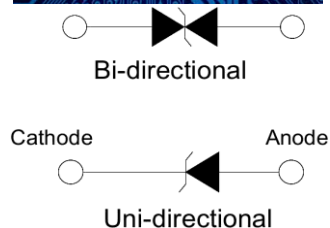


600 WATT TVS COMPONENT

DESCRIPTION:



The ALPSMBJXXA/CA (UNI/BI) Series are multi-line transient voltage suppressor arrays that provides board level protection for standard TTL and MOS bus line applications against the damaging effects of ESD, tertiary lightning and switching transients.

The ALPSMBJXXA/CA Series TVS devices are ideal for the transient voltage clamp protection of I/O Interfaces, DC power line bus and other circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

FEATURES:

- 600 Watts Peak Pulse Power per Line ($t_p = 10/1000\mu s$), repetition rate (duty cycles): 0.01%
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Bidirectional and Unidirectional Configurations
- Excellent Clamping Capability
- Available in Multiple Voltages
- RoHS Compliant
- REACH Compliant
- Suffix "-H" indicates Halogen free parts, ex. ALPSMBJ5.0A-H

APPLICATIONS:

- I/O Interfaces
- DC power line bus
- Telecom
- Computer
- Industrial and Consumer electronic applications.

MECHANICAL CHARACTERISTICS

- Epoxy: UL94-V0 rated flame retardant.
- Case: Molded plastic, DO-214AA / SMB
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode except bi-directional models

ORDERING PART NUMBER

PART NUMBER	ORDERING PART NUMBER
ALPSMBJXXA/CA	ALPSMBJXXA/CA - SC



beyond boundaries...

ALPSMBJXXA/CA Series
DO-214AA(SMB)

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ $T_A=25^{\circ}\text{C}$ Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power Dissipation at $T_A=25^{\circ}\text{C}$ by 10/1000 μs Waveform (Fig.3)	P_{PPM}	600	Watts
Power Dissipation on Infinite Heatsink at $T_L = 50^{\circ}\text{C}$	P_D	5	Watts
Peak Forward Surge Current, 8.3ms single half sinewave - (Note 1)	I_{FSM}	100	Amps
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only (Note 2)	V_F	3.5	V
Operating Temperature Range	T_J	-55 to 150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}\text{C}$
NOTES: 1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.			

TYPICAL ELECTRICAL CHARACTERISTICS

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified							
PART NUMBER (Notes 1-2)	REVERSE STAND-OFF VOLTAGE V_R (VOLTS)	BREAKDOWN VOLTAGE $V_{(BR)}$ @ I_T VOLTS		TEST CURRENT @ I_T (mA)	MAXIMUM CLAMPING VOLTAGE V_C @ I_{PP} (VOLTS)	MAXIMUM PEAK PULSE CURRENT I_{PP} (AMPS)	MAXIMUM REVERSE LEAKAGE CURRENT I_R @ V_R (μA)
		MIN	MAX				
ALPSMBJ5.0A/CA	5.0	6.40	7.00	10	9.2	65.3	800
ALPSMBJ6.0A/CA	6.0	6.67	7.37	10	10.3	58.3	800
ALPSMBJ6.5A/CA	6.5	7.22	7.98	10	11.2	53.6	500
ALPSMBJ7.0A/CA	7.0	7.78	8.60	10	12.0	50.0	200
ALPSMBJ7.5A/CA	7.5	8.33	9.21	1	12.9	46.6	100
ALPSMBJ8.0A/CA	8.0	8.89	9.83	1	13.6	44.2	50
ALPSMBJ8.5A/CA	8.5	9.44	10.40	1	14.4	41.7	20
ALPSMBJ9.0A/CA	9.0	10.00	11.10	1	15.4	39.0	10
ALPSMBJ10A/CA	10.0	11.10	12.30	1	17.0	35.3	5
ALPSMBJ11A/CA	11.0	12.20	13.50	1	18.2	33.0	1
ALPSMBJ12A/CA	12.0	13.30	14.70	1	19.9	30.2	1
ALPSMBJ13A/CA	13.0	14.40	15.90	1	21.5	28.0	1
ALPSMBJ14A/CA	14.0	15.60	17.20	1	23.2	25.9	1
ALPSMBJ15A/CA	15.0	16.70	18.50	1	24.4	24.6	1
ALPSMBJ16A/CA	16.0	17.80	19.70	1	26.0	23.1	1
ALPSMBJ17A/CA	17.0	18.90	20.90	1	27.6	21.8	1
ALPSMBJ18A/CA	18.0	20.00	22.10	1	29.2	20.6	1
ALPSMBJ20A/CA	20.0	22.20	24.50	1	32.4	18.6	1
ALPSMBJ22A/CA	22.0	24.40	26.90	1	35.5	16.9	1
ALPSMBJ24A/CA	24.0	26.70	29.50	1	38.9	15.5	1
ALPSMBJ26A/CA	26.0	28.90	31.90	1	42.1	14.3	1
ALPSMBJ28A/CA	28.0	31.10	34.40	1	45.4	13.3	1
ALPSMBJ30A/CA	30.0	33.30	36.80	1	48.4	12.4	1
ALPSMBJ33A/CA	33.0	36.70	40.60	1	53.3	11.3	1
ALPSMBJ36A/CA	36.0	40.00	44.20	1	58.1	10.4	1
ALPSMBJ40A/CA	40.0	44.40	49.10	1	64.5	9.3	1
ALPSMBJ43A/CA	43.0	47.80	52.80	1	69.4	8.7	1
ALPSMBJ45A/CA	45.0	50.00	55.30	1	72.7	8.3	1
ALPSMBJ48A/CA	48.0	53.30	58.90	1	77.4	7.8	1
ALPSMBJ51A/CA	51.0	56.70	62.70	1	82.4	7.3	1
ALPSMBJ54A/CA	54.0	60.00	66.30	1	87.1	6.9	1
ALPSMBJ58A/CA	58.0	64.40	71.20	1	93.6	6.5	1

