

PROTECTION PRODUCTS
Maximum Ratings

Rating	Symbol	Value	Units
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	+/- 20 +/- 15	kV
Junction Temperature	T_J	125	°C
Operating Temperature	T_{op}	-40 to +85	°C
Storage Temperature	T_{STG}	-55 to +150	°C

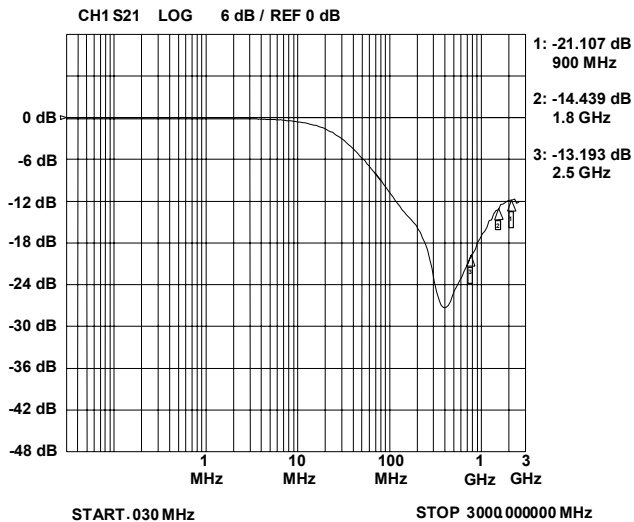
Electrical Characteristics (T=25°C)

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
TVS Reverse Stand-Off Voltage	V_{RWM}				5	V
TVS Reverse Breakdown Voltage	V_{BR}	$I_t = 1mA$	6	8	10	V
TVS Reverse Leakage Current	I_R	$V_{RWM} = 3.3V$		0.001	0.1	μA
Equivalent Series Resistance	R_{DC}			1.4	2	Ohms
Inductance	L			2	3	nH
Capacitance	C_1, C_2	$V_R = 0V, f = 1MHz$	85	100	115	pF
Total Capacitance	$C_1 + C_2$	Input to Gnd, Each Line $V_R = 0V, f = 1MHz$		210	230	pF

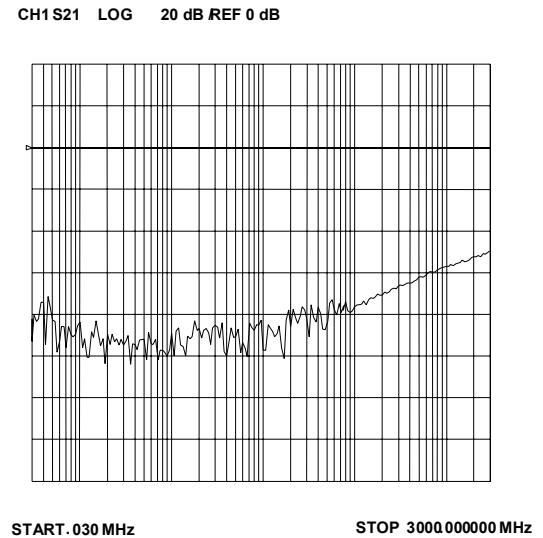
PROTECTION PRODUCTS

Typical Characteristics

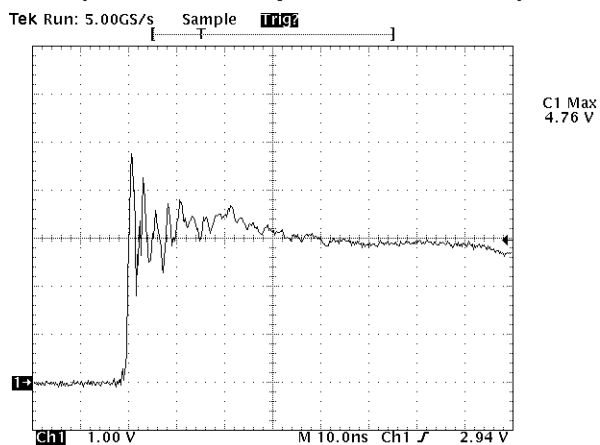
Typical Insertion Loss S21 (Each Line)



