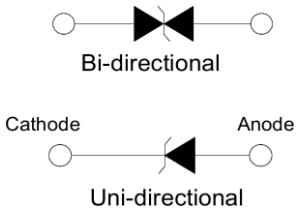
1500-WATT SURFACE MOUNT TRANSIENT VOLTAGE – 5.0V ~ 440V

DESCRIPTION:



The ALPSMCJXXA/CA (UNI/BI) Series are designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

The ALPSMCJXXA/CA Series has a peak pulse power rating of 1500 Watts for an 10/1000µs waveshape.

FEATURES:

- 1500W peak pulse power capacity with a 10/1000µs waveform, repetition rate (duty cycle): 0.01%
- 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 in DO-214AB(SMC-F) package.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex. ALPSMCJ5.0A-H

APPLICATIONS:

- Protection of I/O Interfaces
- VCC bus and other vulnerable circuits
  - Telecom
  - Computer
  - Industrial
  - Consumer electronic applications.

MECHANICAL CHARACTERISTICS

- Epoxy: UL94-V0 rated flame retardant.
- Case: Molded plastic, DO-214AB / SMC-F.
- Terminals: Solder Plated, Solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode except bi-directional models
- Mounting Position: Any.
- Approximate Weight: 0.23 grams.

ORDERING PART NUMBER

PART NUMBER	ORDERING PART NUMBER
ALPSMCJXXA / CA	**ALPSMCJXXA / CA - SC**

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Operating Junction Temperature range	T_J	-55 to +150	°C
Storage Temperature range	T_{STG}	-55 to 150	°C
Maximum instantaneous forward voltage at 100A for uni-directional types only, (Note 4)	V_F	3.5/5.0	V
Peak Pulse Power Dissipation with 10/1000μs waveform, (Fig.3) (Note 1, 2)	P_{PPM}	1500	W
Peak Pulse current with a 10/1000μs Waveform	I_{PPM}	See Table 1	A
Steady State Power Dissipation at T_A=75°C, (Note 2)	$P_{M(AV)}$	6.5	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 3)	I_{FSM}	200	A

Notes:

1. Non-repetitive current pulse, per Fig. 3 and derated above T_A =25°C per Fig. 2.
2. Mounted on copper pad area of 0.31" x 0.31" (8.0x8.0mm) per Fig 5.
3. Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 pulses per minute maximum.
4. V_F <3.5V for devices of V_{BR} <200V and V_F <5.0V for devices of V_{BR} >201V.

TYPICAL ELECTRICAL CHARACTERISTICS

ELECTRICAL CHARACTERISTICS PER LINE @ T_A = 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 @ I_{PP}		MAXIMUM REVERSE LEAKAGE CURRENT @V_{RWM} I_R µA
		MIN	MAX		V_C VOLTS	@I_{PP} AMPS	
ALPSMCJ5.0A / CA	5.0	6.40	7.00	10	9.2	163.0	800
ALPSMCJ6.0A / CA	6.0	6.67	7.37	10	10.3	145.6	800
ALPSMCJ6.5A / CA	6.5	7.22	7.98	10	11.2	134.0	500
ALPSMCJ7.0A / CA	7.0	7.78	8.60	10	12.0	125.0	200
ALPSMCJ7.5A / CA	7.5	8.33	9.21	1	12.9	116.3	100
ALPSMCJ8.0A / CA	8.0	8.89	9.83	1	13.6	110.3	50
ALPSMCJ8.5A / CA	8.5	9.44	10.40	1	14.4	104.2	20
ALPSMCJ9.0A / CA	9.0	10.00	11.10	1	15.4	97.4	10
ALPSMCJ10A / CA	10	11.10	12.30	1	17.0	88.2	5
ALPSMCJ11A / CA	11	12.20	13.50	1	18.2	82.4	1
ALPSMCJ12A / CA	12	13.30	14.70	1	19.9	75.4	1
ALPSMCJ13A / CA	13	14.40	15.90	1	21.5	69.8	1
ALPSMCJ14A / CA	14	15.60	17.20	1	23.2	64.7	1
ALPSMCJ15A / CA	15	16.70	18.50	1	24.4	61.5	1
ALPSMCJ16A / CA	16	17.80	19.70	1	26.0	57.7	1
ALPSMCJ17A / CA	17	18.90	20.90	1	27.6	54.4	1
ALPSMCJ18A / CA	18	20.00	22.10	1	29.2	51.4	1
ALPSMCJ20A / CA	20	22.20	24.50	1	32.4	46.3	1
ALPSMCJ22A / CA	22	24.40	26.90	1	35.5	42.3	1
ALPSMCJ24A / CA	24	26.70	29.50	1	38.9	38.6	1