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER (Notes 1-2)	REVERSE STAND-OFF VOLTAGE V_R (VOLTS)	BREAKDOWN VOLTAGE $V_{(BR)}$ @ I_T VOLTS		TEST CURRENT @ I_T (mA)	MAXIMUM CLAMPING VOLTAGE V_C @ I_{PP} (VOLTS)	MAXIMUM PEAK PULSE CURRENT I_{PP} (AMPS)	MAXIMUM REVERSE LEAKAGE CURRENT I_R @ V_R (μ A)
		MIN	MAX				
ALPSMBJ60A/CA	60.0	66.70	73.70	1	96.8	6.2	1
ALPSMBJ64A/CA	64.0	71.10	78.60	1	103.0	5.9	1
ALPSMBJ70A/CA	70.0	77.80	86.00	1	113.0	5.3	1
ALPSMBJ75A/CA	75.0	83.30	92.10	1	121.0	5.0	1
ALPSMBJ78A/CA	78.0	86.70	95.80	1	126.0	4.8	1
ALPSMBJ85A/CA	85.0	94.40	104.00	1	137.0	4.4	1
ALPSMBJ90A/CA	90.0	100.00	111.00	1	146.0	4.1	1
ALPSMBJ100A/CA	100.0	111.00	123.00	1	162.0	3.7	1
ALPSMBJ110A/CA	110.0	122.00	135.00	1	177.0	3.4	1
ALPSMBJ120A/CA	120.0	133.00	147.00	1	193.0	3.1	1
ALPSMBJ130A/CA	130.0	144.00	159.00	1	209.0	2.9	1
ALPSMBJ150A/CA	150.0	167.00	185.00	1	243.0	2.5	1
ALPSMBJ160A/CA	160.0	178.00	197.00	1	259.0	2.3	1
ALPSMBJ170A/CA	170.0	189.00	209.00	1	275.0	2.2	1
ALPSMBJ180A/CA	180.0	201.00	222.00	1	292.0	2.1	1
ALPSMBJ190A/CA	190.0	211.00	234.00	1	307.0	2.0	1
ALPSMBJ200A/CA	200.0	224.00	247.00	1	324.0	1.9	1
ALPSMBJ220A/CA	220.0	246.00	272.00	1	356.0	1.7	1
ALPSMBJ250A/CA	250.0	279.00	309.00	1	405.0	1.5	1
ALPSMBJ300A/CA	300.0	335.00	371.00	1	486.0	1.2	1
ALPSMBJ350A/CA	350.0	391.00	432.00	1	567.0	1.1	1
ALPSMBJ400A/CA	400.0	447.00	494.00	1	648.0	1.0	1
ALPSMBJ440A/CA	440.0	492.00	543.00	1	713.0	0.9	1