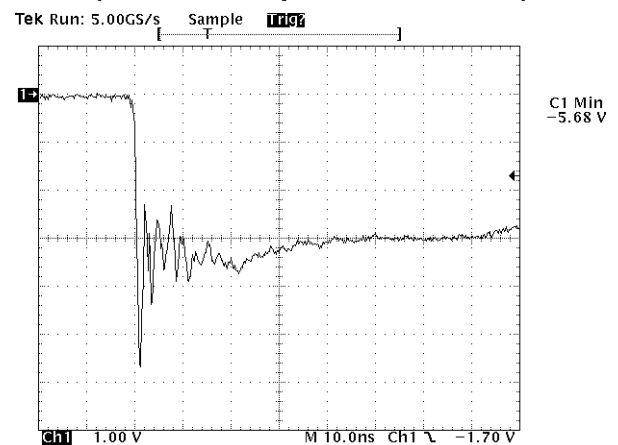
Analog Crosstalk (Each Line)



**ESD Clamping
(+8kV Contact per IEC 61000-4-2)**

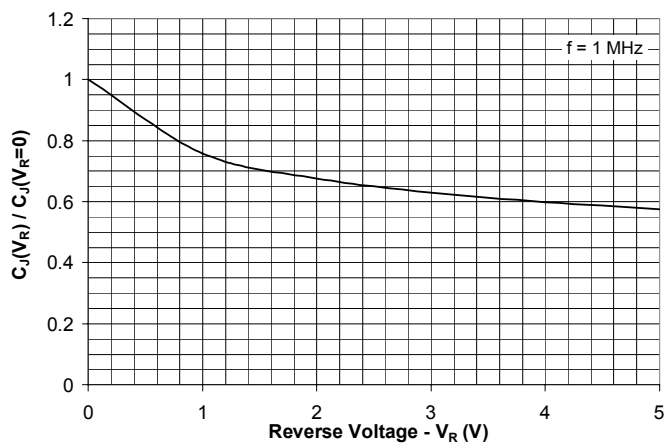


**ESD Clamping
(-8kV Contact per IEC 61000-4-2)**



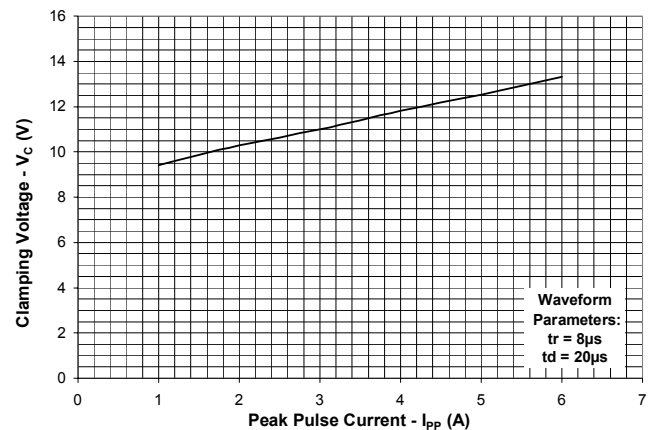
Note: Data is taken with a 10x attenuator

Normalized Capacitance vs. Reverse Voltage



Note: Data is taken with a 10x attenuator

Clamping Voltage vs. Peak Pulse Current



PROTECTION PRODUCTS

Applications Information

Device Connection

The EClamp2422N provides EMI filtering and ESD protection in a small SLP1510N6 package for speaker port applications. The equivalent circuit diagram is shown in Figure 1. The layout of the device is designed such that the data lines can be routed through the device. The first line pair enters at pin 1 and exits at pin 6. The second line pair enters at pin 2 and exits at pin 5. The device is symmetrical so the above connections may be reversed. Ground connection is made at pins 3 and 4.

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.

Figure 1 -Circuit Diagram (Each Line)

