SEMTECH INTERNATIONAL AG

PROTECTION PRODUCTS

Absolute Maximum Rating

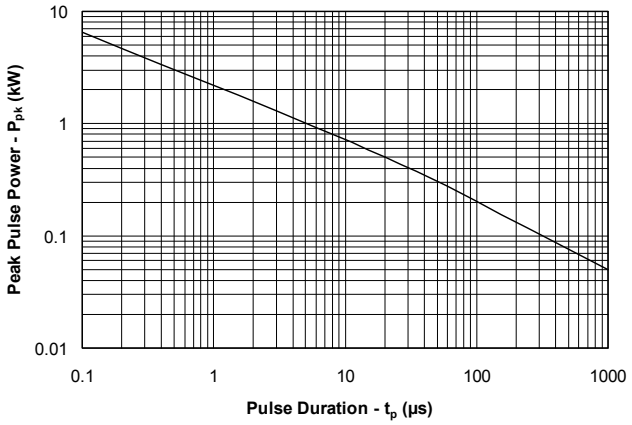
Rating	Symbol	Value	Units
Peak Pulse Power (t_p = 8/20µs)	P_{pk}	500	Watts
Peak Pulse Current (t_p = 8/20µs)	I_{PP}	10	Amps
Operating Temperature	T_J	-55 to +125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

Electrical Characteristics (T=25°C)

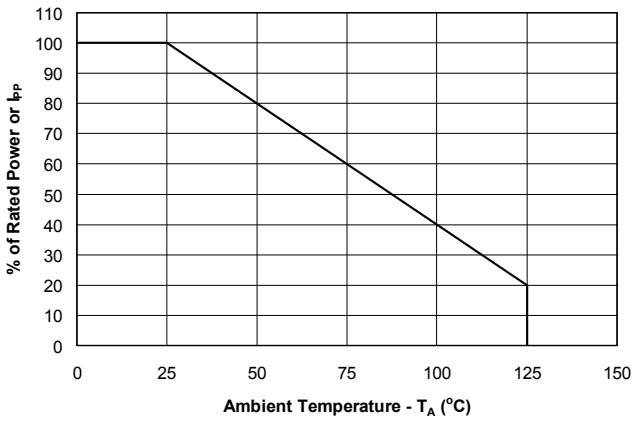
Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}				24	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA	26.7			V
Reverse Leakage Current	I_R	V_{RWM} = 24V, T=25°C			1	µA
Clamping Voltage	V_C	I_{PP} = 1A, t_p = 8/20µs			43	V
Clamping Voltage	V_C	I_{PP} = 10A, t_p = 8/20µs			50	V
Peak Pulse Current	I_{PP}	t_p = 8/20µs			10	A
Junction Capacitance	C_j	Between I/O pins and Ground V_R = 0V, f = 1MHz			10	pF

Typical Characteristics

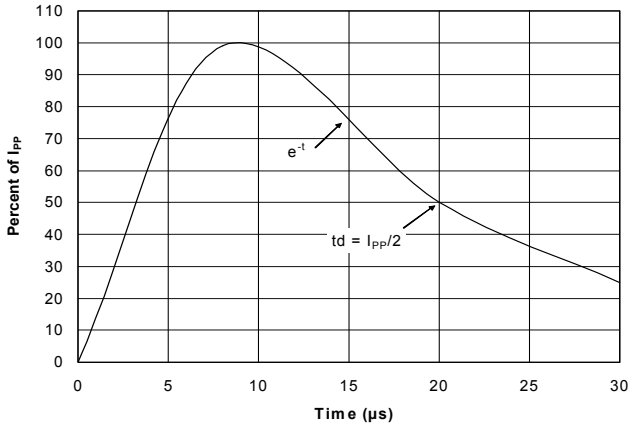
Non-Repetitive Peak Pulse Power vs. Pulse Time