TYPICAL DEVICE CHARACTERISTICS CURVES

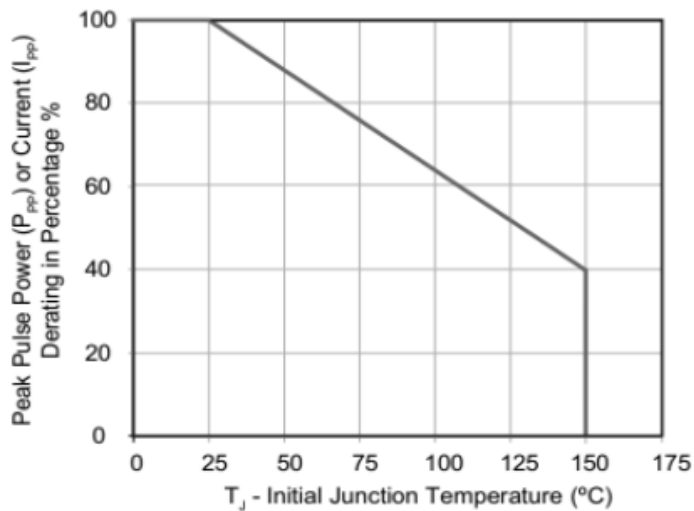


Fig1. PEAK PULSE POWER DERATING CURVE

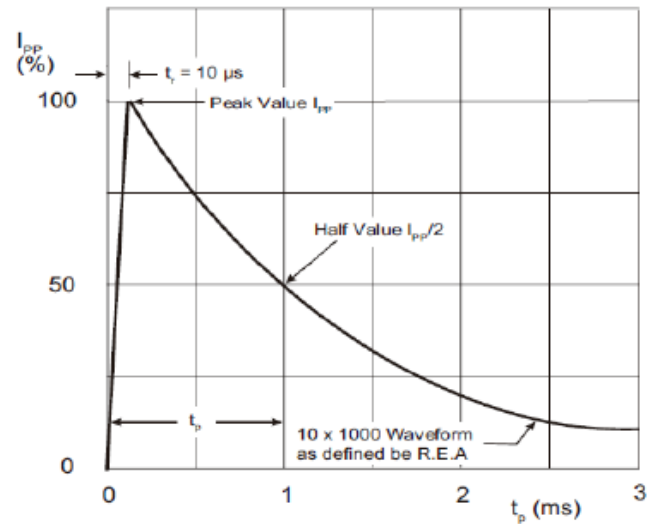


Fig2. PULSE WAVEFORM

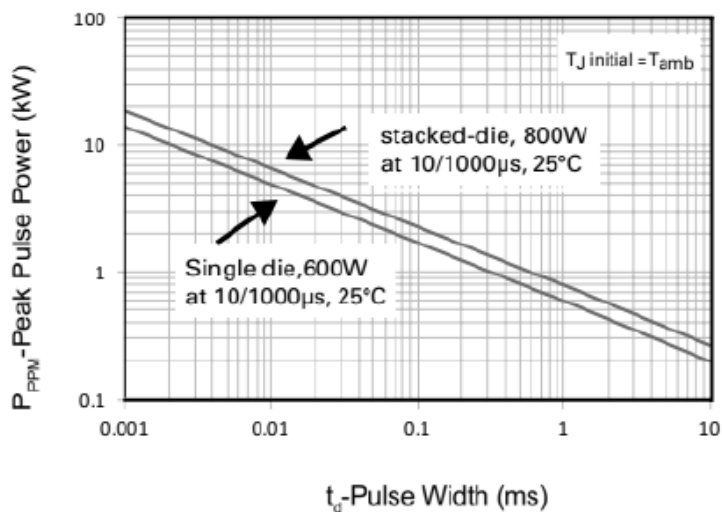


Fig3. PEAK PULSE POWER RATING CURVE

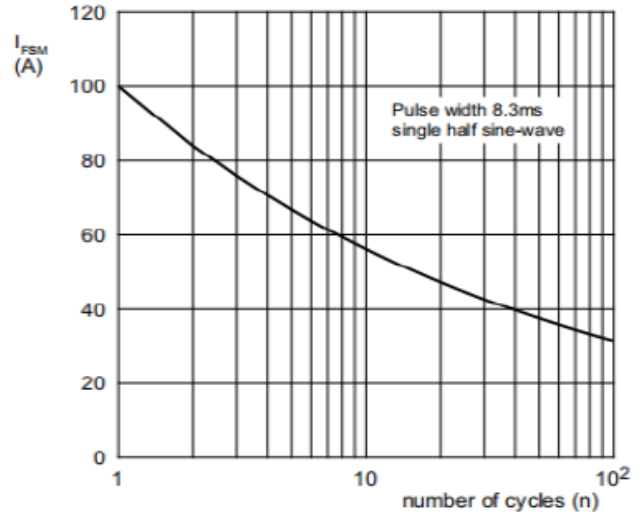
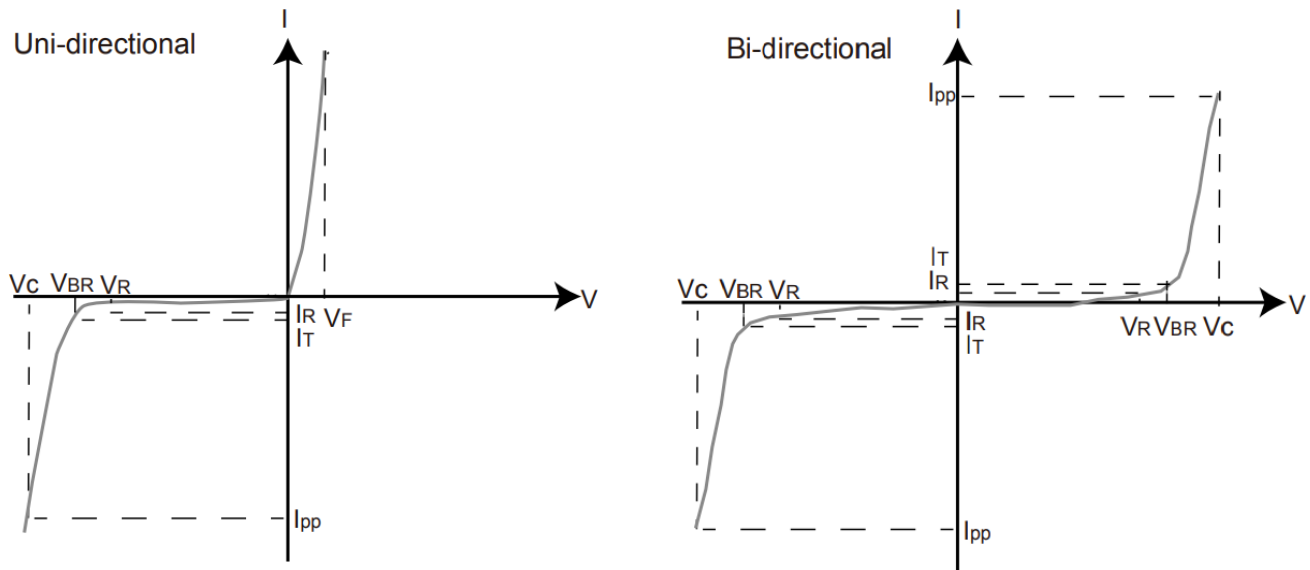


Fig4. MAXIMUM NON-REPETITIVE SURGE CURRENT

I-V CURVE CHARACTERISTICS



P_{PPM} Peak Pulse Power Dissipation -- Max power dissipation

V_R Stand-off Voltage -- Maximum voltage that can be applied to the TVS without operation

V_{BR} Breakdown Voltage -- Maximum voltage that flows through the TVS at a specified test current (I_T)

V_C Clamping Voltage -- Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)

