DF3A6.8FUT1

Preferred Device

Zener ESD Protection Diode

Dual Common Anode Zeners for ESD Protection

These dual monolithic silicon zener diodes are designed for applications requiring transient overvoltage protection capability. They are intended for use in voltage and ESD sensitive equipment such as computers, printers, business machines, communication systems, medical equipment and other applications. Their dual junction common anode design protects two separate lines using only one package. These devices are ideal for situations where board space is at a premium.

Features

- Pb−Free Package is Available
- SC−70 Package Allows Two Separate Unidirectional Configurations
- Low Leakage < 1.0 μA @ 5.0 V
- Breakdown Voltage: 6.4−7.2 V @ 5.0 mA
- ESD Protection Meeting:16 kV Human Body Model
  30 kV Contact = IEC61000−4−2
- Peak Power: 24 W @ 1.0 ms (Unidirectional), per Figure 1
- Peak Power: 150 W @ 20 μs (Unidirectional), per Figure 2

Mechanical Characteristics

- Void Free, Transfer−Molded, Thermosetting Plastic Case
- Corrosion Resistant Finish, Easily Solderable
- Package Designed for Optimal Automated Board Assembly
- Small Package Size for High Density Applications

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Steady State Power Dissipation Derate above 25°C (Note 1)	P_D	200 1.6	mW mW/°C
Thermal Resistance Junction−to−Ambient	$R_{\theta JA}$	618	°C/W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	− 55 to +150	°C
Peak Power Dissipation @ 1.0 ms (Note 2) @ T_A = 25°C	P_{PK}	20	W
Peak Power Dissipation @ 20 μs (Note 3) @ T_A = 25°C	P_{PK}	150	W
ESD Discharge MIL STD 883C − Method 3015−6 IEC61000−4−2, Air Discharge IEC61000−4−2, Contact Discharge	V_{PP}	 16 30 30	kV

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Mounted on FR−5 Board = 1.0 X 0.75 X 0.062 in.
2. Non−repetitive pulse per Figure 1.
3. Non−repetitive pulse per Figure 2.

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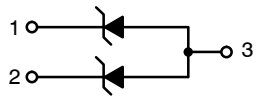
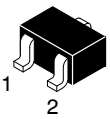
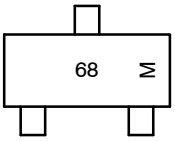




SC−70/SOT−323
CASE 419
STYLE 4

MARKING DIAGRAM



68 = Specific Device Code
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
DF3A6.8FUT1	SC−70	3000/Tape & Reel
DF3A6.8FUT1G	SC−70 (Pb−Free)	3000/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

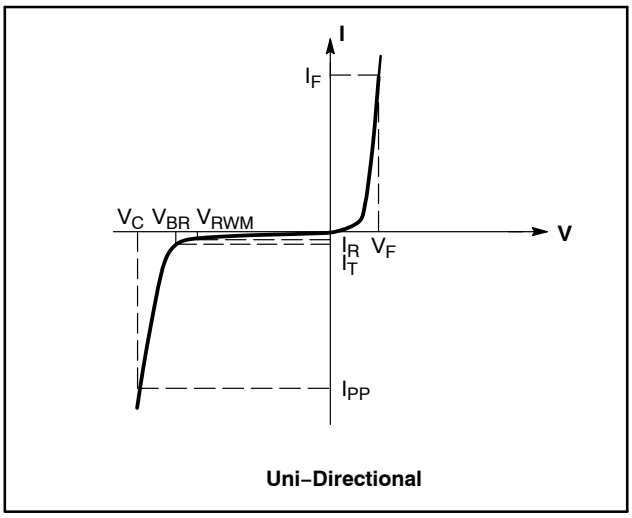
Preferred devices are recommended choices for future use and best overall value.

