5000 WATT TVS COMPONENT STAND-OFF VOLTAGE 11 TO 440V

DESCRIPTION:

The 5.0ALPSMDJXX/C (UNI/BI) and 5.0ALPSMDJXXA/CA (UNI/BI) Series are multi-line transient voltage suppressor arrays series 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 5.0ALPSMDJXX/C and 5.0ALPSMDJXXA/CA Series has a peak pulse power rating of 5000 Watts for an 10/1000µs waveshape.

FEATURES:

- Glass Passivated Chip
- 5000 Watts Peak Pulse Power per Line (tp = 10/1000µs)
- Low Leakage Current
- Unidirectional & Bidirectional Configurations
- Available in Multiple Voltages
- Excellent Clamping Capability
- Very Fast Response Time
- RoHS Compliant
- REACH Compliant

APPLICATIONS:

- ESD
- Tertiary lightning
- Switching transients

MECHANICAL CHARACTERISTICS

- Epoxy: UL94-V0 rated flame retardant.
- Case: Molded plastic, DO-214AB / SMC.
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode end except Bipolar
- Mounting Position: Any.

ORDERING PART NUMBER

PART NUMBER	ORDERING PART NUMBER
5.0ALPSMDJXX/C **5.0ALPSMDJXXA/CA**	**5.0ALPSMDJXX/C - SM** **5.0ALPSMDJXXA/CA - SM**

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS T_A@ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power dissipation with a tp =10/1000µs waveform (Note 1)	P_{PP}	5000	Watts
Peak Pulse Current with a tp = 10/1000µs waveform (Note 1)	I_{PP}	See Next Table	Amps
Power Dissipation on Infinite Heatsink at T_L = 75°C	P_D	6.5	Watts
Peak Forward Surge Current, 8.3ms single half sinewave - Unidirectional Only (Note 2)	I_{FSM}	300	Amps
Maximum Instantaneous Forward Voltage at 100A - Unidirectional Only (Note 3)	V_F	3.5/5.0	V
Operating Temperature	T_A	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C

NOTE
1. Non-repetitive current pulse per Figure 5 and derated above T_A = 25°C per Figure 1.
2. Measured on 8.3ms single half sinewave or equivalent square wave, duty cycle = 4 pulses per minute maximum.
3. V_F<3.5V for devices of V_{BR}<200V and V_F<5.0V for devices of V_{BR}>201V

ELECTRICAL CHARACTERISTICS PER LINE T_A@ 25°C Unless Otherwise Specified							
PART NUMBER (Notes 1-2)	WORKING PEAK REVERSE 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 @V_{RWM} I_R µA
		MIN	MAX				
5.0ALPSMDJ11 / C	11.0	12.20	14.90	10	20.1	248.8	800
5.0ALPSMDJ11A / CA	11.0	12.20	13.50	10	18.2	274.7	800
5.0ALPSMDJ12 / C	12.0	13.30	16.30	10	22.0	227.3	800
5.0ALPSMDJ12A / CA	12.0	13.30	14.70	10	19.9	251.3	800
5.0ALPSMDJ13 / C	13.0	14.40	17.60	10	23.8	210.1	500
5.0ALPSMDJ13A / CA	13.0	14.40	15.90	10	21.5	232.6	500
5.0ALPSMDJ14 / C	14.0	15.60	19.10	10	25.8	193.8	200
5.0ALPSMDJ14A / CA	14.0	15.60	17.20	10	23.2	215.5	200
5.0ALPSMDJ15 / C	15.0	16.70	20.40	1	26.9	185.9	100
5.0ALPSMDJ15A / CA	15.0	16.70	18.50	1	24.4	204.9	100
5.0ALPSMDJ16 / C	16.0	17.80	21.80	1	28.8	173.6	50
5.0ALPSMDJ16A / CA	16.0	17.80	19.70	1	26.0	192.3	50
5.0ALPSMDJ17 / C	17.0	18.90	23.10	1	30.5	163.9	20
5.0ALPSMDJ17A / CA	17.0	18.90	20.90	1	27.6	181.2	20
5.0ALPSMDJ18 / C	18.0	20.00	24.40	1	32.2	155.3	10
5.0ALPSMDJ18A / CA	18.0	20.00	22.10	1	29.2	171.2	10

