



Micro Commercial Components  
21201 Itasca Street Chatsworth  
CA 91311

Phone: (818) 701-4933

Fax: (818) 701-4939

## TSMBJ0309C-130

### 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

## Transient Voltage Protection Device 120 Volts

### Mechanical Data

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

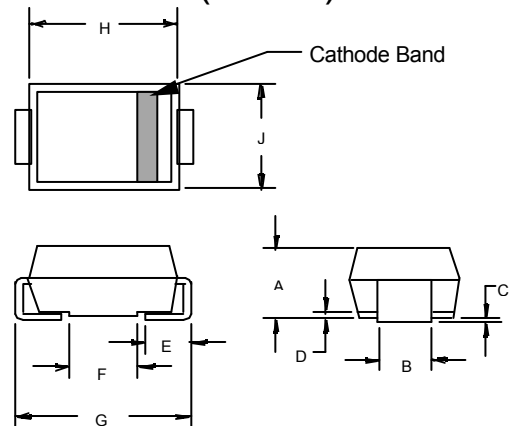
### Maximum Ratings

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

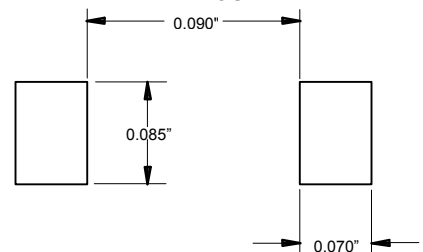
Characteristic	Symbol	Value	Unit
Thermal Resistance junction to lead	$R_{\theta JL}$	30°C/W	
Thermal Resistance junction to ambient	$R_{\theta JA}$	120°C/W	On recommended pad layout
Typical positive temperature coefficient for breakdown voltage	$\Delta V_{BR}/\Delta T_J$	0.1%/°C	

### DO-214AA (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

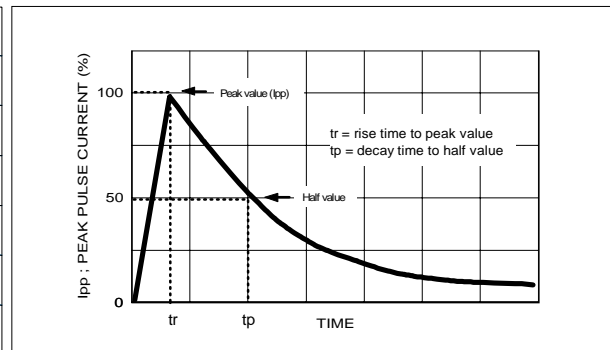


## ELECTRICAL CHARACTERISTIC @25°C Unless otherwise specified

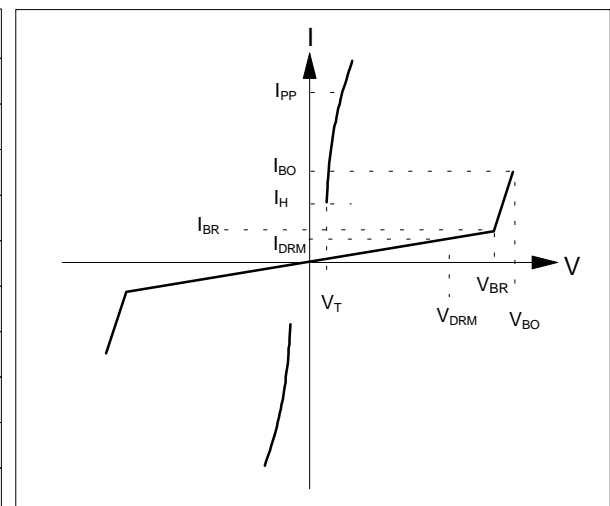
Parameter	Rated Repetitive Off-state Voltage	Off-state Leakage Current@ $V_{DRM}$	Breakover Voltage	On-State Voltage @ $I_T=1.0A$	Breakover Current		Holding Current		Off-State Capacitance
					$I_{BO-}$	$I_{BO+}$	$I_{H-}$	$I_{H+}$	
Symbol	$V_{DRM}$	$I_{DRM}$	$V_{BO}$	$V_T$	$I_{BO-}$	$I_{BO+}$	$I_{H-}$	$I_{H+}$	$C_J$
Units	Volts	$\mu A$	Volts	Volts	mA	mA	mA	mA	pF
Limit	Max	Max	Max	Max	Min	Max	Min	Max	Typ.
TSMBJ0309C-130	120	5	160	5	50	800	150	800	60

## MAXIMUM RATED SURGE WAVEFORM

Waveform	Standard	$I_{pp}$ (A)
2/10 us	GR-1089-CORE	200
8/20 us	IEC 61000-4-5	150
10/160 us	FCC Part 68	100
10/700 us	ITU-T K20/21	60
10/560 us	FCC Part 68	60
10/1000 us	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,  $V_R=2V_{dc}$  bias.

