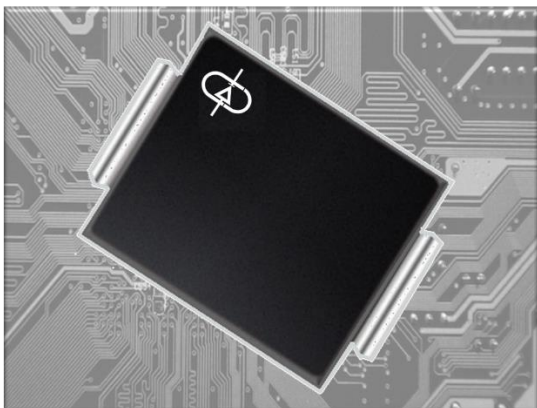


600W SURFACE MOUNT UNIDIRECTIONAL TRANSIENT VOLTAGE SUPPRESSORS DIODES 5.0V-85V

DESCRIPTION:



The ALPSMA6JXXA/CA (UNI/BI) series is designed to protect voltage sensitive components from high voltage, high energy transients. The SMA series is supplied in cost-effective, highly reliable package and is ideally suited for use in communication systems, automotive, numerical controls, process controls, medical equipment, business machines, power supplies and many other industrial/consumer applications.



FEATURES:

- 600W peak pulse power capability with a 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Low profile surface mounted application in order to optimize board space.
- Excellent clamping capability.
- Low incremental surge resistance.
- Fast response time from 0V to VBR, typically less than 1 ps for uni-directional & 5 ns for bi-directional types.
- Glass passivated chip junction.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. ALPSMA6J5.0A-H

APPLICATIONS:

- Communication Systems
- Automotive
- Numerical and Process controls
- Medical equipment
- Business machines
- Power supplies
- Industrial/consumer applications.

MECHANICAL CHARACTERISTICS

- Epoxy: UL94-V0 rated flame retardant.
- Case: Molded plastic, DO-214AC / SMA.
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position: Any.

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified				
PARAMETER		SYMBOL	VALUE	UNITS
Peak Power Dissipation	with a 10/1000μs waveform, Note 1, 2 & Fig. 1	P_{PPM}	600	W
Peak pulse current	with a 10/1000μs waveform	I_{PPM}	See Table 1	A
Steady state power dissipation	at $T_L=75^\circ\text{C}$, Note 2	$P_{M(AV)}$	3.0	W
Peak forward surge current	8.3ms single half sine-wave, Note 3	I_{FSM}	50	A
Maximum instantaneous forward voltage	at $I_F=25\text{A}$ For uni-directional types only, Note 4	V_F	3.5	V
Operating junction temperature range		T_J	-55 to +150	°C
Storage Temperature Range		T_{STG}	-65 to +175	°C
NOTE 1. Non-repetitive current pulse, per Fig. 3 and derated above $T_A=25^\circ\text{C}$ per Fig. 2 2. Mounted on copper pad area of 0.2"x0.2" (5.0x5.0 mm) per Fig 5 3. Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.				

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified							
PART NUMBER (UNI)	REVERSE STAND-OFF VOLTAGE V_{RWM} VOLTS	BREAKDOWN VOLTAGE $V_{(BR)}$ @ I_T VOLTS		TEST CURRENT @ I_T mA	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C VOLTS	MAXIMUM REVERSE SURGE CURRENT @ I_{PP} AMPS	MAXIMUM REVERSE LEAKAGE CURRENT @ V_{RWM} I_R μA
		MIN	MAX				
ALPSMA6J5.0A / CA	5.0	6.40	7.00	10	9.2	65.2	800
ALPSMA6J6.0A / CA	6.0	6.67	7.37	10	10.3	58.3	800
ALPSMA6J6.5A / CA	6.5	7.22	7.98	10	11.2	53.6	500
ALPSMA6J7.0A / CA	7.0	7.78	8.60	10	12.0	50.0	200
ALPSMA6J7.5A / CA	7.5	8.33	9.21	1.0	12.9	46.5	100
ALPSMA6J8.0A / CA	8.0	8.89	9.83	1.0	13.6	44.1	50
ALPSMA6J8.5A / CA	8.5	9.44	10.4	1.0	14.4	41.7	20
ALPSMA6J9.0A / CA	9.0	10.0	11.1	1.0	15.4	39.0	10
ALPSMA6J10A / CA	10	11.1	12.3	1.0	17.0	35.3	5
ALPSMA6J11A / CA	11	12.2	13.5	1.0	18.2	33.0	5
ALPSMA6J12A / CA	12	13.3	14.7	1.0	19.9	30.2	5
ALPSMA6J13A / CA	13	14.4	15.9	1.0	21.5	27.9	5
ALPSMA6J14A / CA	14	15.6	17.2	1.0	23.2	25.9	5
ALPSMA6J15A / CA	15	16.7	18.5	1.0	24.4	24.6	5