ELECTRICAL CHARACTERISTICS PER LINE T_A@ 25°C Unless Otherwise Specified							
PART NUMBER (Notes 1-2)	WORKING PEAK REVERSE 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 @V_{RWM} I_R µA
		MIN	MAX				
5.0ALPSMDJ19 / C	19.0	21.13	25.76	1	34.0	147.0	10
5.0ALPSMDJ19A / CA	19.0	21.10	23.30	1	30.8	162.4	10
5.0ALPSMDJ20 / C	20.0	22.20	27.10	1	35.8	139.7	5
5.0ALPSMDJ20A / CA	20.0	22.20	24.50	1	32.4	154.3	5
5.0ALPSMDJ22 / C	22.0	24.40	29.80	1	39.4	126.9	5
5.0ALPSMDJ22A / CA	22.0	24.40	26.90	1	35.5	140.8	5
5.0ALPSMDJ24 / C	24.0	26.70	32.60	1	43.0	116.3	5
5.0ALPSMDJ24A / CA	24.0	26.70	29.50	1	38.9	128.5	5
5.0ALPSMDJ26 / C	26.0	28.90	35.30	1	46.6	107.3	5
5.0ALPSMDJ26A / CA	26.0	28.90	31.90	1	42.1	118.8	5
5.0ALPSMDJ28 / C	28.0	31.10	38.00	1	50.0	100.0	5
5.0ALPSMDJ28A / CA	28.0	31.10	34.40	1	45.4	110.1	5
5.0ALPSMDJ30 / C	30.0	33.30	40.70	1	53.5	93.5	5
5.0ALPSMDJ30A / CA	30.0	33.30	36.80	1	48.4	103.3	5
5.0ALPSMDJ33 / C	33.0	36.70	44.90	1	59.0	84.7	5
5.0ALPSMDJ33A / CA	33.0	36.70	40.60	1	53.3	93.8	5
5.0ALPSMDJ36 / C	36.0	40.00	48.90	1	64.3	77.8	5
5.0ALPSMDJ36A / CA	36.0	40.00	44.20	1	58.1	86.1	5
5.0ALPSMDJ40 / C	40.0	44.40	54.30	1	71.4	70.0	5
5.0ALPSMDJ40A / CA	40.0	44.40	49.10	1	64.5	77.5	5
5.0ALPSMDJ43 / C	43.0	47.80	58.40	1	76.7	65.2	5
5.0ALPSMDJ43A / CA	43.0	47.80	52.80	1	69.4	72.0	5
5.0ALPSMDJ45 / C	45.0	50.00	61.10	1	80.3	62.3	5
5.0ALPSMDJ45A / CA	45.0	50.00	55.30	1	72.7	68.8	5
5.0ALPSMDJ48 / C	48.0	53.30	65.10	1	85.5	58.5	5
5.0ALPSMDJ48A / CA	48.0	53.30	58.90	1	77.4	64.6	5

ELECTRICAL CHARACTERISTICS PER LINE T_A@ 25°C Unless Otherwise Specified							
PART NUMBER (Notes 1-2)	WORKING PEAK REVERSE 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 @V_{RWM} I_R µA
		MIN	MAX				
5.0ALPSMDJ51 / C	51.0	56.70	69.30	1	91.1	54.9	5
5.0ALPSMDJ51A / CA	51.0	56.70	62.70	1	82.4	60.7	5
5.0ALPSMDJ54 / C	54.0	60.00	73.30	1	96.3	51.9	5
5.0ALPSMDJ54A / CA	54.0	60.00	66.30	1	87.1	57.4	5
5.0ALPSMDJ58 / C	58.0	64.40	78.70	1	103.0	48.5	5
5.0ALPSMDJ58A / CA	58.0	64.40	71.20	1	93.6	53.4	5
5.0ALPSMDJ60 / C	60.0	66.70	81.50	1	107.0	46.7	5
5.0ALPSMDJ60A / CA	60.0	66.70	73.70	1	96.8	51.7	5
5.0ALPSMDJ64 / C	64.0	71.10	86.90	1	114.0	43.9	5
5.0ALPSMDJ64A / CA	64.0	71.10	78.60	1	103.0	48.5	5
5.0ALPSMDJ70 / C	70.0	77.80	95.10	1	125.0	40.0	5
5.0ALPSMDJ70A / CA	70.0	77.80	86.00	1	113.0	44.2	5
5.0ALPSMDJ75 / C	75.0	83.30	102.0	1	134.0	37.3	5
5.0ALPSMDJ75A / CA	75.0	83.30	92.10	1	121.0	41.3	5
5.0ALPSMDJ78 / C	78.0	86.70	106.0	1	139.0	36.0	5
5.0ALPSMDJ78A / CA	78.0	86.70	95.80	1	126.0	39.7	5
5.0ALPSMDJ80 / C	80.0	88.96	108.8	1	143.2	34.9	5
5.0ALPSMDJ80A / CA	80.0	88.80	97.60	1	129.6	38.6	5
5.0ALPSMDJ85 / C	85.0	94.40	115.0	1	151.0	33.1	5
5.0ALPSMDJ85A / CA	85.0	94.40	104.0	1	137.0	36.5	5
5.0ALPSMDJ90 / C	90.0	100.0	122.0	1	160.0	31.3	5
5.0ALPSMDJ90A / CA	90.0	100.0	111.0	1	146.0	34.2	5
5.0ALPSMDJ100 / C	100.0	111.0	136.0	1	179.0	27.9	5
5.0ALPSMDJ100A / CA	100.0	111.0	123.0	1	162.0	30.9	5

