Description

The DSL03-24 provides ESD, EFT and surge protection for high-speed data interfaces. The transient voltage array, steering diode combination device meets IEC 61000-4-2(ESD), IEC 61000-4-4 (EFT) and IEC 61000-4-5(Surge) requirements. Available in the space-saving SOT23-6 package configuration, this device is offered in 24V with a Peak Pulse Power rating of 500W for and 8/20μs waveshape.

Features

- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±15kV
    - Contact discharge: ±8kV
  - IEC61000-4-4 (EFT) 40A (5/50ns)
  - IEC61000-4-5 (Surge) : 24A(8/20μs) -Level 2(Line -Gnd) & Level 3(Line-Line)
- 500W Peak Pulse Power per Line(tp=8/20μs)
- ESD Protection >25 kilovolts
- Protection for 2 Lines
- Low Capacitance: < 5pF
- ROHS Compliant
- REACH Compliant

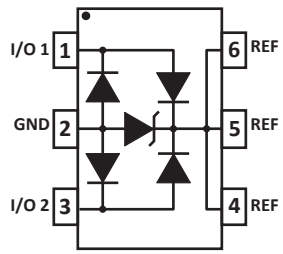
Mechanical Characteristics

- Package: SOT23-6
- Approximate Weight: 16milligrams
- Lead-Free Nickel Paladium Gold Plating
- Solder Reflow Temperature: 260-270°C
- UL Flammability Classification Rating 94V-0
- 8mm Tape and Reel per EIA Standard 481
- Marking Information: See Below

Applications

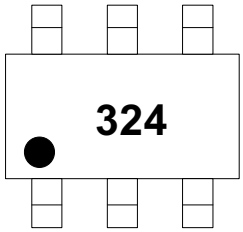
- xDSL
- Portable Electronics
- SMART Phones

Dimensions and Pin Configuration



Circuit and Pin Schematic

Marking Information



324 = Device Marking Code
Dot denotes Pin1

Ordering Information

Part Number	Marking	Packaging	Reel Size
DSL03-24	324	3000/Tape & Reel	7 inch

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

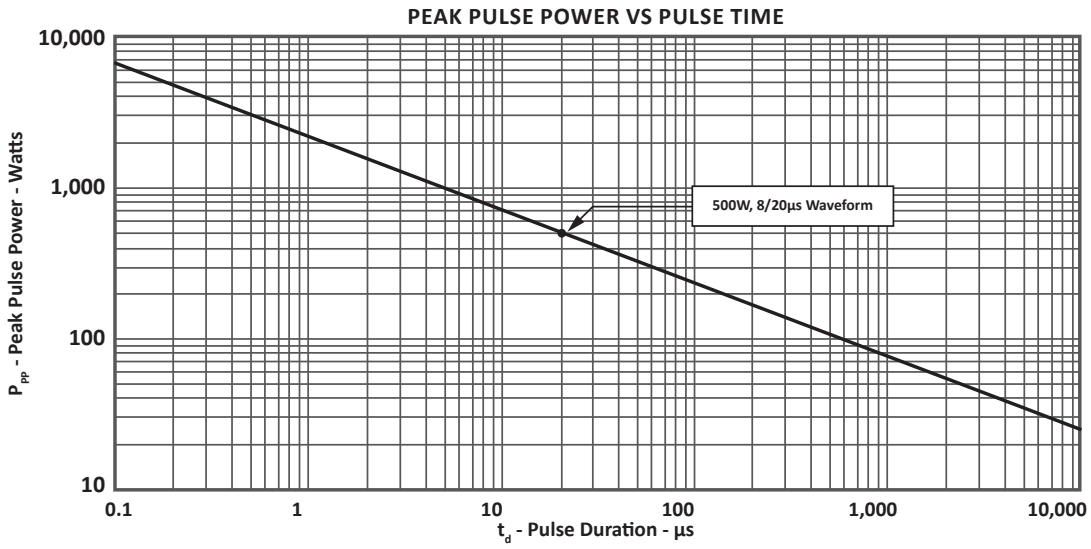
Parameter	Symbol	Value	Unit
Peak Pulse Power（tp=8/20μs）	P_{PP}	500	W
Peak Pulse Current（tp=8/20μs）	I_{PP}	15	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±15 ±8	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

