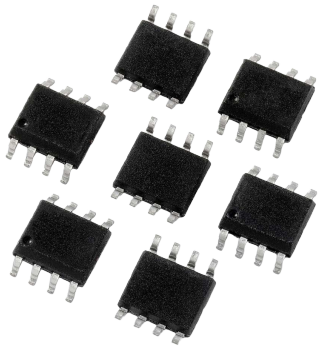
HJKE
WWW.HJKEIC.COM

LC03-6

Low Capacitance TVS

Description

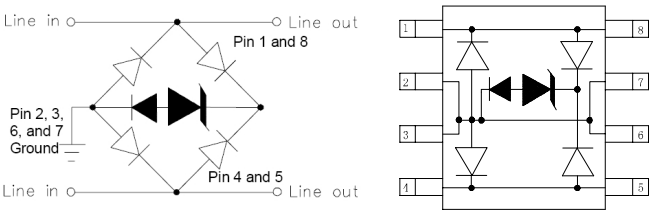
The LC03-6 is a 6V 100A low capacitance TVS arrays, combining a TVS diode with a rectifier bridge to provide both common and differential transient protection in one package, The LC03-6 complies with the IEC 61000-4-2 (ESD) with ±30kV air and ±30kV contact discharge. It is assembled into a 8-pin lead-free SO-8 package, the LC03 -6 is rated for GR-1089, intra-building transient immunity requirements for telecommunication installations and pro-vide overvoltage protection for applications such as 10/100/1000 BaseT Ethernet and T3/E3 interfaces.



SOP-8

Features

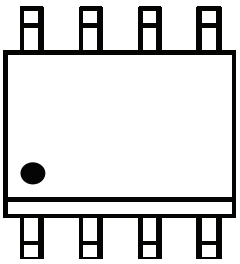
- Low capacitance for high speed interfaces
- Ultra low leakage: nA level
- Low operating voltage
- Low clamping voltage
- Protects two lines in common and differential mode
- JEDEC SO-8 package
- Complies with following standards:
  – IEC 61000-4-2 (ESD) immunity test
    Air discharge: ±30kV
    Contact discharge: ±30kV
  – IEC61000-4-5 (Lightning) 100A (8/20μs)
- RoHS Compliant



Circuit diagram

Mechanical Characteristics

- Package: SO-8
- Lead Finish: Matte Tin
- Case Material: “Green” Molding Compound.
- Terminal Connections: See Diagram Below
- Marking Information: See Below



Dot denotes Pin1

Applications

- T1/E1 Line Cards
- T3/E3 and DS3 Interfaces
- STS-1 Interfaces
- 10/100/1000 BaseT Ethernet
- ISDN Interfaces
- Low Voltage Interfaces

Ordering Information

Part Number	Packaging	Reel Size
LC03-6	2500/Tape & Reel	13 inch

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

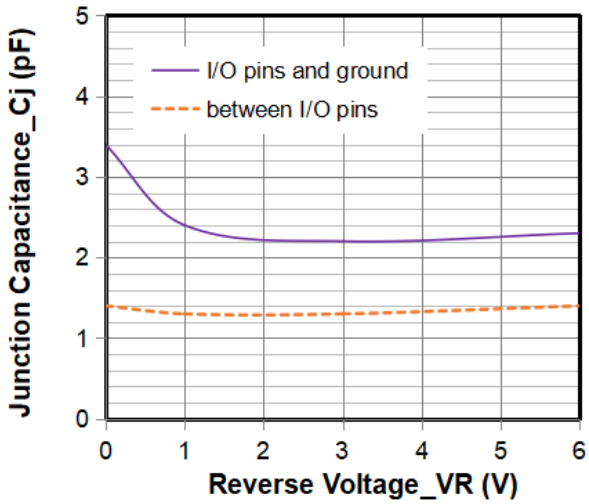
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	2600	W
Peak Pulse Current (8/20μs)	I_{PP}	100	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±30 ±30	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

Electrical Characteristics (T_A=25°C unless otherwise specified)