ELECTRICAL CHARACTERISTICS PER LINE T_A@ 25°C Unless Otherwise Specified							
PART NUMBER (Notes 1-2)	WORKING PEAK REVERSE 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 @V_{RWM} I_R µA
		MIN	MAX				
5.0ALPSMDJ110 / C	110.0	122.0	149.0	1	196.0	25.5	5
5.0ALPSMDJ110A / CA	110.0	122.0	135.0	1	177.0	28.2	5
5.0ALPSMDJ120 / C	120.0	133.0	163.0	1	214.0	23.4	5
5.0ALPSMDJ120A / CA	120.0	133.0	147.0	1	193.0	25.9	5
5.0ALPSMDJ130 / C	130.0	144.0	176.0	1	231.0	21.6	5
5.0ALPSMDJ130A / CA	130.0	144.0	159.0	1	209.0	23.9	5
5.0ALPSMDJ140 / C	140.0	155.7	190.4	1	250.6	20.0	5
5.0ALPSMDJ140A / CA	140.0	155.0	171.0	1	226.8	22.0	5
5.0ALPSMDJ150 / C	150.0	167.0	204.0	1	268.0	18.7	5
5.0ALPSMDJ150A / CA	150.0	167.0	185.0	1	243.0	20.6	5
5.0ALPSMDJ160 / C	160.0	178.0	218.0	1	287.0	17.4	5
5.0ALPSMDJ160A / CA	160.0	178.0	197.0	1	259.0	19.3	5
5.0ALPSMDJ170 / C	170.0	189.0	231.0	1	304.0	16.4	5
5.0ALPSMDJ170A / CA	170.0	189.0	209.0	1	275.0	18.2	5
5.0ALPSMDJ180 / C	180.0	200.2	244.8	1	322.2	15.5	5
5.0ALPSMDJ180A / CA	180.0	200.0	220.0	1	291.6	17.1	5
5.0ALPSMDJ190 / C	190.0	211.3	258.4	1	340.1	14.7	5
5.0ALPSMDJ190A / CA	190.0	211.0	232.0	1	307.8	16.2	5
5.0ALPSMDJ200A / CA	200.0	224.0	247.0	1	324.0	15.4	5
5.0ALPSMDJ220A / CA	220.0	246.0	272.0	1	356.0	14.0	5
5.0ALPSMDJ250A / CA	250.0	279.0	309.0	1	405.0	12.3	5
5.0ALPSMDJ300A / CA	300.0	335.0	371.0	1	486.0	10.3	5
5.0ALPSMDJ350A / CA	350.0	391.0	432.0	1	567.0	8.8	5
5.0ALPSMDJ400A / CA	400.0	447.0	494.0	1	648.0	7.7	5
5.0ALPSMDJ440A / CA	440.0	492.0	543.0	1	713.0	7.0	5

NOTE
1. Suffix 'A ' denotes 5% tolerance device. Without 'A' denotes 10% tolerance device
2. Part numbers with “CA” suffix are bidirectional devices, i.e., 5.0ALPSMDJ440CA
3. For bidirectional devices having a V_R of 20 Volts and under, the I_R limit is double.

