



Features

- ESD Protect for Low-Voltage Differential Signaling (LVDS) channels
- Protects four I/O lines
- Provide ESD protection for each channel to **IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (air / contact)**
IEC 61000-4-4 (EFT) 80A (5/50ns)
IEC 61000-4-5 (Lightning) 15A (8/20 μs)
- For operating voltage of 3.3V and below
- Low capacitance : 1.8pF typical
- Fast turn-on and Low clamping voltage
- Array of surge rated diodes with internal equivalent TVS diode
- Solid-state silicon-avalanche and active circuit triggering technology
- **Green Part**

Applications

- LVDS Interface
- USB2.0 Data Lines Protection
- Control Signal Lines Protection
- SIM Ports
- Monitors and Flat Panel Displays
- Notebook and PC Computers
- Ethernet Port: 10/100/1000 Mb/s
- Consumer Electronics
- Set Top Box

Description

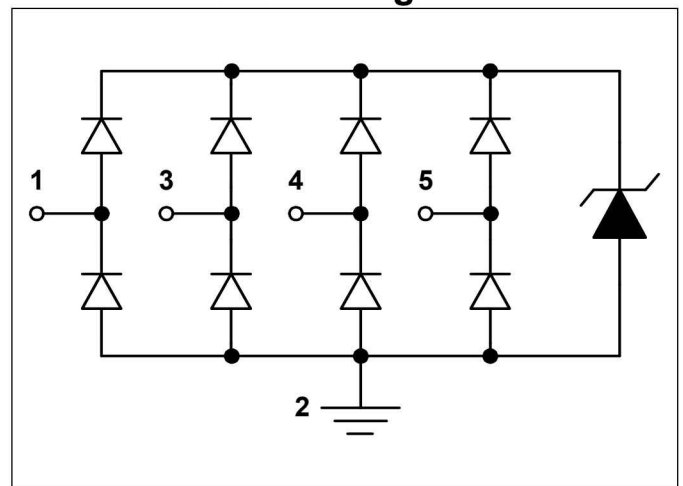
AZ1013-04C is a high performance design which includes surge rated diode arrays to protect high speed data interfaces. The AZ1013-04C has been specifically designed to protect sensitive components, which are connected to data and transmission lines, from over-voltage caused by Electrostatic Discharging (ESD), Electrical Fast Transients (EFT), and Lightning.

AZ1013-04C is a unique design which includes surge rated, low capacitance steering diodes and a unique design of clamping cell which is an equivalent TVS diode in a single package. During

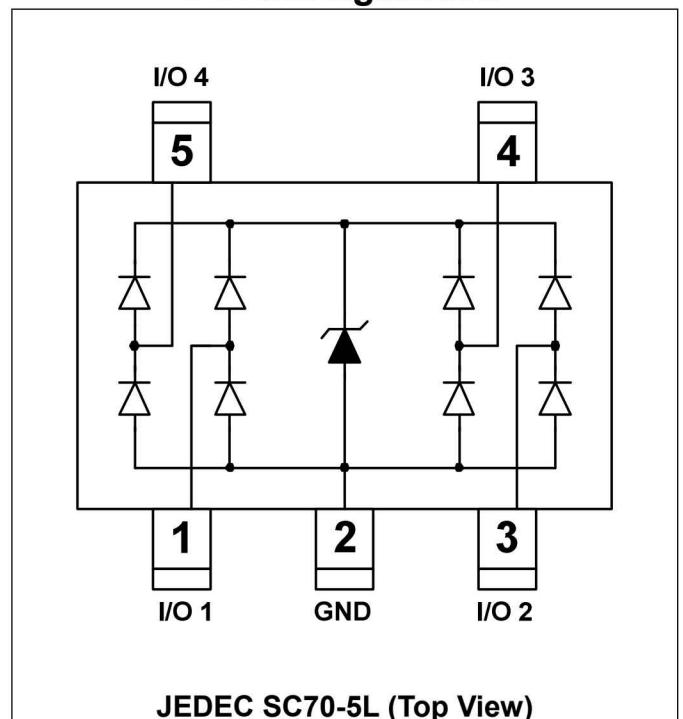
transient conditions, the steering diodes direct the transient to either the internal ESD line or to ground line. The internal unique design of clamping cell prevents over-voltage on the internal ESD line and on the I/O line, which is protecting any downstream components.

AZ1013-04C may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 ($\pm 15\text{kV}$ air, $\pm 8\text{kV}$ contact discharge).

