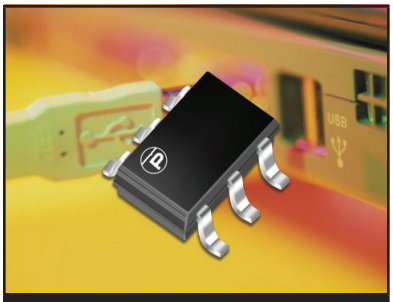
ULTRA LOW CAPACITANCE STEERING DIODE/THYRISTOR ARRAY



SOT-23-6 PACKAGE

DESCRIPTION

The DSL03-24T provides ESD, EFT and surge protection for high-speed data interfaces. The 24V thyristor array, steering diode combination device meets IEC 61000-4-2 (ESD) and IEC 61000-4-5 (Surge) requirements. Available in the space-saving SOT-23-6 package configuration.

FEATURES

- Compatible with IEC 61000-4-2 (ESD): Air 15kV, Contact 8kV
- Compatible with IEC 61000-4-5 (Surge): 30A, 8/20µs
- ESD Protection > 25 kilovolts
- Protection for 2 Lines
- Ultra Low Capacitance: < 3pF
- RoHS Compliant
- REACH Compliant

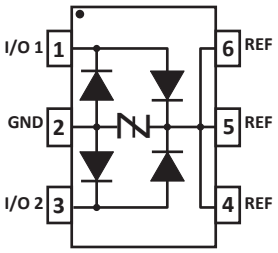
APPLICATIONS

- Gateway
- Set-Top Boxes
- Modems/Routers

MECHANICAL CHARACTERISTICS

- Molded JEDEC SOT-23-6 Package
- Approximate Weight: 16 milligrams
- Lead Matte Tin Plating
- Solder Reflow Temperature - 250°C ± 5°C
- Flammability Rating UL 94V-0
- 8mm Tape and Reel per EIA Standard 481

PIN CONFIGURATION



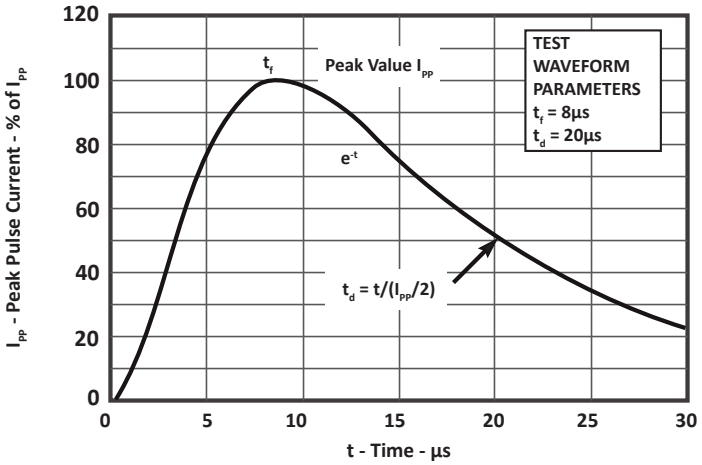
TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Operating Temperature	T_L	-55 to 150	°C
Storage Temperature	T_{STG}	-65 to 150	°C
Peak Pulse Current (tp = 8/20µs) - Note 1	I_{PP}	30	Amps

NOTES
1. Across Thyristor only - pin 2 to pin 5.

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified							
PART NUMBER (Note 1)	DEVICE MARKING	MINIMUM STAND-OFF VOLTAGE V_{DRM} VOLTS	MAXIMUM SWITCHING VOLTAGE @ 1V/µS $V_{(S)}$ VOLTS	TYPICAL HOLDING CURRENT I_H mA	MINIMUM SWITCHING CURRENT I_S mA	MAXIMUM LEAKAGE CURRENT @V_{WM} I_D µA	TYPICAL CAPACITANCE @2V, 1MHz C pF
DSL03-24T	P24	19	29	40	10	0.01	3.0

NOTES
1. All measurements made between I/O1 and I/O2.