ELECTRICAL CHARACTERISTICS

(T_A = 25°C unless otherwise noted)

UNIDIRECTIONAL (Circuit tied to Pins 1 and 3 or 2 and 3)

Symbol	Parameter
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_F	Forward Current
V_F	Forward Voltage @ I_F
Z_{ZT}	Maximum Zener Impedance @ I_{ZT}
Z_{ZK}	Maximum Zener Impedance @ I_{ZK}



Uni−Directional

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

UNIDIRECTIONAL (Circuit tied to Pins 1 and 3 or 2 and 3)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Forward Voltage	V_F	I_F = 10 mA		0.8	0.9	V
Zener Voltage (Note 4)	V_Z	I_{ZT} = 5 mA	6.4	6.8	7.2	V
Operating Resistance (Note 5)	Z_{ZK}	I_{ZK} = 0.5 mA			200	Ω
	Z_{ZT}	I_{ZT} = 5 mA			50	Ω
Reverse Current	I_{R1}	V_{RWM} = 5 V			0.5	μA
Clamping Voltage	V_C	I_{PP} = 2.0 A (Figure 1) I_{PP} = 9.37 A (Figure 2)			9.6 16	V V
ESD Protection Human Body Model (HBM) Contact – IEC61000−4−2 Air Discharge					 16 30 30	kV

4. V_Z measured at pulse test current I_{ZT} at an ambient temperature of 25°C.
5. Z_{ZT} and Z_{ZK} is measured by dividing the AC voltage drop across the device by the AC current supplied. AC frequency = 1.0 kHz.

