Alfa-MOS Technology

AFE2050

Bi-Direction Ultra Low Capacitance Single-Line ESD Protection Array

General Description

The AFE2050 is bi-direction voltage rail ultra -low capacitance transient voltage suppressor, electrical characteristics are positive / negative direction is symmetry, and the maximum capacitance is 0.9pF. It can be used for power supply line protection during static discharging, transient pulse and lightning discharge.

AFE2050 is suitable in ESD protection for high-speed data line.

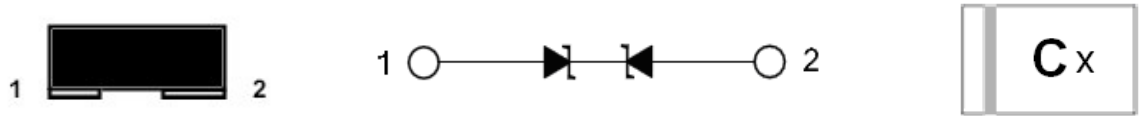
Features

- Bi-Direction ESD protection
- Provide ESD protection meeting IEC61000-4-2(ESD)

  ±10 KV air discharge
  ±10 KV contact discharge

- Ultra capacitance structure; no higher than 0.9 pF
- Low clamping voltage
- low operating voltage 5V
- Reliable silicon device avalanche breakdown structure
- Small Body Outline: DFN-2-1.0 x 0.6 x 0.5-0.65mm

Pin Description (DFN-2)



Application

- USB interface
- 10/100/1000M Ethernet
- Digital Camera
- High Speed data line interface

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFE2050FN2RG	Cx	DFN-2-1.0 x 0.6 x 0.5-0.65mm	Tape & Reel	12000 EA

※ C Parts Code
※ X Monthly Code
※ AFE2050FN2RG : 7" Tape & Reel ; Pb- Free ; Halogen- Free

Absolute Maximum Ratings

(TA=25℃ Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Maximum Peak Pulse Current (tp = 8/20 μs)	I_{PP}	2.5	A
ESD Per IEC 61000– 4 – 2 (Air) ESD Per IEC 61000 – 4 – 2 (Contact)	V_{PP}	±10 ±10	KV
Storage temperature range	Tstg	-55 ~ +150	℃
Operating temperature range	Topr	-55 ~ +125	℃

Electrical Characteristics

(TA=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Reverse Working Voltage	V_{RWM}	Any I/O pin to GND			5	V
Reverse Breakdown Voltage	V_{BR}	Any I/O pin to GND I_T = 1mA	6		9	V
Reverse Leakage Current	I_R	V_{RWM} = 5V; tp=8/20us; Positive pulse; Any I/O pin to GND			1	μA
Positive Clamping Voltage	V_{C1}	I_{PP} = 1A; tp=8/20us; Positive pulse; Any I/O pin to GND		8.5	12	V
Junction Capacitance	Cj	V_R=0V; f=1MHz; Any I/O pin to GND		0.5	0.9	pF