TYPICAL DEVICE CHARACTERISTICS

FIGURE 2
TYPICAL NORMALIZED SWITCHING VOLTAGE VS JUNCTION TEMPERATURE

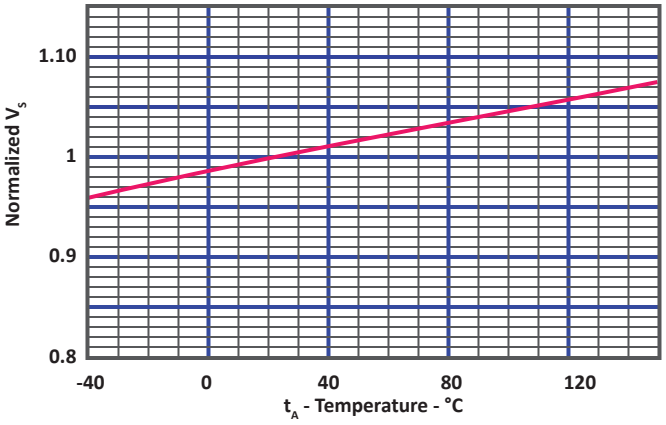


FIGURE 3
TYPICAL NORMALIZED HOLDING CURRENT VS JUNCTION TEMPERATURE

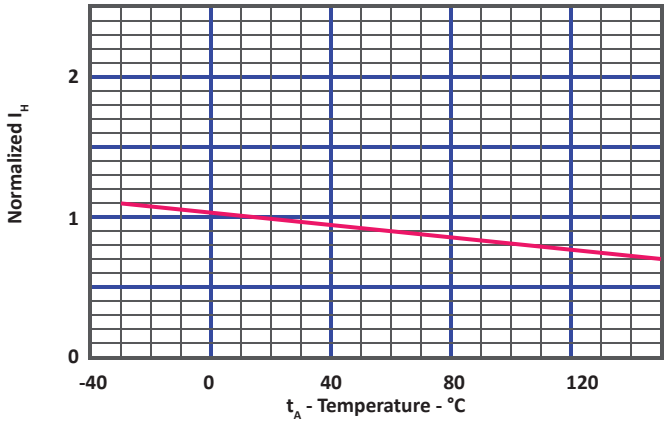


FIGURE 4
TYPICAL ON-STATE VOLTAGE VS ON-STATE CURRENT

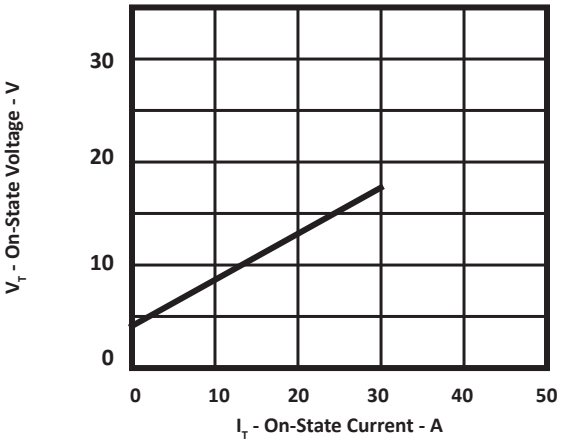
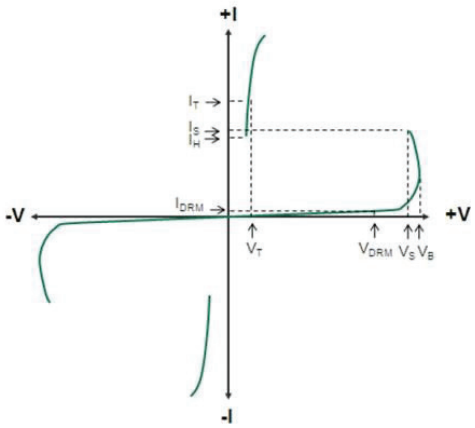


