

### HF SLD Automotive Series




#### Agency Approvals

AGENCY	AGENCY FILE NUMBER
	E230531

#### Maximum Ratings and Thermal Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation 1. 100µs x 150ms test waveform	P <sub>PPM</sub>	2200	W
2. 8 x 20µs test waveform		50000	W
Steady State Power Dissipation on infinite heat sink at T <sub>L</sub> =75°C (Fig. 5)	P <sub>M(AV)</sub>	8.0	W
Maximum Instantaneous Forward Voltage at 100A for Unidirectional only	V <sub>F</sub>	3.5	V
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to 175	°C
Typical Thermal Resistance Junction to Lead	R <sub>UJL</sub>	8.0	°C/W
Typical Thermal Resistance Junction to Ambient	R <sub>UJA</sub>	40	°C/W

#### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage V <sub>BR</sub> @ I <sub>T</sub> (V)		Test Current I <sub>T</sub> (mA)	Reverse Stand off Voltage V <sub>R</sub> (Volts)	Maximum Reverse Leakage @ V <sub>R</sub> I <sub>R</sub> (µA)	Maximum Peak Pulse Current I <sub>pp</sub> (A)	Maximum Clamping Voltage @ I <sub>pp</sub> V <sub>C</sub> (V)	Agency Approval 
		MIN	MAX						
SLD16U-017AUTO	SLD16-018AUTO	18.0	22.0	1.0	16	10	76	28.6	x
SLD24U-017AUTO	SLD24-018AUTO	25.0	30.0	1.0	24	10	61	36.0	x

Notes:

- V<sub>BR</sub> measured after I<sub>T</sub> applied for 300µs, I<sub>T</sub>= square wave pulse or equivalent.
- Surge current waveform per 100µs x 150ms exponential wave and derated per Fig. 3.
- All terms and symbols are consistent with ANSI/IEEE C62.35.

#### Description

The SLD Automotive Series is packaged in a highly reliable industry standard P600 axial leaded package and is designed to provide precision overvoltage protection for sensitive electronics.

#### Features

- Halogen-Free
- RoHS compliant
- Typical maximum temperature coefficient  
 $\Delta V_{BR} = 0.1\% \times V_{BR} @ 25^\circ\text{C} \times \Delta T$
- Glass passivated chip junction in P600 package
- ISO 7637-2 Level 4 Impulse 5a; 2200W peak pulse capability at 100µs x 150ms waveform, repetition rate (duty cycles): 0.01%
- Fast response time: typically less than 1.0ps from 0 Volts to BV min
- Excellent clamping capability
- Low incremental surge resistance
- High temperature soldering guaranteed: 260°C/40 seconds / 0.375"(9.5mm) lead length, 5 lbs., (2.3kg) tension
- Plastic package has Underwriters Laboratory Flammability classification 94V-O
- Matte Tin Lead-free plated

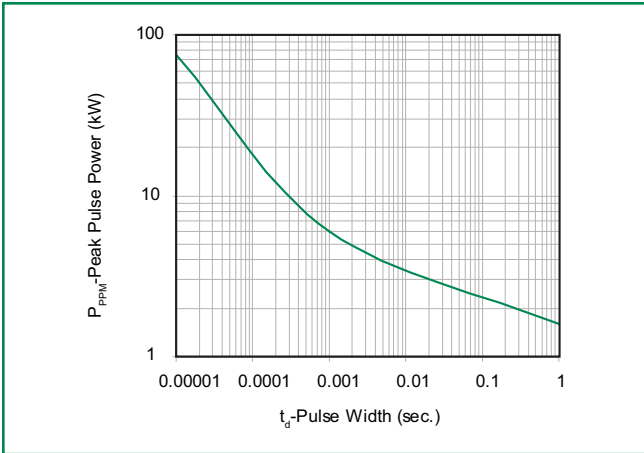
#### Applications

Designed to protect sensitive electronics from:

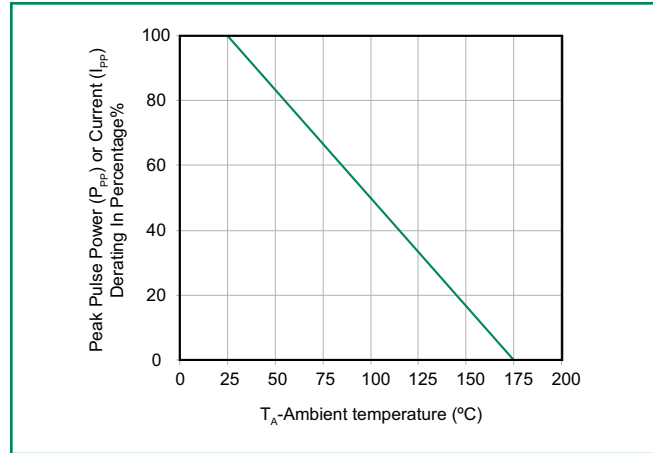
- Inductive Load Switching
- Alternator Load Dump