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 @ I_{Pp}		MAXIMUM REVERSE LEAKAGE CURRENT @V_{RWM} I_R µA
		MIN	MAX		V_C VOLTS	@I_{PP} AMPS	
ALPSMCJ26A / CA	26	28.90	31.90	1	42.1	35.6	1
ALPSMCJ28A / CA	28	31.10	34.40	1	45.4	33.1	1
ALPSMCJ30A / CA	30	33.30	36.80	1	48.4	31.0	1
ALPSMCJ33A / CA	33	36.70	40.60	1	53.3	28.2	1
ALPSMCJ36A / CA	36	40.00	44.20	1	58.1	25.8	1
ALPSMCJ40A / CA	40	44.40	49.10	1	64.5	23.3	1
ALPSMCJ43A / CA	43	47.80	52.80	1	69.4	21.6	1
ALPSMCJ45A / CA	45	50.00	55.30	1	72.7	20.6	1
ALPSMCJ48A / CA	48	53.30	58.90	1	77.4	19.4	1
ALPSMCJ51A / CA	51	56.70	62.70	1	82.4	18.2	1
ALPSMCJ54A / CA	54	60.00	66.30	1	87.1	17.2	1
ALPSMCJ58A / CA	58	64.40	71.20	1	93.6	16.1	1
ALPSMCJ60A / CA	60	66.70	73.70	1	96.8	15.5	1
ALPSMCJ64A / CA	64	71.10	78.60	1	103.0	14.6	1
ALPSMCJ70A / CA	70	77.80	86.00	1	113.0	13.3	1
ALPSMCJ75A / CA	75	83.30	92.10	1	121.0	12.4	1
ALPSMCJ78A / CA	78	86.70	95.80	1	126.0	11.9	1
ALPSMCJ85A / CA	85	94.40	104.0	1	137.0	11.0	1
ALPSMCJ90A / CA	90	100.0	111.0	1	146.0	10.3	1
ALPSMCJ100A / CA	100	111.0	123.0	1	162.0	9.3	1
ALPSMCJ110A / CA	110	122.0	135.0	1	177.0	8.5	1
ALPSMCJ120A / CA	120	133.0	147.0	1	193.0	7.8	1
ALPSMCJ130A / CA	130	144.0	159.0	1	209.0	7.2	1
ALPSMCJ150A / CA	150	167.0	185.0	1	243.0	6.2	1

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 @ I_{Pp}		MAXIMUM REVERSE LEAKAGE CURRENT @V_{RWM} I_R µA
		MIN	MAX		V_C VOLTS	@I_{PP} AMPS	
ALPSMCJ160A / CA	160	178.0	197.0	1	259.0	5.8	1
ALPSMCJ170A / CA	170	189.0	209.0	1	275.0	5.5	1
ALPSMCJ180A / CA	180	201.0	222.0	1	292.0	5.2	1
ALPSMCJ190A / CA	190	211.0	234.0	1	307.0	4.9	1
ALPSMCJ200A / CA	200	224.0	247.0	1	324.0	4.7	1
ALPSMCJ220A / CA	220	246.0	272.0	1	356.0	4.2	1
ALPSMCJ250A / CA	250	279.0	309.0	1	405.0	3.7	1
ALPSMCJ300A / CA	300	335.0	371.0	1	486.0	3.1	1
ALPSMCJ350A / CA	350	391.0	432.0	1	567.0	2.7	1
ALPSMCJ400A / CA	400	447.0	494.0	1	648.0	2.3	1

