



Micro Commercial Components

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TSMBJ0309C-130

**Transient Voltage Protection Device
 120 Volts**

Features

- Oxide-Glass passivated Junction
- Bi-Directional protection in a single device
- Surge capabilities up to 50A@10/1000us or 150A@8/20us
- High Off-State impedance and Low On-State voltage
- Plastic material has UL flammability classification 94V-0

Mechanical Data

- Case : Molded plastic
- Polarity : None cathode band denotes
- Approx Weight : 0.093grams

Maximum Ratings

Characteristic	Symbol	Value	Unit
Non-repetitive peak impulse current	I_{PP}	50A	10/1000us
Non-repetitive peak On-state current	I_{TSM}	20A	8.3ms, one-half cycle
Operating temperature range	T_{OP}	-40~125°C	
Junction and storage temperature range	T_J, T_{STG}	-55~150°C	

Thermal Resistance

Characteristic	Symbol	Value	Unit
Thermal Resistance junction to lead	$R_{\theta JL}$	30°C/W	
Thermal Resistance junction to ambient	$R_{\theta JA}$	120°C/W	On recommended pad layout
Typical positive temperature coefficient for breakdown voltage	$\Delta V_{BR}/\Delta T_J$	0.1%/°C	

DO-214AA (SMB)

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.078	.096	2.00	2.44	
B	.077	.083	1.96	2.10	
C	.002	.008	.05	.20	
D	—	.02	—	.51	
E	.030	.060	.76	1.52	
F	.065	.091	1.65	2.32	
G	.205	.220	5.21	5.59	
H	.160	.180	4.06	4.57	
J	.130	.155	3.30	3.94	

SUGGESTED SOLDER PAD LAYOUT

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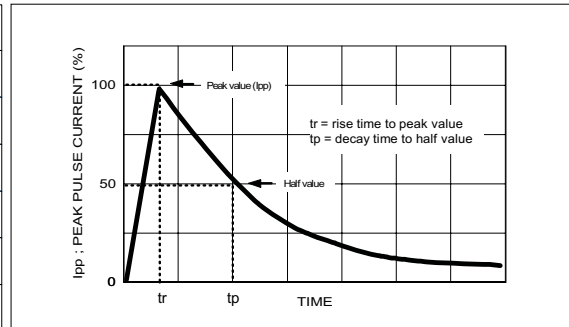
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ELECTRICAL CHARACTERISTIC @25: Unless otherwise specified

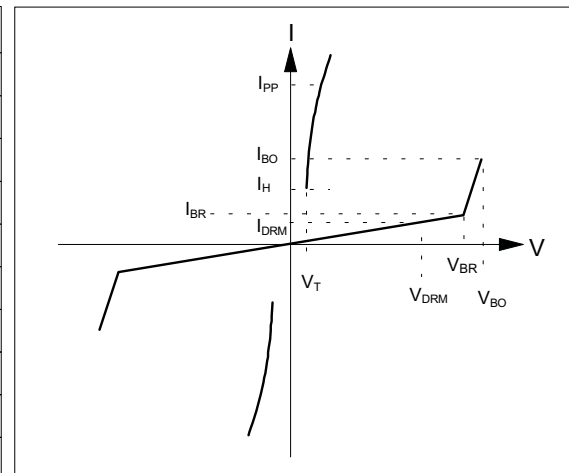
Parameter	Rated Repetitive Off-state Voltage	Off-state Leakage Current@ V_{DRM}	Breakover Voltage	On-State Voltage @ $I_T=1.0A$	Breakover Current	Holding Current	Off-State Capacitance
Symbol	V_{DRM}	I_{DRM}	V_{BO}	V_T	I_{BO+}	I_H	C_J
Units	Volts	μA	Volts	Volts	mA	mA	pF
Limit	Max	Max	Max	Max	Max	Min	Typ.
TSMBJ0309C-130	120	5	160	5	800	150	60

