

Features

- ESD/Surge Protection for 1 Line with Unidirectional.
- Provide ESD protection for each line 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) 100A (8/20 μs)
- For operating voltage of **7.0V** and below
- **1.6mm x 1.0mm DFN package** saves board space
- High surge protection
- Fast turn-on and Low clamping voltage
- Solid-state silicon-avalanche and active circuit triggering technology
- **Green Part**

Applications

- Power Supply Protection
- USB VBUS Protection
- Cellular Handsets and Accessories
- Small Panel Modules
- PDA's
- Portable Devices
- Digital Cameras
- Touch Panels
- Notebooks and Handhelds
- MP3 Players
- Peripherals

Description

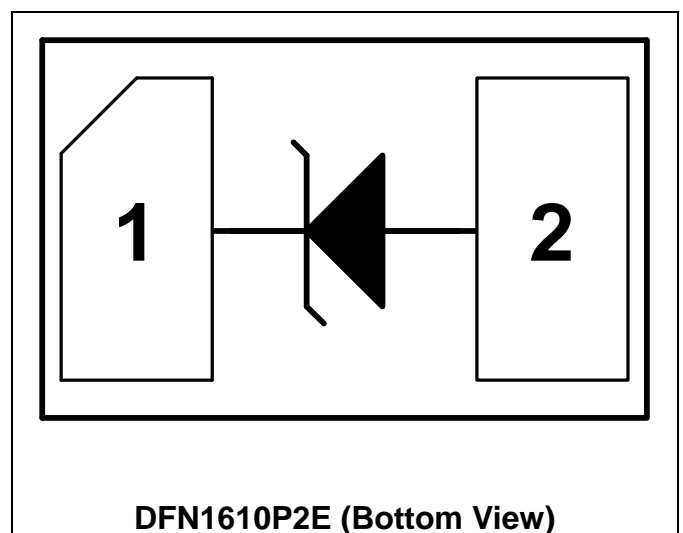
AZ4507-01F is a design which includes a unidirectional ESD rated clamping cell to protect one power line, or one control line, or one low speed data line in an electronic systems. The AZ4507-01F has been specifically designed to protect sensitive components which are connected to power and control lines from

over-voltage damage and latch-up caused by Electrostatic Discharging (ESD), Lightning, and Cable Discharge Event (CDE).

AZ4507-01F is a unique design which includes proprietary clamping cell in a single package. During transient conditions, the proprietary clamping cell prevents over-voltage on the power line or control/data lines, protecting any downstream components.

AZ4507-01F 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 (tp=8/20μs)	I _{PP-1} (Note 1)	100	A
	I _{PP-2} (Note 2)	60	
Operating Supply Voltage (pin-1 to pin-2)	V _{DC}	7.7	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 +85	°C
Storage Temperature	T _{STO}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS						
PARAMETER	SYMBOL	CONDITIONS	MINI	TYP	MAX	UNITS
Reverse Stand-Off Voltage	V _{RWM}	Pin-1 to pin-2, T=25 °C.			7.0	V
Reverse Leakage Current	I _{Leak}	V _{RWM} = 7.0V, T=25 °C, pin-1 to pin-2.			1	μA
Reverse Breakdown Voltage	V _{BV}	I _{BV} = 1mA, T=25 °C, pin-1 to pin-2.	7.8		10.5	V
Forward Voltage	V _F	I _F = 15mA, T=25 °C, pin-2 to pin-1.	0.6		1.2	V
Surge Clamping Voltage (Note 1)	V _{CL-surge}	I _{PP} = 100A, tp=8/20μs, T=25 °C, pin-1 to pin-2.		18.5		V
ESD Clamping Voltage (Note 3)	V _{clamp}	IEC 61000-4-2 +8kV (I _{TLP} = 16A), Contact mode, pin-1 to pin-2, T=25 °C.		10		V
ESD Dynamic Turn-on Resistance	R _{dynamic}	IEC 61000-4-2 0~+8kV, T=25 °C, Contact mode, pin-1 to pin-2.		0.1		Ω
Channel Input Capacitance	C _{IN}	V _R = 0V, f = 1MHz, T=25 °C, pin-1 to pin-2.		0.83	1.0	nF

Note 1: The Peak Pulse Current measured conditions: tp = 8/20μs, 2ohm source impedance.

