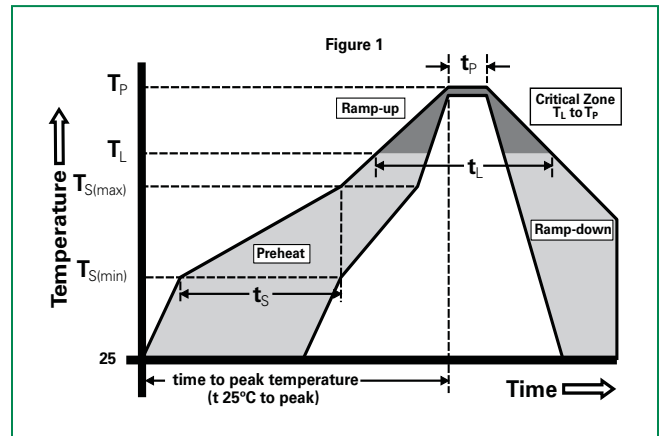


**Normalized DC Holding Current vs. Case Temperature**



**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	



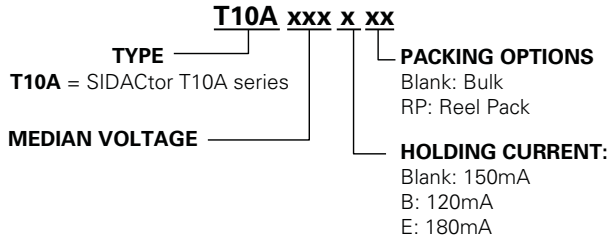
**Physical Specifications**

<b>Lead Material</b>	Copper Alloy
<b>Terminal Finish</b>	100% Matte-Tin Plated
<b>Body Material</b>	UL recognized epoxy meeting flammability classification 94V-0

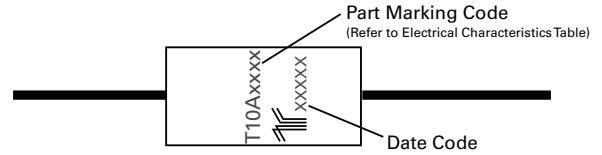
**Environmental Specifications**

<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-A104
<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

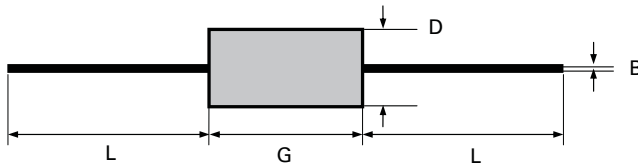
**Part Numbering**



**Part Marking**



**Dimensions – DO-15**

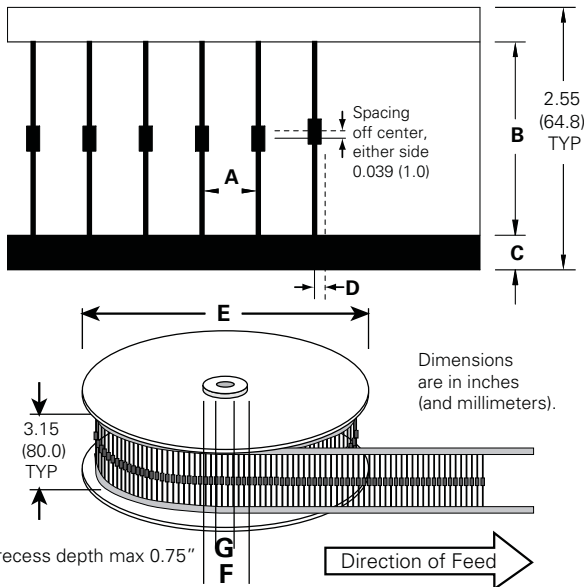


Dimension	Inches		Millimeters	
	MIN	MAX	MIN	MAX
<b>B</b>	0.028	0.034	0.711	0.864
<b>D</b>	0.12	0.14	3.048	3.556
<b>G</b>	0.235	0.27	5.969	6.858
<b>L</b>	1		25.4	

**Packing Options**

Package Type	Description	Packaging Quantity	Added Suffix	Industry Standard
T10A	DO-15 Tape and Reel Pack	1000	RP	EIA-RS-296-D
	DO-15 Bulk Pack	500	N/A	N/A

**Tape and Reel Specification – DO-15**



Symbols	Description	Inches	MM
<b>A</b>	Component Spacing (lead to lead)	0.200 ± 0.020"	5.08 ± 0.508
<b>B</b>	Inner Tape Pitch	2.062 ± 0.059"	52.37 ± 1.498
<b>C</b>	Tape Width	0.250"	6.35
<b>D</b>	Max. Off Alignment	0.048"	1.219
<b>E</b>	Reel Dimension	13"	330.2
<b>F</b>	Max. Hub Recess	3"	76.19
<b>G</b>	Max. Abor Hole	0.68"	17.27