MAXIMUM RATED SURGE WAVEFORM

Waveform	Standard	I_{pp} (A)
2/10 μs	GR-1089-CORE	200
8/20 μs	IEC 61000-4-5	150
10/160 μs	FCC Part 68	100
10/700 μs	ITU-T K20/21	60
10/560 μs	FCC Part 68	60
10/1000 μs	GR-1089-CORE	50



Symbol	Parameter	
V_{DRM}	Stand-off voltage	
I_{DRM}	Leakage current at stand-off voltage	
V_{BR}	Breakdown voltage	
I_{BR}	Breakdown current	
V_{BO}	Breakover voltage	
I_{BO}	Breakover current	
I_H	Holding current	NOTE: 1
V_T	On state voltage	
I_{PP}	Peak pulse current	
C_O	Off-state capacitance	NOTE: 2



NOTE :

- $I_H > (V_L / R_L)$ If this criterion is not obeyed, the TSPD triggers but does not return correctly to high-resistance state. The surge recovery time. It does not exceed 30ms.
- Off-state capacitance measured at $f=1.0MHz$, $1.0V_{rms}$ signal, $VR=2V_{dc}$ bias.

Fig.1 - Off-State Current v.s Junction Temperature

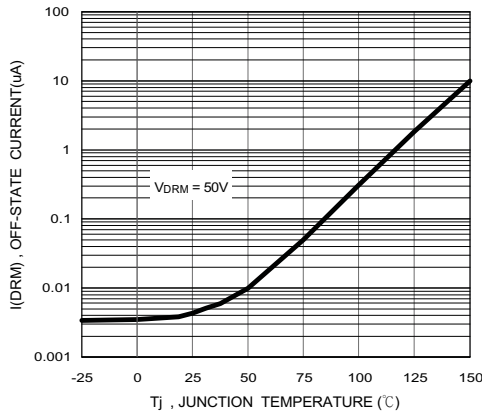


Fig.2 - Relative Variation of Breakdown Voltage v.s Junction Temperature

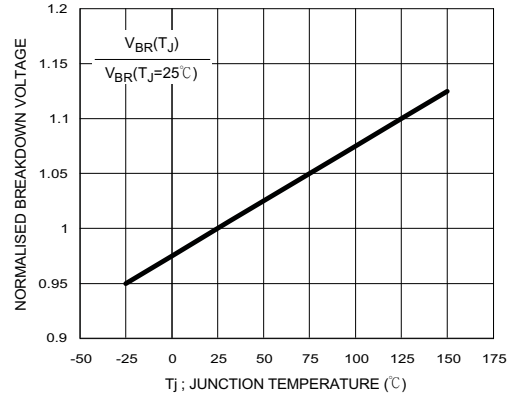


Fig.3 - Relative Variation of Breakover Voltage v.s Junction Temperature

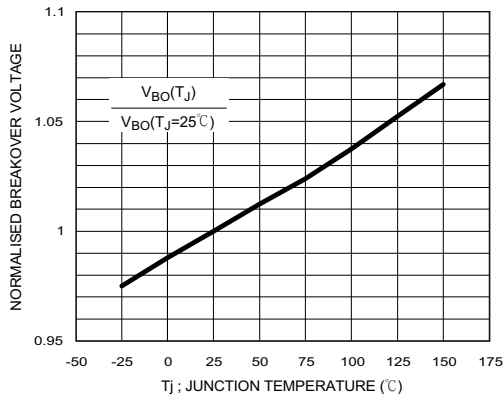


Fig.4 - On-State Current v.s On-State Voltage

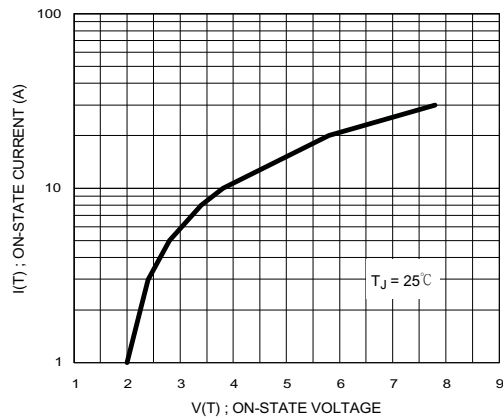


Fig.5 - Relative Variation of Holding Current v.s Junction Temperature

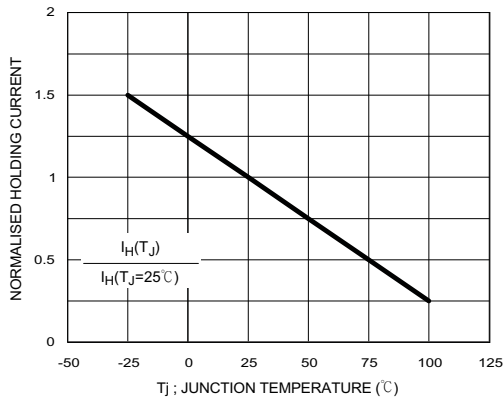
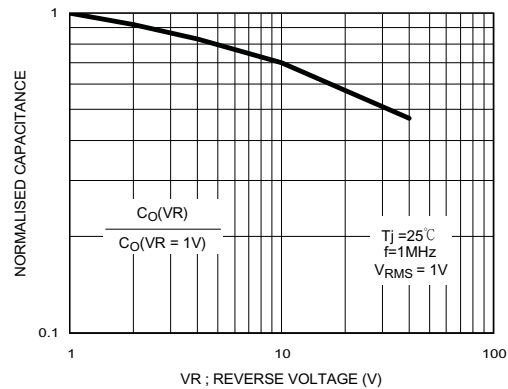
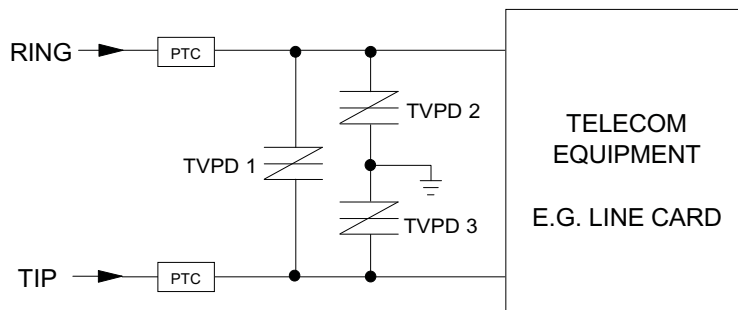
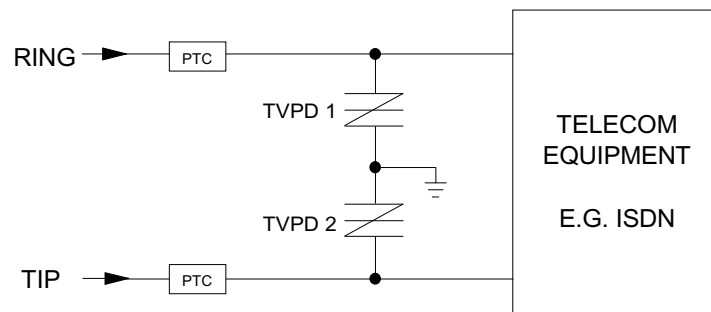
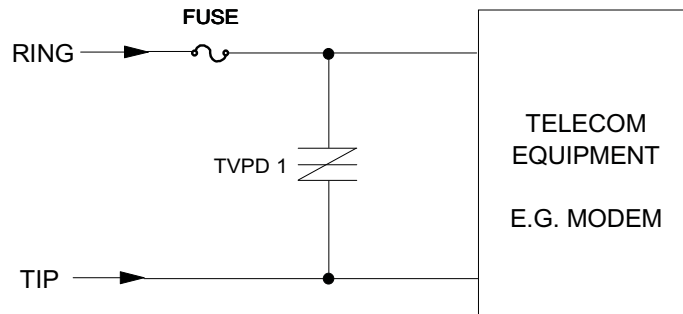


Fig.6 - Relative Variation of Junction Capacitance v.s Reverse Voltage Bias



TSMBJ0309C-130

TYPICAL APPLICATION CIRCUITS



The PTC (Positive Temperature Coefficient) is an overcurrent protection device.