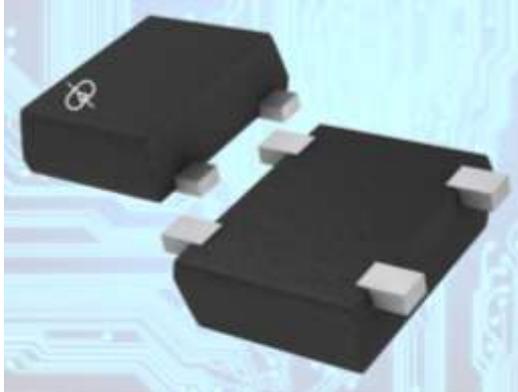


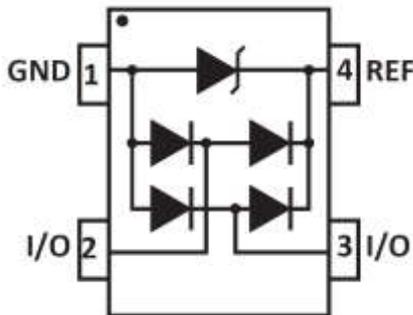
**ULTRA LOW CAPACITANCE STEERING DIODE/TVS ARRAY**

**DESCRIPTION:**



The ALPLR0502 is an ultra-low capacitance (0.6pF) steering diode and TVS array combo. This device provides circuit protection for interfaces and wireless bus applications and portable electronics. The ALPLR0502 is ideally suited to protect USB (1.0-3.0) data I/O ports against the effects of ESD and EFT.

The ALPLR0502 meets the requirements of IEC 61000-4-2 (ESD) and IEC 61000-4-4 (EFT). At higher operating frequencies or faster edge rates, insertion loss and signal integrity are a major concern. The ALPLR0502 offers an ultra-low capacitance and low leakage current in a SOT-543 package.



**FEATURES:**

- Compatible with IEC 61000-4-2 (ESD): Air ±15kV, Contact ±8kV
- Compatible with IEC 61000-4-4 (EFT): 40A - 5/50ns
- 200 Watts Peak Pulse Power per Line (tp = 8/20µs)
- ESD Protection > 25 kilovolts
- Low Clamping Voltage
- Unidirectional Configuration
- Protects 2 I/O Ports and Power Supply
- Ultra-Low Capacitance: 0.6pF
- RoHS Compliant
- REACH Compliant

**APPLICATIONS:**

- Ethernet - 10/100 Base T
- FireWire
- Wireless Communications
- USB 1.0, USB 2.0 & USB 3.0



beyond boundaries...

ALPLR0502

SOT-543

**TYPICAL DEVICE CHARACTERISTICS**

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power (tp = 8/20μs) - See Figure 1	P <sub>PP</sub>	200	Watts
Operating Temperature	T <sub>L</sub>	-55 to 150	°C
Storage Temperature	T <sub>STG</sub>	-55 to 150	°C
Peak Forward Voltage - I <sub>F</sub> = 1A, 8/20μs	V <sub>F</sub>	1.5	Volts

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified						
PART NUMBER	RATED STAND-OFF VOLTAGE  V <sub>WM</sub> VOLTS	MINIMUM BREAKDOWN VOLTAGE  @ 1mA V <sub>(BR)</sub> VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 2)		MAXIMUM LEAKAGE CURRENT @V <sub>WM</sub> I <sub>D</sub> μA	MAXIMUM CAPACITANCE (Per Data Line) (Fig. 5) (Note 1)  @0V, 1MHz C <sub>J(SD)</sub> pF
			@ I <sub>P</sub> = 1A V <sub>C</sub> VOLTS	@ 8/20μs V <sub>C</sub> @ I <sub>PP</sub>		
ALPLR0502	5.0	6.0	9.8	20.0V @10.0A	1	0.6

NOTE

- As shown in Figure 5, REF 1 is connected to ground, REF 2 is connected to +V<sub>CC</sub> and input applies to V<sub>CC</sub> = 5V, V<sub>SIGN</sub> = 30mV, F = 1MHz.
- Measured across pin 1 to pin 4.