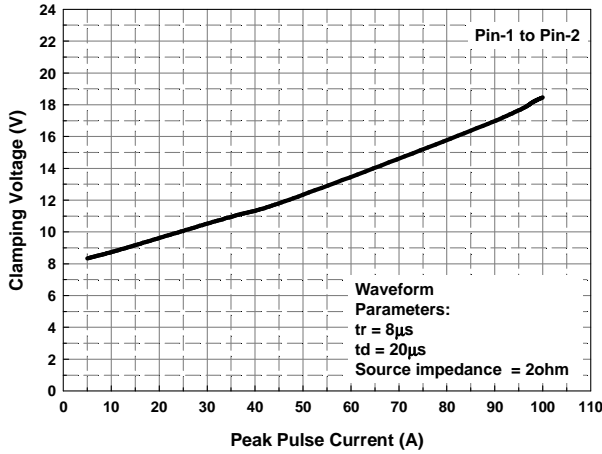
Note 2: The Peak Pulse Current measured conditions: tp = 8/20μs, 42ohm source impedance.

Note 3: ESD Clamping Voltage was measured by Transmission Line Pulsing (TLP) System.

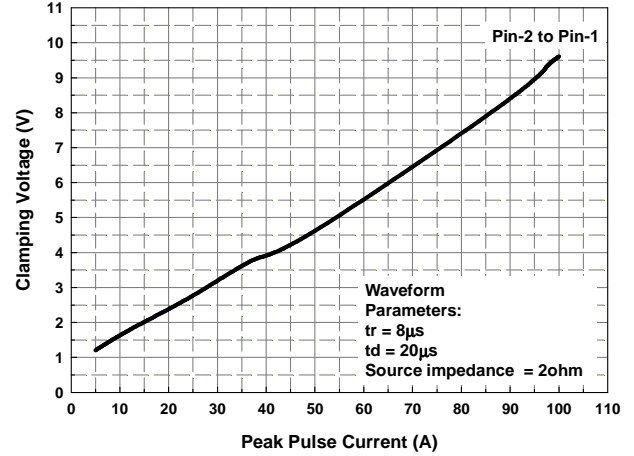
TLP conditions: Z₀= 50Ω, t_p= 100ns, t_r= 1ns.

Typical Characteristics

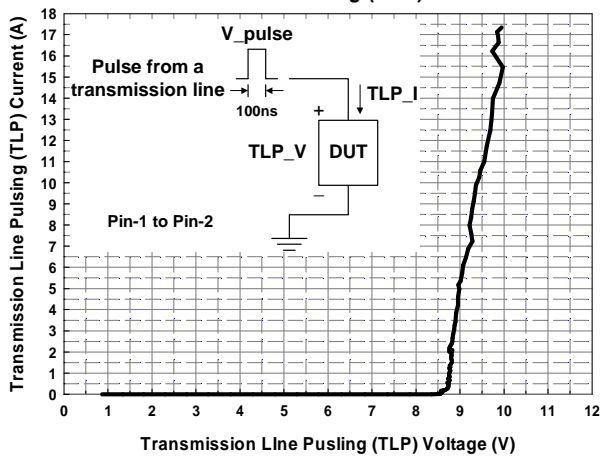
Reverse Clamping Voltage vs. Peak Pulse Current



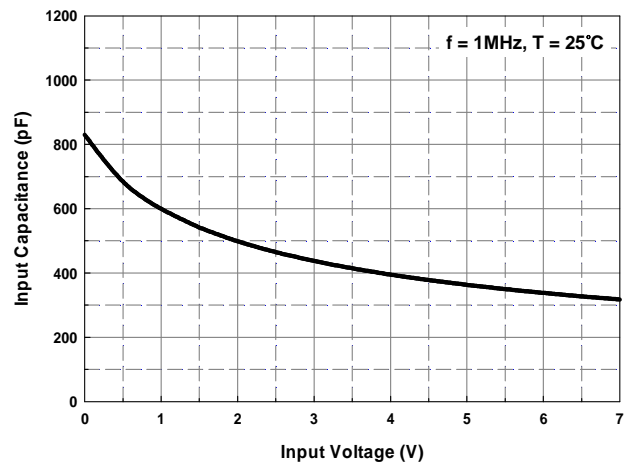
Forward Clamping Voltage vs. Peak Pulse Current