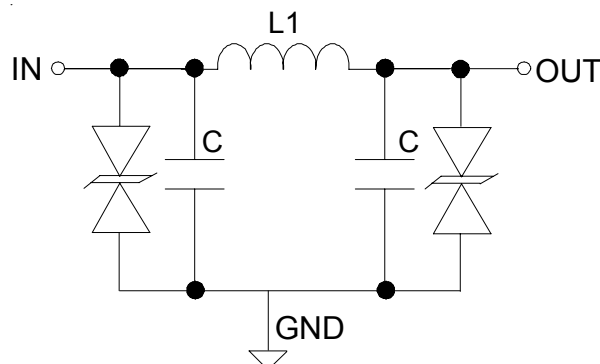
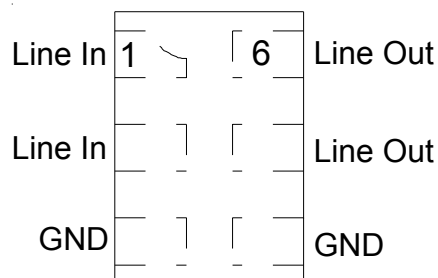
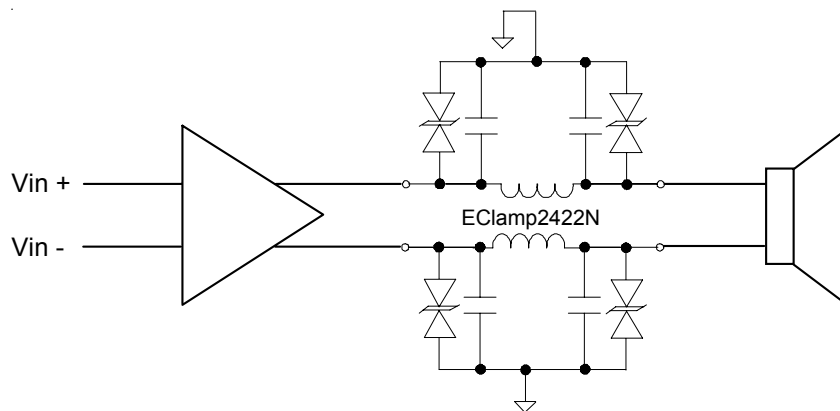


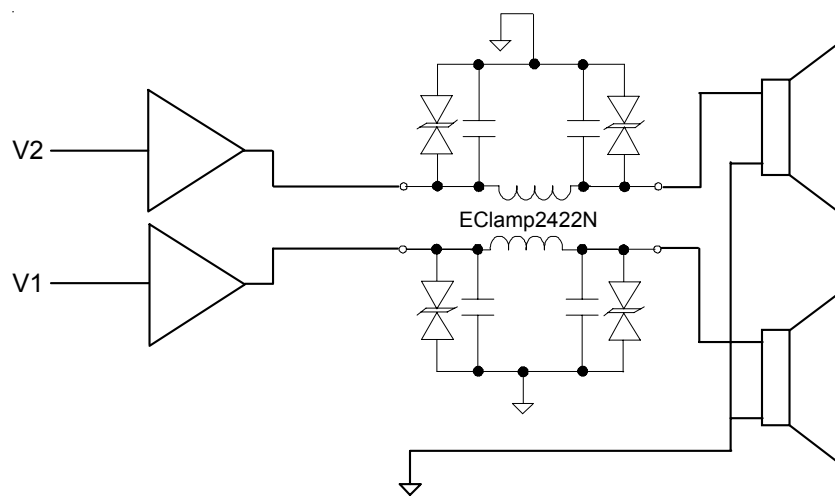
Figure 2 - Pin Identification and Configuration (Top Side View)



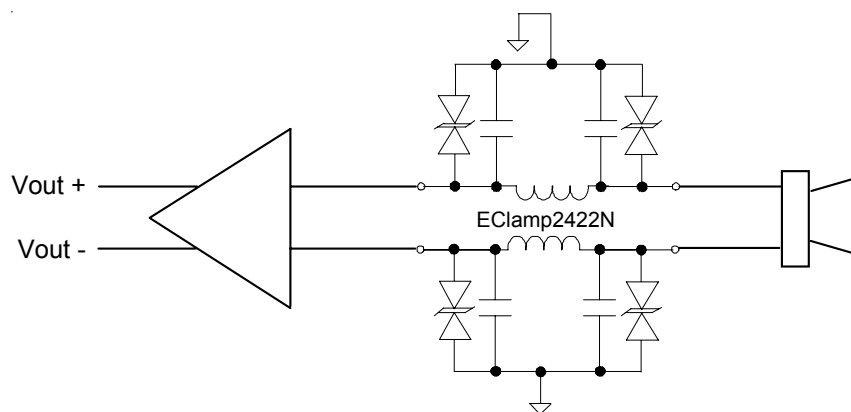
Pin	Identification
1, 2	Input Lines from Speaker
5, 6	Output Lines to Audio Ckt
3, 4	Ground

