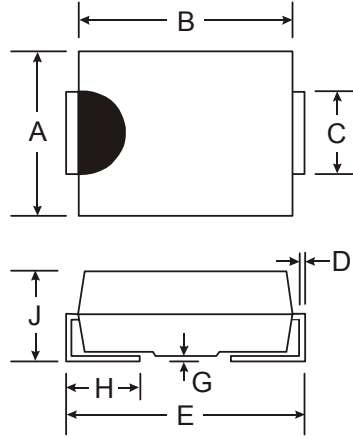


**Features**

- Glass Passivated Die Construction
- Super-Fast Recovery Time For High Efficiency
- Surge Overload Rating to 30A Peak
- Ideally Suited for Automated Assembly
- **Lead Free Finish/RoHS Compliant (Note 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**Mechanical Data**

- Case: SMA
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208 (E3)
- Polarity: Cathode Band or Cathode Notch
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.064 grams (approximate)



SMA		
Dim	Min	Max
A	2.29	2.92
B	4.00	4.60
C	1.27	1.63
D	0.15	0.31
E	4.80	5.59
G	0.10	0.20
H	0.76	1.52
J	2.01	2.30
All Dimensions in mm		

**Maximum Ratings and Electrical Characteristics**

@T<sub>A</sub> = 25°C unless otherwise specified

Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

Characteristic	Symbol	ES1A	ES1B	ES1C	ES1D	ES1G	Unit	
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>							
Working Peak Reverse Voltage	V <sub>RWM</sub>	50	100	150	200	400	V	
DC Blocking Voltage (Note 5)	V <sub>R</sub>							
RMS Reverse Voltage	V <sub>R(RMS)</sub>	35	70	105	140	280	V	
Average Rectified Output Current @ T <sub>T</sub> = 110°C	I <sub>O</sub>	1.0						A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	30						A
Maximum Forward Voltage Drop @ I <sub>F</sub> = 0.6A @ I <sub>F</sub> = 1.0A	V <sub>FM</sub>	0.90 0.92				1.25	V	
Peak Reverse Current @ T <sub>A</sub> = 25°C at Rated DC Blocking Voltage (Note 5) @ T <sub>A</sub> = 125°C	I <sub>RM</sub>	5.0 200					μA	
Maximum Reverse Recovery Time (Note 1)	t <sub>rr</sub>	25					ns	
Typical Total Capacitance (Note 2)	C <sub>T</sub>	10					pF	
Typical Thermal Resistance, Junction to Terminal (Note 3)	R <sub>θJT</sub>	25					°C/W	
Operating and Storage Temperature Range	T <sub>i</sub> , T <sub>STG</sub>	-55 to +150						°C

- Notes:
1. Measured with I<sub>F</sub> = 0.5A, I<sub>R</sub> = 1.0A, I<sub>rr</sub> = 0.25A. See figure 5.
  2. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.
  3. Unit mounted on PC board with 5.0 mm<sup>2</sup> (0.013 mm thick) copper pad as heat sink.
  4. RoHS revision 13.2.2003. Glass and high temperature solder exemptions applied, see EU Directive Annex Notes 5 and 7.
  5. Short duration pulse test used to minimize self-heating effect.

