

TVS DIODE ARRAY

DESCRIPTION:



The ALPS24VT23M-3B is designed to protect bidirectional lines, Excellent clamping capability, low leakage, and fast response time. The ALPS24VT23M-3B is suited for using in Communication Systems.

FEATURES:

- 405 Watts Peak Pulse Power per Line ($t_p=8/20\mu s$)
- Excellent clamping voltage
- Low leakage current
- Protects two bidirectional lines
- Fast response time, typically $< 1\text{ ns}$
- Transient protection to
 - IEC 61000-4-2 (ESD), $\pm 30\text{ kV}$ (Air), $\pm 30\text{ kV}$ (Contact)
 - IEC 61000-4-4 (EFT) 40A (5/50nS)
 - IEC 61000-4-5 (Surge) 9A (8/20 μs)
- Halogen free and RoHS compliant

APPLICATIONS:

- Cellular Handsets and Accessories
- Portable Electronics
- Control & Monitoring Systems
- Servers, Notebooks
- Set-Top Box
- Communication Systems

MECHANICAL CHARACTERISTICS

- Epoxy: UL94-V0 Molding compound flammability rating.
- Case: Molded plastic, SOT-23

TYPICAL DEVICE CHARACTERISTICS
ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNITS
Peak pulse power ($t_p=8/20\mu\text{s}$)	P_{PP}	405	W
Peak pulse current ($t_p=8/20\mu\text{s}$)	I_{PP}	9	A
ESD (IEC61000-4-2 air discharge) @25°C	V_{ESD}	± 30	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V_{ESD}	± 30	kV
Lead Soldering temperature	T_L	260 (10Seconds)	°C
Junction temperature range	T_J	-55 to +125	°C
Storage temperature range	T_{STG}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP.	MAX	UNIT
Reverse Stand-off Voltage		V_{RWM}			24	V
Reverse Breakdown Voltage	$I_T=1\text{mA}$	V_{BR}	26.7			V
Reverse Leakage Current	$V_R=24\text{V}$	I_R		0.1	0.5	μA
Clamping Voltage	$I_{PP}=9\text{A}$; $t_p=8/20\mu\text{s}$	V_C		40	45	V
Junction Capacitance	(pin1 to pin2) $V_R=0\text{V}$; $f=1\text{MHz}$	C_J		18		pF

TYPICAL DEVICE CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)