Typical Characteristics

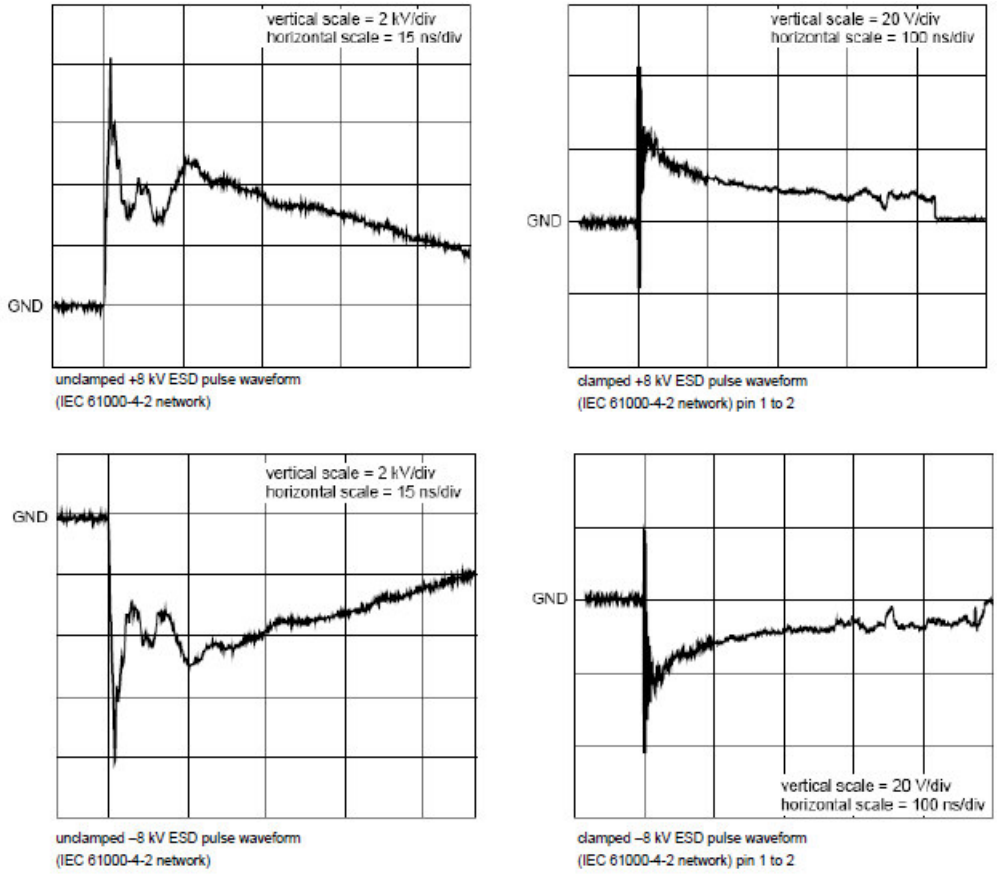


Fig. 1. ESD clamping test setup and waveform

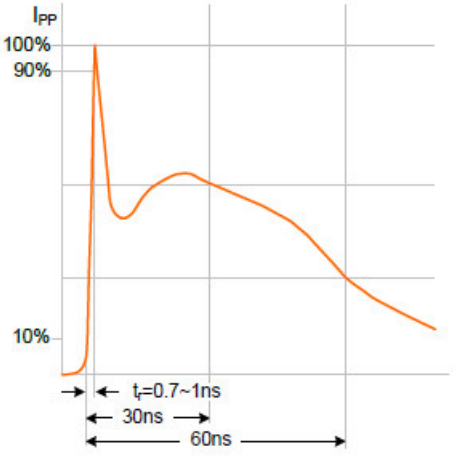


Fig. 2. ESD pulse waveform according to IEC 61000-4-2

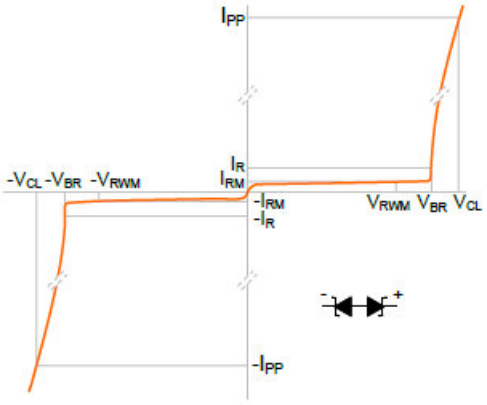
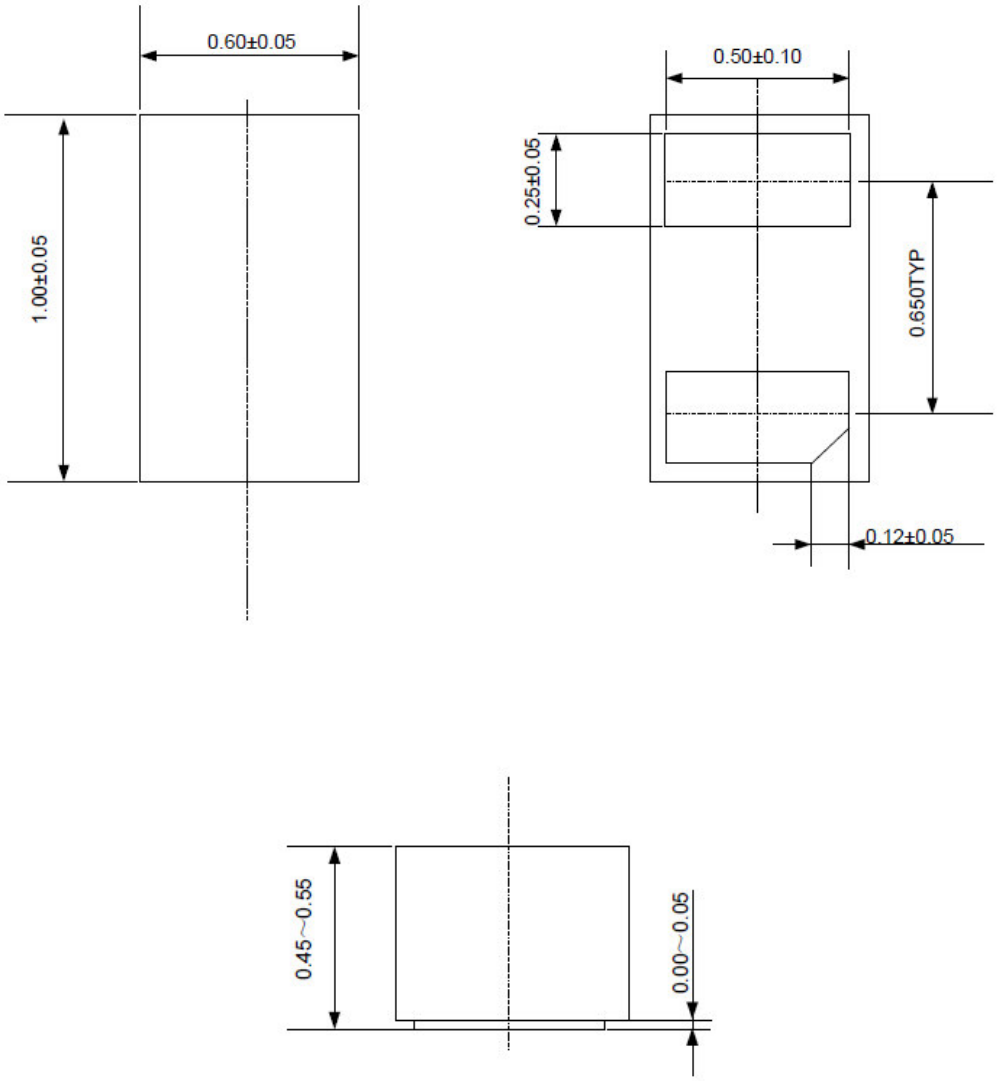


Fig. 3. V-I characteristics for a bidirectional ESD protection diode

Package Information (DFN-2-1.0 x 0.6 x 0.5-0.65mm)



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