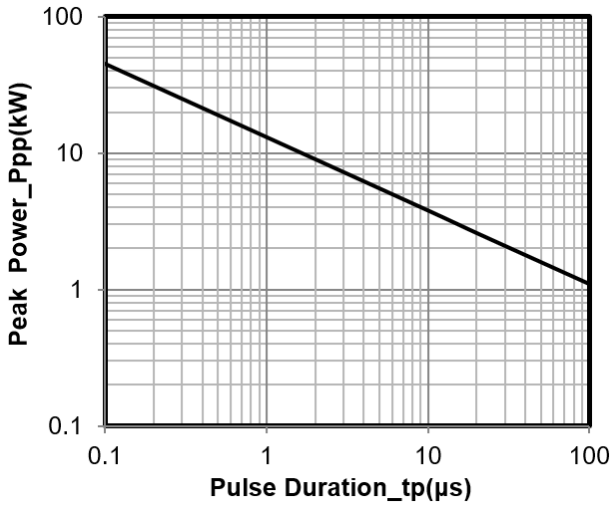
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			6	V	
Breakdown Voltage	V_{BR}	6.8			V	I_T = 1mA
Reverse Leakage Current	I_R			5	μA	V_{RWM} = 6V
Clamping Voltage	V_C			18	V	I_{PP} = 50A (8 x 20μs pulse), any I/O pin to ground
Clamping Voltage	V_C			26	V	I_{PP} = 100A (8 x 20μs pulse), any I/O pin to ground
Junction Capacitance	C_J		3.5	7	pF	VR = 0V, f = 1MHz, between I/O pins and ground
Junction Capacitance	C_J		1.5	4	pF	VR = 0V, f = 1MHz, between I/O pins

Note 1: I/O pins are Pin 1, 4, 5 and 8

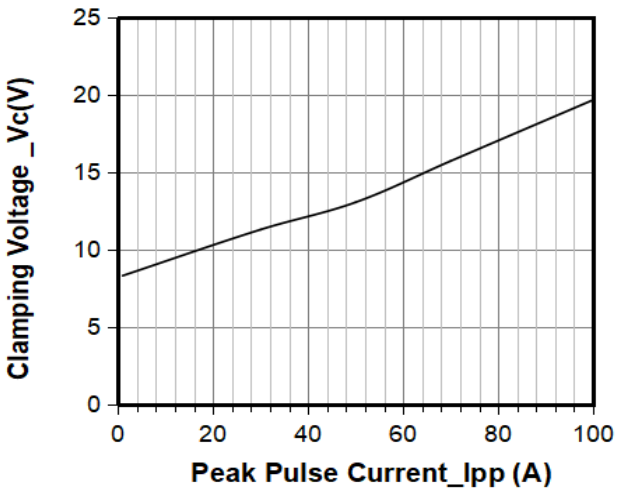
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



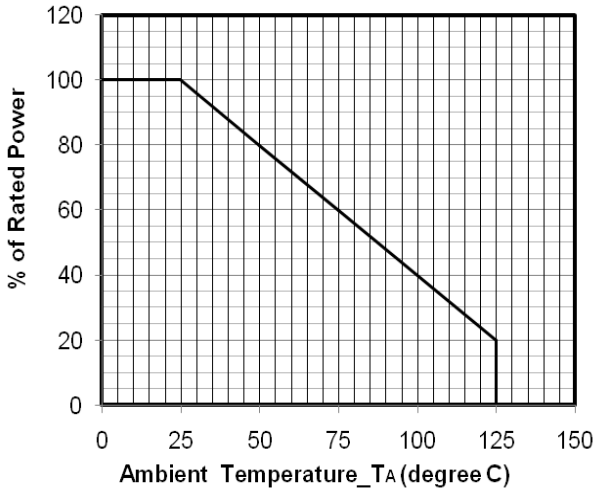
Junction Capacitance vs. Reverse Voltage