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER (Notes 1-2)	REVERSE STAND-OFF VOLTAGE V_{RWM} VOLTS	BREAKDOWN VOLTAGE $V_{(BR)}$ @ I_T VOLTS		TEST CURRENT @ I_T mA	MAXIMUM CLAMPING VOLTAGE (Fig. 2) @ I_P V_C VOLTS	MAXIMUM REVERSE SURGE CURRENT @ I_{DD} AMPS	MAXIMUM REVERSE LEAKAGE CURRENT @ V_{RWM} I_R μA
		MIN	MAX				
ALPSMA6J16A / CA	16	17.8	19.7	1.0	26.0	23.0	5
ALPSMA6J17A / CA	17	18.9	20.9	1.0	27.6	21.7	5
ALPSMA6J18A / CA	18	20.0	22.1	1.0	29.2	20.5	5
ALPSMA6J20A / CA	20	22.2	24.5	1.0	32.4	18.5	5
ALPSMA6J22A / CA	22	24.4	26.9	1.0	35.5	16.9	5
ALPSMA6J24A / CA	24	26.7	29.5	1.0	38.9	15.4	5
ALPSMA6J26A / CA	26	28.9	31.9	1.0	42.1	14.3	5
ALPSMA6J28A / CA	28	31.1	34.4	1.0	45.4	13.2	5
ALPSMA6J30A / CA	30	33.3	36.8	1.0	48.4	12.4	5
ALPSMA6J33A / CA	33	36.7	40.6	1.0	53.3	11.2	5
ALPSMA6J36A / CA	36	40.0	44.2	1.0	58.1	10.3	5
ALPSMA6J40A / CA	40	44.4	49.1	1.0	64.5	9.3	5
ALPSMA6J43A / CA	43	47.8	52.8	1.0	69.4	8.6	5
ALPSMA6J45A / CA	45	50.0	55.3	1.0	72.7	8.3	5
ALPSMA6J48A / CA	48	53.3	58.9	1.0	77.4	7.8	5
ALPSMA6J51A / CA	51	56.7	62.7	1.0	82.4	7.3	5
ALPSMA6J54A / CA	54	60.0	66.3	1.0	87.1	6.9	5
ALPSMA6J58A / CA	58	64.4	71.2	1.0	93.6	6.4	5
ALPSMA6J60A / CA	60	66.7	73.7	1.0	96.8	6.2	5
ALPSMA6J64A / CA	64	71.1	78.6	1.0	103.0	5.8	5
ALPSMA6J70A / CA	70	77.8	86.0	1.0	113.0	5.3	5
ALPSMA6J75A / CA	75	83.3	92.1	1.0	121.0	5.0	5
ALPSMA6J78A / CA	78	86.7	95.8	1.0	126.0	4.8	5
ALPSMA6J85A / CA	85	94.4	104	1.0	137.0	4.4	5