TYPICAL CHARACTERISTICS

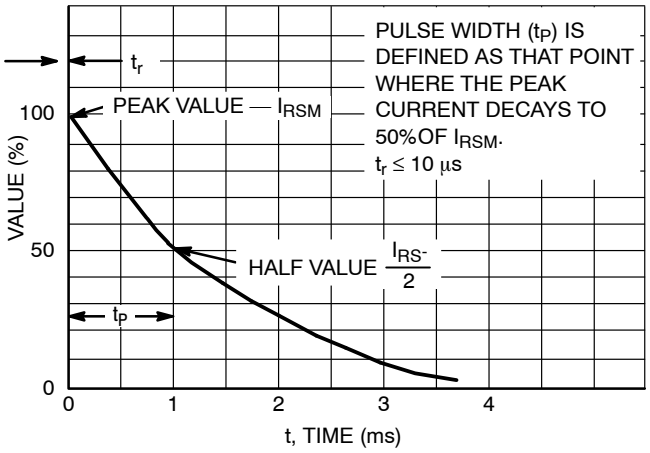


Figure 1. 10 × 1000 μs Pulse Waveform

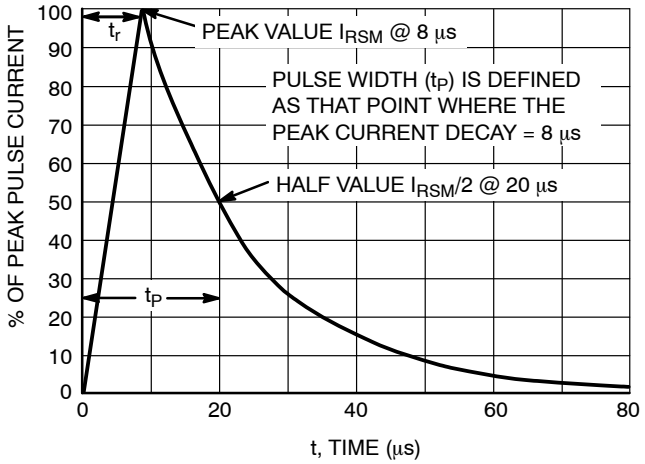


Figure 2. 8 × 20 μs Pulse Waveform

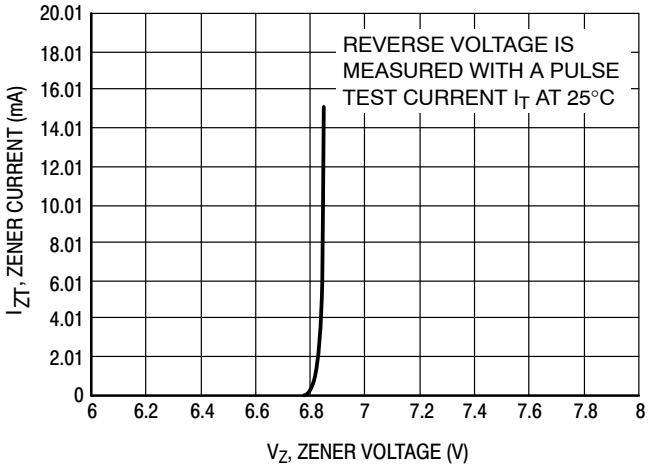


Figure 3. Zener Voltage vs. Zener Current

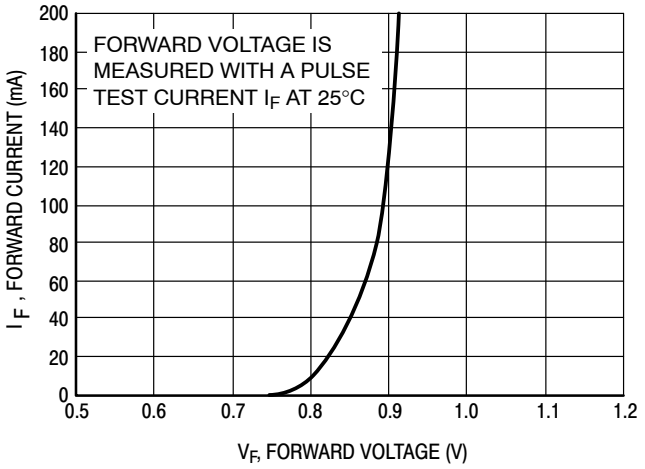


Figure 4. Forward Voltage vs. Forward Current

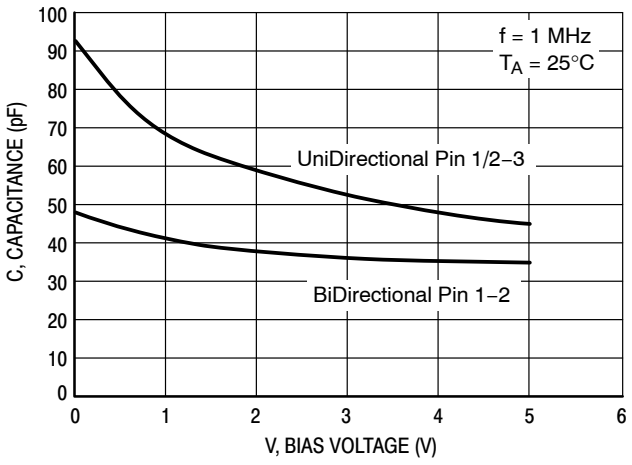


Figure 5. Capacitance vs. Bias Voltage

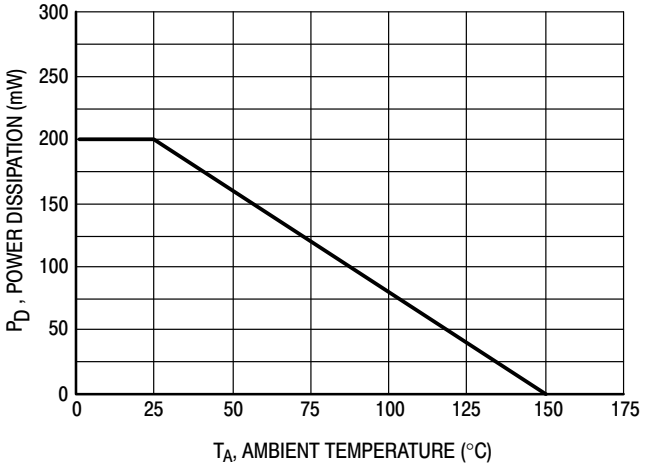


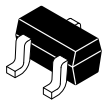
Figure 6. Steady State Power Derating Curve

