Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power (tp = 8/20μs)	P_{pk}	300	Watts
ESD Voltage (HBM per IEC 61000-4-2)	V_{ESD}	>25	kV
Lead Soldering Temperature	T_L	260 (10 sec.)	°C
Operating Temperature	T_J	-55 to +125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

Electrical Characteristics (T=25°C)

SMDA05C

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}				5	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA	6			V
Reverse Leakage Current	I_R	V_{RWM} = 5V, T=25°C			20	μA
Clamping Voltage	V_C	I_{PP} = 1A, tp = 8/20μs			9.8	V
Clamping Voltage	V_C	I_{PP} = 5A, tp = 8/20μs			11	V
Maximum Peak Pulse Current	I_{PP}	tp = 8/20μs			17	A
Junction Capacitance	C_j	V_R = 0V, f = 1MHz			350	pF

SMDA12C

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}				12	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA	13.3			V
Reverse Leakage Current	I_R	V_{RWM} = 12V, T=25°C			1	μA
Clamping Voltage	V_C	I_{PP} = 1A, tp = 8/20μs			19	V
Clamping Voltage	V_C	I_{PP} = 5A, tp = 8/20μs			24	V
Maximum Peak Pulse Current	I_{PP}	tp = 8/20μs			12	A
Junction Capacitance	C_j	V_R = 0V, f = 1MHz			120	pF

Electrical Characteristics *(Continued)*

SMDA15C

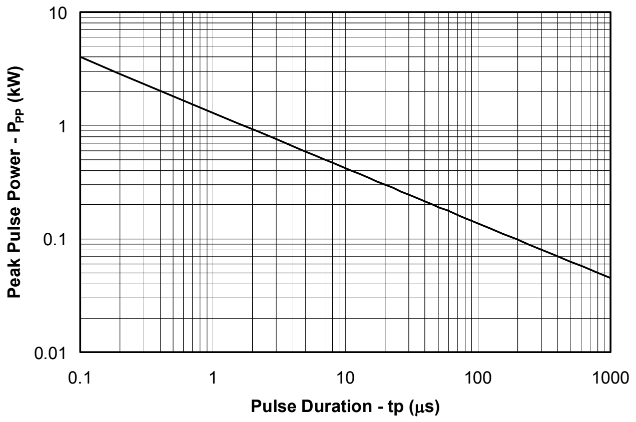
Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}				15	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA	16.7			V
Reverse Leakage Current	I_R	V_{RWM} = 15V, T=25°C			1	µA
Clamping Voltage	V_C	I_{PP} = 1A, tp = 8/20µs			24	V
Clamping Voltage	V_C	I_{PP} = 5A, tp = 8/20µs			30	V
Maximum Peak Pulse Current	I_{PP}	tp = 8/20µs			10	A
Junction Capacitance	C_j	V_R = 0V, f = 1MHz			75	pF

SMDA24C

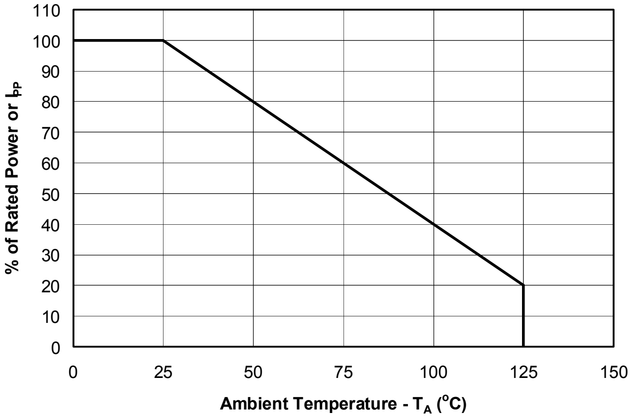
Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}				24	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA	26.7			V
Reverse Leakage Current	I_R	V_{RWM} = 24V, T=25°C			1	µA
Clamping Voltage	V_C	I_{PP} = 1A, tp = 8/20µs			43	V
Clamping Voltage	V_C	I_{PP} = 5A, tp = 8/20µs			55	V
Maximum Peak Pulse Current	I_{PP}	tp = 8/20µs			5	A
Junction Capacitance	C_j	V_R = 0V, f = 1MHz			50	pF

Typical Characteristics

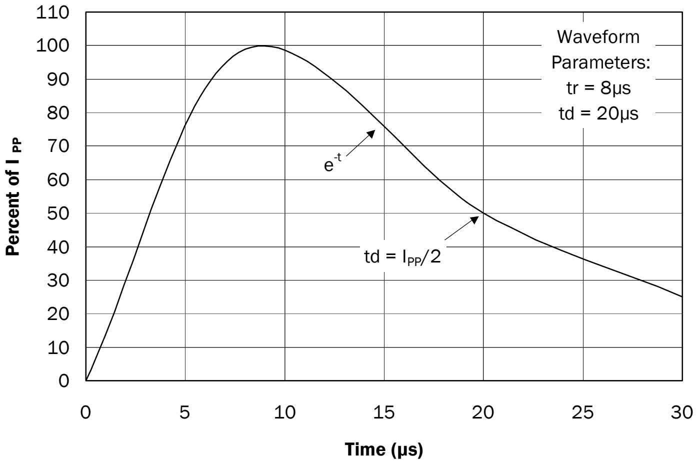
Non-Repetitive Peak Pulse Power vs. Pulse Time