NOTE

1. V_{BR} measured after I_T applied for 300 μs , I_T = square wave pulse or equivalent
2. Surge current waveform per Fig. 3 and derated per Fig. 2
3. For bi-directional types having V_{RWM} of 10 volts and less, the I_R limit is doubled
4. Suffix 'A' denotes 5% tolerance devices. Part numbers with "CA" suffix are bidirectional devices, i.e., 8. ALPSMA6J85CA.
5. All terms and symbols are consistent with ANS/IEEE C62.35
6. Transient Voltage Suppressors (TVS) are devices used to protect vulnerable circuits from electrical overstress such as that caused by electrostatic discharge, inductive load switching and induced lightning. Within the TVS, damaging voltage spikes are limited by clamping or avalanche action of a rugged silicon pn junction which reduces the amplitude of the transient to a nondestructive level. See Fig. 7 & Fig. 8

TYPICAL DEVICE CHARACTERISTICS CURVES

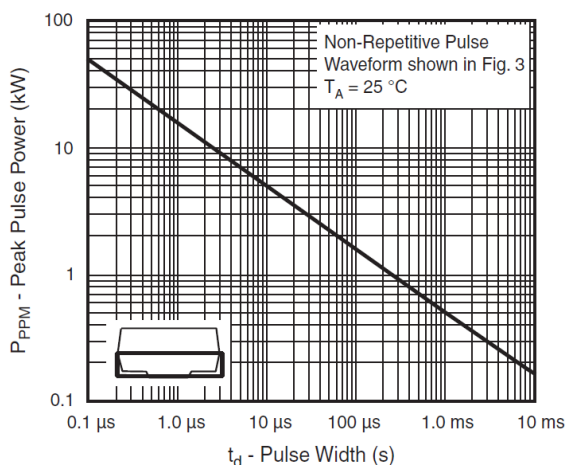


Fig1. PEAK PULSE POWER RATING CURVE

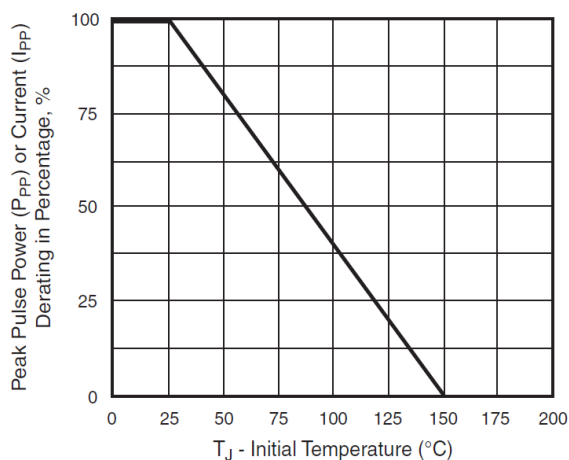


Fig2. PULSE POWER OR CURRENT VS. INITIAL JUNCTION TEMPERATURE

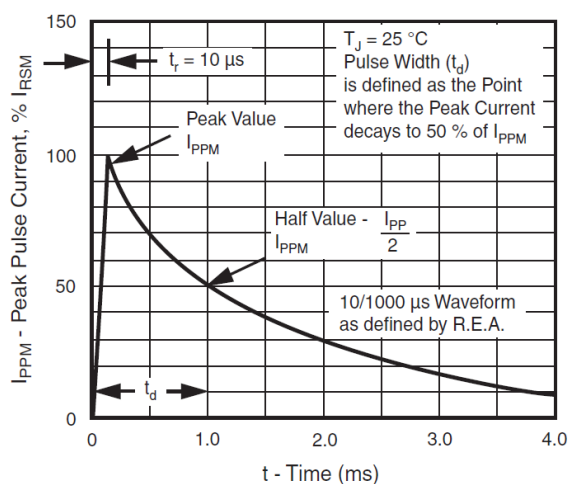


Fig3. PULSE WAVEFORM

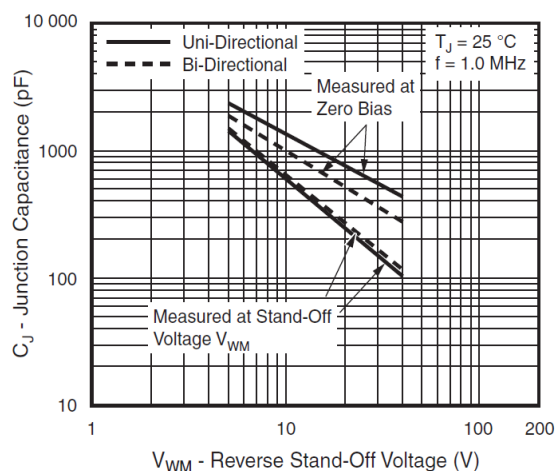


Fig4. TYPICAL JUNCTION CAPACITANCE

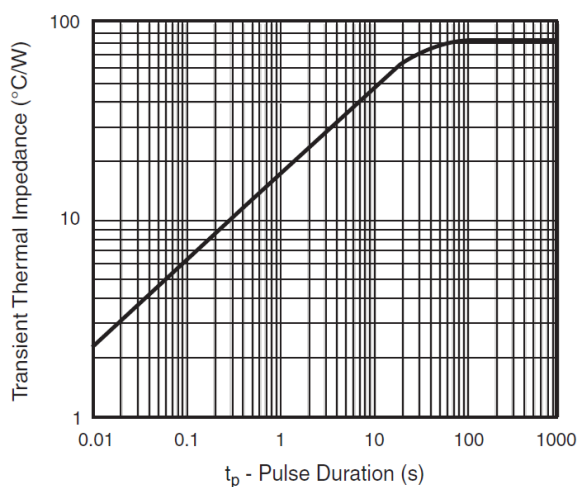


Fig5 TYPICAL TRANSIENT THERMAL IMPEDANCE

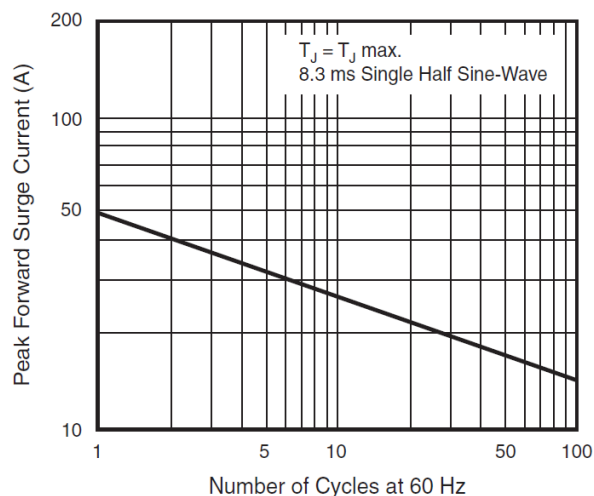
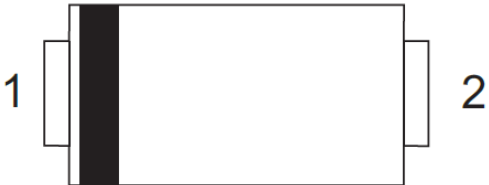
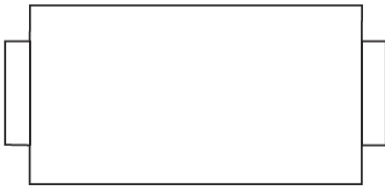


