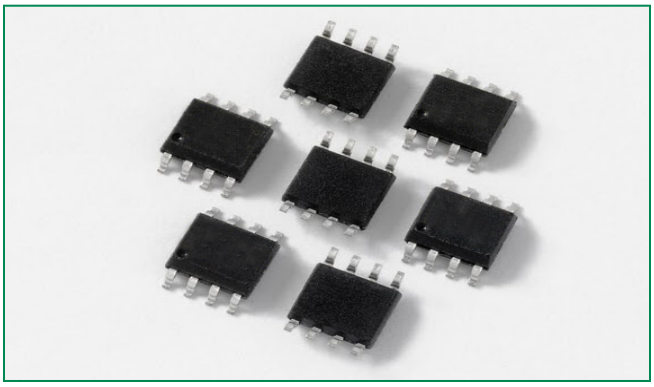
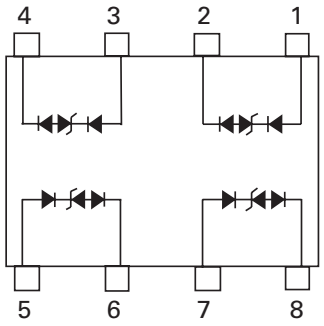
HF RoHS Pb GREEN SPLV2.8-4 Lead-Free/Green Series



Description

The SPLV2.8-4 was designed to protect low voltage, CMOS devices from ESD and lightning induced transients. There is a compensating diode in series with each low voltage TVS to present a low loading capacitance to the line being protected. These robust structures can safely absorb repetitive ESD strikes at ±30kV (contact discharge) per IEC61000-4-2 standard and each structure can safely dissipate up to 24A (IEC61000-4-5, t_P=8/20µs) with very low clamping voltages.

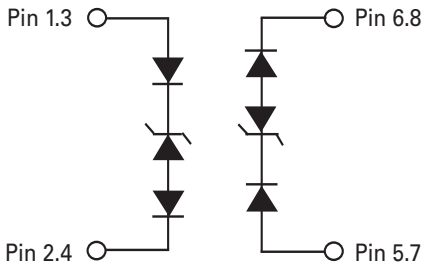
Pinout



Features

- ESD, IEC61000-4-2, ±30kV contact, ±30kV air
- EFT, IEC61000-4-4, 40A (5/50ns)
- Lightning, IEC61000-4-5, 24A (8/20µs)
- Low capacitance of 3.8pF per line
- Low leakage current of 1µA (MAX) at 2.8V
- SOIC-8 pin configuration allows for simple flow-through layout

Functional Block Diagram



Applications

- 10/100/1000 Ethernet
- WAN/LAN Equipment
- Switching Systems
- Desktops, Servers, and Notebooks
- Analog Inputs
- Base Stations

Absolute Maximum Ratings

Parameter	Rating	Units
Peak Pulse Power (t_P=8/20µs)	400	W
Peak Pulse Current (t_P=8/20µs)	24	A
Operating Temperature	-40 to 85	°C
Storage Temperature	-60 to 150	°C

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

Electrical Characteristics (T_{OP} = 25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reverse Standoff Voltage	V_{RWM}	I_R≤1µA			2.8	V
Reverse Breakdown Voltage	V_{BR}	I_T=2µA	3.0			V
Snap Back Voltage	V_{SB}	I_T=50mA	2.8			V
Reverse Leakage Current	I_{LEAK}	V_R=2.8V (Each Line)			1	µA
Clamping Voltage[1]	V_C	I_{PP}=5A, t_P=8/20µs (Each Line)		6.8	8.5	V
Clamping Voltage[1]	V_C	I_{PP}=24A, t_P=8/20µs (Each Line)		12.5	15.0	V
ESD Withstand Voltage[1]	V_{ESD}	IEC61000-4-2 (Contact)	±30			kV
		IEC61000-4-2 (Air)	±30			kV
Dynamic Resistance	R_{DYN}	(V_{C2} - V_{C1}) / (I_{PP2} - I_{PP1}) (Each Line)		0.3		Ω
Diode Capacitance[1]	C_D	V_R=0V, f=1MHz (Each Line)		3.8	5	pF

NOTES:

[1]Parameter is guaranteed by design and/or device characterization.