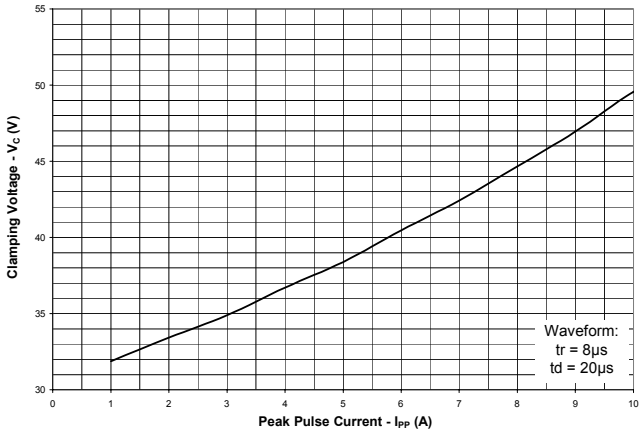
Power Derating Curve



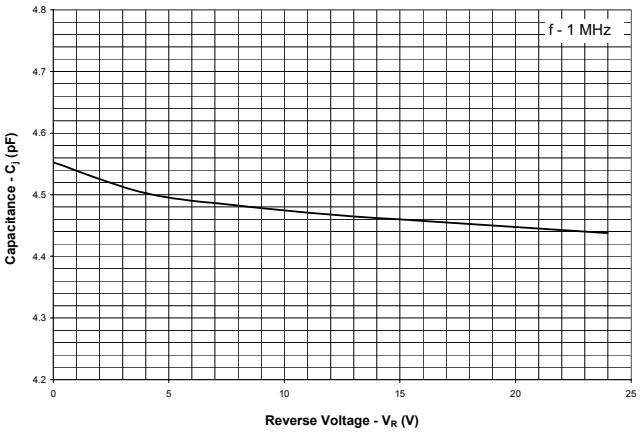
Pulse Waveform



Clamping Voltage vs. Peak Pulse Current



Capacitance vs. Reverse Voltage



Applications Information

Device Connection for Metallic Protection of High-Speed Data Lines

The LCDA24C-1 is designed to protect high-speed data lines from transient over-voltages which result from lightning and ESD. The device is designed to protect one line in common mode (Line-to-Ground) or one line pair in metallic (Line-to-Line) mode. For metallic mode protection, the input of line 1 is connected at pin 1 and the output is connected at pin 4. Likewise, the input of line 2 is connected at pin 2 and the output is connected at pin 3. For common mode protection, ground either pins 1 and 4 or pins 2 and 3. The ground connection should be made directly to the ground plane for best results.

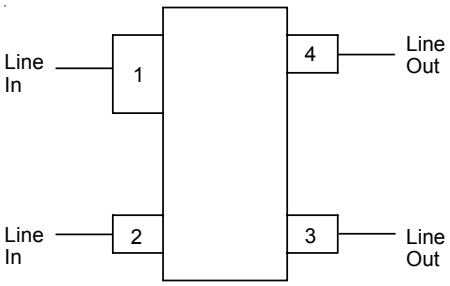


Figure 1 - Connection for Differential Protection (Line-to-Line)

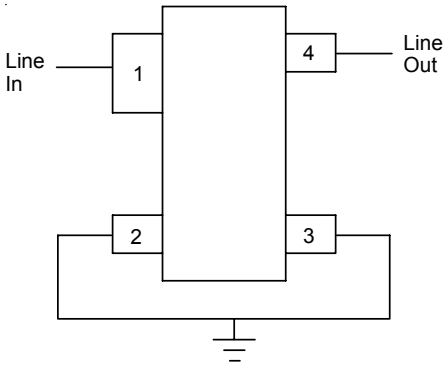


Figure 2 - Connection for Common Mode Protection (Line-to-Ground)

ADSL Protection

A typical ADSL protection circuit is shown in Figure 3. A protection device with an operating voltage of 270 volts is connected on the line side of the circuit. A high voltage device is used due to the presence of the ring signal. Secondary IC side protection is achieved with low voltage TVS devices. The LCDA24C-1 is connected between to transmit line pairs. Since the LCDA24C-1 has a working voltage of 24 volts, it may be used on pairs with signal swings as high as +/-12 volts. The SD05C is used to protect the receive pairs. The signal swings on these lines can be as high as +/-5 volts.

