

Description

The ASHxxFB series are designed to protect voltage sensitive components which are connected to data and transmission lines from over voltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients). Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium.



Mechanical Characteristics

- ◆ DFN1006-2L
- ◆ ROHS/ Compliant
- ◆ Halogen free
- ◆ Molding compound flammability rating: UL94V-0
- ◆ Marking: Part number
- ◆ Packing: Tape and Reel per EIA 481



Features

- ◆ IEC 61000-4-2 (ESD)
 - $\pm 30\text{kV}$ Contact Discharge
 - $\pm 30\text{kV}$ Air Discharge
- ◆ 100W Peak pulse Power (8/20us)
- ◆ IEC 61000-4-4 EFT Protection
 - 40A (5/50ns)
- ◆ Halogen free and RoHS compliant
- ◆ Protects one directional I/O line
- ◆ Transient protection for high-speed data lines
- ◆ Low clamping voltage
- ◆ AEC-Q101

Applications

- ◆ Cell Phone Handsets and Accessories
- ◆ Microprocessor based equipment
- ◆ Personal Digital Assistants
- ◆ Notebooks / Desktops / Servers
- ◆ Portable Instrumentation
- ◆ Peripherals & Pagers

Dimensions and Pin Configuration

| Pin | Name | Description | Outline | Circuit Diagram |
|-----|------|---------------|--|---|
| 1 | IO1 | Connect to IO |  |  |
| 3 | IO2 | Connect to IO | | |

Ordering Information

| Part Number | Package | Material | Packing | Quantity per reel | Flammability Rating | Reel Size | |
|--------------------------------|------------|--------------|-------------|-------------------|---------------------|-----------|---|
| ASHxxFB | DFN1006-2L | Halogen free | Tape & Reel | 10,000 PCS | UL 94V-0 | 7 inches | |
| Marking for the ASHxxFB series | | | | | | | |
| V_{RWM} | 3.3V | 5V | 8V | 12V | 15V | 24V | - |
| Marking | T | PB | R2.C | 2C | E | DH | - |

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise specified)

| Parameters | Symbol | Min. | Max. | Unit |
|--|-----------|------|------|------|
| ESD (IEC61000-4-2 air discharge) @25°C | V_{ESD} | - | ±30 | kV |
| ESD (IEC61000-4-2 contact discharge) @25°C | V_{ESD} | - | ±30 | kV |
| Junction temperature | T_J | - | 125 | °C |
| Operating temperature | T_{OP} | -40 | 125 | °C |
| Storage temperature | T_{STG} | -55 | 150 | °C |
| Lead temperature | T_L | - | 260 | °C |

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Part Number | VRWM (max.) | VBR (min.) | VCL@I=1A (max.) | IPP (max.) | VCL@I=IPP (max.) | IR (max.) | CJ (typ.) |
|-------------|-------------|------------|-----------------|------------|------------------|-------------------|-----------|
| | (V) | (V) | (V) | (A) | (V) | (μA) | (Pf) |
| ASH03FB | 3.3 | 3.6 | 7 | 8 | 10 | 1.0 | 15 |
| ASH05FB | 5.0 | 5.6 | 8 | 7 | 11 | 1.0 | 15 |
| ASH08FB | 8.0 | 9.0 | 13 | 6 | 16 | 1.0 | 10 |
| ASH12FB | 12.0 | 13.0 | 18 | 6 | 25 | 1.0 | 10 |
| ASH15FB | 15.0 | 16.5 | 24 | 7 | 35 | 1.0 | 18 |
| ASH24FB | 24.0 | 26.0 | 35 | 5 | 48 | 1.0 | 20 |

Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)