Circuit Diagram



Pin Configuration





SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS			
PARAMETER	SYMBOL	RATING	UNITS
Peak Pulse Current ($t_p = 8/20\mu s$)	I_{PP}	15	A
Operating Supply Voltage (I/O - GND)	V_{DC}	(GND – 0.5) to 3.6	V
ESD per IEC 61000-4-2 (Air)	V_{ESD}	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	
Lead Soldering Temperature	T_{SOL}	260 (10 sec.)	°C
Operating Temperature	T_{OP}	-55 to +125	°C
Storage Temperature	T_{STO}	-55 to +150	°C

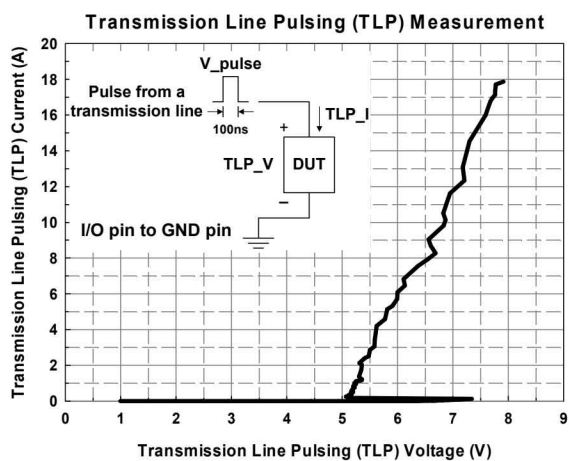
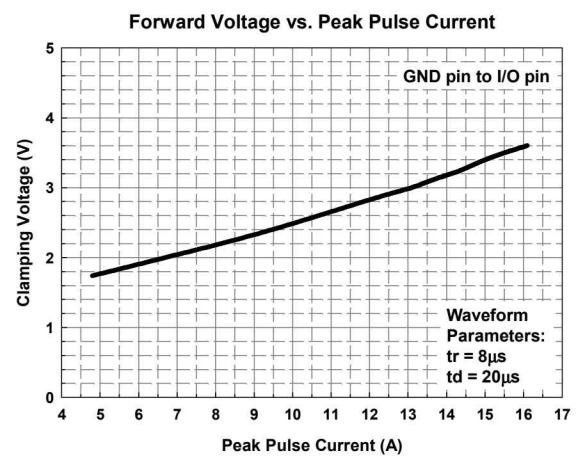
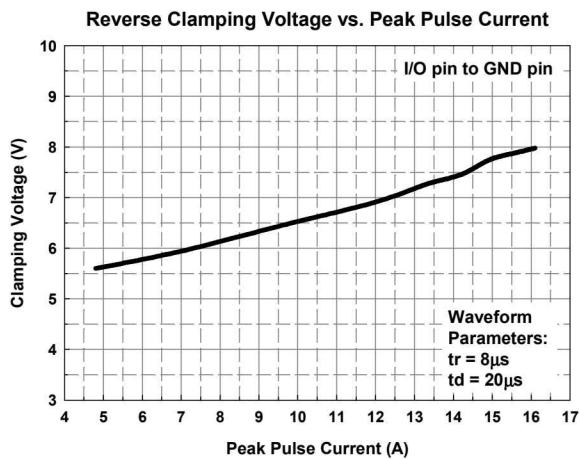
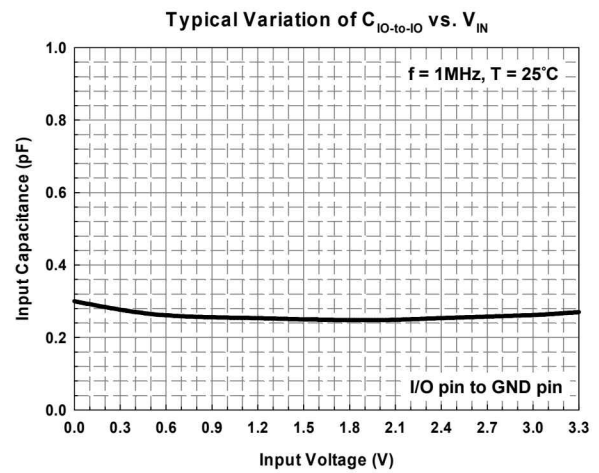
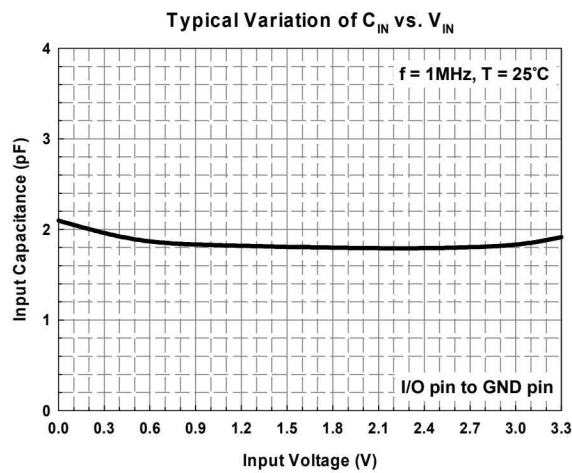
ELECTRICAL CHARACTERISTICS						
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Reverse Stand-Off Voltage	V_{RWM}	Pin-1, -3, -4, -5 to Pin-2, $T=25^\circ C$.			3.3	V
Channel Leakage Current	$I_{CH-Leak}$	$V_{RWM} = 3.3V$, $T=25^\circ C$. Pin-1, -3, -4, -5 to Pin-2.			1.0	μA
Reverse Breakdown Voltage	V_{BV}	$I_{BV} = 1mA$, $T=25^\circ C$. Pin-1, -3, -4, -5 to Pin-2.	4.5			V
Forward Voltage	V_F	$I_F = 15mA$, $T=25^\circ C$, Pin-2 to Pin-1, -3, -4, -5.		0.8	1.2	V
ESD Clamping Voltage (Note. 1)	V_{clamp}	IEC 61000-4-2 +8kV ($I_{TLP} = 16A$), Contact mode, $T=25^\circ C$, I/O pin to Ground.		7.8		V
Lightning Clamping Voltage	$V_{lightning}$	$I_{PP}=5A$, $t_p=8/20\mu s$, $T=25^\circ C$, Any Channel pin to Ground.		5.7		V
Channel Input Capacitance	C_{IN}	$V_{pin2}=0V$, $V_{IN}=1.65V$, $f = 1MHz$, $T=25^\circ C$, Any Channel pin to Ground.		1.8	2.3	pF
Channel to Channel Input Capacitance	C_{CROSS}	$V_{pin2}=0V$, $V_{IN}=1.65V$, $f = 1MHz$, $T=25^\circ C$, Between Channel pins.		0.25	0.5	pF

