

SURFACE MOUNT BI-DIRECTIONAL TVS FOR ESD PROTECTION DIODE 24V

DESCRIPTION:



The ALPN242BT23 is designed for average power 350W approximated ESD protection, different V_{RWM} , different peak pulse power available.

FEATURES:

- IEC61000-4-2 (ESD) $\pm 15\text{kV}$ (air), $\pm 8\text{kV}$ (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lighting) 5A (8/20 μs)
- 350 Watts peak pulse power per (tp=8/20 μs)
- Working voltages 24V
- Low clamping voltage
- Low leakage current
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen free parts, ex. ALPN242BT23-H

APPLICATIONS:

- Industrial control networks
- Smart distribution systems
- Automotive networks
- Low and high-speed CAN
- Fault tolerant CAN.

MECHANICAL CHARACTERISTICS

- Epoxy: UL94-V0 rated flame retardant.
- Case: Molded plastic, SOT-23
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position: Any.
- Approximate Weight: 0.008 grams.

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power (tp= 8/20μs waveform)	P _{PP}	350	W
ESD per IEC 61000-4-2 (air)	V _{ESD}	±30	kV
ESD per IEC 61000-4-2 (contact)		±30	
Lead soldering temperature	T _L	260 (10sec.)	°C
Operating junction temperature range	T _J	-55 to +150	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified									
PART NUMBER	V _{RWM} (V)	I _R (μA) @V _{RWM}	V _{BR} (V) @I _T (Note 2)		@ I _T (mA)	V _C (V) (Note 1) @ I _{PP} =1.0A	V _C (V) (Note 1) @ I _{PP} =5.0A	P _{PK} (W) (Note 1)	C _i (pF) V _R =0V and f=1MHz
	Max.	Max.	Min.	Max.		Max.	Max.	Max.	Max.
ALPN242BT23	24.0	0.1	26.2	32.0	1.0	36.0	46.0	230	30
Notes 1: Surge current waveform per Fig.2 2: V _{BR} is measured with a pulse test current I _T at an ambient temperature of 25°C									

TYPICAL DEVICE CHARACTERISTICS CURVES

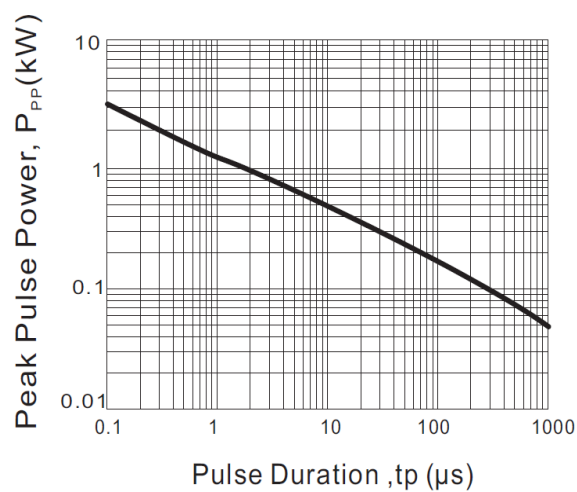


Fig1. NON-REPETITIVE PEAK PULSE POWER

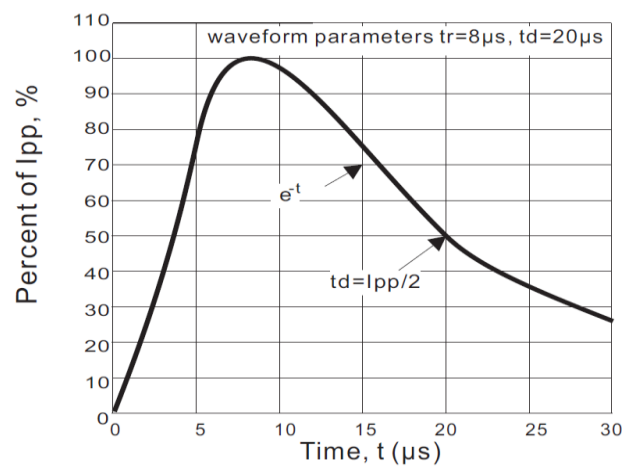
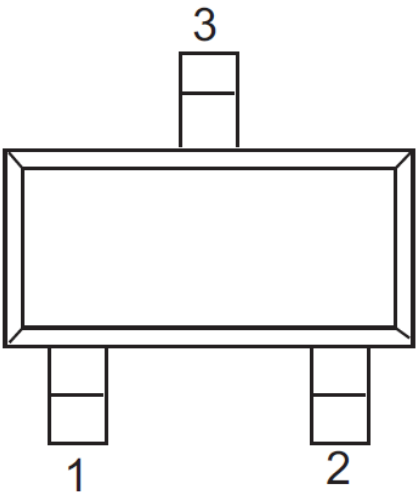
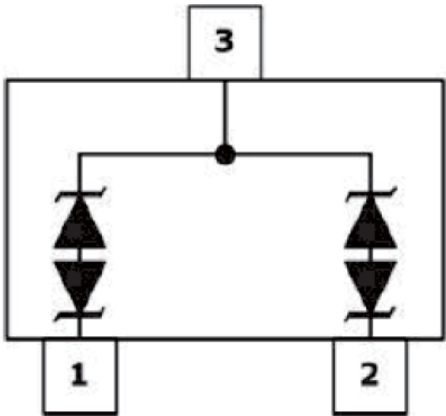