PROTECTION PRODUCTS
Applications Information


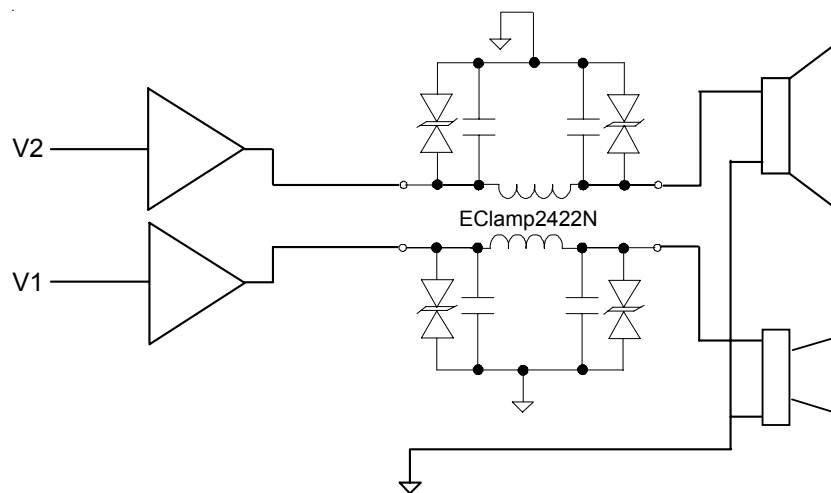
Differential Mode Protection with Speaker Output



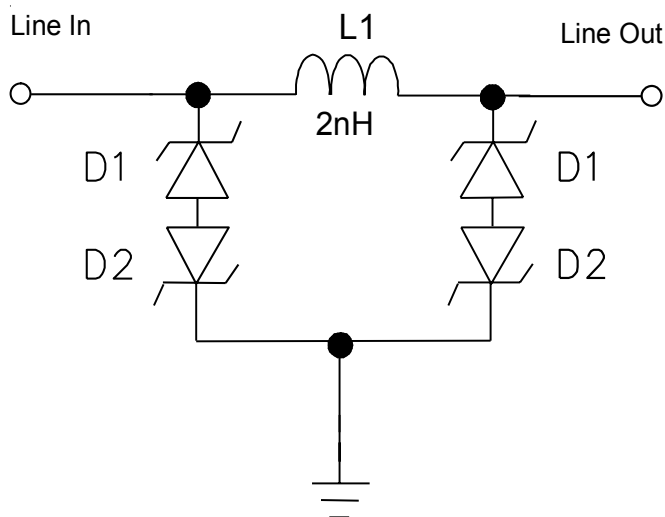
Protection of Two Single-Ended Mode Speakers

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Applications Information


Differential Mode Protection with Microphone Input



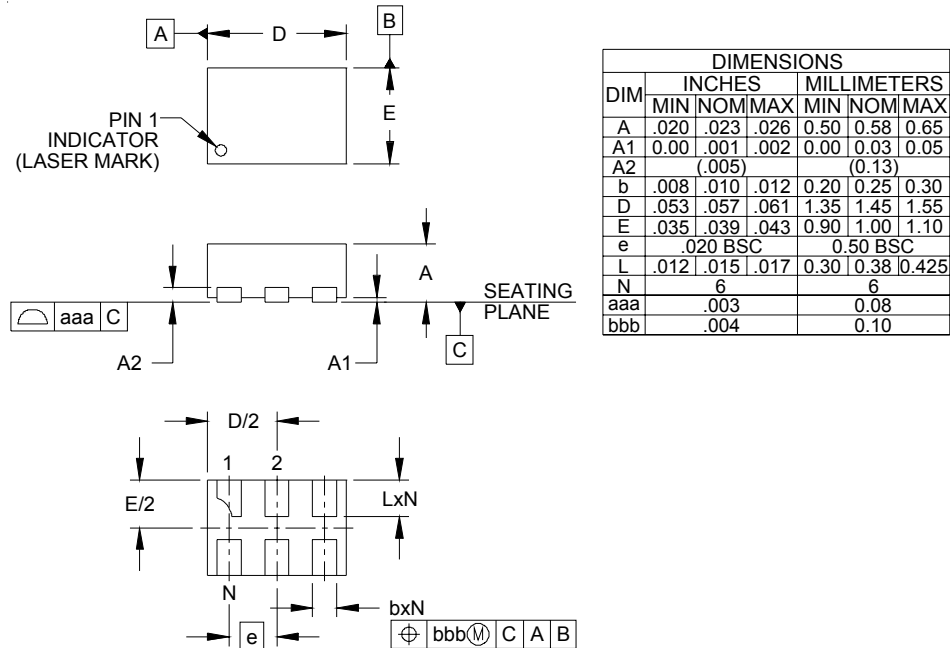
Protection of Single-Ended Mode Microphone and Speaker Output