Note 1: ESD Clamping Voltage was measured by Transmission Line Pulsing (TLP) System.

TLP conditions: $Z_0 = 50\Omega$, $t_p = 100ns$, $t_r = 1ns$.



Typical Characteristics

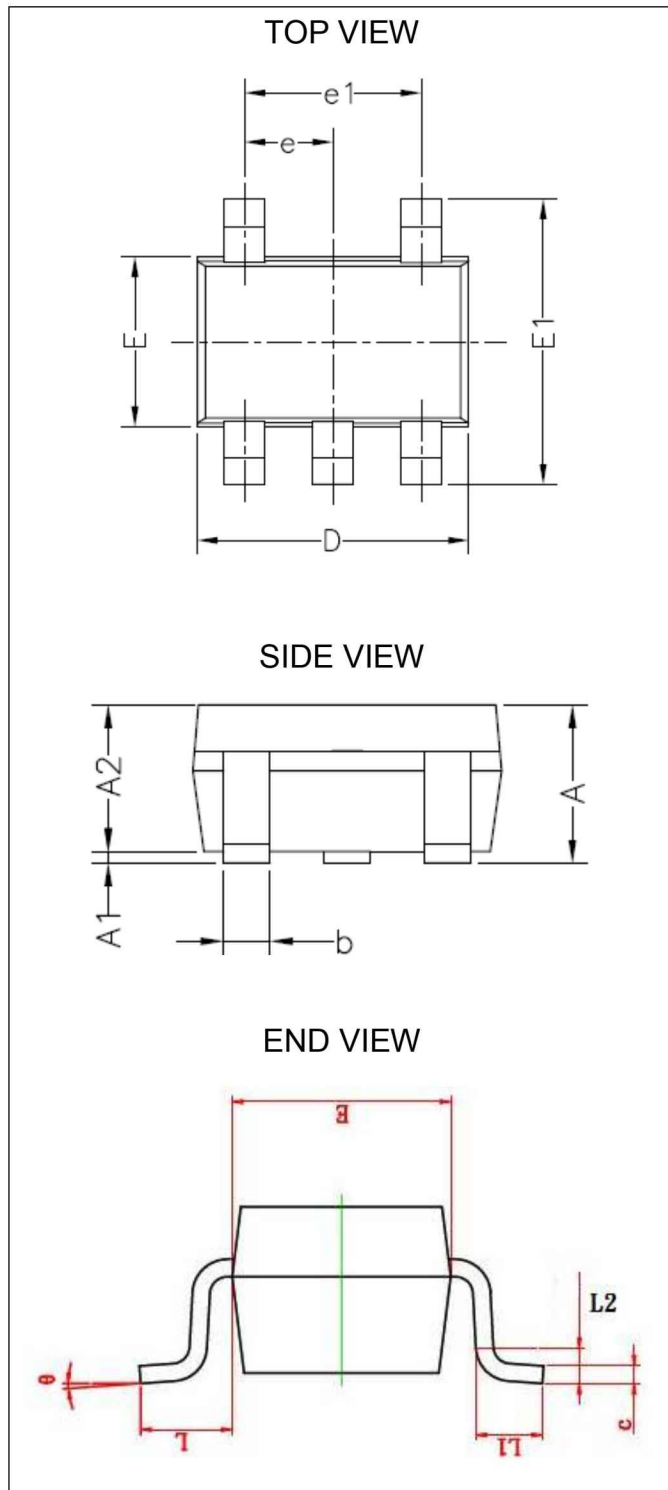




Mechanical Details

SC70-5L

PACKAGE DIAGRAMS



PACKAGE DIMENSIONS

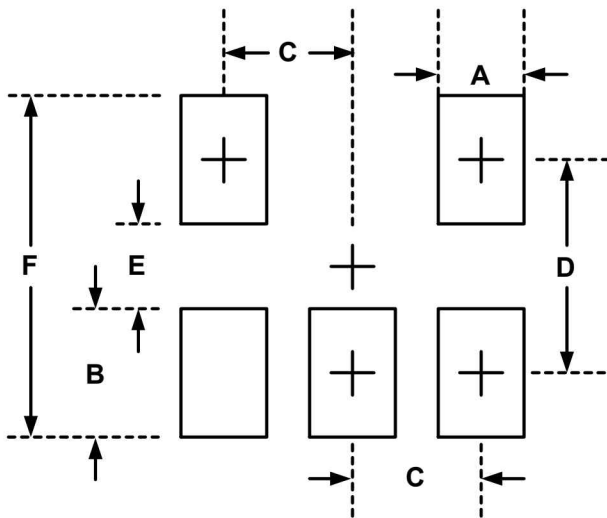
Symbol	Millimeters		Inches	
	MIN.	MAX.	MIN.	MAX.
A	0.9	1.1	0.035	0.043
A1	0	0.1	0	0.004
A2	0.875	1	0.035	0.04
b	0.15	0.4	0.006	0.016
C	0.08	0.15	0.003	0.006
D	1.9	2.2	0.076	0.087
e	0.65 BSC		0.026 BSC	
e1	1.2	1.4	0.047	0.055
E	1.15	1.35	0.045	0.053
E1	2	2.45	0.008	0.096
L	0.525 REF		0.021 REF	
L1	0.26	0.46	0.01	0.018
L2	0.2 REF		0.008 REF	
θ	0°	8°	0°	8°

Note:

1. All dimensions are in millimeters, and the dimensions in inches are for reference only.
2. 1mm = 40 mils = 0.04 inches.



LAND LAYOUT

