Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power (t_p = 8/20μs)	P_{pk}	1800	Watts
Peak Pulse Current (t_p = 8/20μs)	I_{PP}	100	A
Lead Soldering Temperature	T_L	260 (10 sec.)	°C
Operating Temperature	T_J	-55 to +125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

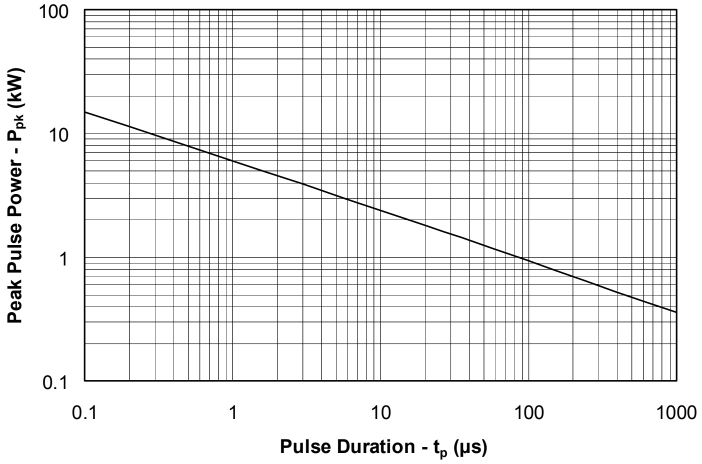
Electrical Characteristics

LC03-3.3

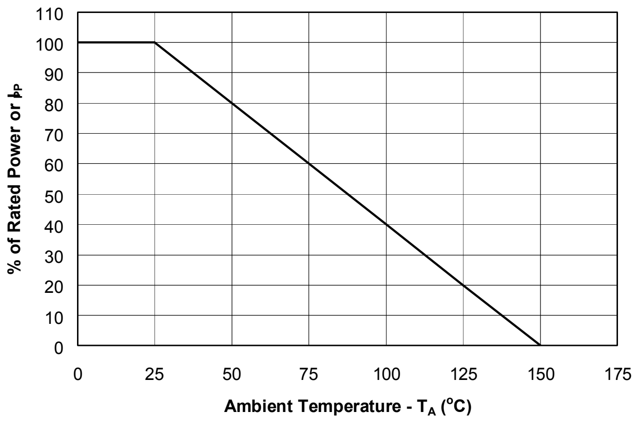
Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}				3.3	V
Punch-Through Voltage	V_{PT}	I_{PT} = 2μA	3.5			V
Snap-Back Voltage	V_{SB}	I_{SB} = 50mA	2.8			V
Reverse Leakage Current	I_R	V_{RWM} = 3.3V, T=25°C			1	μA
Clamping Voltage	V_C	I_{PP} = 50A, t_p = 8/20μs Line-to-Ground			11.5	V
Clamping Voltage	V_C	I_{PP} = 50A, t_p = 8/20μs Line-to-Line			13.5	V
Clamping Voltage	V_C	I_{PP} = 100A, t_p = 8/20μs Line-to-Ground			15	V
Clamping Voltage	V_C	I_{PP} = 100A, t_p = 8/20μs Line-to-Line			18	V
Junction Capacitance	C_j	Between I/O pins and Ground V_R = 0V, f = 1MHz		16	25	pF
		Between I/O pins V_R = 0V, f = 1MHz		8	12	pF

Typical Characteristics

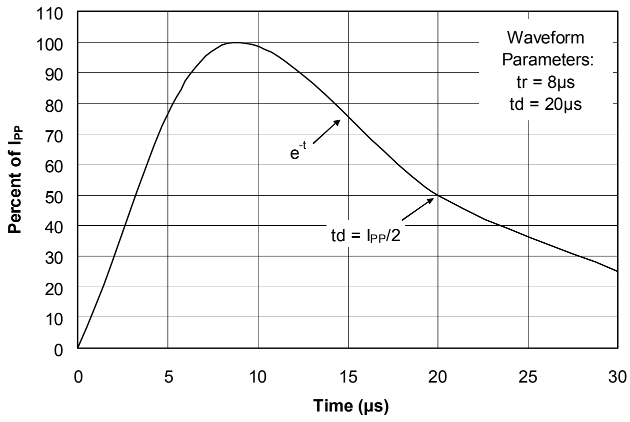
Non-Repetitive Peak Pulse Power vs. Pulse Time