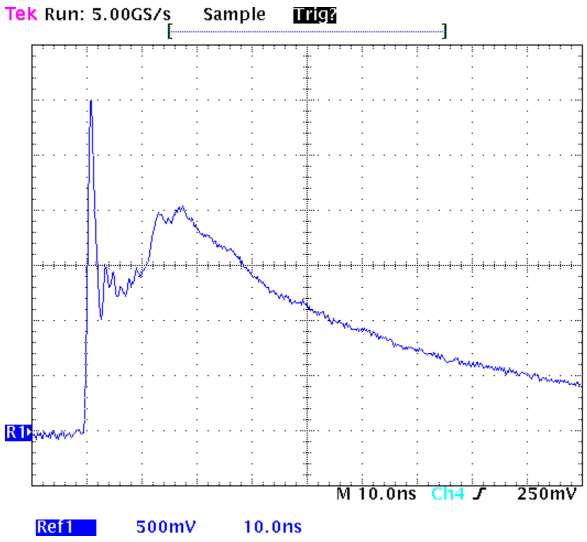
Power Derating Curve



Pulse Waveform



ESD Pulse Waveform (IEC 61000-4-2)



IEC 61000-4-2 Discharge Parameters

Level	First Peak Current (A)	Peak Current at 30 ns (A)	Peak Current at 60 ns (A)	Test Voltage (Contact Discharge) (kV)	Test Voltage (Air Discharge) (kV)
1	7.5	4	8	2	2
2	15	8	4	4	4
3	22.5	12	6	6	8
4	30	16	8	8	15

Applications Information

Device Connection for Protection of Four Data Lines

The SMDAxxC series of devices are designed to protect up to four data lines. The devices are connected as follows:

- The SMDAxxC are bidirectional devices and are designed for use on lines where the normal operating voltage is above and below ground. Pins 1, 2, 3, and 4 are connected to the protected lines. Pins 5, 6, 7, and 8 are connected to ground. Since the device is electrically symmetrical, these connections may be reversed. The ground connections should be made directly to the ground plane for best results. The path length is kept as short as possible to reduce the effects of parasitic inductance in the board traces.

Circuit Board Layout Recommendations for Suppression of ESD.

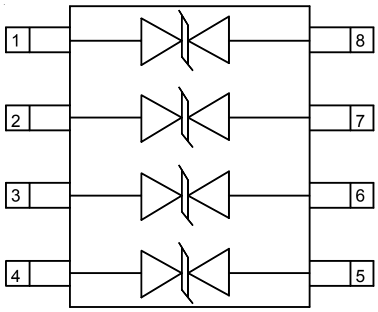
Good circuit board layout is critical for the suppression of ESD induced transients. The following guidelines are recommended:

- Place the TVS near the input terminals or connectors to restrict transient coupling.
- Minimize the path length between the TVS and the protected line.
- Minimize all conductive loops including power and ground loops.
- The ESD transient return path to ground should be kept as short as possible.
- Never run critical signals near board edges.
- Use ground planes whenever possible.

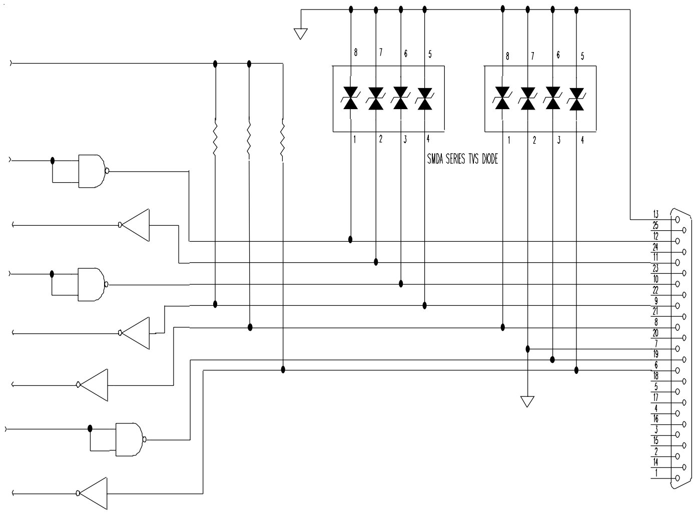
Matte Tin Lead Finish

Matte tin has become the industry standard lead-free replacement for SnPb lead finishes. A matte tin finish is composed of 100% tin solder with large grains. Since the solder volume on the leads is small compared to the solder paste volume that is placed on the land pattern of the PCB, the reflow profile will be determined by the requirements of the solder paste. Therefore, these devices are compatible with both lead-free and SnPb assembly techniques. In addition, unlike other lead-free compositions, matte tin does not have any added alloys that can cause degradation of the solder joint.

