ES1A - ES1G

## 1.0A SURFACE MOUNT SUPER-FAST RECTIFIER

Features

- Glass Passivated Die Construction
- Super-Fast Recovery Time For High Efficiency
- Low Forward Voltage Drop and High Current Capability
- Surge Overload Rating to 30A Peak
- Ideally Suited for Automated Assembly
- Plastic Material: UL Flammability Classification Rating 94V-0

Mechanical Data

- Case: Molded Plastic
- Terminals: Solder Plated Terminal - Solderable per MIL-STD-202, Method 208
- Polarity: Cathode Band or Cathode Notch
- Marking: Type Number
- Weight: 0.064 grams (approx.)
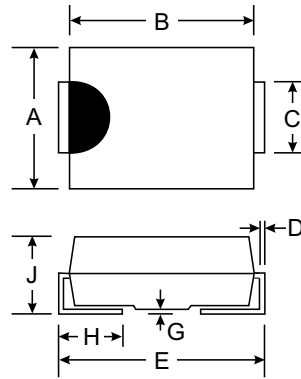
SMA		
Dim	Min	Max
A	2.29	2.92
B	4.00	4.60
C	1.27	1.63
D	0.15	0.31
E	4.80	5.59
G	0.10	0.20
H	0.76	1.52
J	2.01	2.62
All Dimensions in mm		

Maximum Ratings and Electrical Characteristics @ T_A = 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 Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	50	100	150	200	400	V
RMS Reverse Voltage	$V_{R(RMS)}$	35	70	105	140	280	V
Average Rectified Output Current @ T_T = 110°C	I_O	1.0					A
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine-wave Superimposed on Rated Load (JEDEC Method)	I_{FSM}	30					A
Forward Voltage Drop @ I_F = 0.6A @ I_F = 1.0A	V_{FM}	0.90 0.98				⎯ 1.25	V
Peak Reverse Current @ T_A = 25°C at Rated DC Blocking Voltage @ T_A = 100°C	I_{RM}	5.0 200					µA
Reverse Recovery Time (Note 3)	t_{rr}	20					ns
Typical Junction Capacitance (Note 2)	C_j	10					pF
Typical Thermal Resistance, Junction to Terminal (Note 1)	$R_{\theta JT}$	40					K/W
Operating and Storage Temperature Range	T_j, T_{STG}	-65 to +150					°C

Notes: 1. Unit mounted on PC board with 5.0 mm² (0.013 mm thick) copper pad as heat sink.
2. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.
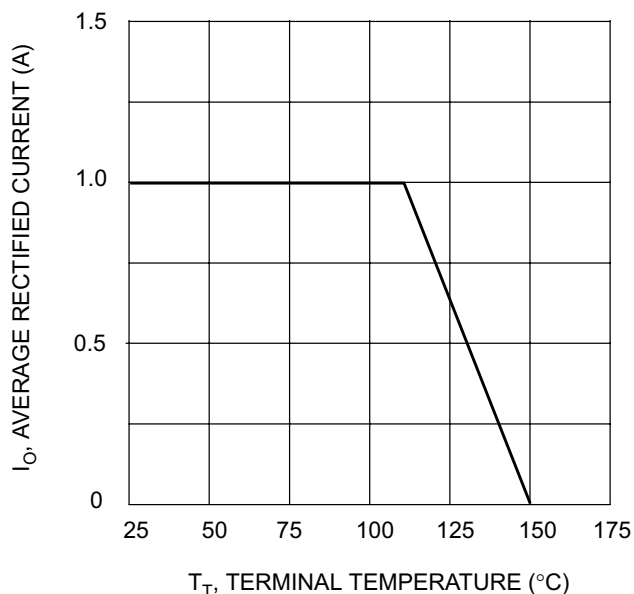3. Measured with I_F = 0.5A, I_R = 1.0A, I_{rr} = 0.25A. See figure 5.

Fig. 1 Forward Current Derating Curve

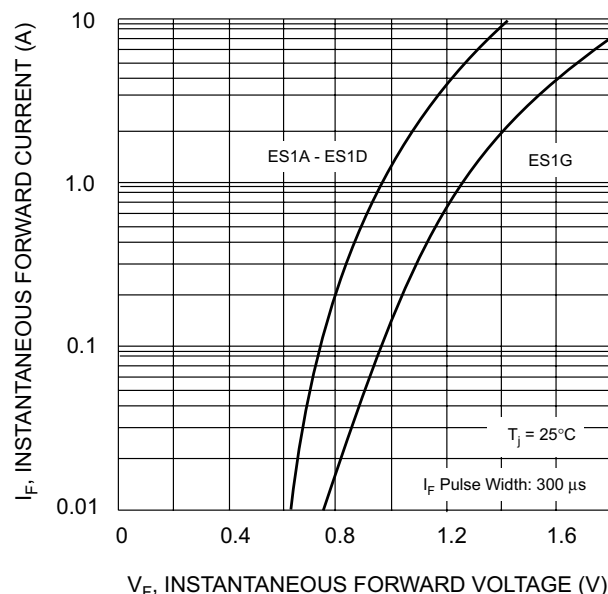T_T, TERMINAL TEMPERATURE (°C)

I_O, AVERAGE RECTIFIED CURRENT (A)

Fig. 2 Typical Forward Characteristics

V_F, INSTANTANEOUS FORWARD VOLTAGE (V)