I_R Reverse Leakage Current -- Current measured at V_R

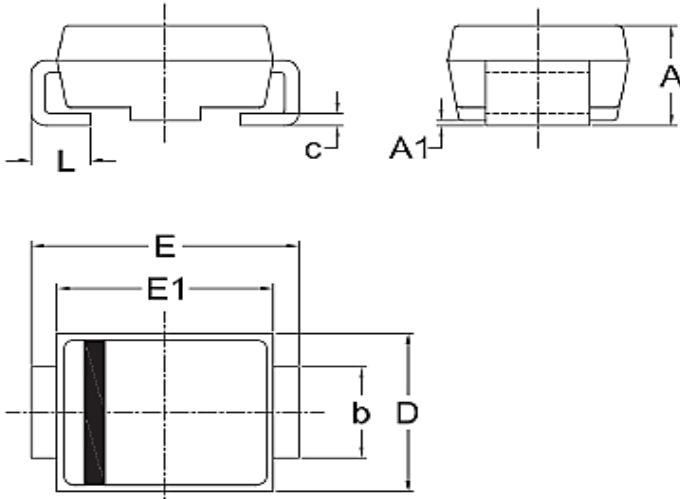
V_F Forward Voltage Drop for Uni-directional

PINNING INFORMATION

PIN	SIMPLIFIED OUTLINE	SYMBOL
Uni-Directional Pin1 Cathode Pin2 Anode		
Bi-Directional		

PACKAGE INFORMATION

DO-214AA(SMB)



OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.99	2.61	0.078	0.103
A1	0.10	0.30	0.004	0.012
b	1.70	2.30	0.067	0.091
c	0.15	0.31	0.006	0.012
D	3.30	3.94	0.130	0.155
E	5.05	5.70	0.199	0.224
E1	4.06	4.70	0.160	0.185
L	0.76	1.52	0.030	0.060

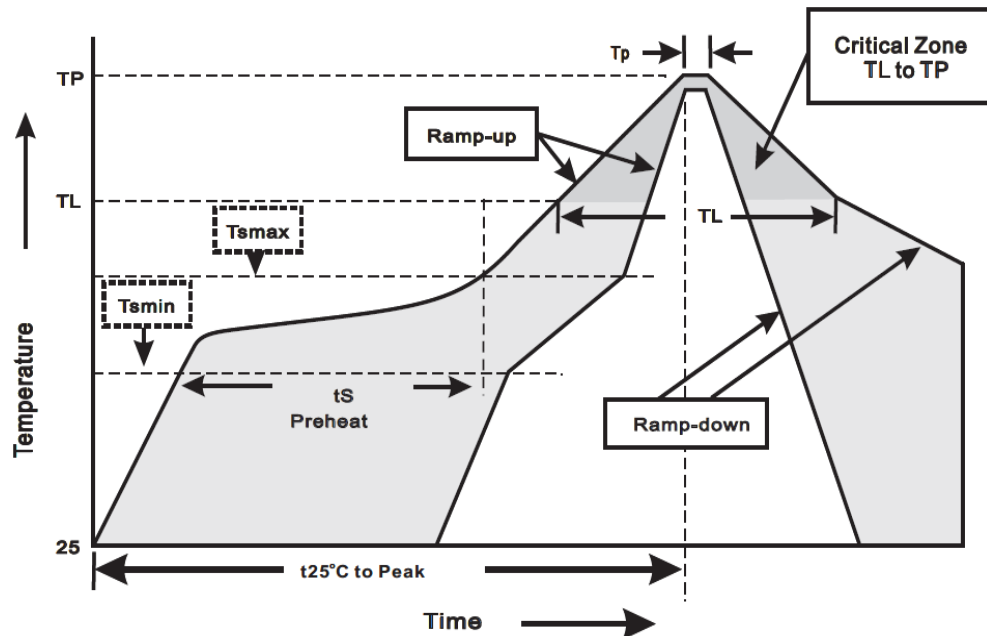
Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$

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 ~ 180 sec
T_{smax} to T_L	
- Ramp-upRate	<3 °C/sec
Time maintained above:	
- Temperature (T_L)	217 °C
- Time(t_L)	60 ~ 150 sec
Peak Temperature (T_P)	260 °C-0/+5 °C
Time within 5 °C of actual Peak Temperature(t_P)	20 ~ 40 sec
Ramp-down Rate	<6 °C/sec
Time 25 °C to Peak Temperature	<8 minutes
Do not exceed	260 °C



beyond boundaries...

ALPSMBJXXA/CA Series DO-214AA(SMB)

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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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