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

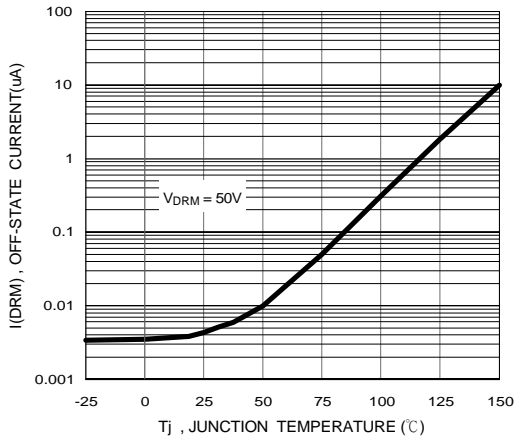


Fig.2 - Relative Variation of Breakdown Voltage v.s Junction Temperature

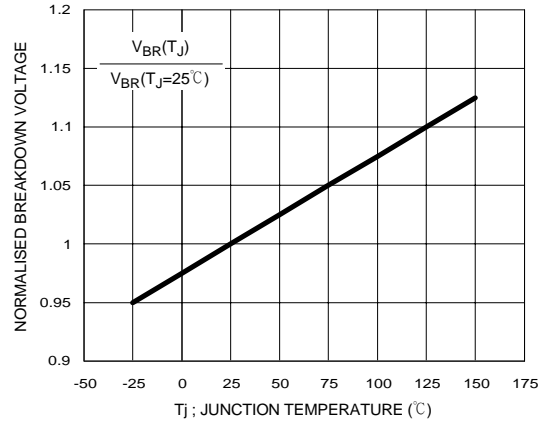


Fig.3 - Relative Variation of Breakover Voltage v.s Junction Temperature

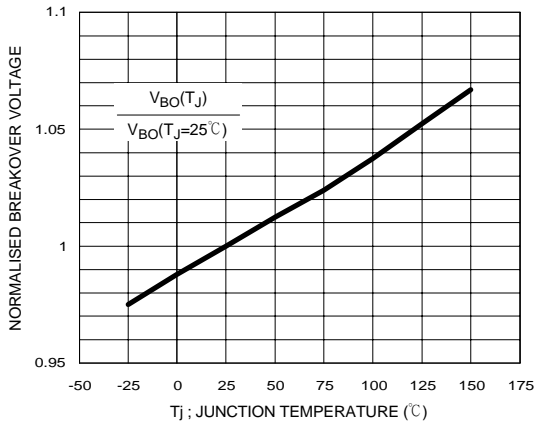


Fig.4 - On-State Current v.s On-State Voltage

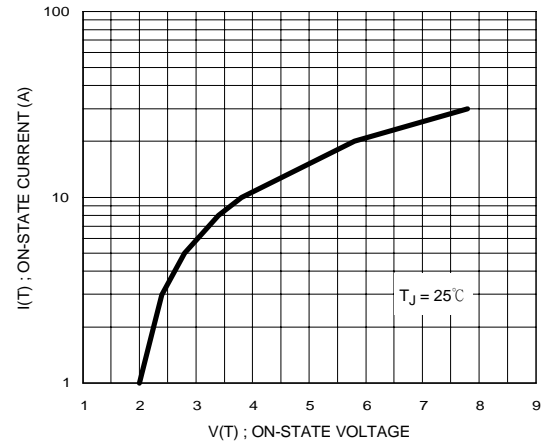


Fig.5 - Relative Variation of Holding Current v.s Junction Temperature

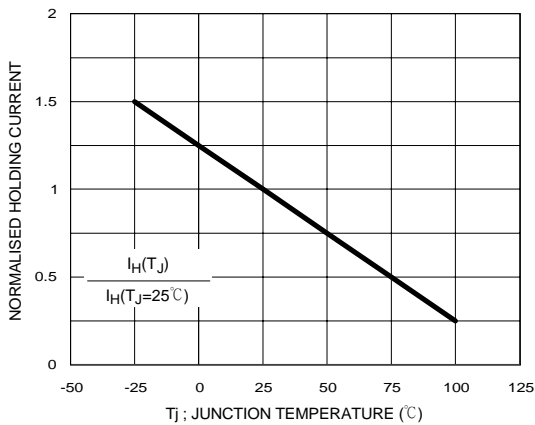


Fig.6 - Relative Variation of Junction Capacitance v.s Reverse Voltage Bias