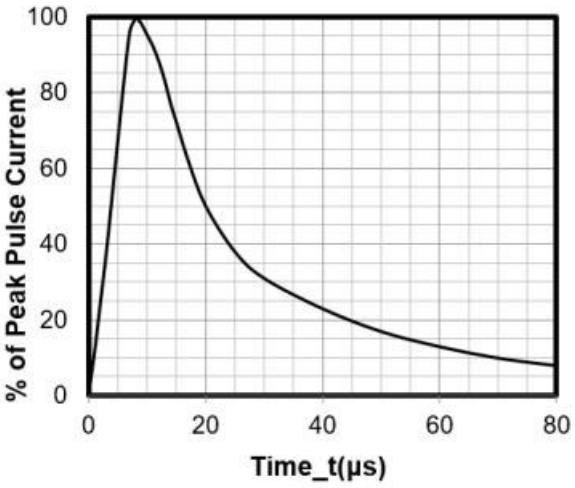


Peak Pulse Power vs. Pulse Time

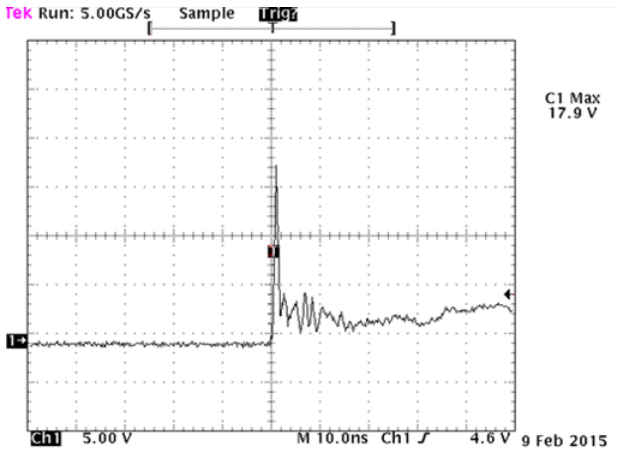


Clamping Voltage vs. Peak Pulse Current (tp = 8/20us)





8 X 20μs Pulse Waveform



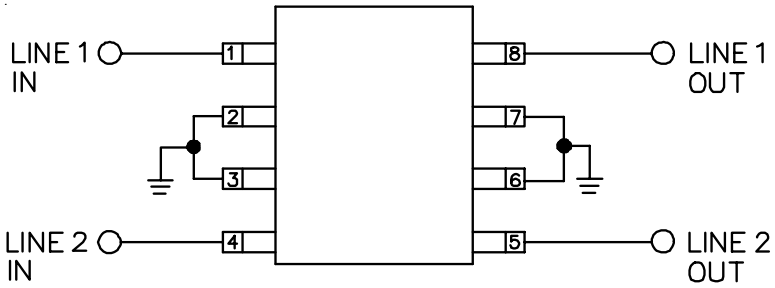
Note：Data is taken with a 10x attenuator

ESD Clamping Voltage

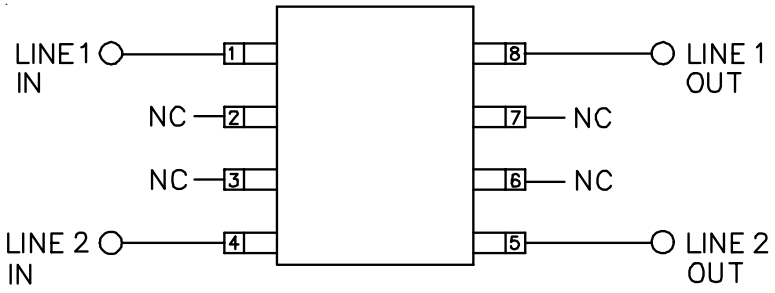
+8 kV Contact per IEC61000−4−2

Typical Application

The LC03-6 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 below. Pins 2, 3, 6, 7 are connected to ground. These pins should be connected directly to a ground plane on the board for the best results, the path length is kept as short as possible to minimize parasitic inductance. In applications where high common voltages are present, differential protection is achieved by leaving pins 2, 3, 6, and 7 not connected.