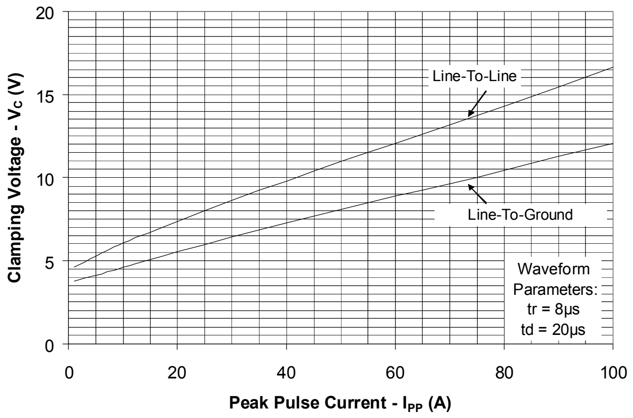
Power Derating Curve



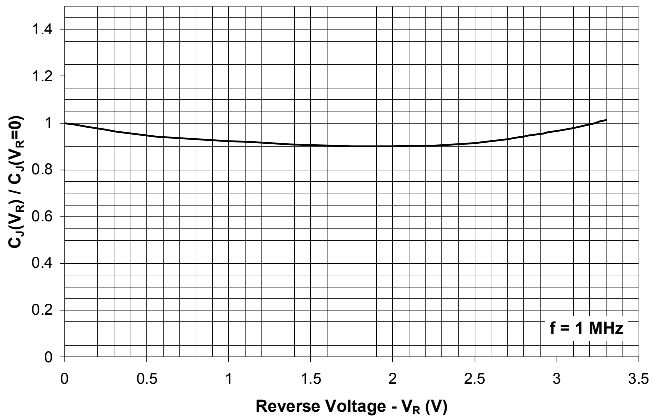
Pulse Waveform



Clamping Voltage vs. Peak Pulse Current



Normalized Capacitance vs. Reverse Voltage



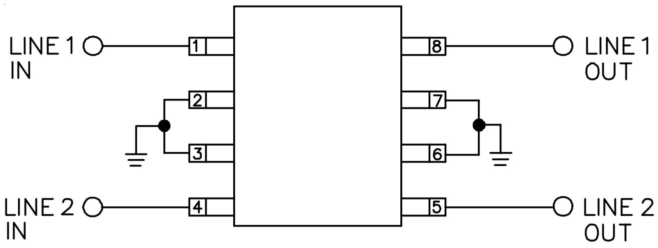
Insertion Loss S21 (Line to Ground)

Applications Information

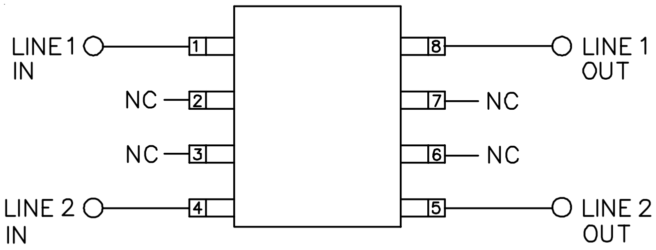
Device Connection Options for Protection of Two High-Speed Data Lines

The LC03-3.3 is designed to protect two high-speed data lines (one differential pair) from transient over-voltages which result from lightning and ESD. The device can be configured to protect in differential (Line-to-Line) and common (Line-to-Ground) mode. Data line inputs/outputs are connected at pins 1 to 8, and 4 to 5 as shown. Pins 2, 3, 6, and 7 are connected to ground. These pins should be connected directly to a ground plane on the board for best results. The path length is kept as short as possible to minimize parasitic inductance. In applications where high common mode voltages are present, differential protection is achieved by leaving pins 2, 3, 6, and 7 not connected.

Connection for Differential (Line-to-Line) and Common Mode Protection (Line-to-Ground)



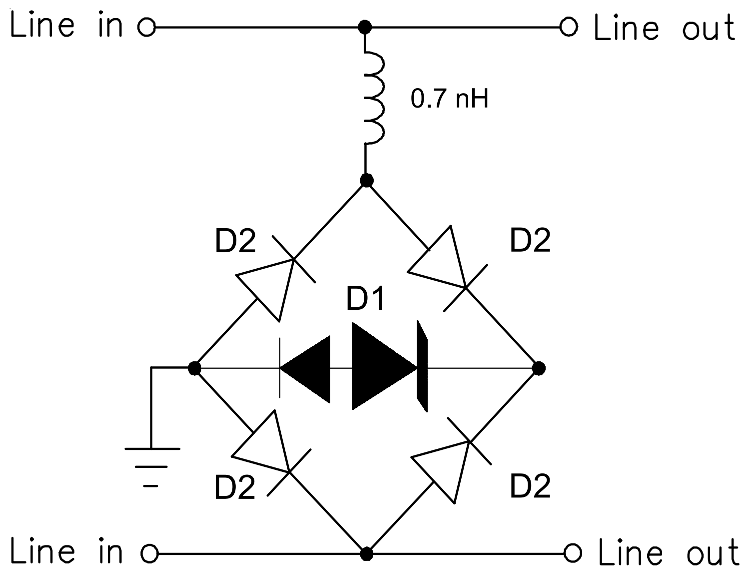
Connection for Differential Protection (Line-to-Line)



Matte Tin Lead Finish

Matte tin has become the industry standard lead-free replacement for SnPb lead finishes. A matte tin finish is composed of 100% tin solder with large grains. Since the solder volume on the leads is small compared to the solder paste volume that is placed on the land pattern of the PCB, the reflow profile will be determined by the requirements of the solder paste. Therefore, these devices are compatible with both lead-free and SnPb assembly techniques. In addition, unlike other lead-free compositions, matte tin does not have any added alloys that can cause degradation of the solder joint.