PROTECTION PRODUCTS
Applications Information - Spice Model

EClamp2422N Spice Model

EClamp2422N Spice Parameters			
Parameter	Unit	D1 (TVS)	D2 (TVS)
IS	Amp	4.09-15	4.09E-15
BV	Volt	7.7	7.7
VJ	Volt	0.7	0.7
RS	Ohm	0.416	0.416
IBV	Amp	1E-3	1E-3
CJO	Farad	210E-12	210E-12
TT	sec	2.541E-9	2.541E-9
M	--	0.01	0.01
N	--	1.1	1.1
EG	eV	1.11	1.11

PROTECTION PRODUCTS

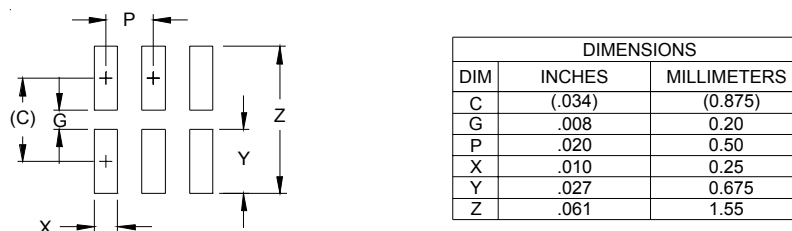
Outline Drawing - SLP1510N6



NOTES:

1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES)

Land Pattern - SLP1510N6

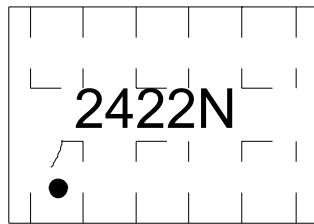


NOTES:

1. THIS LAND PATTERN IS FOR REFERENCE PURPOSES ONLY. CONSULT YOUR MANUFACTURING GROUP TO ENSURE YOUR COMPANY'S MANUFACTURING GUIDELINES ARE MET.

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Marking

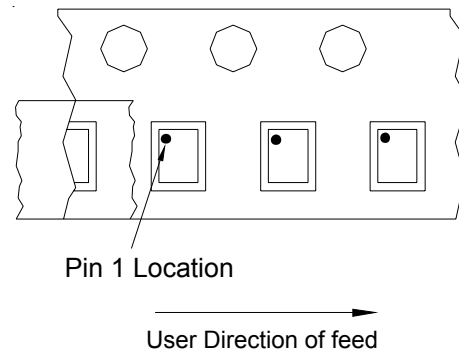
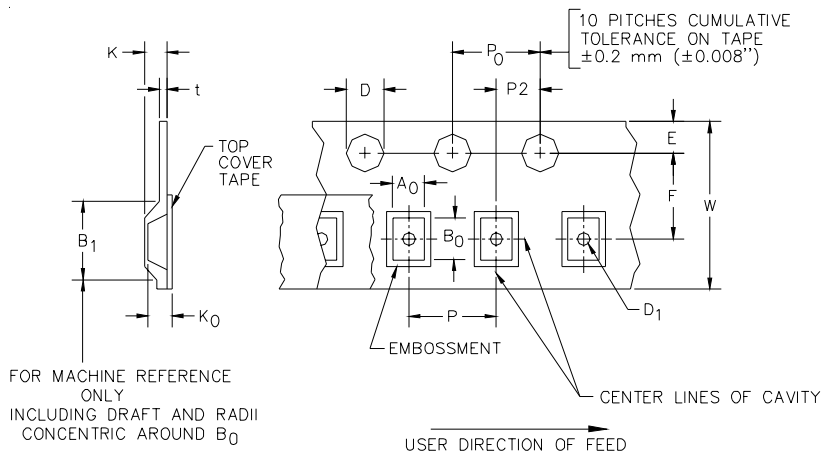


Ordering Information

Part Number	Qty per Reel	Reel Size
EClamp2422N.TCT	3000	7 Inch

EMIClamp and EClamp are marks of Semtech Corporation

Tape and Reel Specification



Device Orientation in Tape

A0	B0	K0
1.24±0.10mm	1.70±0.10mm	0.76±0.10mm

Tape Width	B, (Max)	D	D1	E	F	K (MAX)	P	P0	P2	T(MAX)	W
8 mm	4.2 mm (.165)	1.5 + 0.1 mm - 0.0 mm (0.59 +.005 - .000)	0.8 mm ±0.05 (.031)	1.750±.10 mm (.069±.004)	3.5±0.05 mm (.138±.002)	2.4 mm (.094)	4.0±0.1 mm (.157±.00-4)	4.0±0.1 mm (.157±.00-4)	2.0±0.05mm (.079±.002)	0.4 mm (.016)	8.0 mm + 0.3 mm - 0.1 mm (.312±.012)

Contact Information

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