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# TSMBJ1006C THRU TSMBJ1024C

## Features

- Oxide-Glass passivated Junction
- Bi-Directional protection in a single device
- Surge capabilities up to 100A@10/1000us or 400A@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 Rating

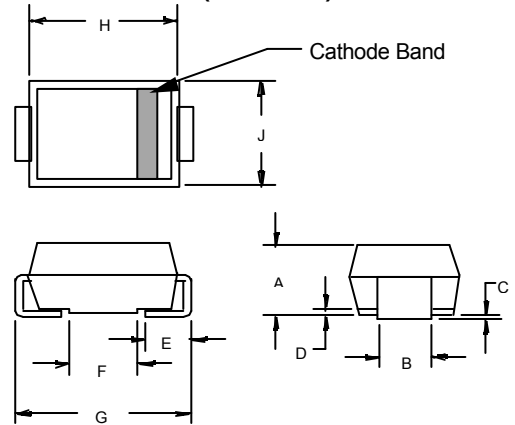
Characteristic	Symbol	Value	Unit
Non-repetitive peak impulse current	$I_{PP}$	100A	10/1000us
Non-repetitive peak On-state current	$I_{TSM}$	50A	8.3ms, one-half cycle
Operating temperature range	$T_{OP}$	-40~150°C	
Junction and storage temperature range	$T_J, T_{STG}$	-55~150°C	

## Thermal Resistance

Characteristic	Symbol	Value	Unit
Thermal Resistance junction to lead	$R_{\theta JL}$	20°C/W	
Thermal Resistance junction to ambient	$R_{\theta JA}$	100°C/W	On recommended pad layout
Typical positive temperature coefficient for breakdown voltage	$\Delta V_{BR}/\Delta T_J$	0.1%/°C	

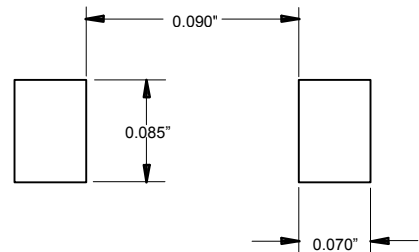
## Transient Voltage Protection Device 75 to 320 Volts

### DO-214AA (SMBJ)



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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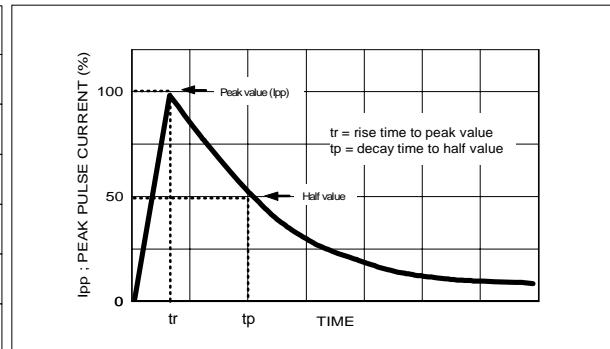


## ELECTRICAL CHARACTERISTIC @25°C Unless otherwise specified

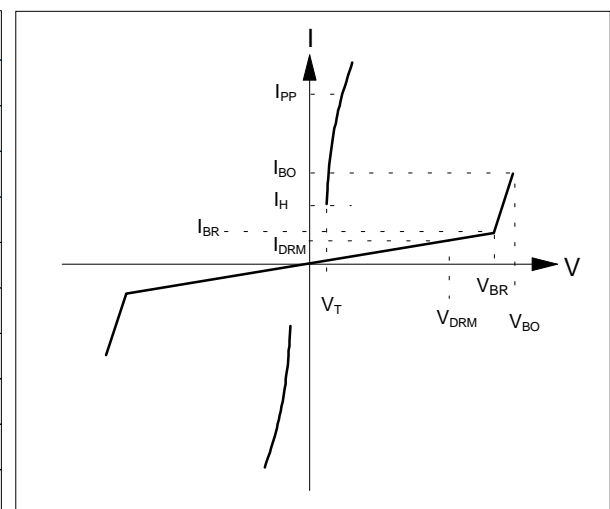
Parameter	Rated Repetitive Off-state Voltage	Off-state Leakage Current@V <sub>DRM</sub>	Breakover Voltage	On-State Voltage @I <sub>T</sub> =1.0A	Breakover Current		Holding Current		Off-State Capacitance
					I <sub>BO</sub>	I <sub>BO+</sub>	I <sub>H</sub>	I <sub>H+</sub>	
Symbol	V <sub>DRM</sub>	I <sub>DRM</sub>	V <sub>BO</sub>	V <sub>T</sub>	I <sub>BO</sub>	I <sub>BO+</sub>	I <sub>H</sub>	I <sub>H+</sub>	C <sub>J</sub>
Units	Volts	uA	Volts	Volts	mA	mA	mA	mA	pF
Limit	Max	Max	Max	Max	Min	Max	Min	Max	Typ.
TSMBJ1006C	75	5	98	5	50	800	150	800	200
TSMBJ1007C	90	5	130	5	50	800	150	800	120
TSMBJ1010C	140	5	180	5	50	800	150	800	120
TSMBJ1012C	160	5	220	5	50	800	150	800	120
TSMBJ1016C	190	5	265	5	50	800	150	800	80
TSMBJ1018C	220	5	300	5	50	800	150	800	80
TSMBJ1022C	275	5	350	5	50	800	150	800	80
TSMBJ1024C	320	5	400	5	50	800	150	800	80