**Ratings and Characteristic Curves** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

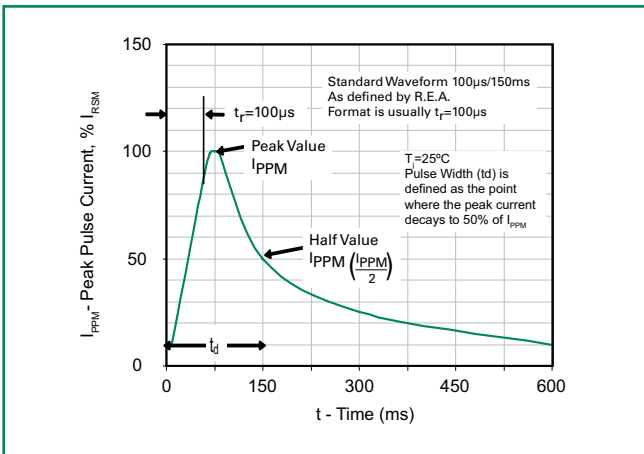
**Figure 1 - Peak Pulse Power Rating Curve**



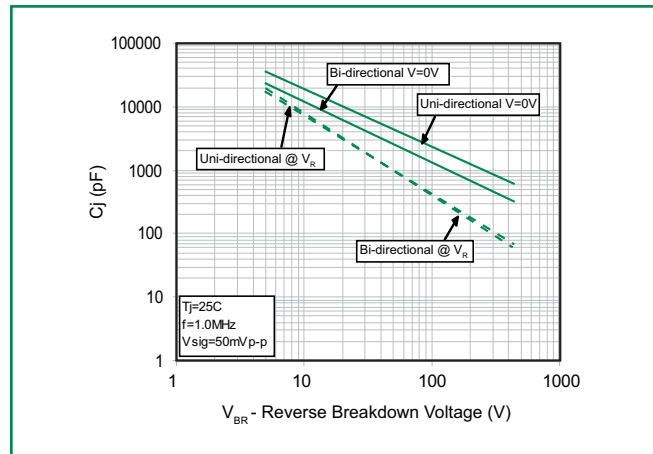
**Figure 2 - Pulse Derating Curve**



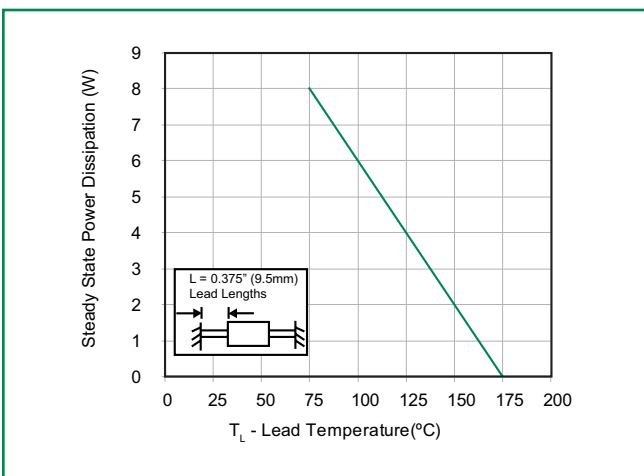
**Figure 3 - Pulse Waveform**



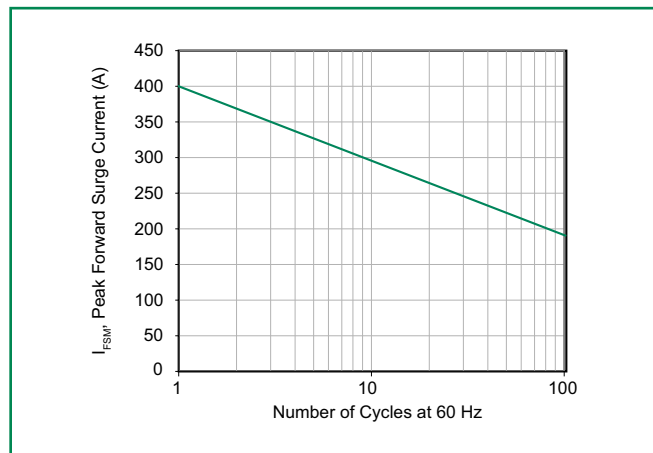
**Figure 4 - Typical Junction Capacitance**