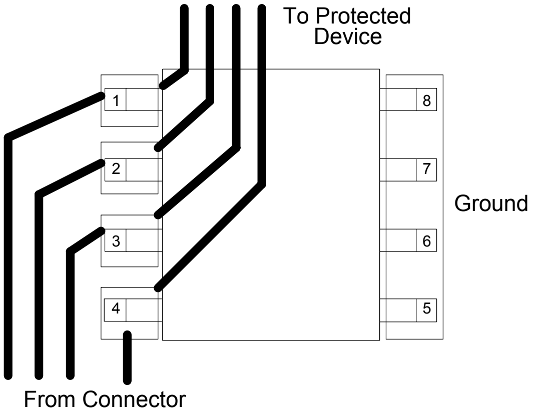
Circuit Diagram



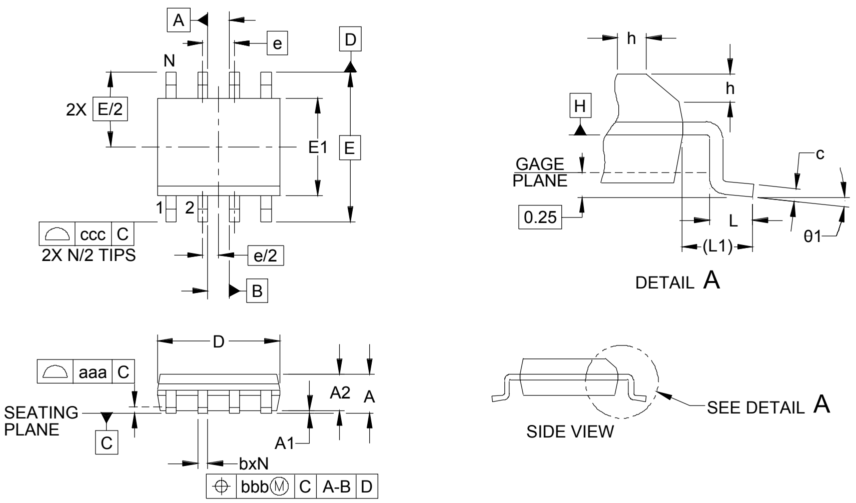
I/O Line Protection



Typical Connection



Outline Drawing - SO-8

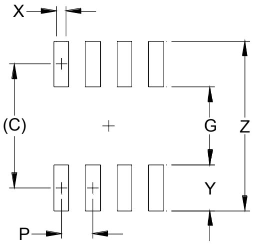


DIM	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	.053	-	.069	1.35	-	1.75
A1	.004	-	.010	0.10	-	0.25
A2	.049	-	.065	1.25	-	1.65
b	.012	-	.020	0.31	-	0.51
c	.007	-	.010	0.17	-	0.25
D	.189	.193	.197	4.80	4.90	5.00
E1	.150	.154	.157	3.80	3.90	4.00
E	.236 BSC			6.00 BSC		
e	.050 BSC			1.27 BSC		
h	.010	-	.020	0.25	-	0.50
L	.016	.028	.041	0.40	0.72	1.04
L1	(.041)			(1.04)		
N	8			8		
θ1	0°	-	8°	0°	-	8°
aaa	.004			0.10		
bbb	.010			0.25		
ccc	.008			0.20		

NOTES:

1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DATUMS -A- AND -B- TO BE DETERMINED AT DATUM PLANE -H-
3. DIMENSIONS "E1" AND "D" DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
4. REFERENCE JEDEC STD MS-012, VARIATION AA.

Land Pattern - SO-8



DIM	INCHES	MILLIMETERS
C	(.205)	(5.20)
G	.118	3.00
P	.050	1.27
X	.024	0.60
Y	.087	2.20
Z	.291	7.40

NOTES:

1. THIS LAND PATTERN IS FOR REFERENCE PURPOSES ONLY. CONSULT YOUR MANUFACTURING GROUP TO ENSURE YOUR COMPANY'S MANUFACTURING GUIDELINES ARE MET.
2. REFERENCE IPC-SM-782A, RLP NO. 300A.

Ordering Information

Part Number	Working Voltage	Lead Finish	Qty per Reel	Reel Size
SMDA05C.TB	5	SnPb	500	7 Inch
SMDA12C.TB	12	SnPb	500	7 Inch
SMDA15C.TB	15	SnPb	500	7 Inch
SMDA24C.TB	24	SnPb	500	7 Inch
SMDA05C.TBT	5	Pb Free	500	7 Inch
SMDA12C.TBT	12	Pb Free	500	7 Inch
SMDA15C.TBT	15	Pb Free	500	7 Inch
SMDA24C.TBT	24	Pb Free	500	7 Inch
SMDA05C	5	SnPb	95/Tube	N/A
SMDA12C	12	SnPb	95/Tube	N/A
SMDA15C	15	SnPb	95/Tube	N/A
SMDA24C	24	SnPb	95/Tube	N/A
SMDA05C.T	5	Pb Free	95/Tube	N/A
SMDA12C.T	12	Pb Free	95/Tube	N/A
SMDA15C.T	15	Pb Free	95/Tube	N/A
SMDA24C.T	24	Pb Free	95/Tube	N/A

Contact Information

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