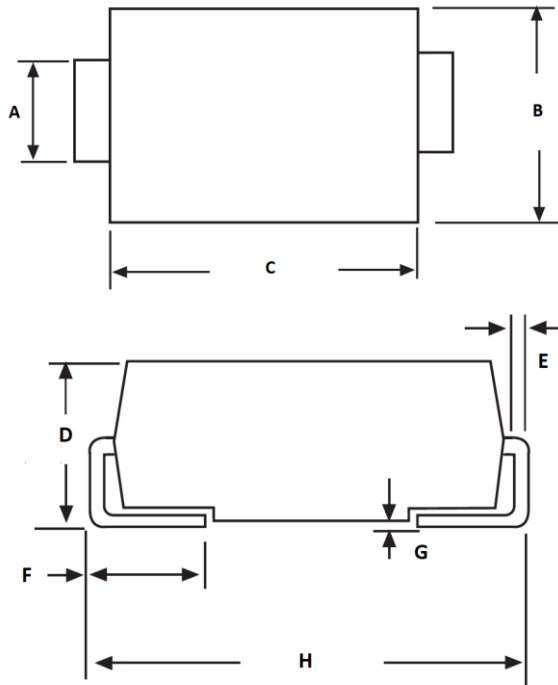
Fig6 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT (UNI-DIRECTIONAL USE ONLY)

PINNING INFORMATION

PIN	SIMPLIFIED OUTLINE	SYMBOL
Uni-Directional Pin1 cathode Pin2 anode		
Bi-Directional		

PACKAGE INFORMATION

DO-214AC / SMA

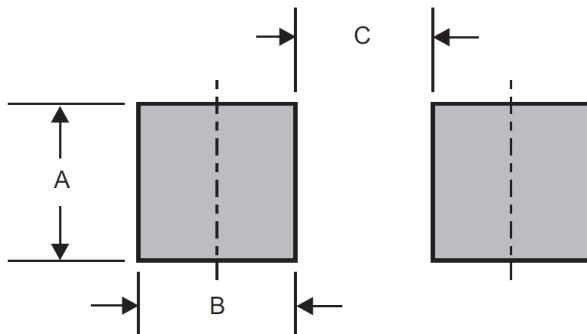


OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.30	1.70	0.051	0.067
B	2.45	3.00	0.096	0.118
C	3.99	4.50	0.157	0.177
D	1.98	2.42	0.078	0.096
E	0.152	0.305	0.006	0.012
F	0.76	1.52	0.030	0.060
G	0.203 MAX.		0.008 MAX.	
E	4.80	5.28	0.188	0.208

NOTES

- Dimensions are exclusive of mold flash and metal burrs.



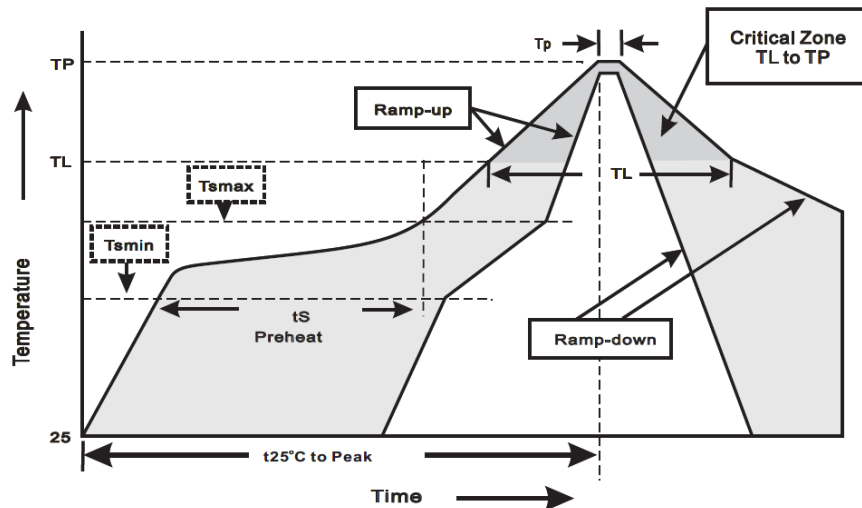
PAD LAYOUT DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.60	-	0.063	-
B	1.50	-	0.059	-
C	2.80	-	0.110	-

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...

ALPSMA6JXXA/CA Series DO-214AC(SMA)

PRODUCT HIGH RELIABILITY 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	$V_{BR} = V_{BR\ NOM} * 80\%$ 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...

ALPSMA6JXXA/CA Series

DO-214AC(SMA)

CUSTOMER NOTE:

DISCLAIMER

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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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