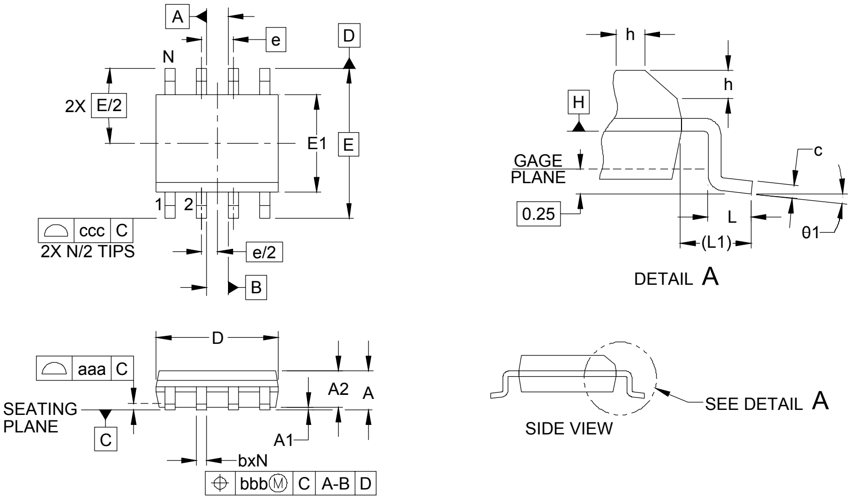
Applications Information - SPICE Model



LC03-3.3 Spice Model

LC03-3.3 Spice Parameters			
Parameter	**Unit**	**D1 (TVS)**	**D2 (LCRD)**
IS	Amp	1.0E-20	3.98E-13
BV	Volt	3.5	240
VJ	Volt	13.8	0.64
RS	Ohm	0.0257	0.048
IBV	Amp	1E-3	1E-3
CJO	Farad	3.4e-9	8.0E-12
TT	sec	2.541E-9	2.541E-9
M	--	0.145	0.022
N	--	1.1	1.1
EG	eV	1.11	1.11

Outline Drawing - SO-8

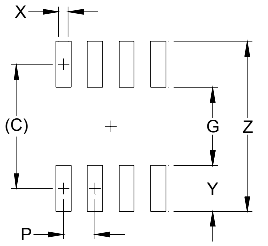


DIM	DIMENSIONS					
	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	.053	-	.069	1.35	-	1.75
A1	.004	-	.010	0.10	-	0.25
A2	.049	-	.065	1.25	-	1.65
b	.012	-	.020	0.31	-	0.51
c	.007	-	.010	0.17	-	0.25
D	.189	.193	.197	4.80	4.90	5.00
E1	.150	.154	.157	3.80	3.90	4.00
E	.236 BSC			6.00 BSC		
e	.050 BSC			1.27 BSC		
h	.010	-	.020	0.25	-	0.50
L	.016	.028	.041	0.40	0.72	1.04
L1	(.041)			(1.04)		
N	8			8		
θ1	0°	-	8°	0°	-	8°
aaa	.004			0.10		
bbb	.010			0.25		
ccc	.008			0.20		

NOTES:

1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DATUMS -A- AND -B- TO BE DETERMINED AT DATUM PLANE -H-
3. DIMENSIONS "E1" AND "D" DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
4. REFERENCE JEDEC STD MS-012, VARIATION AA.

Land Pattern -SO-8



DIM	DIMENSIONS	
	INCHES	MILLIMETERS
C	(.205)	(5.20)
G	.118	3.00
P	.050	1.27
X	.024	0.60
Y	.087	2.20
Z	.291	7.40

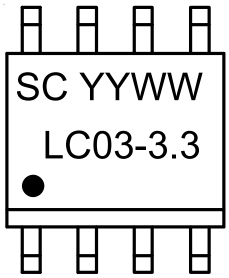
NOTES:

1. THIS LAND PATTERN IS FOR REFERENCE PURPOSES ONLY. CONSULT YOUR MANUFACTURING GROUP TO ENSURE YOUR COMPANY'S MANUFACTURING GUIDELINES ARE MET.
2. REFERENCE IPC-SM-782A, RLP NO. 300A.

Ordering Information

Part Number	Lead Finish	Qty per Reel	Reel Size
LC03-3.3.TB	SnPb	500	7 Inch
LC03-3.3.TBT	Pb Free	500	7 Inch

Marking Diagram



Note:
YYWW = Date Code

Contact Information

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Phone: (805)498-2111 FAX (805)498-3804