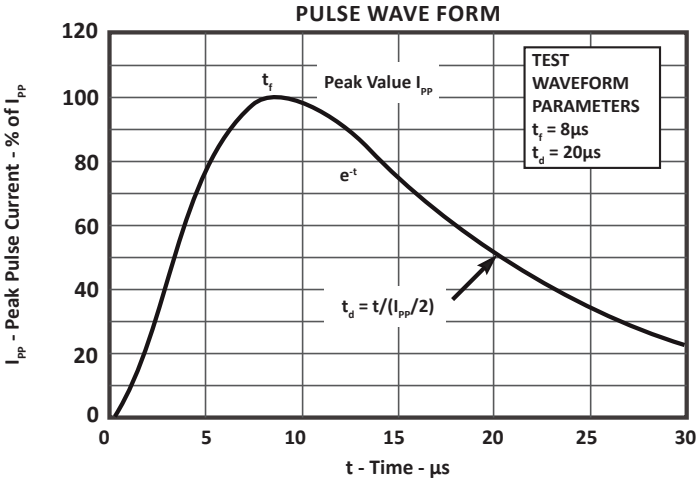
Electrical Characteristics (T_A=25°C unless otherwise specified)

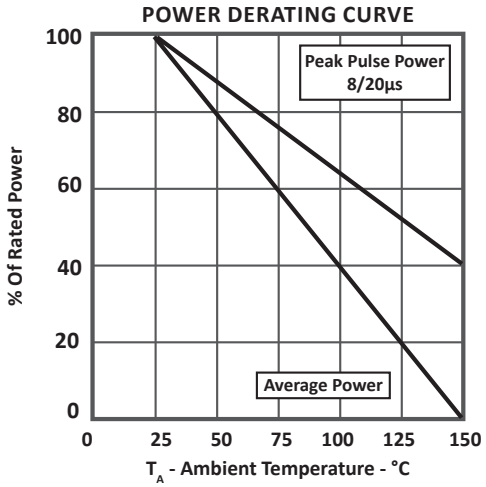
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			24	V	
Breakdown Voltage	V_{BR}	26			V	I_T = 1mA
Reverse Leakage Current	I_R			0.1	μA	V_{RWM} = 24V
Clamping Voltage	V_C			38	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			55	V	I_{PP} = 15A (8 x 20μs pulse)
Junction Capacitance	C_J		1.4	5.0	pF	VR = 0V, f = 1MHz

Notes: All measurements made between I/O1 and I/O2.

Typical Performance Characteristics (T_A=25℃ unless otherwise Specified)







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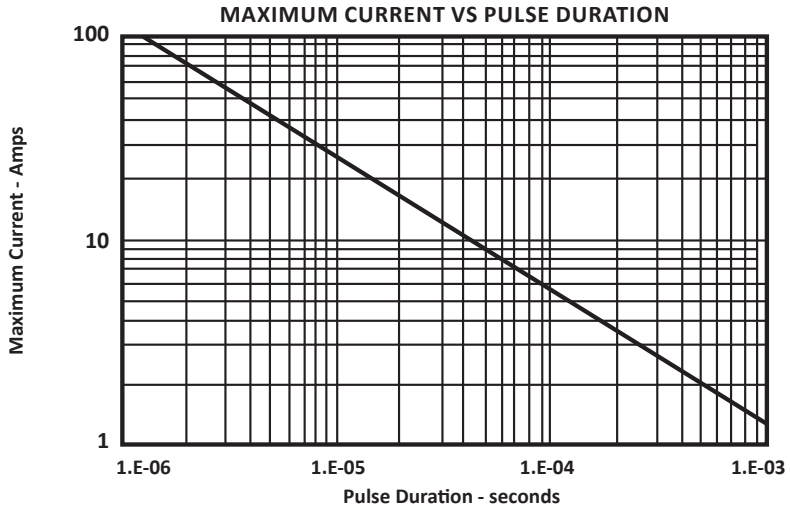
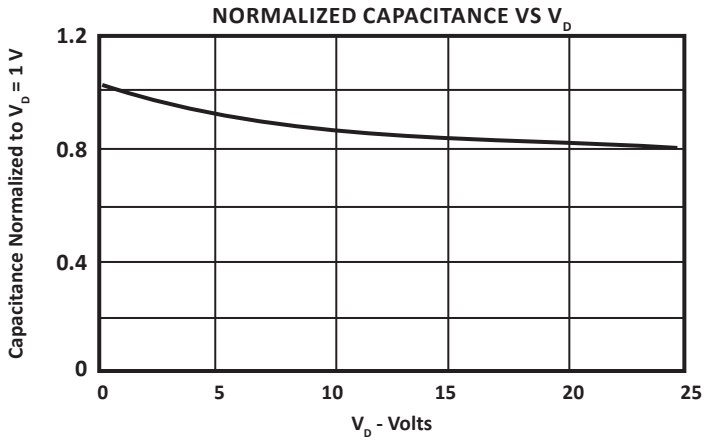
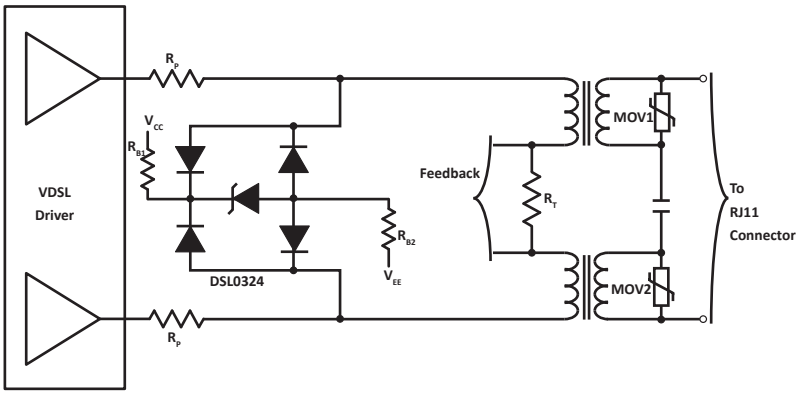