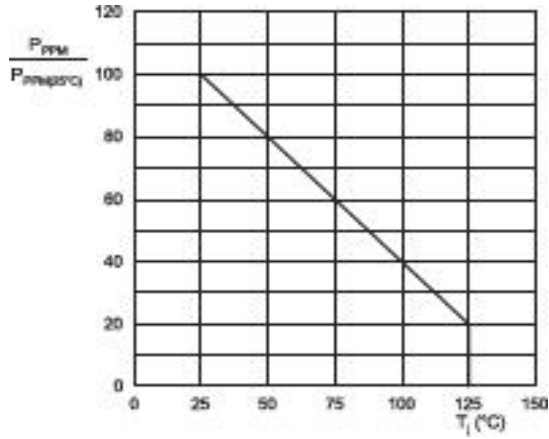


Figure1. Peak pulse power derating curve

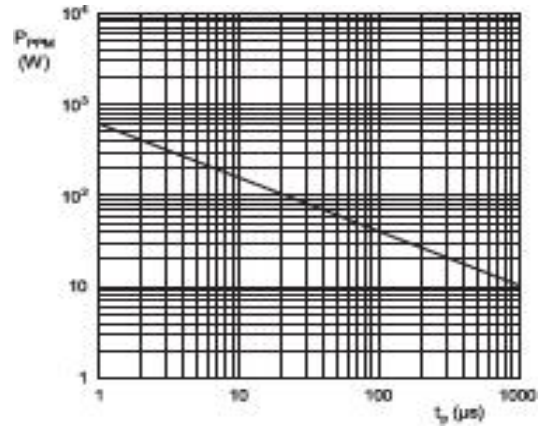


Figure2. Peak Pulse Power vs. Pulse Time

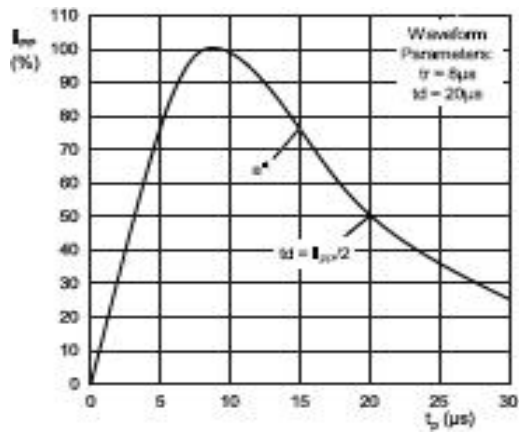


Figure3. Pulse Waveform

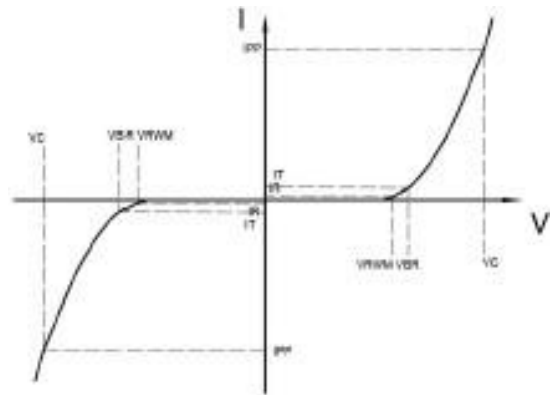
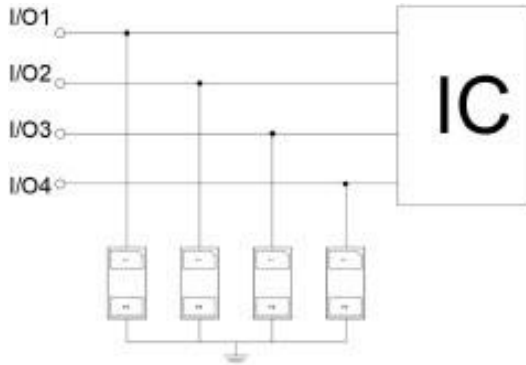


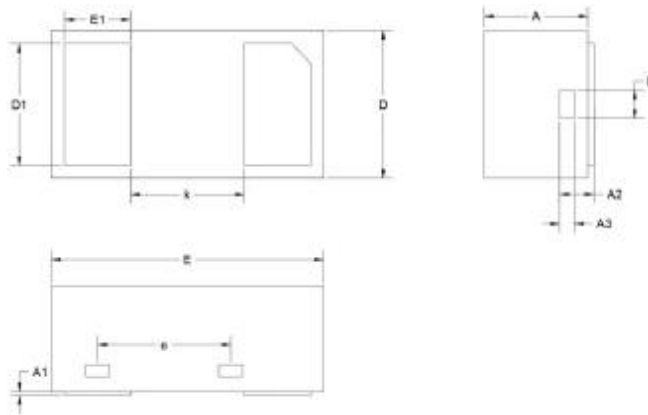
Figure 4 Parameters

Applications Information

Typical Interface Application



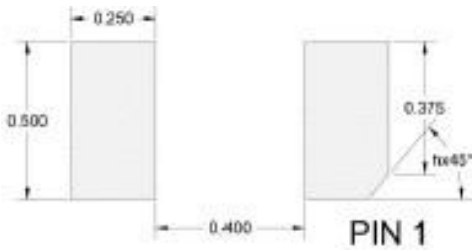
Package Outline Drawing



Units in millimeters

| Symbol | Min. | Nom. | Max. |
|--------|-------|-------|-------|
| A | 0.350 | 0.450 | 0.550 |
| A1 | 0.000 | 0.020 | 0.050 |
| A2 | 0.077 | 0.127 | 0.207 |
| A3 | 0.013 | 0.063 | 0.113 |
| b | 0.070 | 0.120 | 0.200 |
| D | 0.500 | 0.600 | 0.700 |
| D1 | 0.400 | 0.500 | 0.600 |
| E | 0.900 | 1.000 | 1.100 |
| E1 | 0.150 | 0.250 | 0.350 |
| e | 0.310 | 0.410 | 0.560 |
| k | 0.300 | 0.400 | 0.500 |

Recommended Land Pattern



Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference only

Revision history of Specification

| Version | Change Items | Effective Date |
|---------|-----------------|----------------|
| 1.0 | Initial Release | 22-Aug-2021 |
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