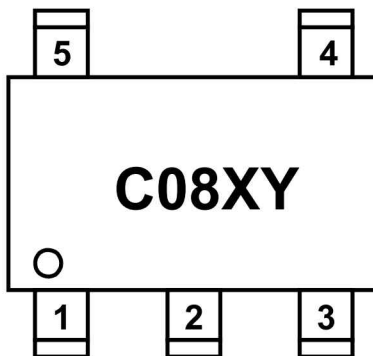


Dimensions		
Index	Millimeter	Inches
A	0.40	0.016
B	0.85	0.033
C	0.65	0.026
D	1.85	0.073
E	1.00	0.039
F	2.70	0.106

Notes:

This LAND LAYOUT is for reference purposes only. Please consult your manufacturing partners to ensure your company's PCB design guidelines are met.

MARKING CODE



C08 = Device Code
X = Date Code
Y = Control Code

Part Number	Marking Code
AZ1013-04C (Green Part)	C08XY

Note. Green means Pb-free, RoHS, and Halogen free compliant.

Ordering Information

PN#	Material	Type	Reel size	MOQ	MOQ/internal box	MOQ/carton
AZ1013-04C.R7G	Green	T/R	7 inch	3,000/reel	4 reel=12,000/box	6 box=72,000/carton



Revision History

Revision	Modification Description
Revision 2014/08/06	Preliminary Release.
Revision 2015/03/19	Update the Operating Temperature from 85°C to 125°C.
Revision 2016/12/30	Formal Release.