**Figure 5 - Steady State Power Derating Curve**

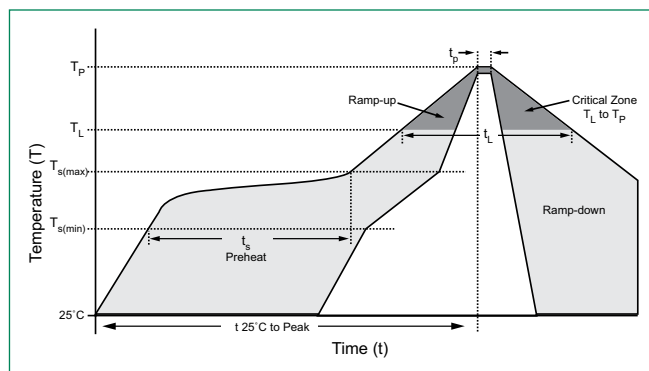


**Figure 6 - Maximum Non-Repetitive Peak Forward Surge Current**



### Soldering Parameters

Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ( $T_{s(min)}$ )	150°C
	- Temperature Max ( $T_{s(max)}$ )	200°C
	- Time (min to max) ( $t_s$ )	60 – 180 secs
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)		3°C/second max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/second max
Reflow	- Temperature ( $T_L$ ) (Liquidus)	217°C
	- Time (min to max) ( $t_s$ )	60 – 150 seconds
Peak Temperature ( $T_p$ )		260 <sup>+0/-5</sup> °C
Time within 5°C of actual peak Temperature ( $t_p$ )		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature ( $T_p$ )		8 minutes Max.
Do not exceed		280°C



### Flow/Wave Soldering (Solder Dipping)

<b>Peak Temperature :</b>	265°C
<b>Dipping Time :</b>	10 seconds
<b>Soldering :</b>	1 time

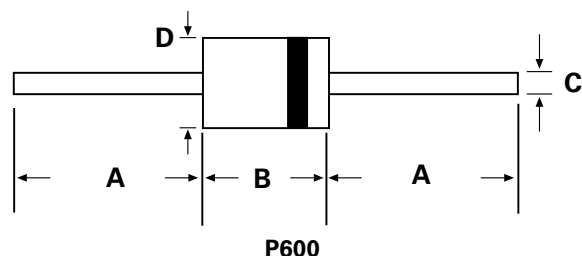
### Physical Specifications

<b>Weight</b>	0.07oz., 2.1g
<b>Case</b>	P600 molded plastic body over passivated junction.
<b>Polarity</b>	Color band denotes the cathode except Bipolar.
<b>Terminal</b>	Matte Tin axial leads, solderable per JESD22-B102D.

### Environmental Specifications

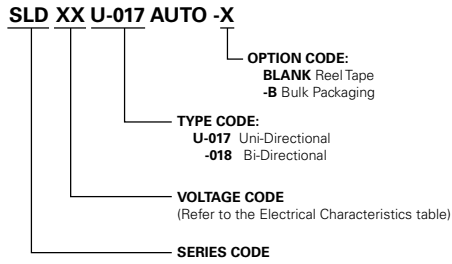
<b>Temperature Cycle</b>	JESD22-A104
<b>Pressure Cooker</b>	JESD 22-A102
<b>High Temp. Storage</b>	JESD22-A103
<b>HTRB</b>	JESD22-A108
<b>Thermal Shock</b>	JESD22-A106

### Dimensions

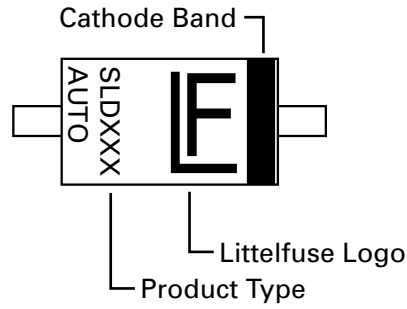


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	1.000	-	25.40	-
B	0.340	0.360	8.60	9.10
C	0.048	0.052	1.22	1.32
D	0.340	0.360	8.60	9.10

### Part Numbering System



### Part Marking System



### Packaging

Part Number	Component Package	Quantity	Packaging Option	Packaging Specification
SLDxxXXXAUTO	P600	800	Tape & Reel	EIA STD RS-296E
SLDxxXXAUTO-B	P600	500	BOX	Littelfuse Concord Packing Spec. DM-0016