NOTE:

1. V_{BR} measured after I_T applied for 300us, I_T=square wave pulse or equivalent.
2. Surge current waveform per Fig. 3 and derated per Fig. 2
3. For bidirectional type having V_{Rwm} of 10 volts and less, the I_R limit is double.
4. Suffix 'C' denotes bi-directional devices. Suffix 'A' denotes 5% tolerance devices, no suffix denotes 10% tolerance devices.
5. All term 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
7. Part numbers with "CA" suffix are bidirectional devices, i.e., ALPSMCJ440CA

TYPICAL DEVICE CHARACTERISTICS CURVES

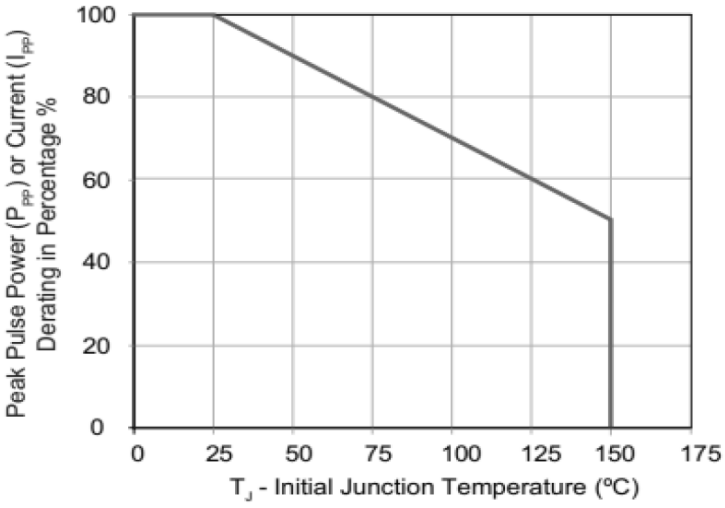


Fig1. PEAK PULSE POWER DERATING CURVE

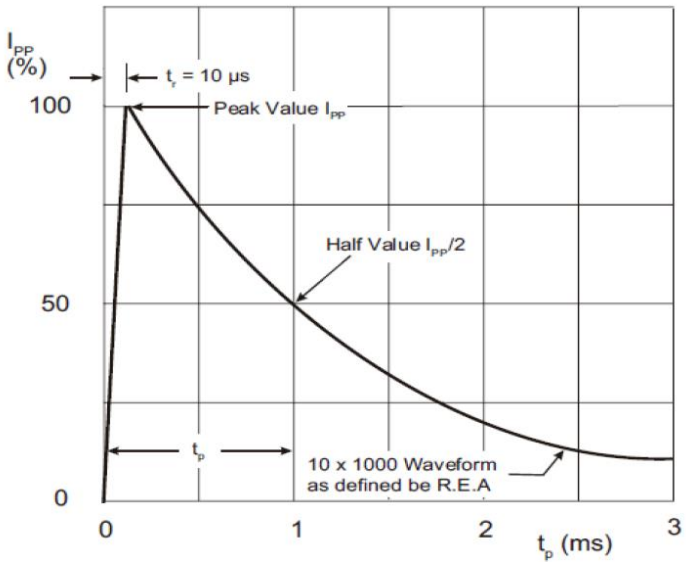


Fig2. PULSE WAVEFORM

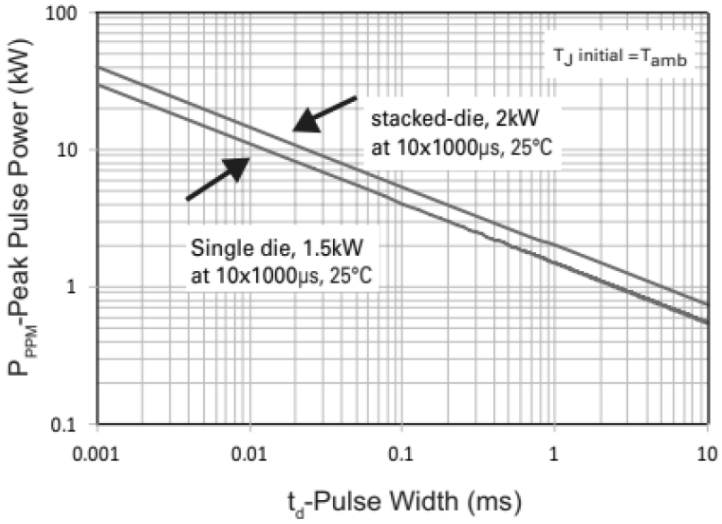


Fig3. PEAK PULSE POWER RATING CURVE

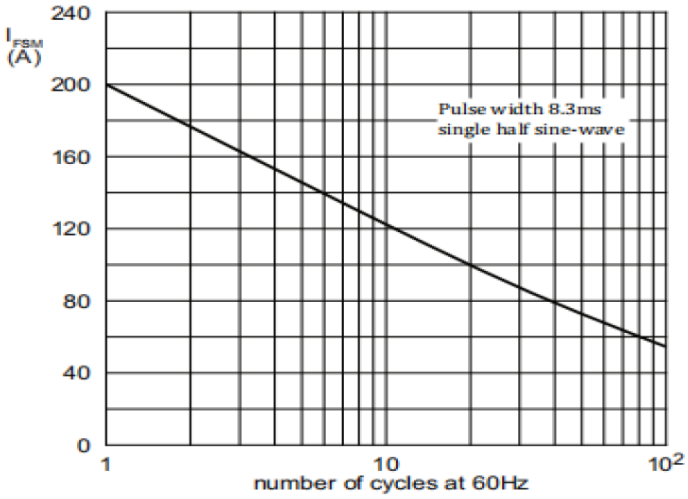


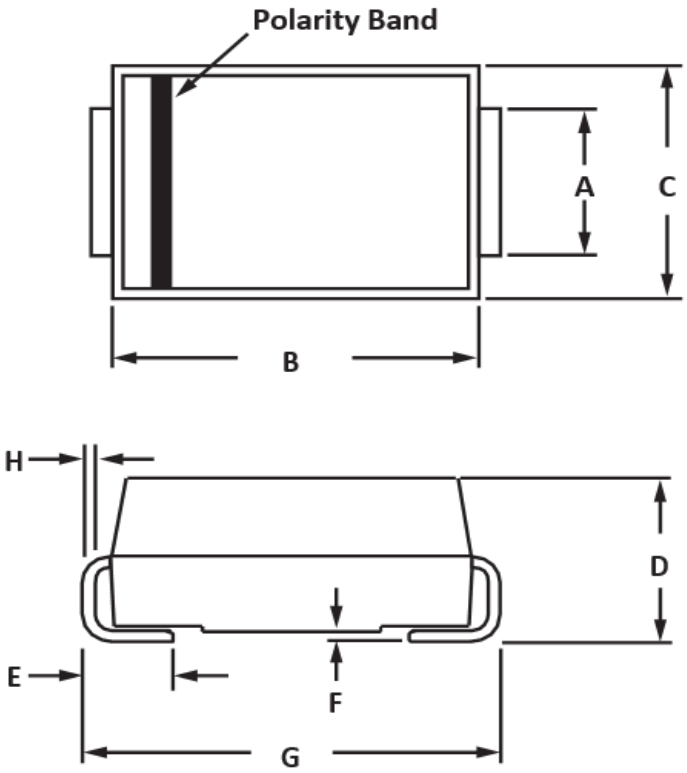
Fig4. MAXIMUM NON-REPETITIVE SURGE CURRENT