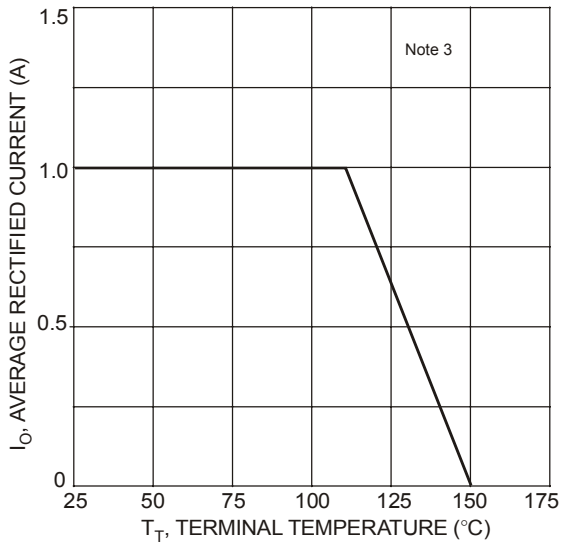


Fig. 1 Forward Current Derating Curve

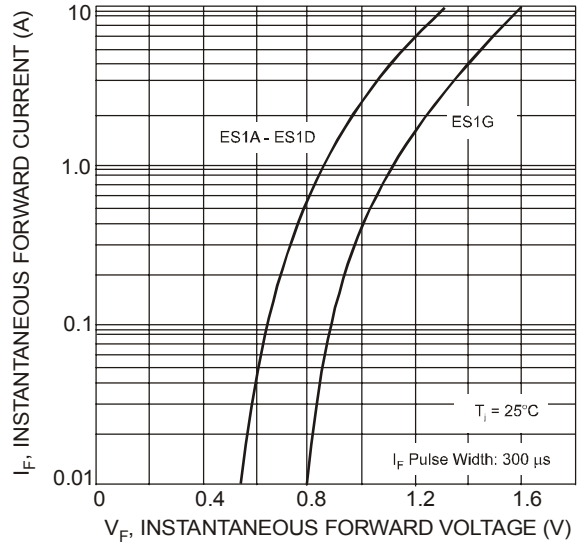


Fig. 2 Typical Forward Characteristics

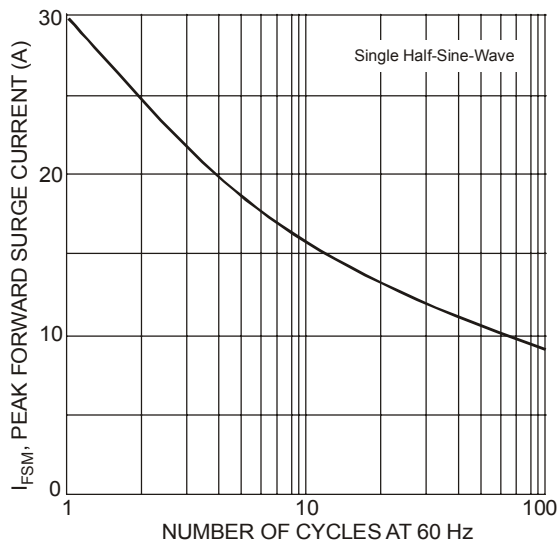


Fig. 3 Surge Current Derating Curve

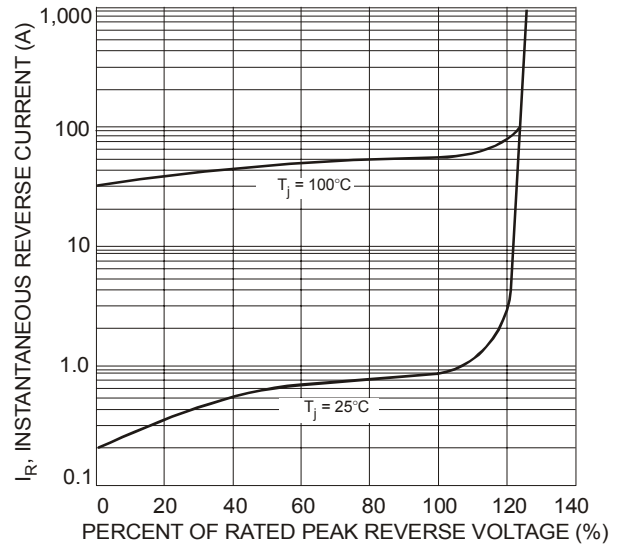
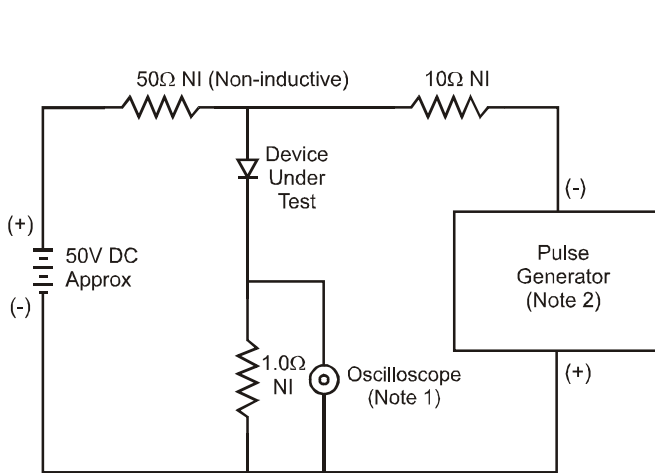


Fig. 4 Typical Reverse Characteristics



- Notes:
1. Rise Time = 7.0ns max. Input Impedance = 1.0MΩ, 22pF.
  2. Rise Time = 10ns max. Input Impedance = 50Ω.

Set time base for 50/100 ns/cm

Fig. 5 Reverse Recovery Time Characteristic and Test Circuit

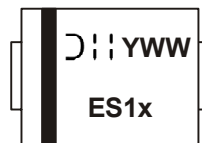
## Ordering Information (Note 6)

Device*	Packaging	Shipping
ES1x-13-F	SMA	5000/Tape & Reel

\* x = Device type, e.g. ES1A-13-F

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



ES1x = Product type marking code, ex. ES1A  
 D|| = Manufacturer's code marking  
 YWW = Date code marking  
 Y = Last digit of year ex: 2 for 2002  
 WW = Week code 01 to 52

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