Application Information

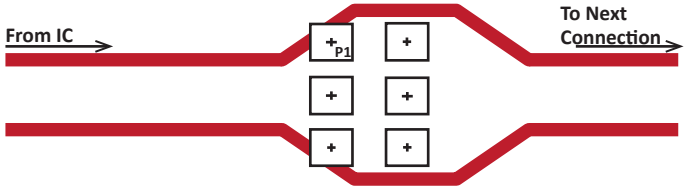
The DSL03-24 is used to protect a VDSL driver outputs. The current limiting resistors (Rp), typically around 1 Ohm, limit the peak current seen by the driver. Low voltage varistors MOV1 and MOV2, with a typical working voltage of less than 20V, limit the current in the line side of the transformer by limiting the voltage across it. In applications sensitive to very low levels of leakage current, optional bias resistors RB1 and RB2 can be used. Both resistors would be required for dual supply applications. Only RB1 is required for single supply applications. In this case, the anodes of the diode array should be connected to ground.



VDSL DRIVER PROTECTION

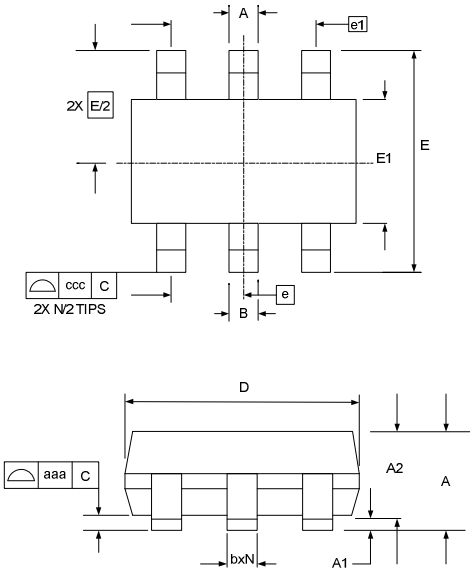
Circuit Board Recommendations

Circuit board layout is critical for electromagnetic compatibility protection. The following guidelines are recommended:
The protection device should be placed near the input terminals or connectors, the device will divert the transient current immediately before it can be coupled into the nearby traces.
The path length between the TVS device and the protected line should be minimized.
All conductive loops including power and ground loops should be minimized.
The transient current return path to ground should be kept as short as possible to reduce parasitic inductance.
Ground planes should be used whenever possible. For multilayer PCBs, use ground vias.



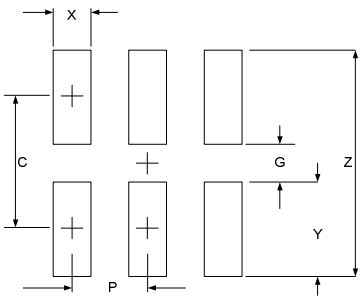
CONNECTING A DIFFERENTIAL SIGNAL

SOT23-6 Package Outline Drawing



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.90		1.45	0.035		0.057
A1	0.00		0.15	0.000		0.006
A2	0.90	1.15	1.30	0.035	0.045	0.051
b	0.25		0.50	0.010		0.020
c	0.08		0.22	0.003		0.009
D	2.80	2.90	3.10	0.110	0.114	0.122
E1	1.50	1.60	1.75	0.060	0.063	0.069
E	2.80 BSC			0.110 BSC		
e	0.95 BSC			0.037 BSC		
e1	1.90 BSC			0.075 BSC		
N	6			6		
aaa	0.10			0.004		
ccc	0.20			0.008		

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	2.50	0.098
G	1.40	0.055
P	0.95	0.037
X	0.60	0.024
Y	1.10	0.043
Z	3.60	0.141

Contact Information

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