



### General Description

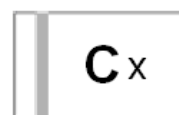
The AFE2050FB is bi-direction voltage rail ultra -low capacitance transient voltage suppressor, electrical characteristics are positive / negative direction is symmetry, and the maximum capacitance is 0.9pF. It can be used for power supply line protection during static discharging, transient pulse and lightning discharge.

AFE2050FB 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: 1.0 x 0.6 x 0.5-0.62mm

### Pin Description ( FBP-02C )



### Application

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

### Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFE2050FBBP02RG	Cx	FBP-02C	Tape & Reel	10000 EA

※ C : Specific Device Code

※ X : Date Code

※ AFE2050FBBP02RG : 7" Tape & Reel ; Pb- Free ; Halogen- Free



### Absolute Maximum Ratings

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Maximum Peak Pulse Current ( tp = 8/20 μs )	I <sub>PP</sub>	2.5	A
ESD Per IEC 61000– 4 – 2 (Air ) ESD Per IEC 61000 – 4 – 2 (Contact )	V <sub>PP</sub>	±10 ±10	KV
Storage temperature range	T <sub>stg</sub>	-55 ~ +150	°C
Operating temperature range	T <sub>opr</sub>	-55 ~ +125	°C

### Electrical Characteristics

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Reverse Working Voltage	V <sub>RWM</sub>	Any I/O pin to GND			5	V
Reverse Breakdown Voltage	V <sub>BR</sub>	Any I/O pin to GND I <sub>T</sub> = 1mA	6		9	V
Reverse Leakage Current	I <sub>R</sub>	V <sub>RWM</sub> = 5V; tp=8/20us; Positive pulse; Any I/O pin to GND			1	μA
Positive Clamping Voltage	V <sub>C1</sub>	I <sub>PP</sub> = 1A; tp=8/20us; Positive pulse; Any I/O pin to GND		8.5	12	V
Junction Capacitance	C <sub>j</sub>	V <sub>R</sub> =0V; f=1MHz; Any I/O pin to GND		0.5	0.9	pF