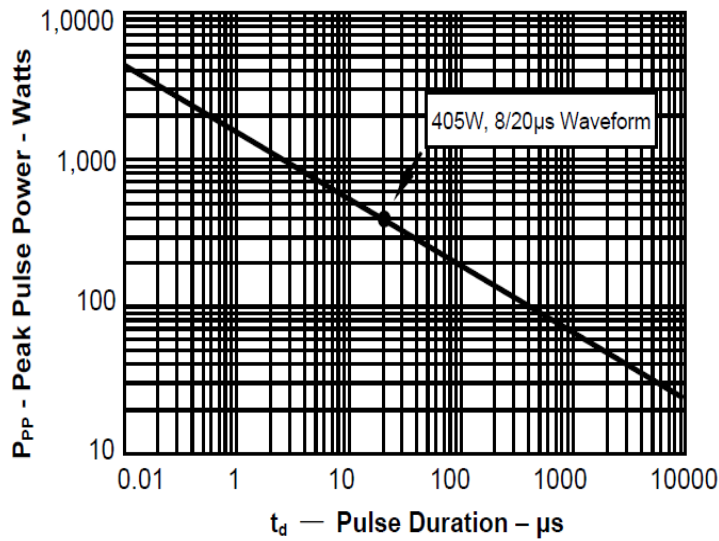


Fig1. PEAK PULSE POWER Vs. PULSE TIME

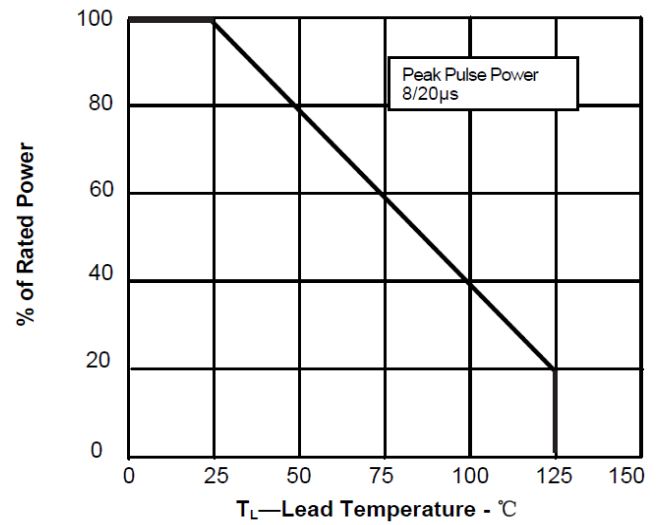


Fig2. POWER DERATING CURVE

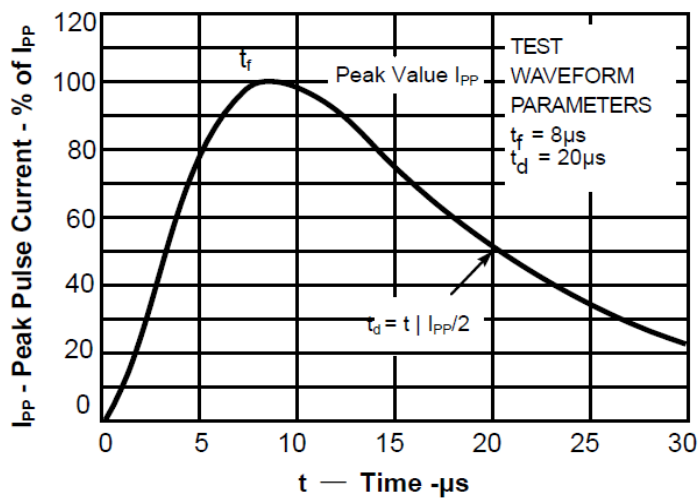


Fig3. PULSE WAVEFORM-8/20μs

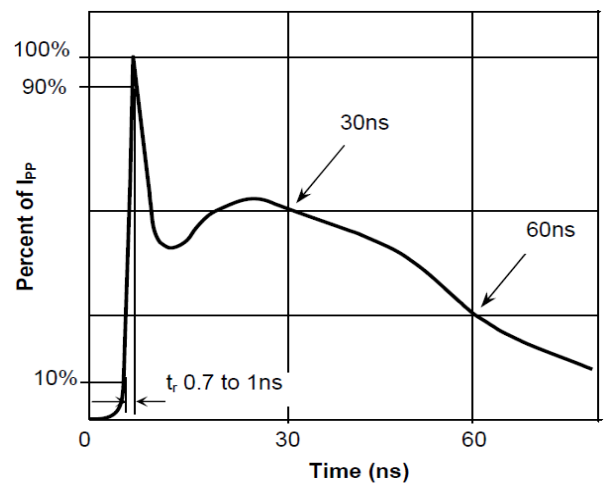
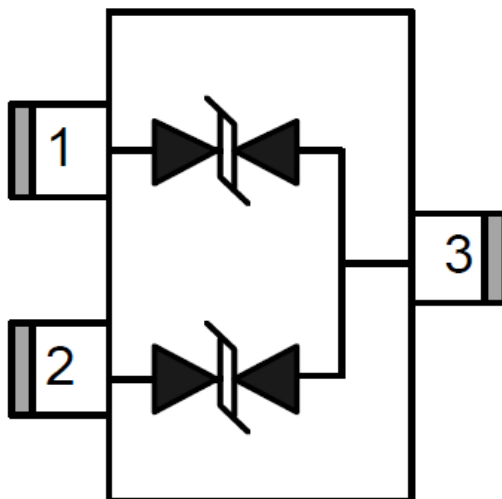


Fig4. PULSE WAVEFORM-ESD (IEC61000-4-2)