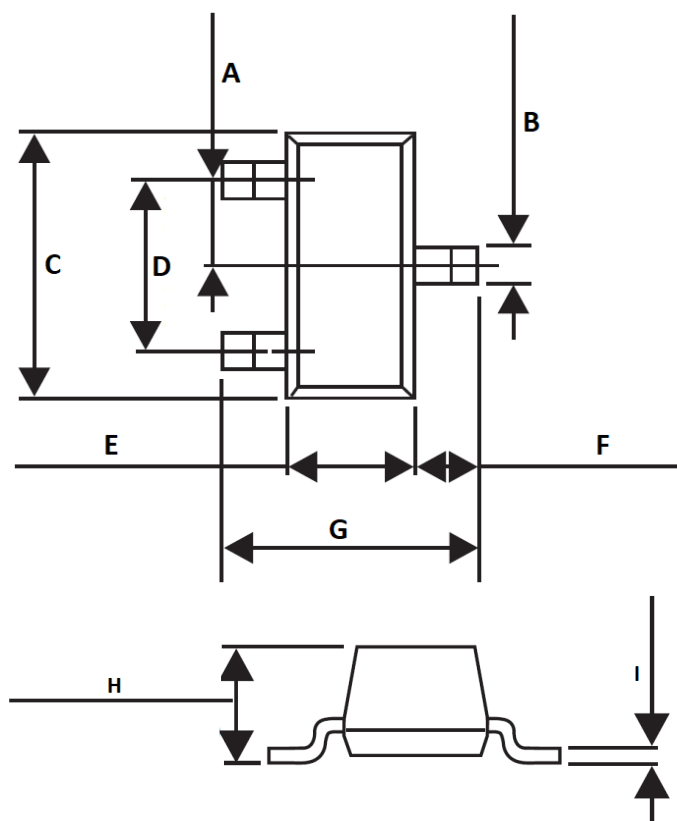
Fig2. PULSE WAVEFORM

PINNING INFORMATION

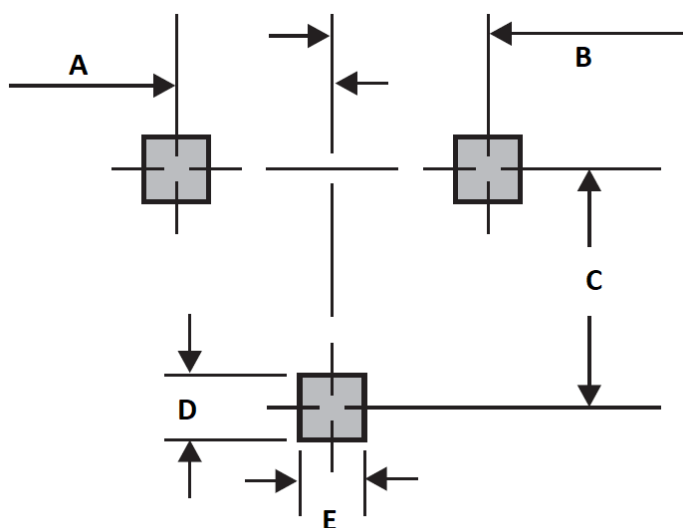
PIN CONFIGURATION	CIRCUIT DIAGRAM
	

PACKAGE INFORMATION

SOT-23



OUTLINE DIMENSIONS				
SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.85	1.05	0.034	0.041
B	0.30	0.50	0.012	0.020
C	2.80	3.04	0.110	0.120
D	1.70	2.10	0.068	0.084
E	1.20	1.60	0.047	0.063
F	0.32	0.67	0.013	0.027
G	2.10	2.75	0.083	0.108
H	0.89	1.15	0.035	0.045
I	0.08	0.18	0.003	0.007

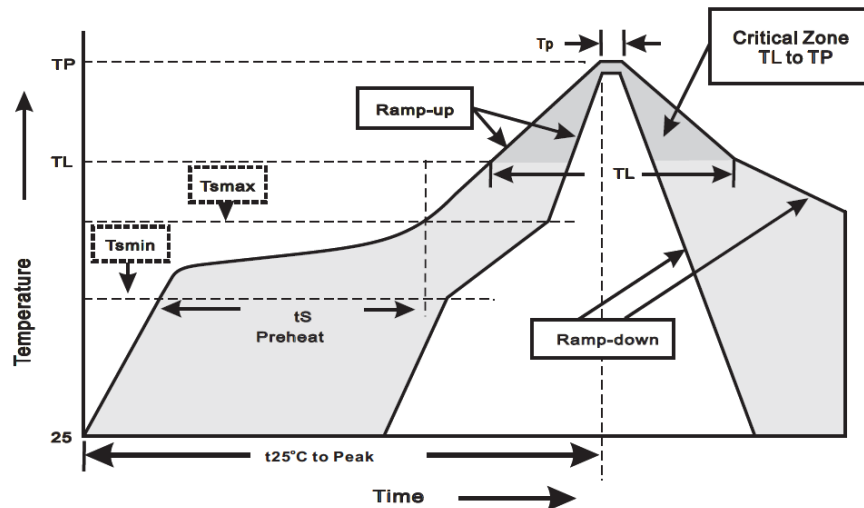


PAD LAYOUT DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.95	-	0.037	-
B	0.95	-	0.037	-
C	2.00	-	0.079	-
D	0.90	-	0.035	-
E	0.80	-	0.031	-

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})	150 °C
- Temperature Max (T_{smax})	200 °C
- Time (min to max) (t_s)	60 ~ 120 sec
T_{smax} to T_L	
- Ramp-upRate	<3 °C/sec
Time maintained above:	
- Temperature (T_L)	217 °C
- Time(t_L)	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



beyond boundaries...

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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	$V_{BR} = V_{BR \text{ Min}} \times 80\%$ at $T_J = 150^\circ$ for 168 hrs.	MIL-STD-750D METHOD-1038
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
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...

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2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).



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