**Typical Characteristics**

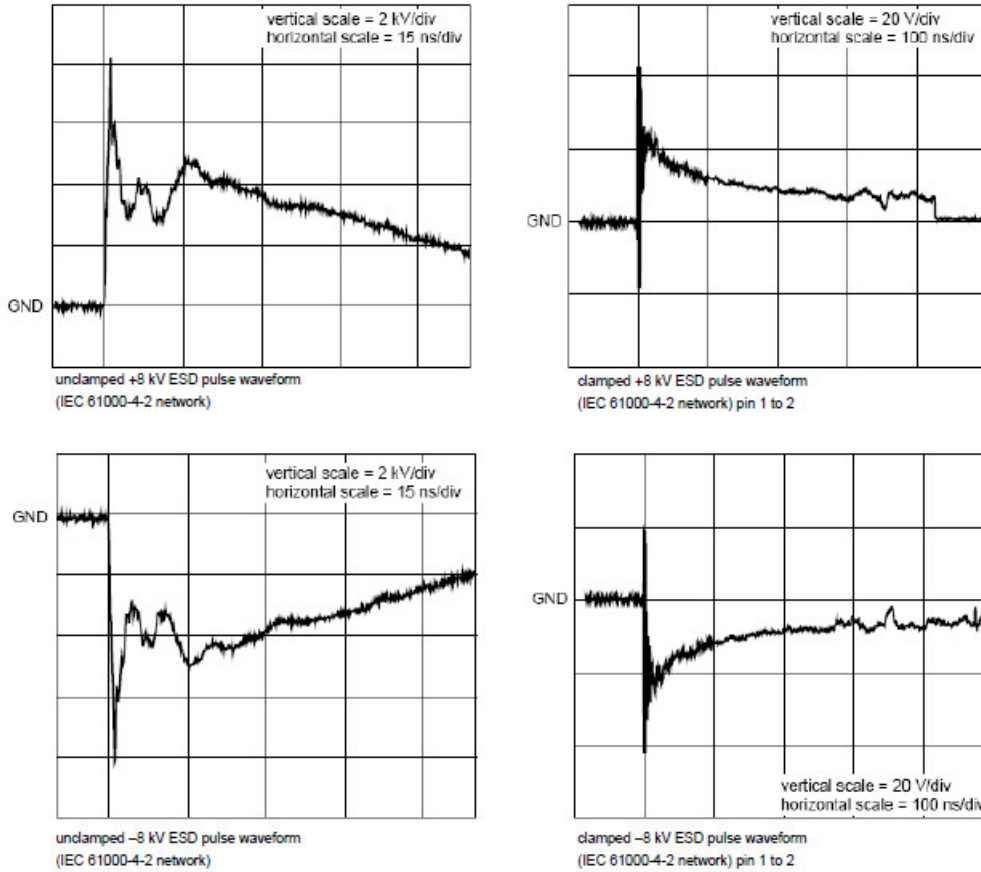


Fig. 1. ESD clamping test setup and waveform

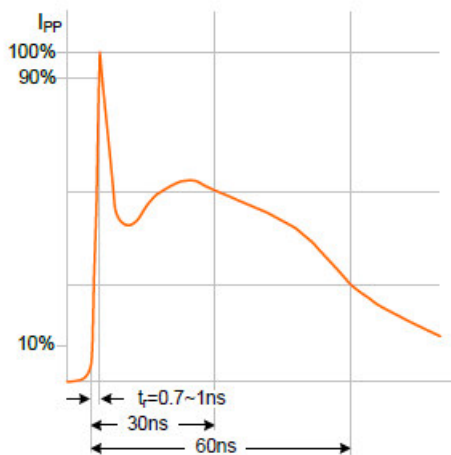


Fig. 2. ESD pulse waveform according to IEC 61000-4-2

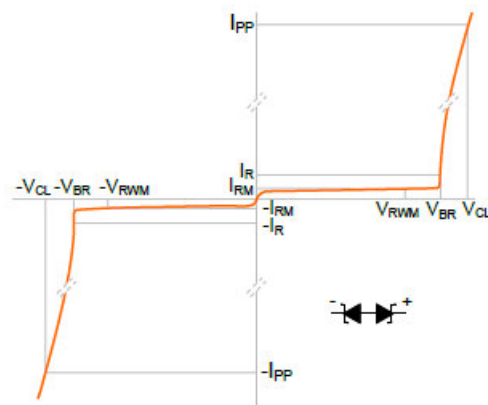
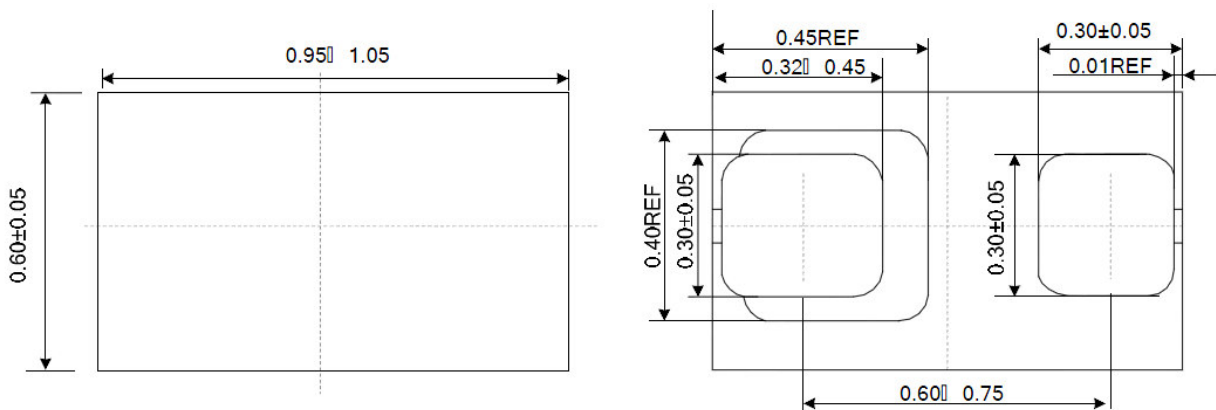


Fig. 3. V-I characteristics for a bidirectional ESD protection diode

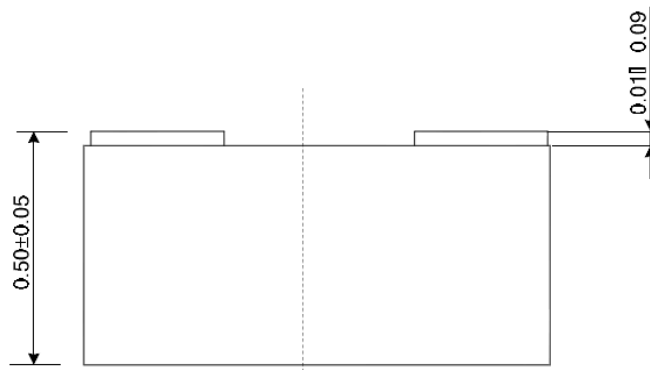


**Package Information (FBP-02C)**



Top View

Bottom View



Side View

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