

TSSD400B1X

Surge Protection Device

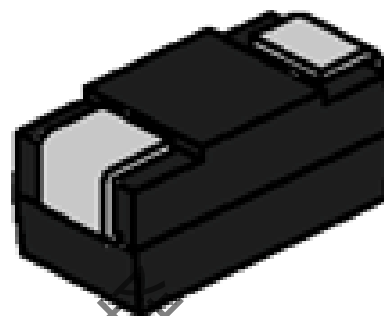
TOP-EMC

Description

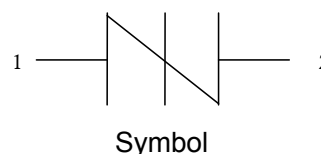
TSSD400B1X is a type of semiconduct component.
That is designed to protect baseband equipment.
from damaging overvoltage transients.

Features

- For surface mounted applications to optimize board space
- Low profile package
- Bidirectional crowbar protection
- Low leakage current : $I = 5\mu\text{A}$ max
- Low on-state voltage
- Low Capacitance
- Response Time is $< 1\mu\text{s}$
- YD/T 950 IEC 61000-4-5
- YD/T 993 ITU K.20/21
- YD/T 1082 TIA-968-A
- GR 1089 Intra-building
- Solid-state silicon technology
- Meets MSL 1 Requirements
- ROHS compliant



DO-214AA (SMB)



Electrical Characteristics (Tamb=25°C)

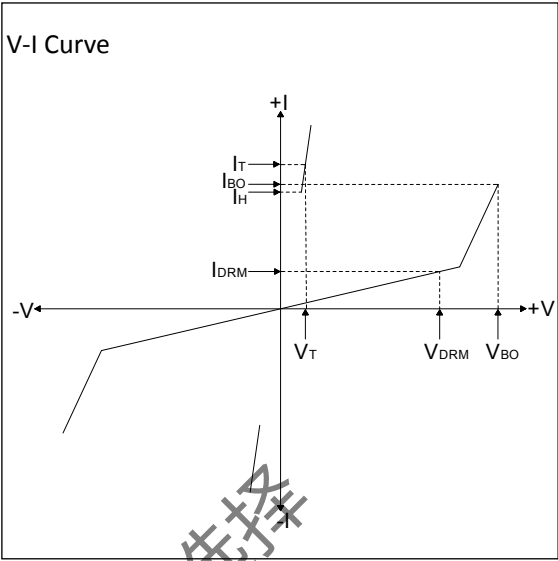
Type	V_{DRM}	I_{DRM}	V_{BO}	I_{BO}	V_{T}	I_{T}	C_{O}	I_{H}
	Min.		Max.	Max.	Max.		Tpy.	Tpy.
	V	μA	V	mA	V	A	pF	mA
TSSD400B1X	400	1	520	800	4	2.2	40	100

① V_{BO} is measured at 100KV/s

② Off-state capacitance is measured in $V_{\text{DC}}=2\text{V}, V_{\text{RMS}}=1\text{V}, f=1\text{MHz}$

Electrical Parameters (T=25°C)

Symbol	Parameter
V_{DRM}	Stand-off voltage
V_{BR}	Breakdown voltage
V_{BO}	Switching Voltage
I_{BO}	Break over current
I_{DRM}	Leakage current at VRM
I_{PP}	Peak pulse current
I_{H}	Holding current
V_{T}	On-state Voltage at I_{T}
C_{O}	Off-state Capacitance



Surge Ratings

Series	I_{PP} (A) min			
	2×10μs	8×20μs	10×700μs	10×1000μs
TSSD400B1X	800	800	200	200

Absolute Maximum Ratings (T_A=25°C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage temperature range	Tstg	-60 to +150	°C
Operating junction temperature range	TJ	-40 to +125	°C

Part Numbering System

T S S D 400 B 1X
① ② ③ ④ ⑤ ⑥ ⑦

- (1) Company Name: TOP-EMC

(2) Product Function: Surge

(3) Chip Size (EIA): S=SMB M=SMA

(4) Vpp(10/700us): A=2.5-3KV B=4KV C=6KV D=8KV E=1.5-2KV
- (5) Repetitive Peak Off-state Voltage:V_{DRM}

(6) Direction Type: Bidirectional

(7) Lines Protected: 1X=1 line

Typical Characteristics

Reflow Condition		Pb-Free assembly (see FIG.2)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	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)		30secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C

