



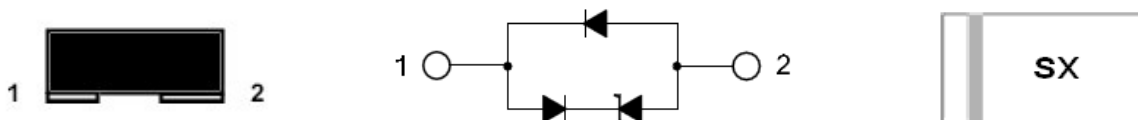
### General Description

The AFE2045 is a single-channel ultra low capacitance rail clamp ESD protection diodes array including a pair of ESD diodes that steer positive or negative ESD current to respectively positive or negative rail. The maximum capacitance of channel to ground is 0.9pF. A zener diode is integrated in the array between the positive and negative supply rails. In the typical applications, the negative rail pin is connected with the ground of the circuit protected. Thus, the positive ESD current is steered to the ground through the internal zener diode to protect the power supply of the circuit protected. AFE2045 is ideal to protect high speed data lines.

### Features

- Single-channel ESD protection
- Provide ESD protection meeting IEC61000-4-2(ESD)
  - ±15 KV air discharge
  - ±10 KV contact discharge
- Super low capacitance between input and ground is no more than 0.9 pF
- Low clamping voltage
- 5V low operating voltage
- Reliable silicon device avalanche breakdown structure
- Small Body Outline: DFN-2

### Pin Description ( DFN-2 )



### Application

- Cell phone handsets and accessories
- Personal Digital Assistants (PDAs)
- Notebooks, Desktops, and Servers
- Portable Instrumentation
- Digital Cameras
- MP3/MP4/PMP Players

### Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFE2045FN2RG	SX	DFN-2	Tape & Reel	12000 EA

- ※ S Parts Code
- ※ X Monthly Code
- ※ AFE2045FN2RG : 7" Tape & Reel ; Pb- Free ; Halogen- Free



### Absolute Maximum Ratings

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Maximum Peak Pulse Power ( tp = 8/20 $\mu$ s )	P <sub>PP</sub>	120	W
Maximum Peak Pulse Current ( tp = 8/20 $\mu$ s )	I <sub>PP</sub>	5.0	A
ESD Per IEC 61000– 4 – 2 (Air ) ESD Per IEC 61000 – 4 – 2 (Contact )	V <sub>PP</sub>	$\pm$ 15 $\pm$ 10	KV
Storage temperature range	Tstg	-55 ~ +150	°C
Operating temperature range	Top	-55 ~ +125	°C

### Electrical Characteristics

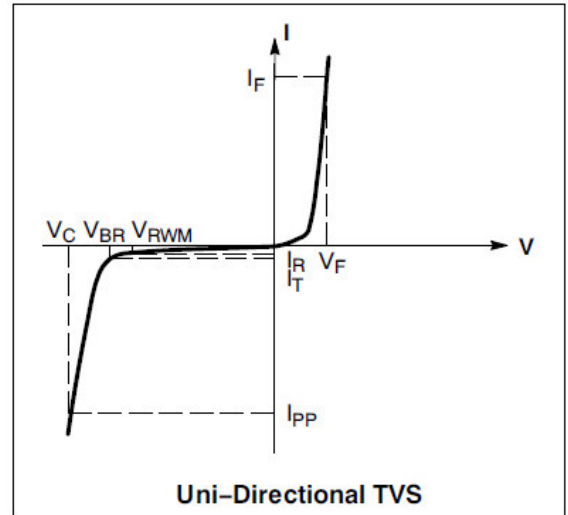
(TA=25°C Unless otherwise noted)

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			V
Reverse Leakage Current	I <sub>R</sub>	V <sub>RWM</sub> = 5V; tp=8/20 $\mu$ s; Positive pulse; Any I/O pin to GND			1	$\mu$ A
Positive Clamping Voltage	V <sub>C1</sub>	I <sub>PP</sub> = 1A; tp=8/20 $\mu$ s; Positive pulse; Any I/O pin to GND		8.5	12	V
Negative Clamping Voltage	V <sub>C2</sub>	I <sub>PP</sub> = 1A; tp=8/20 $\mu$ s; Positive pulse; Any I/O pin to GND		1.8		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



**Electronics Parameter**

Symbol	Parameter
Vrwm	Peak Reverse Working Voltage
Ir	Reverse Leakage Current @ Vrwm
Vbr	Breakdown Voltage @ It
It	Test Current
Ipp	Maximum Reverse Peak Pulse Current
Vc	Clamping Voltage @ Ipp
Ppk	Peak Power Dissipation
C	Junction Capacitance
If	Forward Current
Vf	Forward Voltage @ If