Transmission Line Pulsing (TLP) Measurement

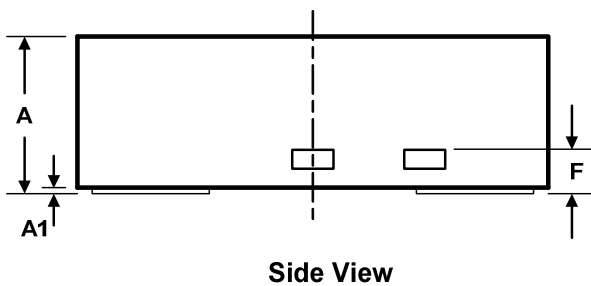
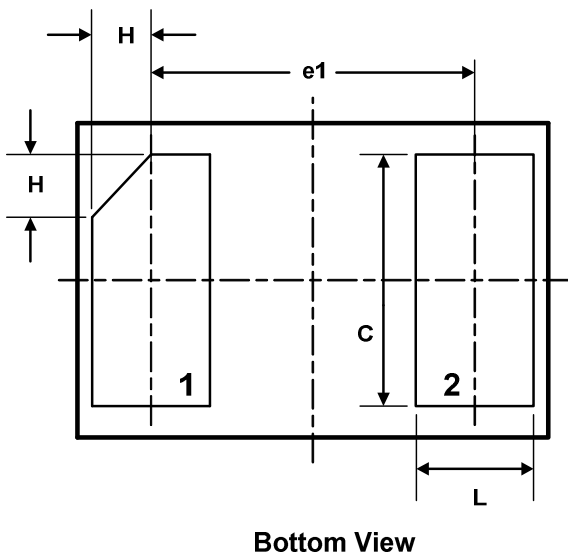
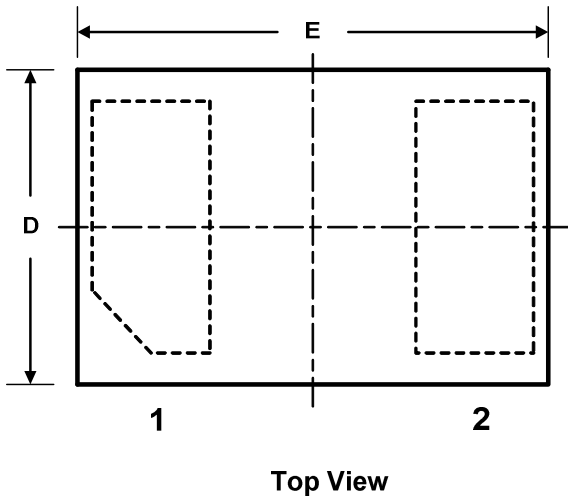


Typical Variation of C_{IN} vs. V_{IN}



Mechanical Details

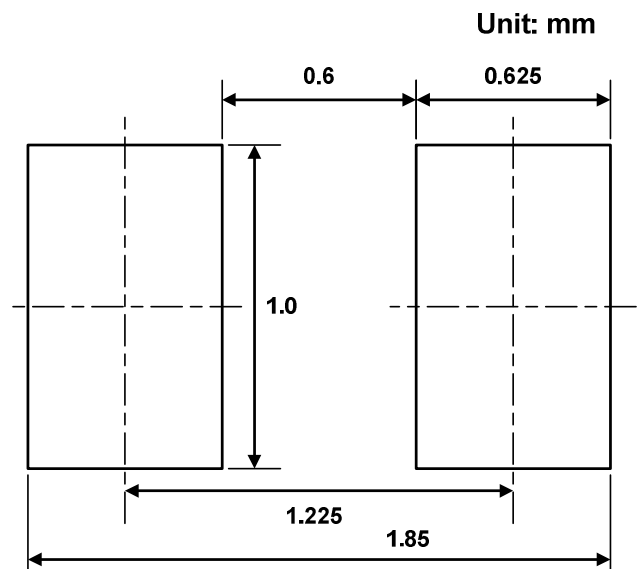
DFN1610P2E PACKAGE DIAGRAMS



PACKAGE DIMENSIONS

SYMBOL	Millimeter		
	Min.	Typ.	Max.
D	0.95	1.00	1.05
E	1.55	1.60	1.65
C	0.75	0.80	0.85
A	0.45	0.50	0.55
A1	-	0.02	0.05
e1	1.10BSC		
F	0.10	0.15	0.20
H	0.15	0.20	0.25
L	0.35	0.40	0.45

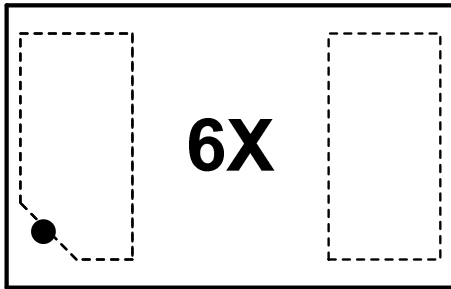
LAND LAYOUT



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



Top View

Part Number	Marking Code
AZ4507-01F.R7G (Green Part)	6X

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

6 = Device Code
X = Date Code

Ordering Information

PN#	Material	Type	Reel size	MOQ	MOQ/internal box	MOQ/carton
AZ4507-01F.R7G	Green	T/R	7 inch	3,000/reel	4 reels = 12,000/box	6 boxes = 72,000/carton

Revision History

Revision	Modification Description
Revision 2015/02/12	Preliminary Release.
Revision 2015/03/12	1. Add the Electrical Characteristics of Surge Clamping Voltage and ESD Clamping Voltage. 2. Add the Typical Characteristics.
Revision 2016/04/11	Formal Release.
Revision 2017/04/25	Add the specification of peak pulse current measured by $t_p=8/20\mu s$, 2ohm source impedance.