## MAXIMUM RATED SURGE WAVEFORM

Waveform	Standard	I <sub>pp</sub> (A)
2/10 us	GR-1089-CORE	500
8/20 us	IEC 61000-4-5	400
10/160 us	FCC Part 68	200
10/700 us	ITU-T K20/21	200
10/560 us	FCC Part 68	150
10/1000 us	GR-1089-CORE	100



Symbol	Parameter	
V <sub>DRM</sub>	Stand-off voltage	
I <sub>DRM</sub>	Leakage current at stand-off voltage	
V <sub>BR</sub>	Breakdown voltage	
I <sub>BR</sub>	Breakdown current	
V <sub>BO</sub>	Breakover voltage	
I <sub>BO</sub>	Breakover current	
I <sub>H</sub>	Holding current	NOTE: 1
V <sub>T</sub>	On state voltage	
I <sub>PP</sub>	Peak pulse current	
C <sub>O</sub>	Off-state capacitance	NOTE: 2



### NOTE :

1.  $I_H > (V_L / R_L)$  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.
2. Off-state capacitance measured at  $f=1.0\text{MHz}$ ,  $1.0\text{Vrms}$  signal,  $V_R=2\text{Vdc}$  bias.

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

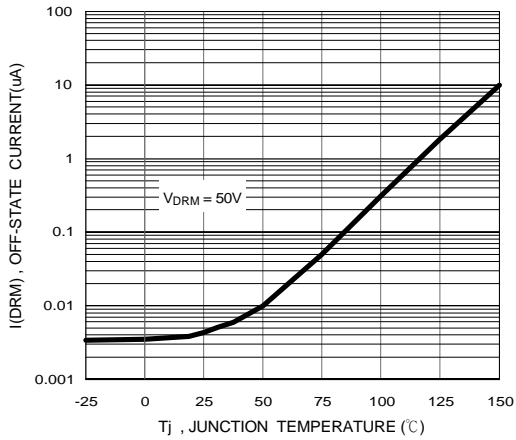


Fig.2 - Relative Variation of Breakdown Voltage v.s Junction Temperature

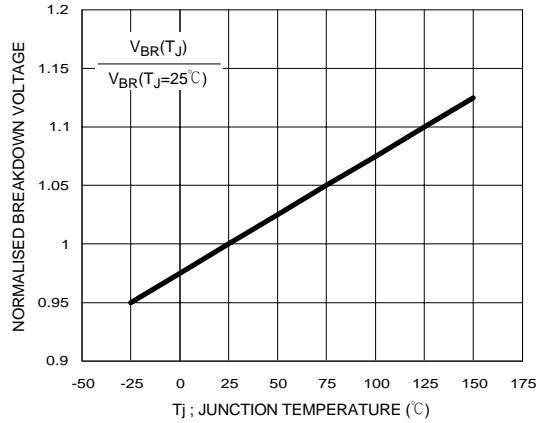


Fig.3 - Relative Variation of Breakover Voltage v.s Junction Temperature

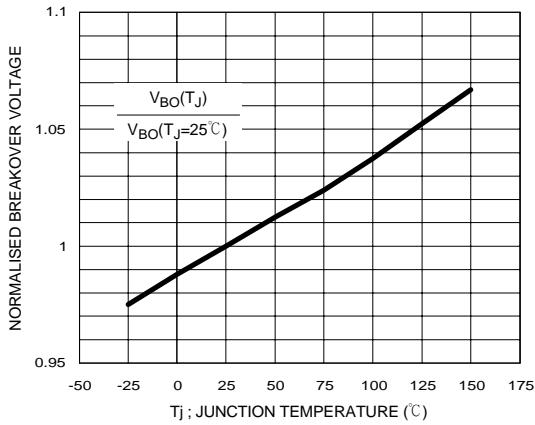


Fig.4 - On-State Current v.s On-State Voltage

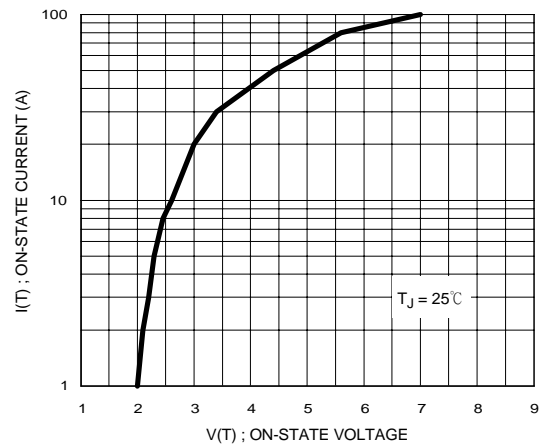


Fig.5 - Relative Variation of Holding Current v.s Junction Temperature

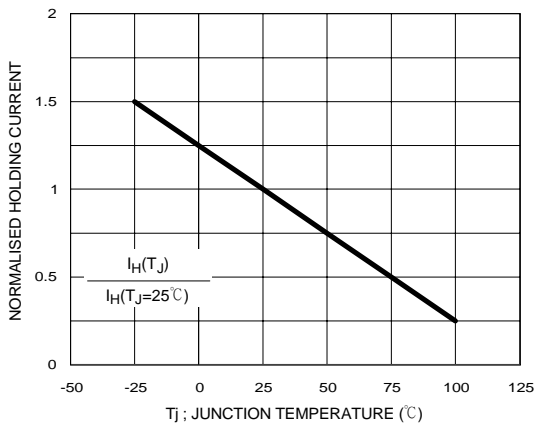
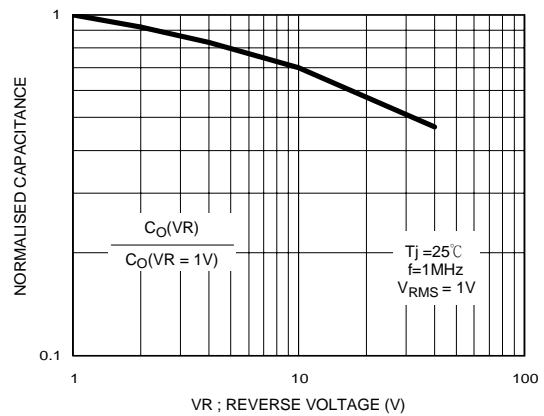


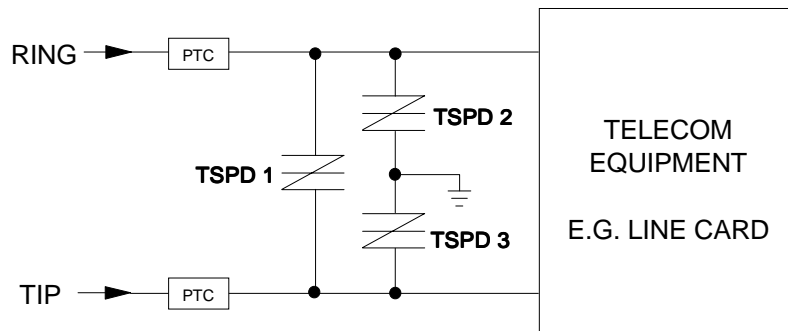
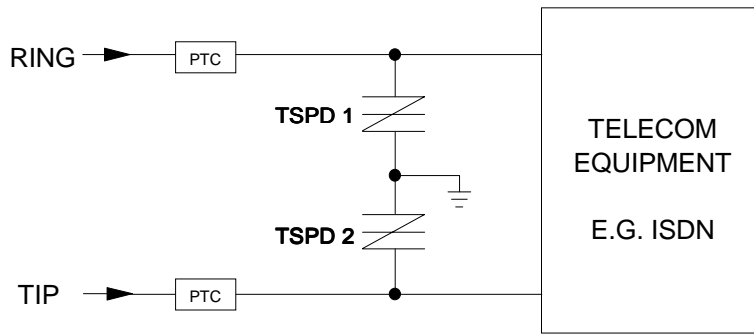
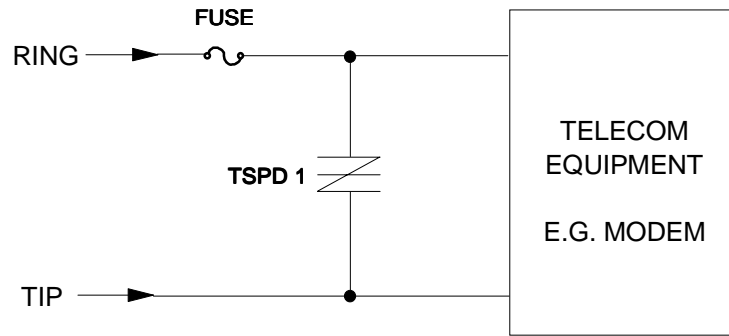
Fig.6 - Relative Variation of Junction Capacitance v.s Reverse Voltage Bias



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## TYPICAL APPLICATION CIRCUITS



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