**Typical Characteristics**

Fig.1. ESD clamp voltage  
Positive 8KV IEC61000-4-2 contact discharge

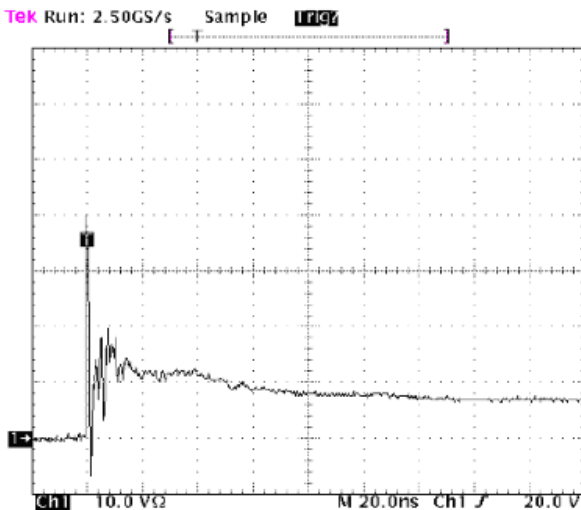
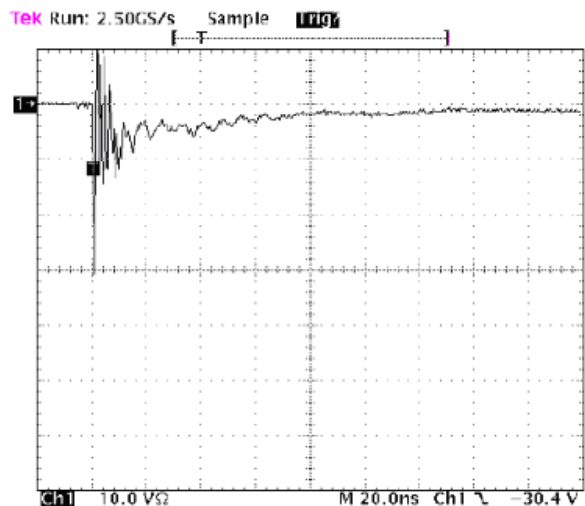
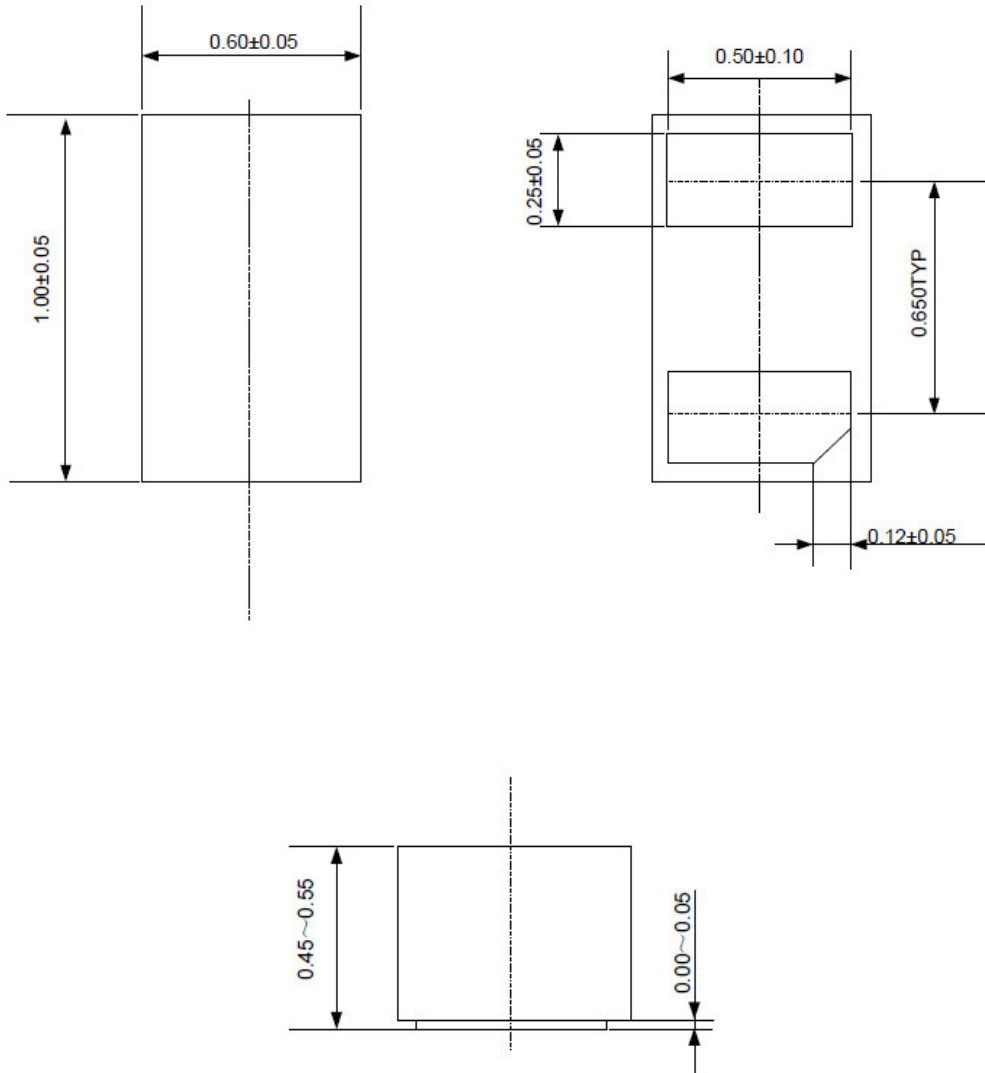


Fig.2. ESD clamp voltage  
Negative 8KV IEC61000-4-2 contact discharge





**Package Information ( DFN-2 )**



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