Figure 1: Capacitance vs. Reverse Voltage

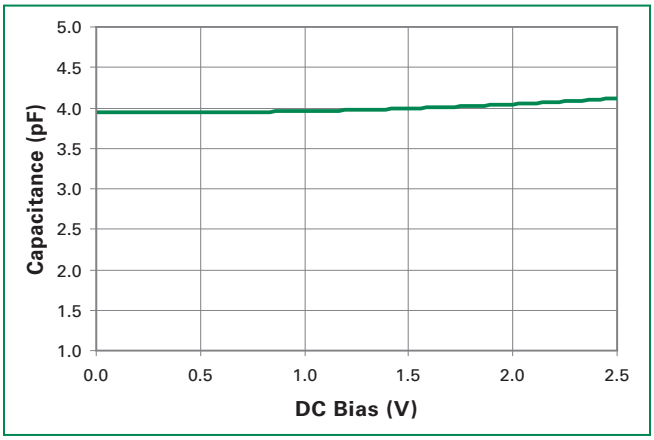


Figure 2: Clamping Voltage vs. I_{PP}

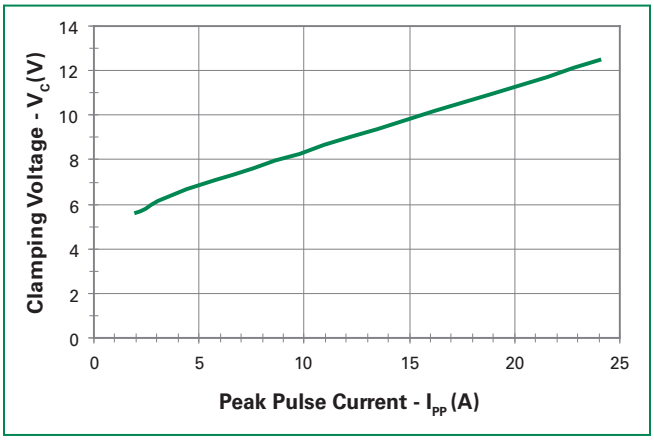
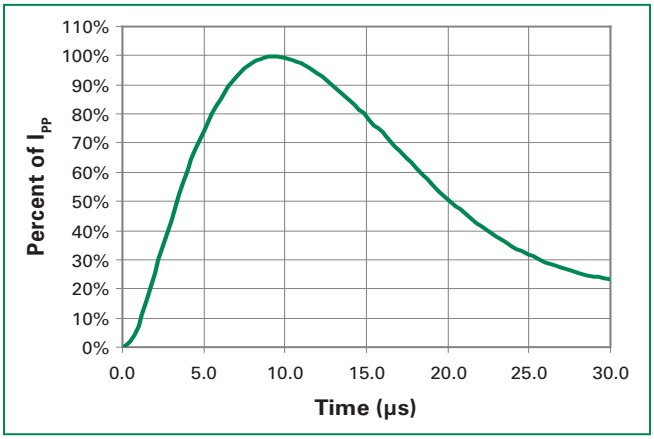
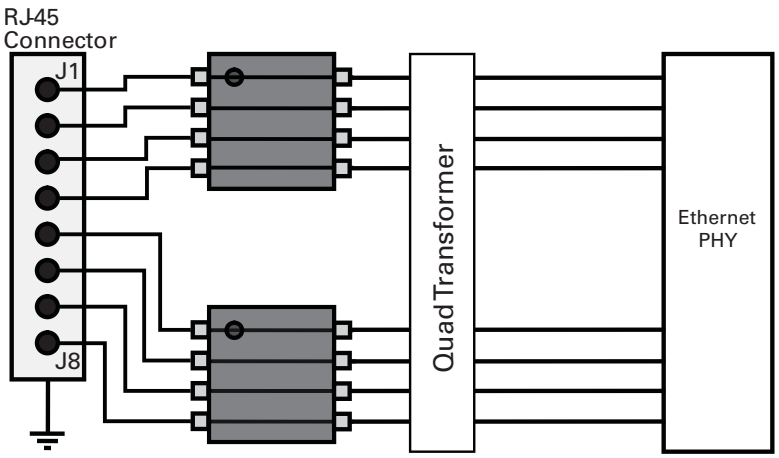


Figure 3: Pulse Waveform



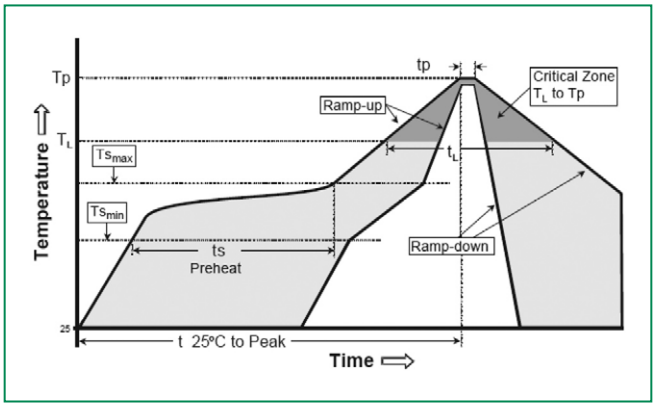
Lead-Free/Green SPLV2.8-4

Application Example

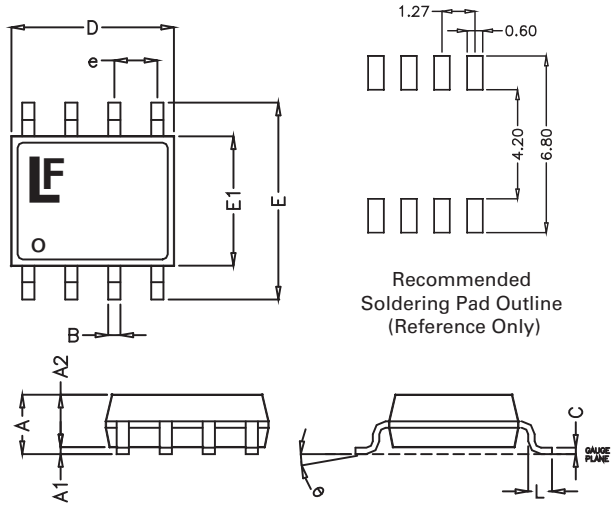


Soldering Parameters

Reflow Condition		Pb – 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		5°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		5°C/second max
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_P)		$250^{+0/-5}$ °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		260°C