TYPICAL DEVICE CHARACTERISTICS CURVES T_A@ 25°C Unless Otherwise Specified

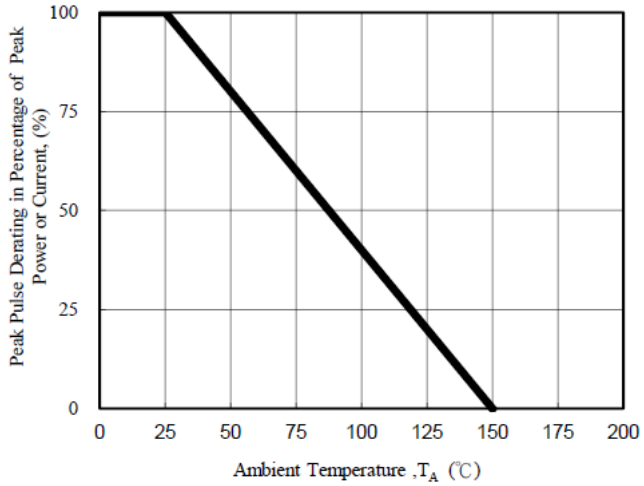


Fig1. POWER DERATING CURVE

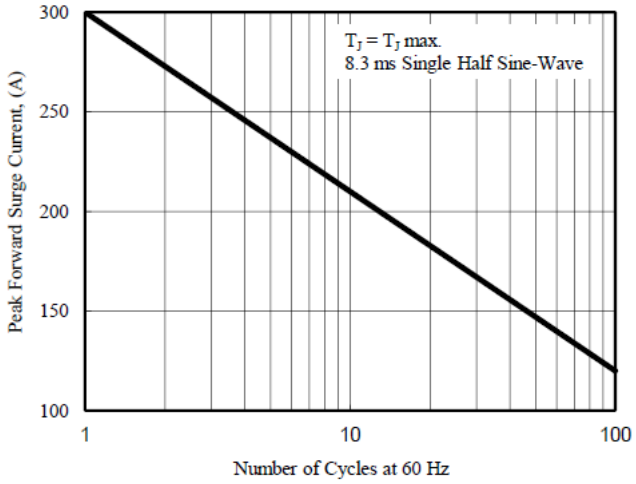


Fig2. MAXIMUM NON-REPETITIVE SURGE CURRENT

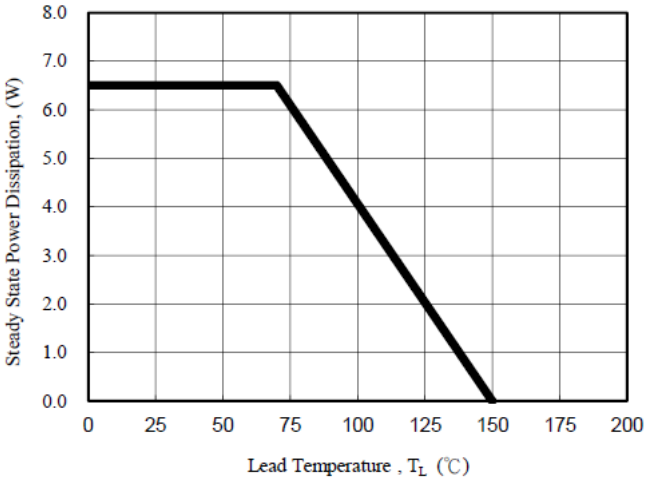


Fig3. STEADY STATE POWER DERATING CURVE

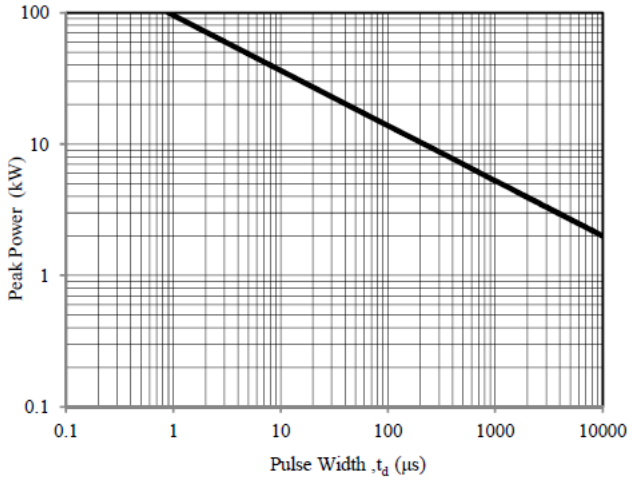


Fig4. PEAK PULSE POWER RATING CURVE

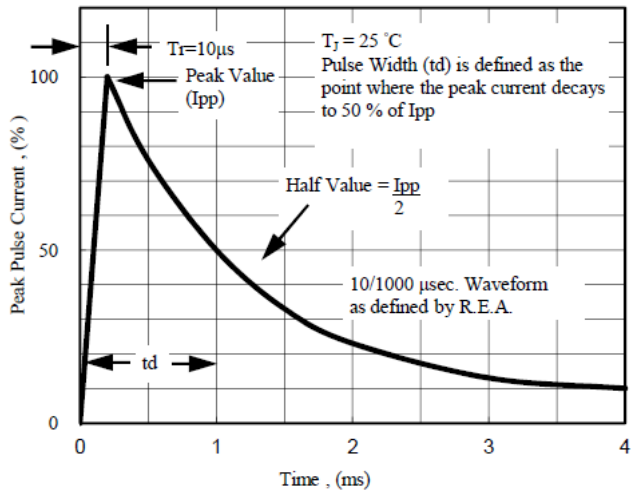


Fig.5 PULSE WAVEFORM

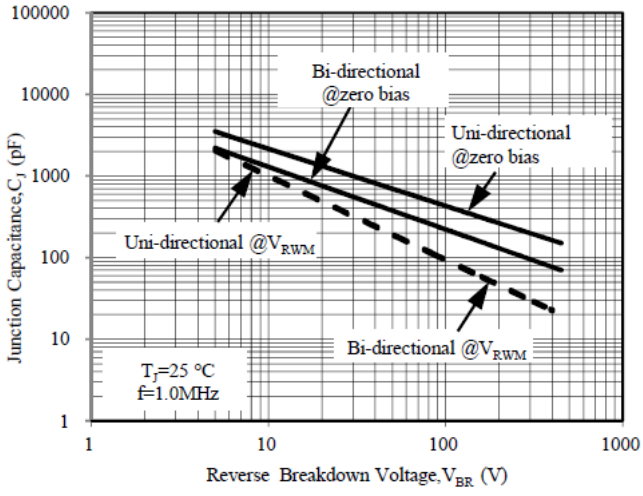
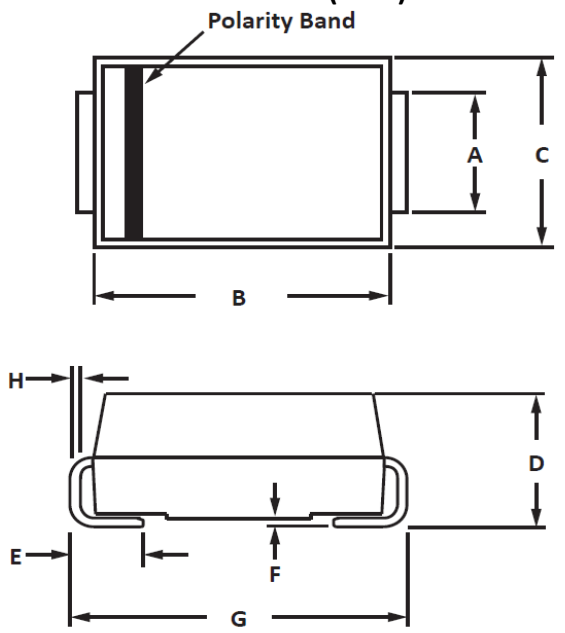


Fig.6 TYPICAL JUNCTION CAPACITANCE

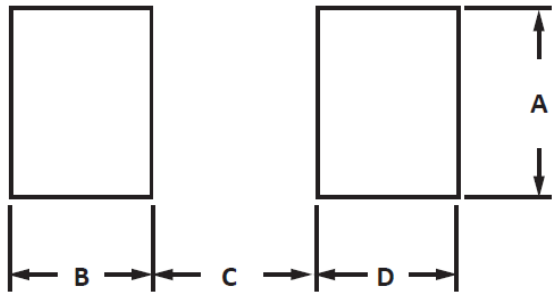
PACKAGE INFORMATION

DO-214AB (SMC)



OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.86	3.16	0.114	0.126
B	6.52	7.02	0.260	0.280
C	5.52	6.15	0.220	0.245
D	1.98	2.59	0.079	0.103
E	0.75	1.51	0.030	0.060
F	0.00	0.20	0.000	0.008
G	7.64	8.02	0.305	0.320
H	0.15	0.30	0.006	0.012

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



PAD LAYOUT DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	3.43	-	0.135	-
B	2.03	-	0.080	-
C	-	4.32	-	0.170
D	2.03	-	0.080	-

CUSTOMER NOTE:

DISCLAIMER

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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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