I_F, INSTANTANEOUS FORWARD CURRENT (A)

ES1A - ES1D

ES1G

$T_j = 25°C$

I_F Pulse Width: 300 µs
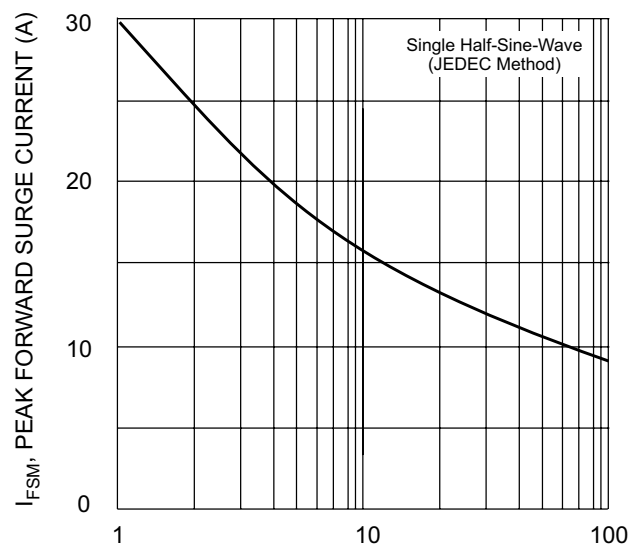
Fig. 3 Surge Current Derating Curve

NUMBER OF CYCLES AT 60 Hz

I_{FSM}, PEAK FORWARD SURGE CURRENT (A)

Single Half-Sine-Wave
(JEDEC Method)
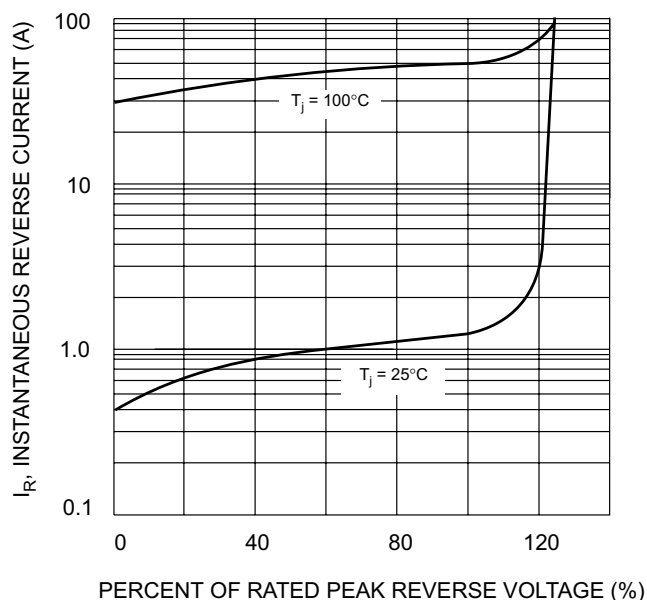
Fig. 4 Typical Reverse Characteristics

PERCENT OF RATED PEAK REVERSE VOLTAGE (%)

I_R, INSTANTANEOUS REVERSE CURRENT (A)

$T_j = 100°C$

$T_j = 25°C$

50Ω NI (Non-inductive)

10Ω NI

Device
Under
Test

(+)

50V DC
Approx

(-)

1.0Ω
NI

Oscilloscope
(Note 1)

Pulse
Generator
(Note 2)

(-)

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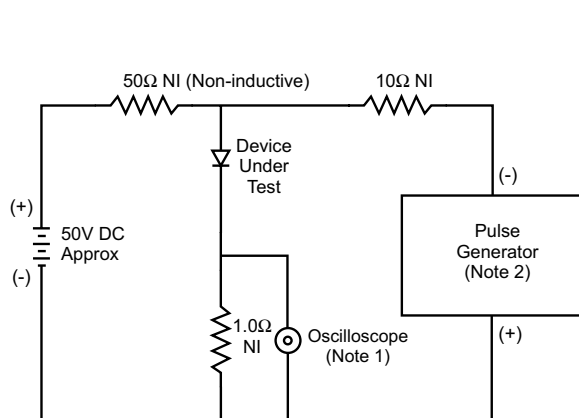
Notes:
1. Rise Time = 7.0ns max. Input Impedance = 1.0MΩ, 22pF.
2. Rise Time = 10ns max. Input Impedance = 50Ω.

t_{rr}

+0.5A

0A

-0.25A

-1.0A
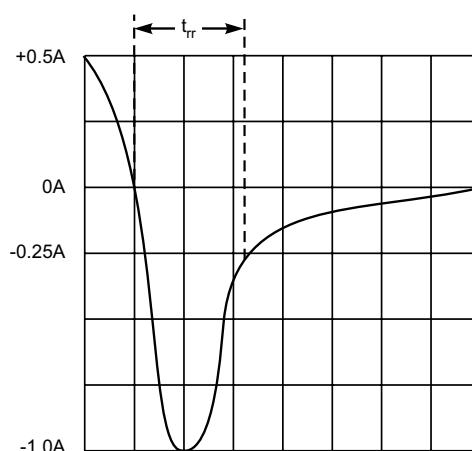
Set time base for 50/100 ns/cm

Fig. 5 Reverse Recovery Time Characteristic and Test Circuit