FIGURE 5
VI CHARACTERISITC CURVE



APPLICATION INFORMATION

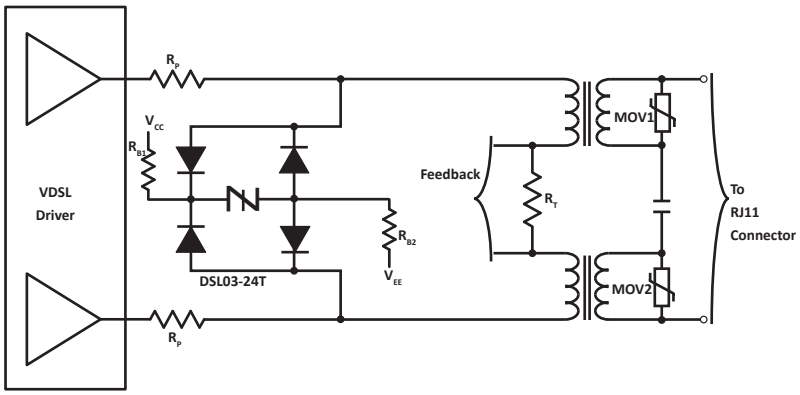


FIGURE 5
VDSL DRIVER PROTECTION

The DSL03-24 is used to protect a VDSL/G.Fast 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 thyristor should be connected to ground.

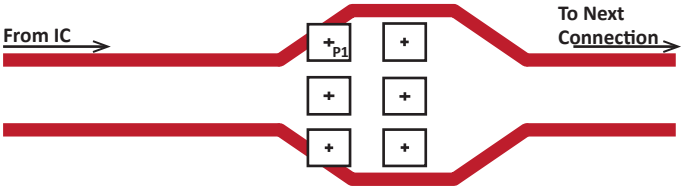


FIGURE 6
CONNECTING A DIFFERENTIAL SIGNAL

CIRCUIT BOARD RECOMMENDATIONS

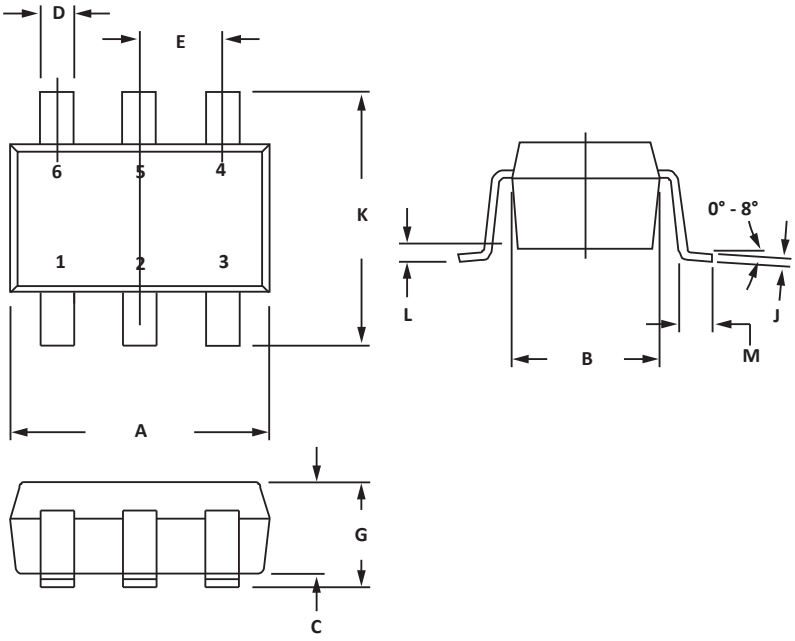
Circuit board layout is critical for electromagnetic compatibility protection. The following guidelines are recommended:

- 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 protection 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.