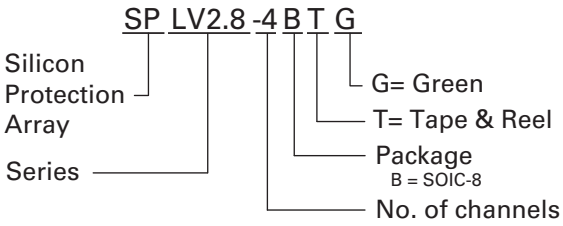


Package Dimensions - Mechanical Drawings and Recommended Solder Pad Outline

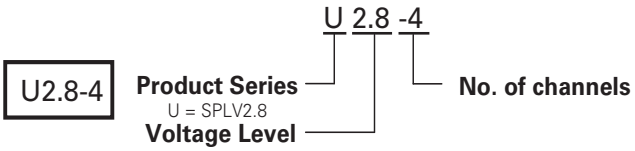


Package	MS-012 (SO-8)			
Pins	8			
JEDEC	MO-223 Issue A			
	Millimetres		Inches	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
A2	1.25	1.65	0.050	0.065
B	0.31	0.51	0.012	0.020
c	0.17	0.25	0.007	0.010
D	4.80	5.00	0.189	0.197
E	5.80	6.20	0.228	0.244
E1	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
L	0.40	1.27	0.016	0.050

Part Numbering System



Part Marking System



Product Characteristics

Lead Plating	Matte Tin
Lead Material	Copper Alloy
Lead Coplanarity	0.0004 inches (0.102mm)
Subsitute Material	Silicon
Body Material	Molded Epoxy
Flammability	UL94-V-0

Notes :

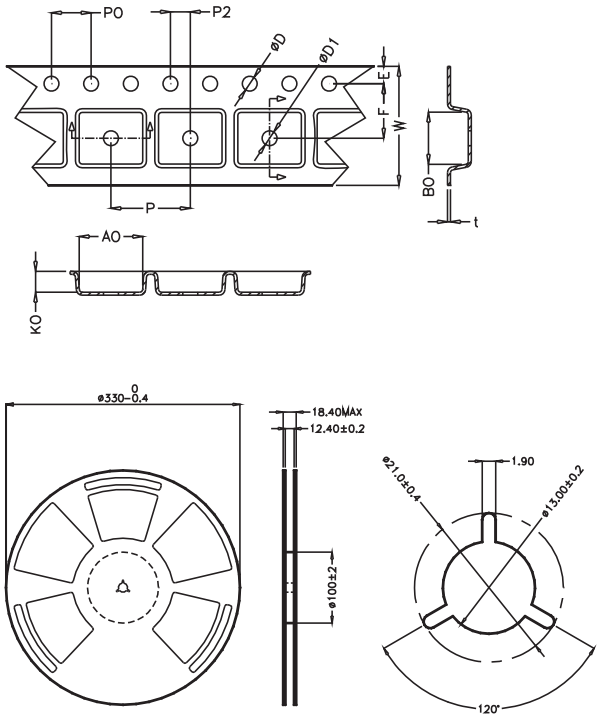
1. All dimensions are in millimeters
2. Dimensions include solder plating.
3. Dimensions are exclusive of mold flash & metal burr.
4. All specifications comply to JEDEC SPEC MO-203 Issue A
5. Blo is facing up for mold and facing down for trim/form, i.e. reverse trim/form.
6. Package surface matte finish VDI 11-13.

Ordering Information

Part Number	Package	Marking	Min. Order Qty.
SPLV2.8-4BTG	SOIC-8	U2.8-4	2500

Lead-Free/Green SPLV2.8-4

Embossed Carrier Tape & Reel Specification - SOIC Package



Symbol	Millimetres		Inches	
	Min	Max	Min	Max
E	1.65	1.85	0.065	0.073
F	5.4	5.6	0.213	0.22
P2	1.95	2.05	0.077	0.081
D	1.5	1.6	0.059	0.063
D1	1.50 Min		0.059 Min	
P0	3.9	4.1	0.154	0.161
10P0	40.0 +/- 0.20		1.574 +/- 0.008	
W	11.9	12.1	0.468	0.476
P	7.9	8.1	0.311	0.319
A0	6.3	6.5	0.248	0.256
B0	5.1	5.3	0.2	0.209
K0	2	2.2	0.079	0.087
t	0.30 +/- 0.05		0.012 +/- 0.002	