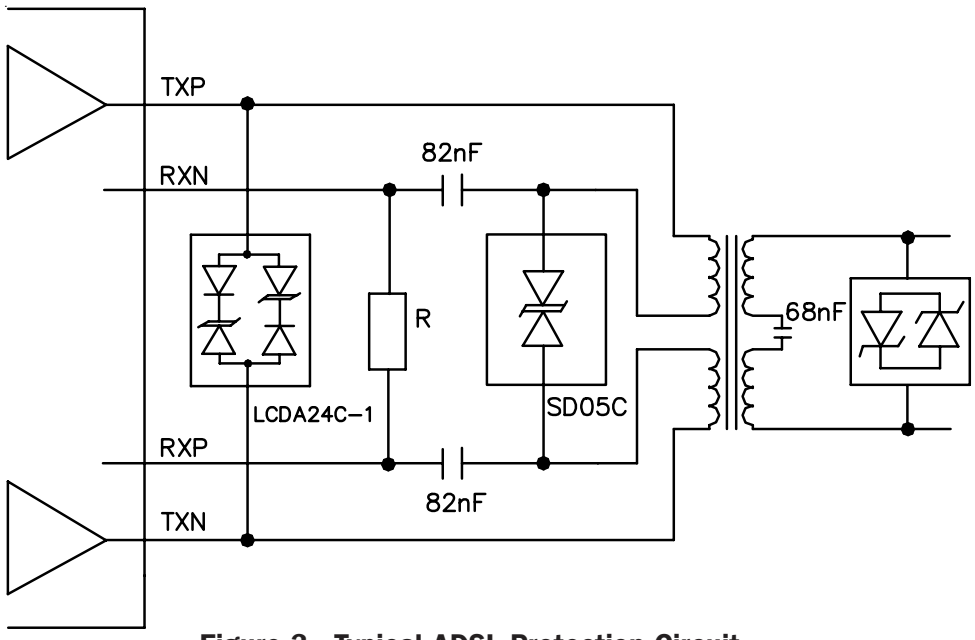
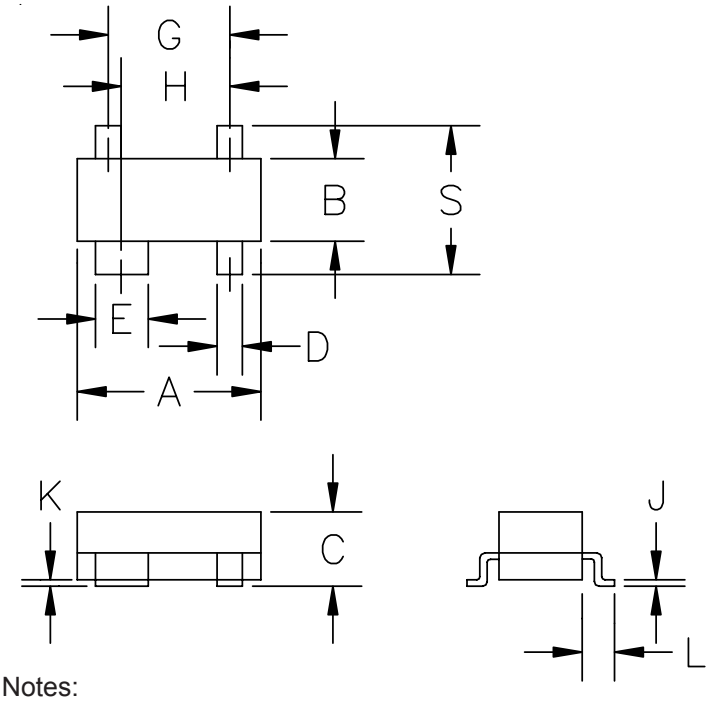


Figure 3 - Typical ADSL Protection Circuit

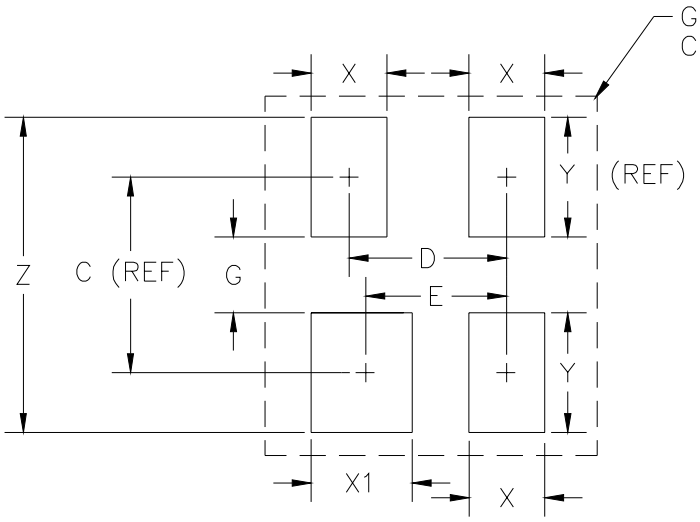
Outline Drawing - SOT-143



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	–
B	.047	.055	1.20	1.40	–
C	.031	.047	.80	1.20	–
D	.014	.018	.37	.510	–
E	.030	.035	.76	.940	–
G	.076 BSC		1.92 BSC		–
H	.068 BSC		1.72 BSC		–
J	.003	.005	.085	.180	–
K	.002	.005	.013	0.10	–
L	.010	.022	–	.55	REF
S	.082	.104	2.10	2.64	–

Notes:
(1) Controlling dimension: Inch (unless otherwise specified).
(2) Dimension A and B do not include mold protrusions. Mold protrusions are .006” max.

Land Pattern - SOT-143

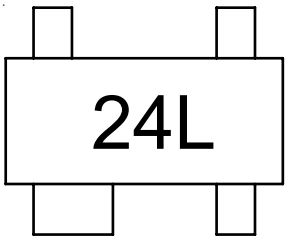


DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
C	–	.087	–	2.20	–
D	.075 BSC		1.90 BSC		–
E	.067 BSC		1.70 BSC		–
G	.032	.040	.80	1.00	–
X	.032	.040	.80	1.00	–
X1	.040	.048	1.00	1.20	–
Y	–	.055	–	1.40	–
Z	.134	.140	3.40	3.60	–

[2] GRID PLACEMENT COURTYARD IS 8 X 8 ELEMENTS (4mm X 4mm) IN ACCORDANCE WITH THE INTERNATIONAL GRID DETAILED IN IEC PUBLICATION 97.

[1] CONTROLLING DIMENSION: MILLIMETERS.

Device Marking



Ordering Information

Part Number	Working Voltage	Qty per Reel	Reel Size
LCDA24C-1.TCT	24V	3,000	7 Inch

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