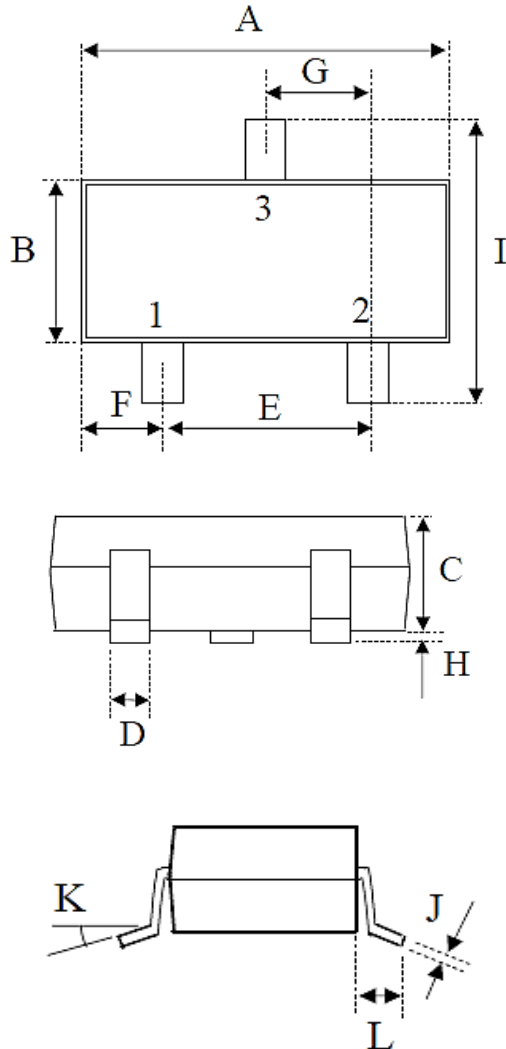
PINNING INFORMATION

SCHEMATIC DIAGRAM



PACKAGE INFORMATION

SOT-23



OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.04	0.110	0.120
B	1.20	1.40	0.047	0.055
C	0.89	1.11	0.035	0.044
D	0.37	0.50	0.015	0.020
E	1.78	2.04	0.070	0.080
F	0.45	0.60	0.018	0.024
G	0.89	1.02	0.035	0.040
H	0.013	0.100	0.001	0.004
I	2.10	2.50	0.083	0.098
J	0.085	0.177	0.003	0.007
K	0°	10°	0°	10°
L	0.45	0.60	0.018	0.024