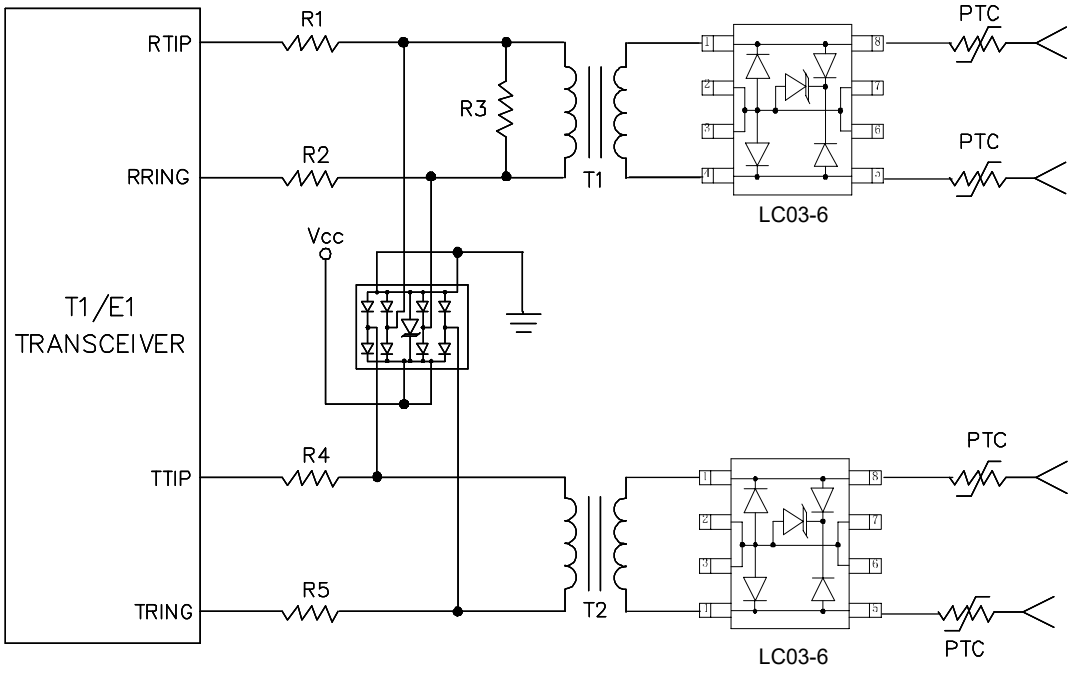


Connection for differential (Line to Line) and common mode protection (Line to Ground)