TYPICAL DEVICE CHARACTERISTICS CURVES

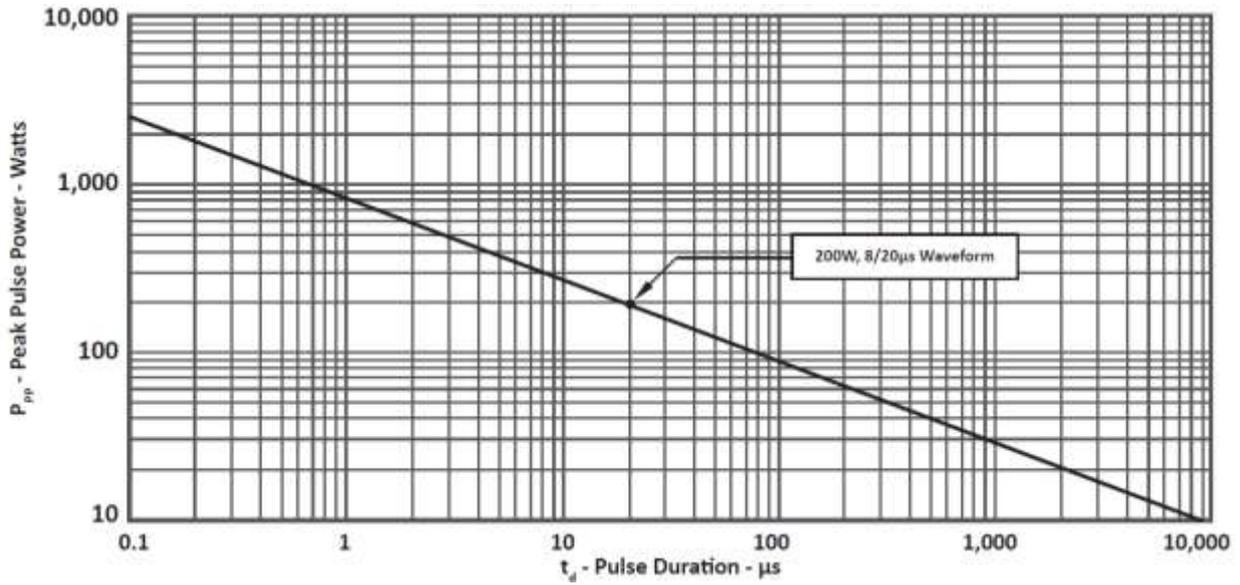


Fig1. PEAK PULSE POWER VS PULSE TIME

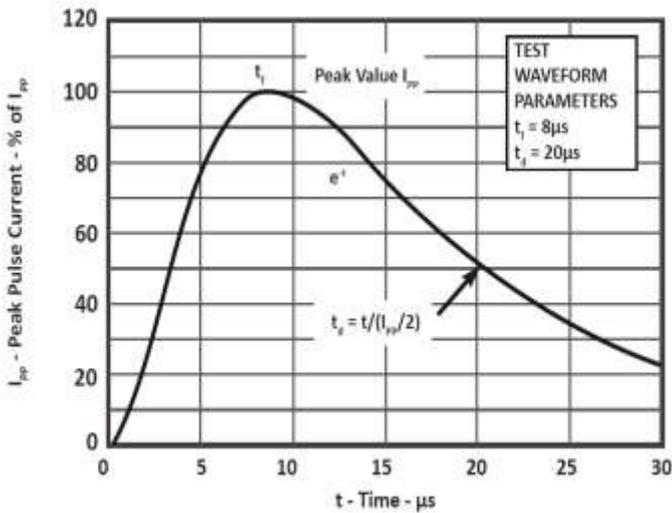


Fig2. PULSE WAVE FORM

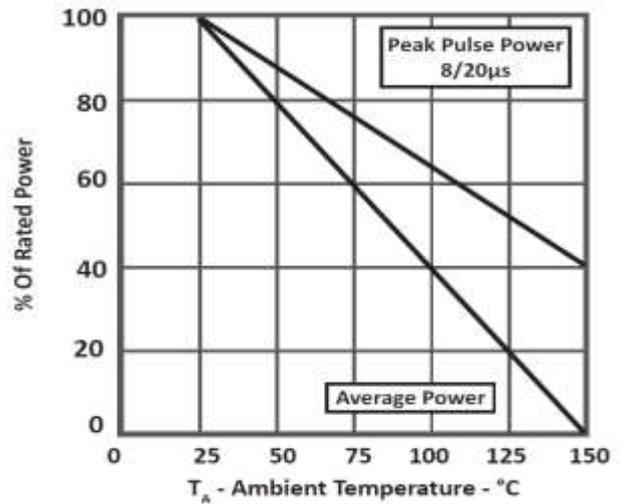


Fig3. POWER DERATING CURVE

TYPICAL DEVICE CHARACTERISTICS CURVES

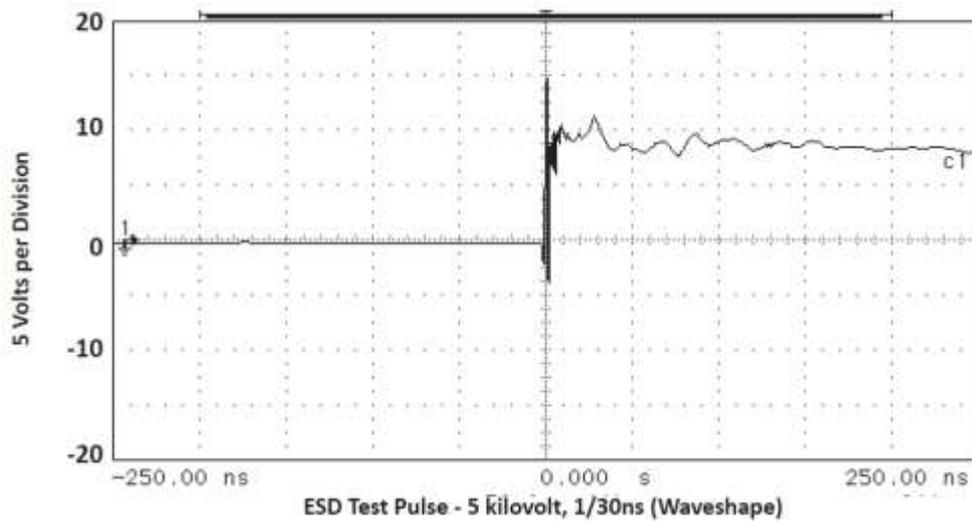


Fig4. OVERSHOOT & CLAMPING VOLTAGE

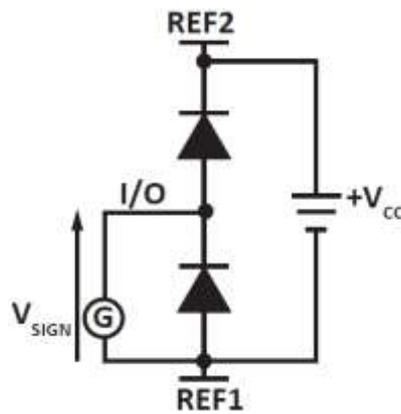
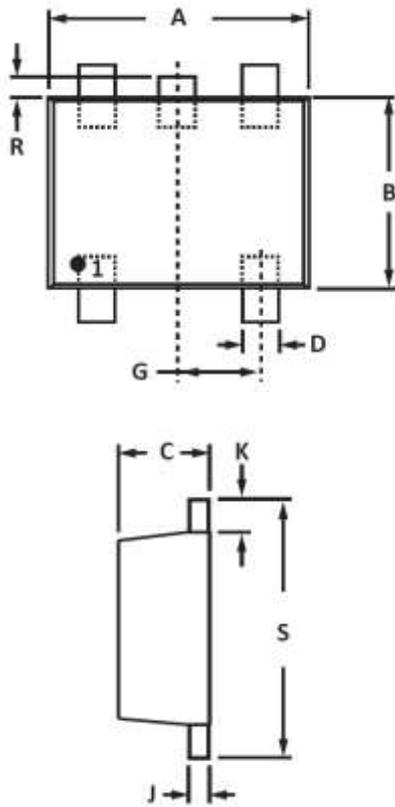


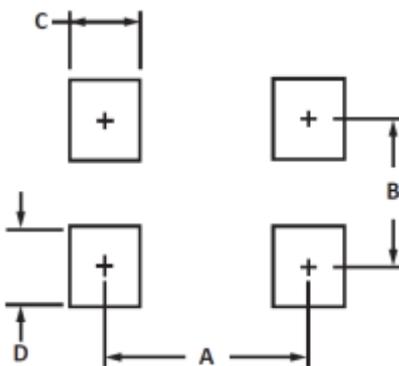
Fig5. INPUT CAPACITANCE CIRCUIT

PACKAGE INFORMATION



OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.50	1.70	0.059	0.067
B	1.10	1.30	0.043	0.051
C	0.50	0.60	0.020	0.024
D	0.17	0.27	0.007	0.011
G	0.50 BSC		0.020 BSC	
J	0.08	0.18	0.003	0.007
K	0.10	0.30	0.004	0.012
S	1.50	1.70	0.059	0.067
R	0.05	0.15	0.002	0.006

**NOTES**  
1. Controlling dimension: inches.  
2. Dimensioning and tolerances per ANSI Y14.5M, 1985.  
3. Dimensions are exclusive of mold flash and metal burrs.  
4. Do not connect center stub.



PAD LAYOUT DIMENSIONS		
DIM	MILLIMETERS	INCHES
	NOMINAL	NOMINAL
A	1.02	0.040
B	1.20	0.048
C	0.30	0.012
D	0.51	0.020

**NOTES**  
1. Controlling dimension: inches.



*beyond boundaries...*

**ALPLR0502**

**SOT-543**

**CUSTOMER NOTE:**

**DISCLAIMER**

The product information and the selection guide facilitates the selection of the ALPINESEMI™'s Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review the Data sheet(s) so as to confirm that the Device(s) meets functionality parameters for your application. The information furnished on the Data Sheet and the ALPINESEMI™'s Web Site is believed to be accurate and reliable at the time of preparation of this document. ALPINESEMI™ however, does not assume any inaccuracies that may arise when the components are mounted and removed. Furthermore, ALPINESEMI™ does not assume liability whatsoever, arising out of the application or the use of any of ALPINESEMI™'s product(s). Neither, does it convey any license under its patent rights nor the rights of others. These products are not guaranteed for use in life saving/support appliances or systems. ALPINESEMI™'s customers using these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and ALPINESEMI™ will not be responsible in any way(s) for any damage(s) resulting from such use.

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**Component Disposal Instructions**

1. ALPINESEMI™ Semiconductor Devices are RoHS compliant and hence customers are requested to dispose as per the prevailing Environmental Legislation put forth in their specific country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).



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