FIG.1: tr × td pulse waveform

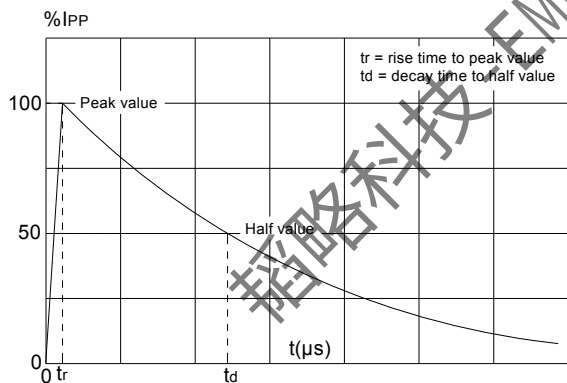


FIG.2: Reflow condition

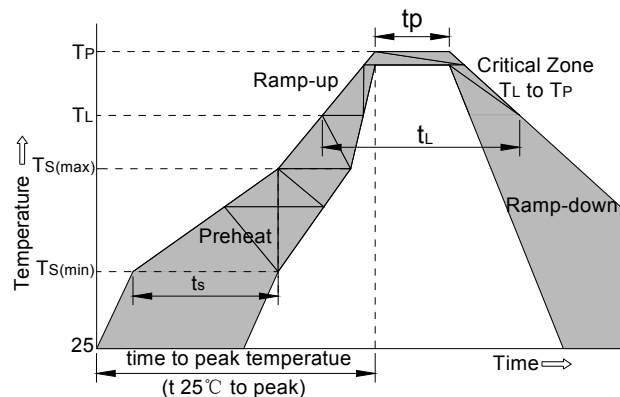


FIG.3: Normalized Vs change vs. junction temperature

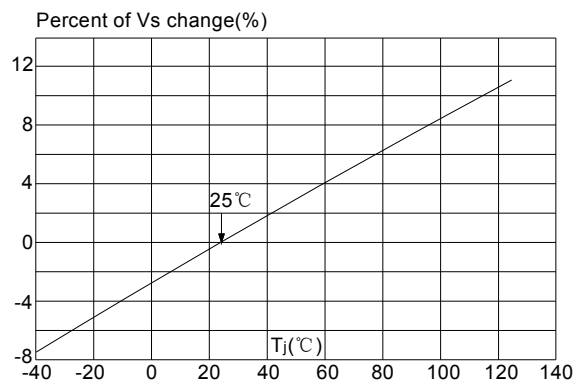
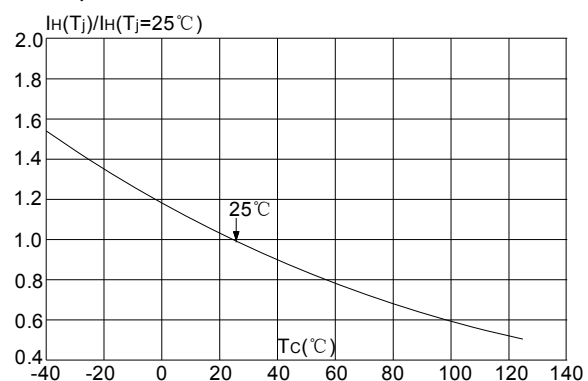
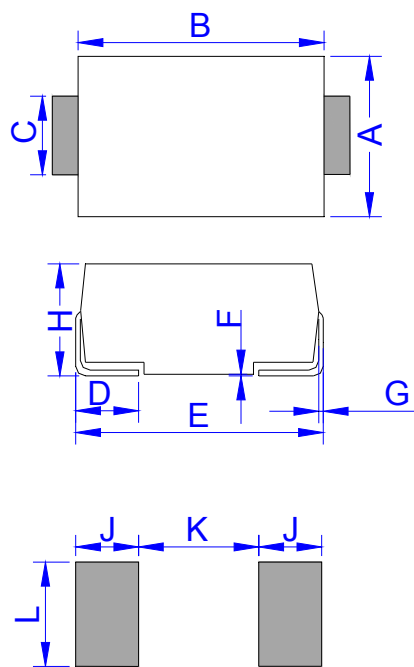


FIG.4: Normalized DC holding current vs. case temperature



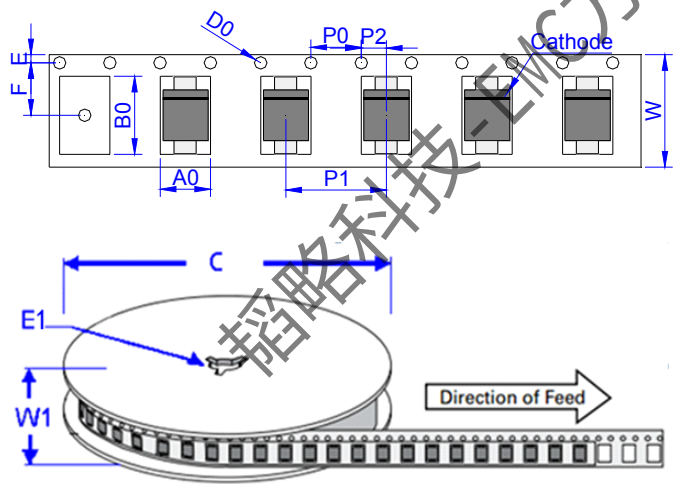
Package Dimensions And Recommend Solder Pad Layout



DO-214AA (SMB)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	3.30	3.94	0.130	0.155
B	4.30	4.80	0.169	0.189
C	1.90	2.20	0.075	0.087
D	0.95	1.52	0.037	0.060
E	5.20	5.60	0.205	0.220
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.10	2.40	0.083	0.094
J	2.20		0.087	
K		2.60		0.102
L	2.30		0.091	

Tape and Reel



Ref.	Dimensions	
	Millimeters	Inches
A0	3.76 ± 0.3	0.148 ± 0.012
B0	5.69 ± 0.3	0.224 ± 0.012
C	330.0	13.0
D0	1.55 ± 0.1	0.061 ± 0.004
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.3 ± 0.3	0.524 ± 0.012
F	5.5 ± 0.2	0.217 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	8.00 ± 0.2	0.3145 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	12.0 ± 0.2	0.472 ± 0.008
W1	15.7 ± 2.0	0.618 ± 0.079

Contant Information

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