PINNING INFORMATION

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

PACKAGE INFORMATION

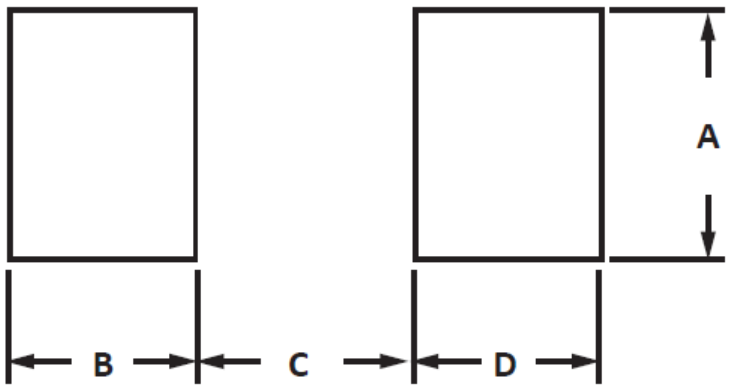
DO-214AB



OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.10	0.110	0.122
B	6.75	7.05	0.266	0.278
C	5.85	6.15	0.230	0.242
D	2.33	2.83	0.092	0.111
E	0.90	1.60	0.035	0.063
F	0.00	0.30	0.000	0.012
G	7.65	8.15	0.301	0.321
H	0.15	0.25	0.006	0.010

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

SUGGESTED SOLDER PAD LAYOUT



PAD LAYOUT DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	3.30	-	0.132	-
B	2.50	-	0.100	-
C	-	4.40	-	0.176
D	2.50	-	0.100	-

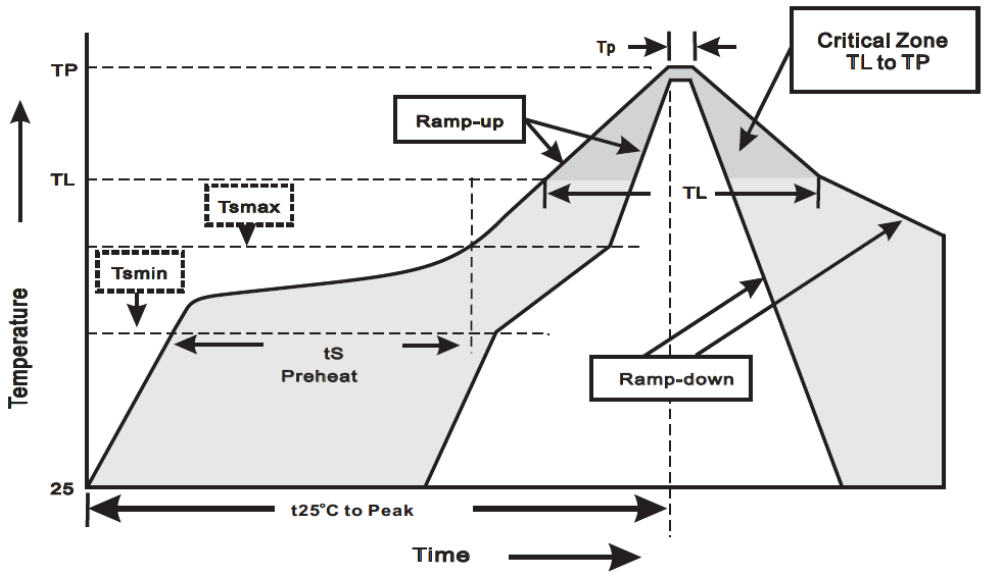
NOTE:
We build diodes using UL approved epoxy compounds for safety. Our Epoxy manufacturers UL approval is E113825 thus we do not require individual UL approval for specific parts as the entire series uses the approved mould compounds.

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

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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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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