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

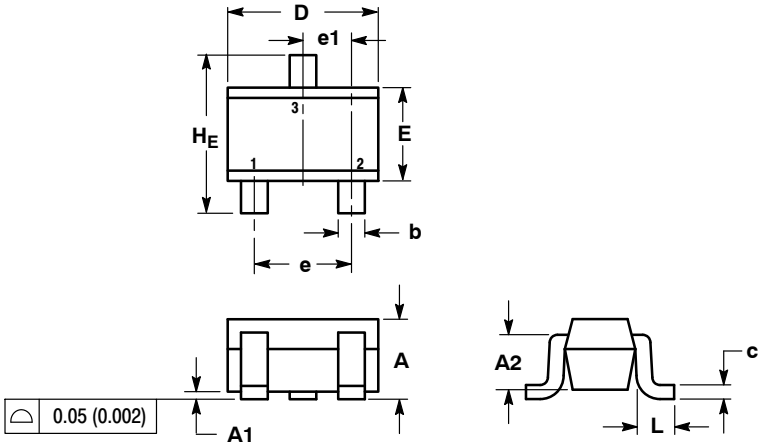
ON Semiconductor®

SC−70 (SOT−323)
CASE 419−04
ISSUE N

DATE 11 NOV 2008



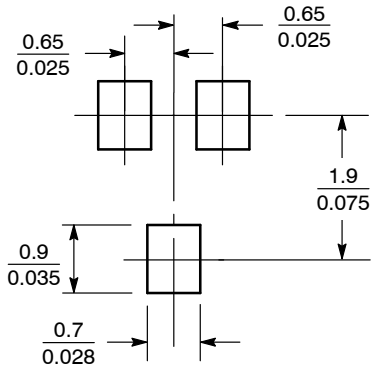
SCALE 4:1



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.90	1.00	0.032	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A2		0.70 REF			0.028 REF	
b	0.30	0.35	0.40	0.012	0.014	0.016
c	0.10	0.18	0.25	0.004	0.007	0.010
D	1.80	2.10	2.20	0.071	0.083	0.087
E	1.15	1.24	1.35	0.045	0.049	0.053
e	1.20	1.30	1.40	0.047	0.051	0.055
e1		0.65 BSC			0.026 BSC	
L	0.20	0.38	0.56	0.008	0.015	0.022
HE	2.00	2.10	2.40	0.079	0.083	0.095

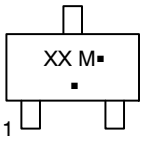
SOLDERING FOOTPRINT*



SCALE 10:1 $\left(\frac{\text{mm}}{\text{inches}}\right)$

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

GENERIC MARKING DIAGRAM



XX = Specific Device Code
M = Date Code
▪ = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “ ▪”, may or may not be present.

STYLE 1:
CANCELLED

STYLE 2:
PIN 1. ANODE
2. N.C.
3. CATHODE

STYLE 3:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

STYLE 4:
PIN 1. CATHODE
2. CATHODE
3. ANODE

STYLE 5:
PIN 1. ANODE
2. ANODE
3. CATHODE

STYLE 6:
PIN 1. EMITTER
2. BASE
3. COLLECTOR

STYLE 7:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

STYLE 8:
PIN 1. GATE
2. SOURCE
3. DRAIN

STYLE 9:
PIN 1. ANODE
2. CATHODE
3. CATHODE−ANODE

STYLE 10:
PIN 1. CATHODE
2. ANODE
3. ANODE−CATHODE

STYLE 11:
PIN 1. CATHODE
2. CATHODE
3. CATHODE

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