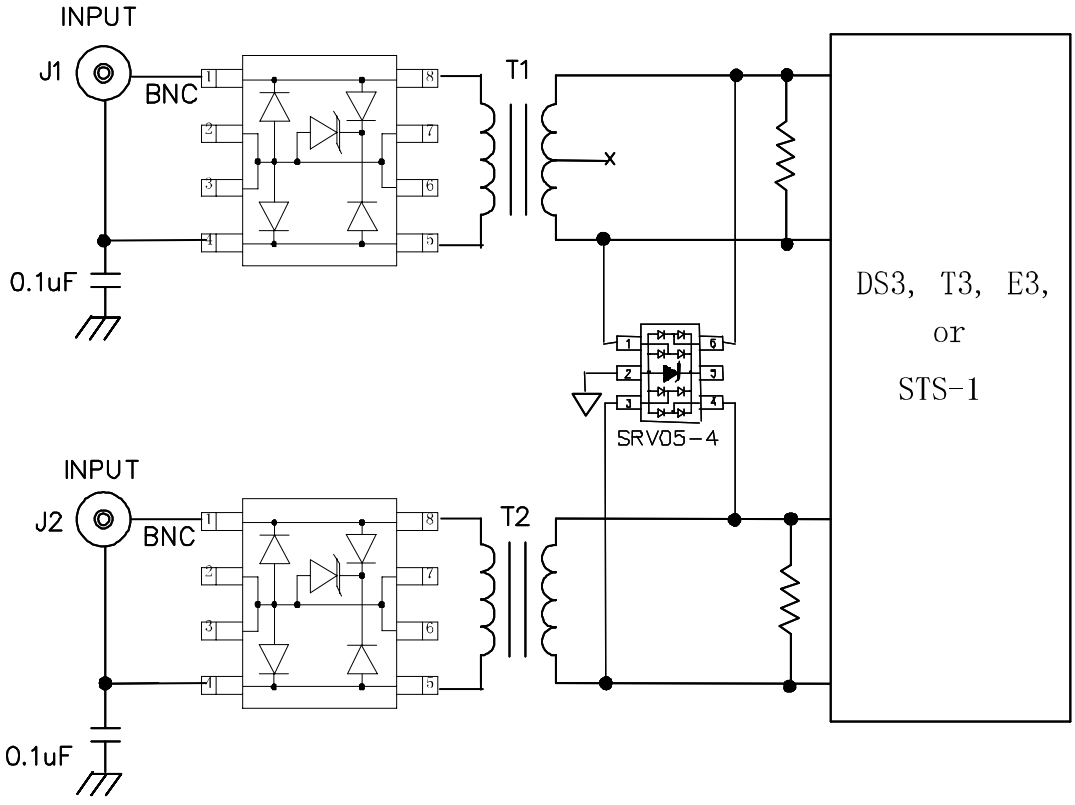


Connection for differential protection (Line to Line)

