SWITCHING DIODE

DESCRIPTION:

The ALPBAV99 is 200mA surface mount switching Diode in SOT23 (Standard) package, offers low turn-on voltage and fast switching capability, designed with PN Junction Guard Ring for Transient and ESD Protection, totally lead-free finish, and RoHS compliant.

FEATURES:

- High Conductance
- Low leakage current
- Small Outline Surface Mount Package
- Excellent clamping voltage
- RoHS Compliant
- REACH Compliant

APPLICATIONS:

- Fast switching speed for power regulation
- General Purpose Switching Applications

MECHANICAL CHARACTERISTICS

- Package: SOT-23
- Package Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Lead frame (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Polarity: See Diagrams in section - PINNING INFORMATION

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25 °C unless otherwise specified			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Reverse Voltage	V_R	70	V
Forward Current	I_F	200	mA
Power Dissipation	P_D	225	mW
Non-Repetitive Peak Forward Surge Current at 8.3 ms single half sine-wave	I_{FSM}	2.0	A
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	556	°C/W
Junction Temperature	T_J	+150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS @ 25 °C unless otherwise specified					
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**MIN**	**MAX**	**UNIT**
Forward Voltage	I_F=1mA I_F=10mA I_F=50mA I_F=150mA	V_F		0.715 0.855 1 1.25	V
Reverse breakdown voltage	I_R=100μA	V_R	75		V
Reverse voltage leakage current	V_R=70V	I_R		2.5	μA
Capacitance between terminals	V_R=0V, f=1.0MHz	C_T		2	pF
Reverse recovery time	I_F=I_R=10mA, I_{rr}=0.1x I_R, R_L=100Ω	T_{rr}		6	nS

TYPICAL DEVICE CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

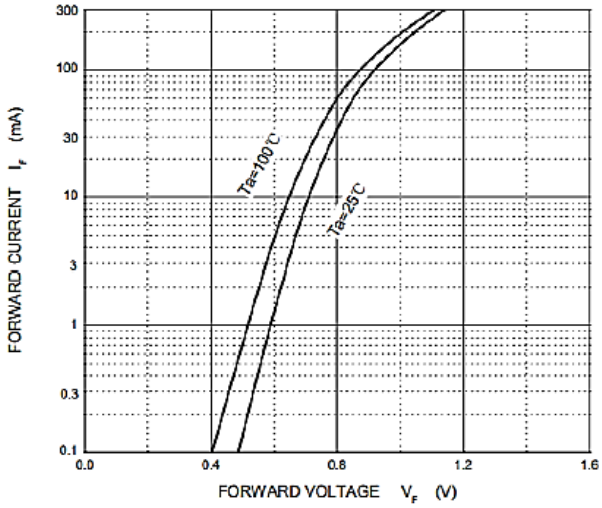


Fig.1 FORWARD CHARACTERISTICS

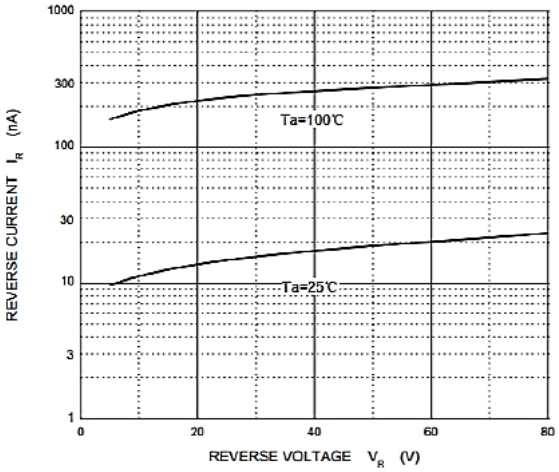


Fig.2 REVERSE CHARACTERISTICS

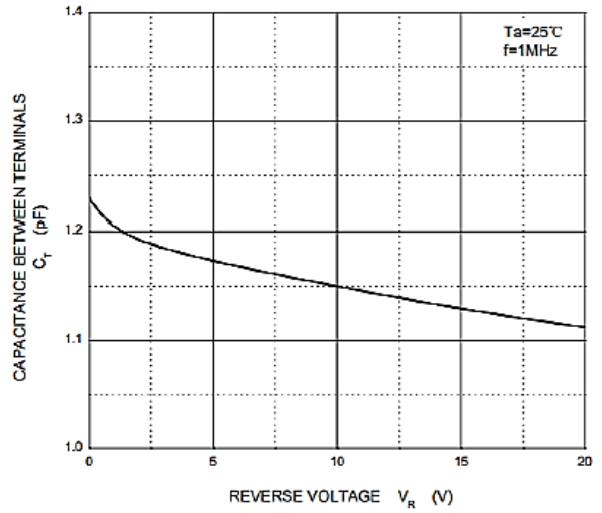


Fig.3 CAPACITANCE CHARACTERISTICS

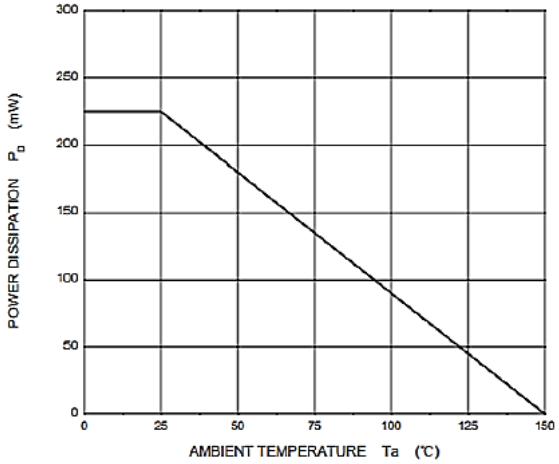
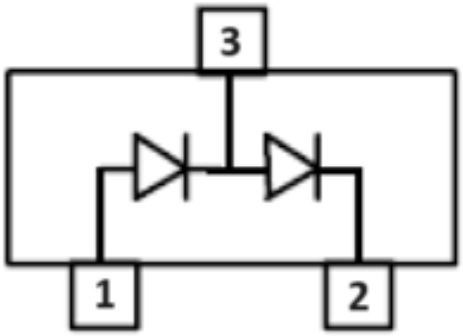