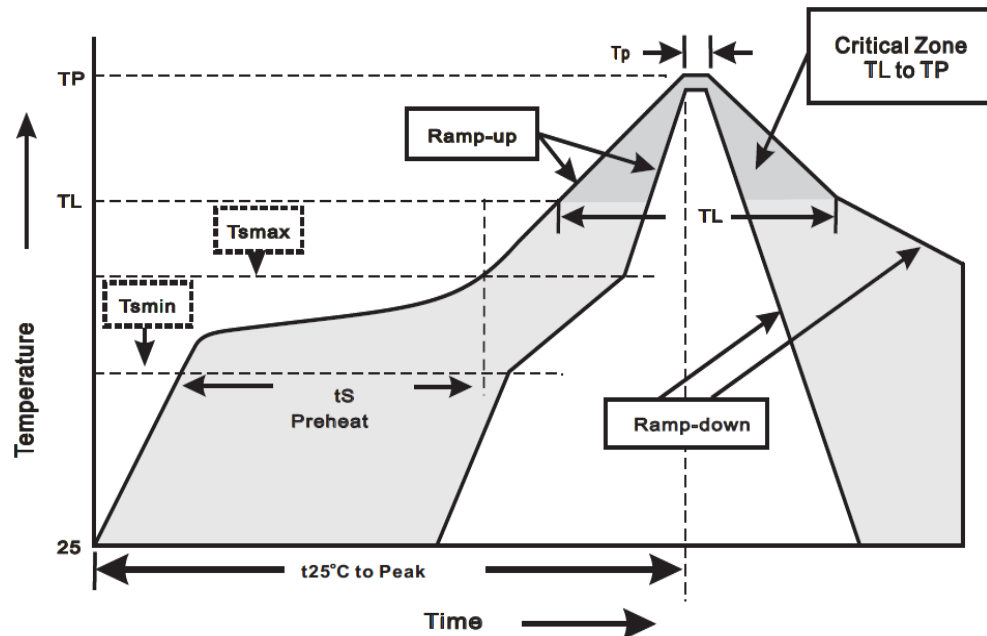
NOTES

1. Dimensions are exclusive of mold flash and metal burrs.

SOLDERING PARAMETERS

SUGGESTED THERMAL PROFILES FOR SOLDERING PROCESSES

1. Storage environment: Temperature=5 °C~40 °C Humidity=55% ±25%
2. Reflow soldering of surface-mount devices



3. Reflow soldering

PROFILE FEATURE	SOLDERING CONDITION
Average ramp-up rate (T_L to T_P)	<3 °C/sec
Preheat - Temperature Min (T_{smin}) - Temperature Max (T_{smax}) - Time (min to max) (t_s)	150 °C 200 °C 60 ~ 120 sec
T_{smax} to T_L - Ramp-upRate	<3 °C/sec
Time maintained above: - Temperature (T_L) - Time(t_L)	217 °C 60 ~ 260 sec
Peak Temperature (T_P)	255 °C-0/+5 °C
Time within 5 °C of actual Peak Temperature(t_P)	10 ~ 30 sec
Ramp-down Rate	<6 °C/sec
Time 25 °C to Peak Temperature	<6 minutes

PRODUCT HIGH RELIABILITY TEST CAPABILITIES

ITEM	TEST CONDITIONS	STANDARD
Solder Resistance	At 260±5°C for 10±2Sec.	MIL-STD-750D METHOD-2031
Solderability	At 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
High Temperature Reverse Bias	$V_R = 80\%$ rate at $T_J = 150^\circ$ for 168 hrs.	MIL-STD-750D METHOD-1038
Forward Operation Life	Rated average rectifier current at $T_A = 25^\circ\text{C}$ for 500hrs	MIL-STD-750D METHOD-1027
Intermittent Operation Life	$T_A = 25^\circ\text{C}$, $I_F = I_O$ On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles.	MIL-STD-750D METHOD-1036
Pressure Cooker	15P _{SIG} at $T_A = 121^\circ\text{C}$ for 4Hrs	JESD22-A102
Temperature Cycling	-55°C to +125°C dwelled for 30min and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
Forward Surge	1.0ms square-wave, one surge.	MIL-STD-750D METHOD-4066-2
Humidity	At $T_A = 85^\circ\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
High Temperature Storage Life	At 175°C for 1000hrs.	MIL-STD-750D METHOD-1031



beyond boundaries...

ALPS24VT23M-3B

SOT-23

CUSTOMER NOTE:

DISCLAIMER

The product information and the selection guide facilitates the selection of the ALPINESEMI™'s Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review the Data sheet(s) so as to confirm that the Device(s) meets functionality parameters for your application. The information furnished on the Data Sheet and the ALPINESEMI™'s Web Site is believed to be accurate and reliable at the time of preparation of this document. ALPINESEMI™ however, does not assume any inaccuracies that may arise when the components are mounted and removed. Furthermore, ALPINESEMI™ does not assume liability whatsoever, arising out of the application or the use of any of ALPINESEMI™'s product(s). Neither, does it convey any license under its patent rights nor the rights of others. These products are not guaranteed for use in life saving/support appliances or systems. ALPINESEMI™'s customers using these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and ALPINESEMI™ will not be responsible in any way(s) for any damage(s) resulting from such use.

Please check the website www.alpinesemi.com for continues updates and revision of datasheets.

DESIGN CHANGES: ALPINESEMI™ strives for continuous improvement and reserves the right to change the specifications of its products without prior notice. ALPINESEMI™ reserves the right to discontinue product lines without prior notice. Any product selection is a recommendation based on best understanding of such product(s) by our engineers. However, buyers are advised to rely on their own judgment for such selection of the products.

ALPINESEMI™ makes no warranty, representation or guarantee regarding the suitability of its products for any particular applications. Neither does ALPINESEMI™ assume any liability arising out of the applications nor the use of such products. ALPINESEMI™ specifically disclaims all liabilities either consequential or incidental.

All rights of the product and datasheet are reserved to ALPINESEMI™.

All logos and information provided in the datasheets are for reference only. Any registered and/or trademark/logos belonging to respective companies be the property of those companies. ALPINESEMI™ extends the courtesy to them, if any of the information found in its datasheet.

Component Disposal Instructions

1. ALPINESEMI™ Semiconductor Devices are RoHS compliant and hence customers are requested to dispose as per the prevailing Environmental Legislation put forth in their specific country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).



sales@alpinesemi.com
www.alpinesemi.com