SOT-23-6 PACKAGE INFORMATION

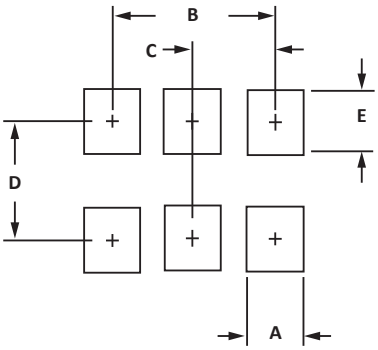
OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.05	0.110	0.120
B	1.50	1.75	0.059	0.070
C	0.90	1.30	0.036	0.051
D	0.30	0.40	0.012	0.016
E	0.85	1.05	0.033	0.040
G	0.90	1.45	0.036	0.057
J	0.09	0.20	0.003	0.008
K	2.60	3.00	0.102	0.118
L	0.0	0.15	0.0	0.006
M	0.30	0.60	0.012	0.024

NOTES
1. Controlling dimension: inches.
2. Dimensioning and tolerances per ANSI Y14.5M, 1985.
3. Dimensions are exclusive of mold flash and metal burrs.

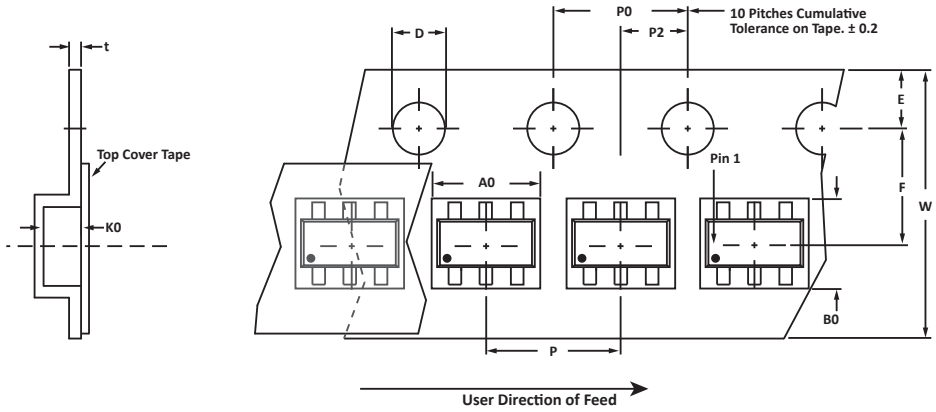


PAD LAYOUT DIMENSIONS		
DIM	MILLIMETERS	INCHES
	NOMINAL	NOMINAL
A	0.70	0.028
B	1.90	0.074
C	0.95	0.037
D	2.40	0.094
E	1.00	0.039

NOTES
1. Controlling dimension: inches.



TAPE AND REEL



SPECIFICATIONS												
REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P2	P	tmax
178mm (7")	8mm	3.20 ± 0.10	3.20 ± 0.10	1.65 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	3.50 ± 0.05	8.00 ± 0.30	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	0.25

NOTES
1. Dimensions are in millimeters.
2. Surface mount product is taped and reeled in accordance with EIA-481.
3. Suffix - T7 = 7" Reel - 3,000 pieces per 8mm tape.
4. Marking on Part - marking code (see page 2) and pin one defined by dot on package.

ORDERING INFORMATION					
BASE PART NUMBER	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
DSL03-24T	N/A	-T7	3,000	7"	n/a
This device is only available in a Lead-Free configuration.					

COMPANY INFORMATION

COMPANY PROFILE

In business more than 25 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection and overcurrent protection components. These include transient voltage suppressor array (TVS arrays) avalanche breakdown diode, steering diode TVS array and electronics SMD chip fuses. These components deliver circuit protection in electronic systems from numerous overvoltage and overcurrent events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices also offers LED wafer die for ESD protection and related high frequency products. ProTek Devices is ISO 9001:2015 certified.

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