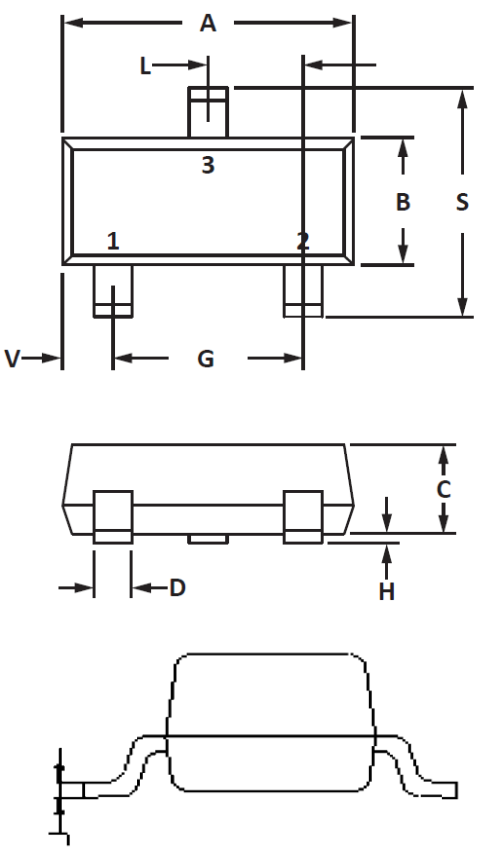
Fig.4 POWER DERATING CURVE

PINNING INFORMATION

PART NO	SYMBOL
ALPBAV99	

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	0.90	1.11	0.035	0.044
D	0.37	0.51	0.015	0.020
G	1.78	2.05	0.070	0.081
H	0.013	0.10	0.001	0.004
J	0.09	0.18	0.004	0.007
L	0.89	1.03	0.035	0.041
S	2.10	2.64	0.083	0.104
V	0.45	0.60	0.018	0.024

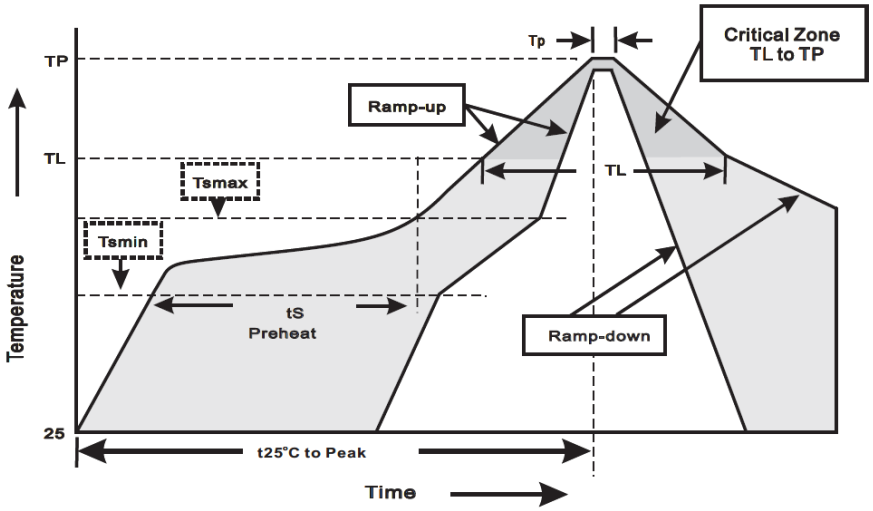
NOTES

- Controlling dimension: millimeters.
- Halogen free, EMC
- Pb free solder
- Lead thickness solder plating
- Lead frame CAC-5
- Other Tolerance ±0.05
- Dimensions are excusive of Burn Mold Flash and Tie Bar extrusions

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(tL)	 217 °C 60 ~ 260 sec
Peak Temperature (T_P)	255 °C-0/+5 °C
Time within 5 °C of actual Peak Temperature(tP)	10 ~ 30 sec
Ramp-down Rate	<6 °C/sec
Time 25 °C to Peak Temperature	<6 minutes

PRODUCT HIGH RELIABLITY TEST CAPABILITIES

ITEM	TEST CONDITIONS	STANDARD
Solder Resistance	At 260±5°C for 10±Sec.	MIL-STD-750D METHOD-2031
Solderability	At 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
High Temperature Reverse Bias	V_{BR}= V_{BR} N_{OM}*80% at T_J=150° for 168 hrs.	MIL-STD-750D METHOD-1038
Pressure Cooker	15P_{SIG} at T_A=121°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
Humidity	At T_A=85°C, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
High Temperature Storage Life	At 175°C for 1000hrs.	MIL-STD-750D METHOD-1031

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.

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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).

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sales@alpinesemi.com
www.alpinesemi.com