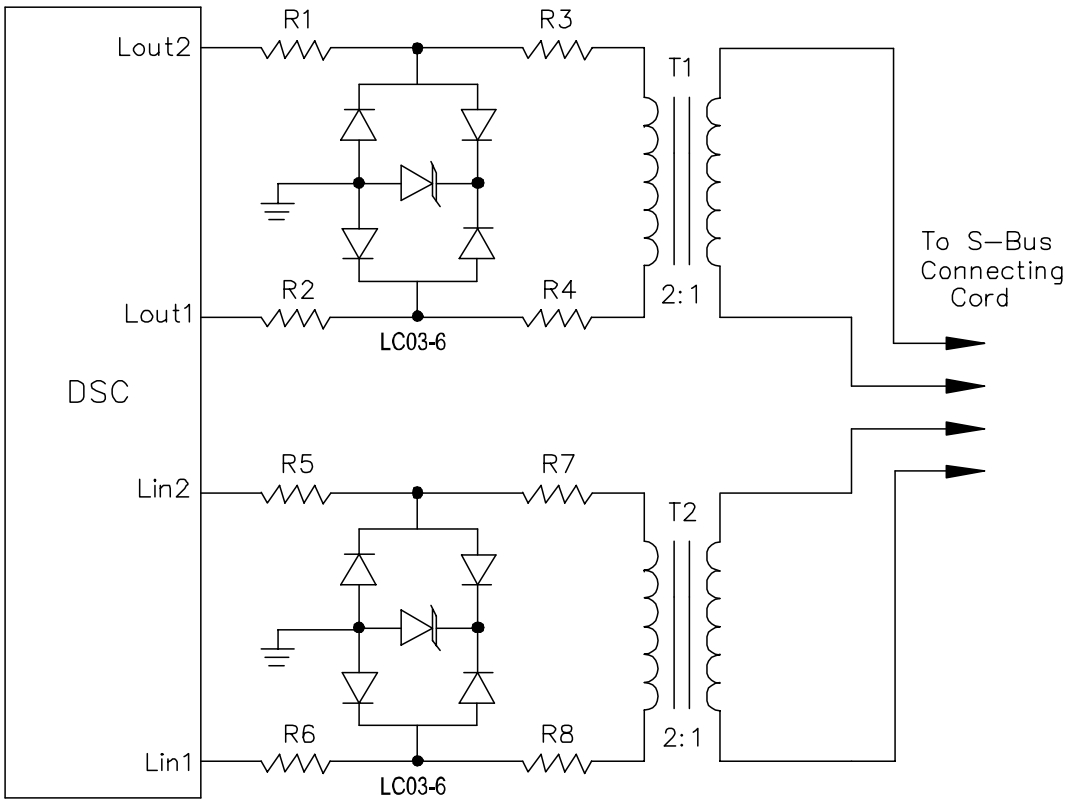
LC03-6 on T1 Line Card Application



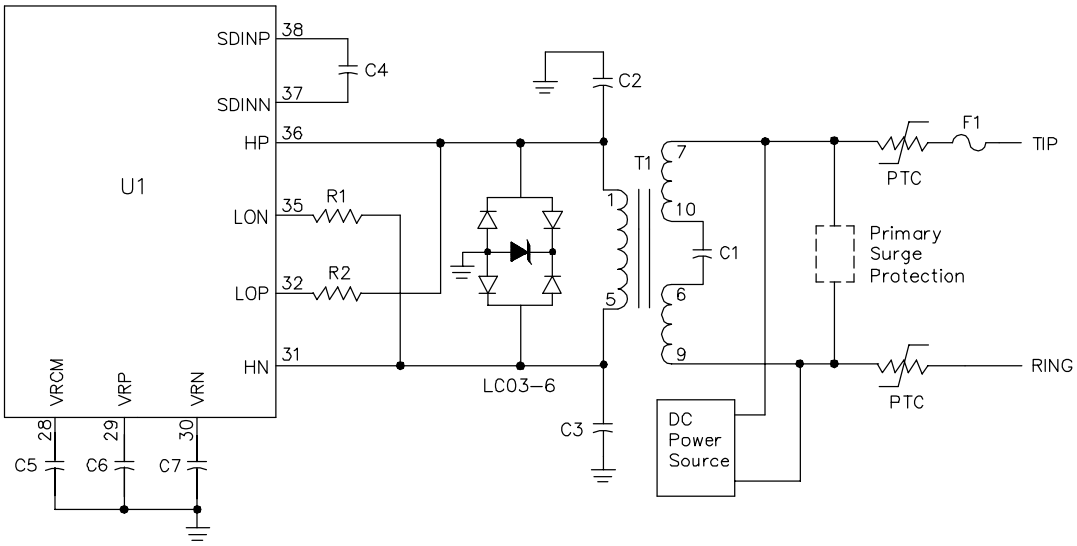
LC03-6 on T3/E3 and STS-1 Application



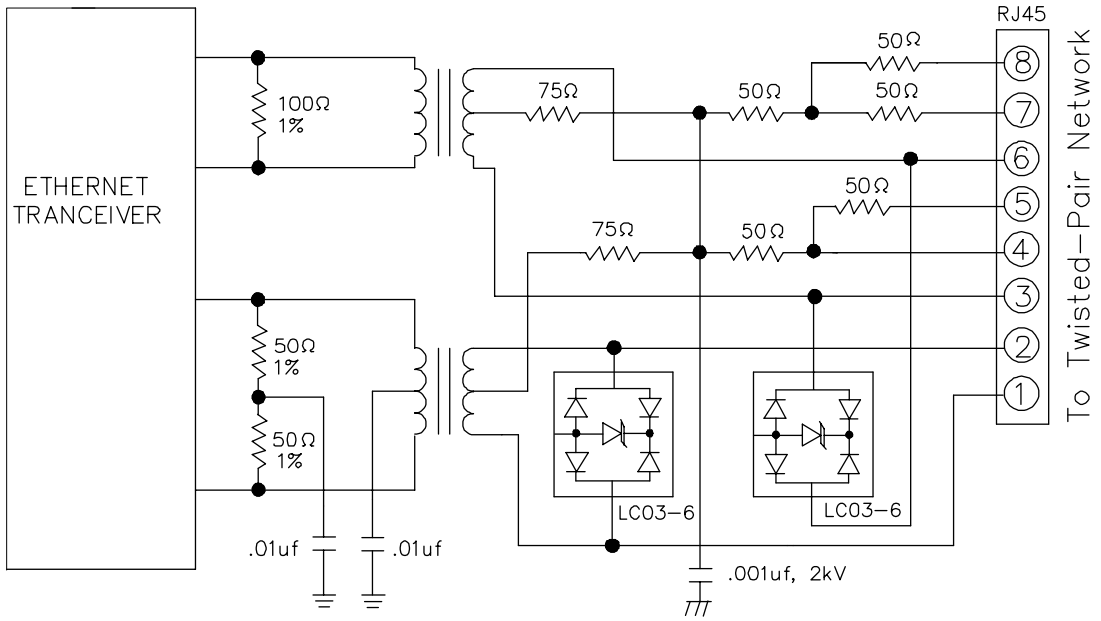
LC03-6 on ISDN S-Interface Application



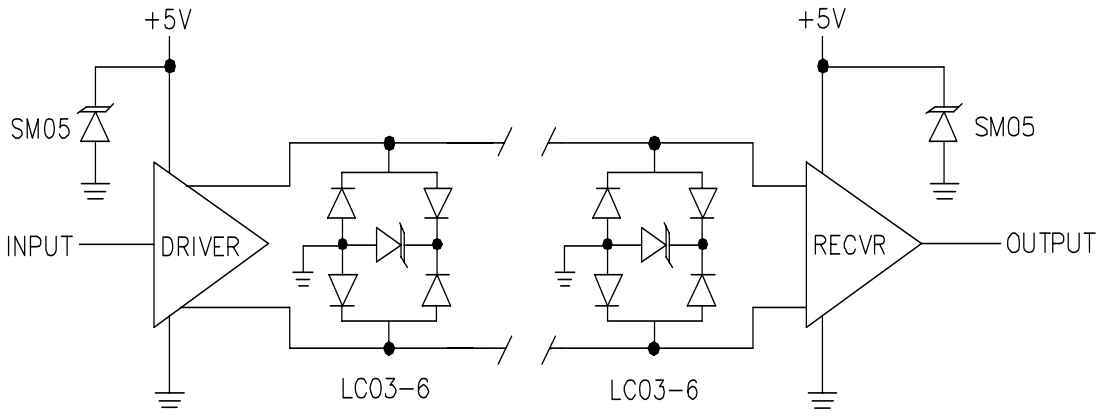
LC03-6 on ISDN U-Interface Secondary Application



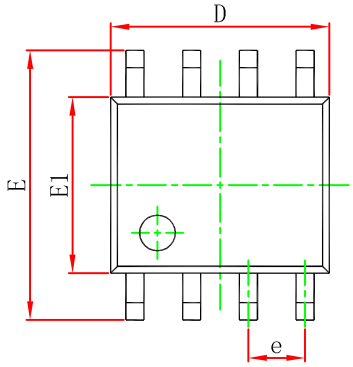
LC03-6 on 10/100 Ethernet Application

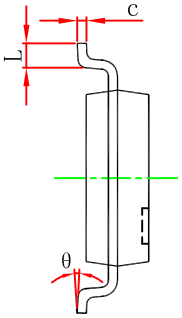


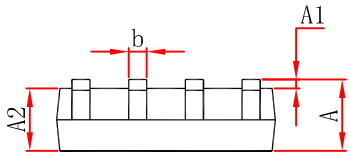
LC03-6 on High Speed Driver/Receiver Application



SOP-8 Package Outline Drawing

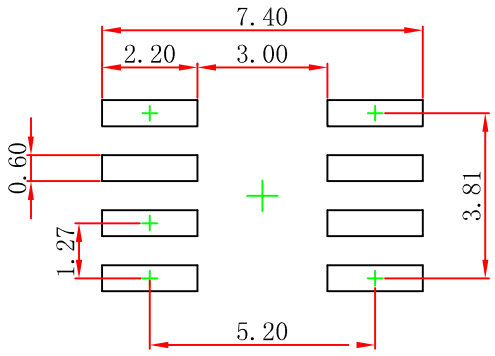






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

SOP8 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.