R

# SURFACE MOUNT SUPER FAST RECOVERY RECTIFIER REVERSE VOLTAGE 50 to 600 Volts FORWARD CURRENT 1.0 Ampere

SMAF

## **FEATURES**

Plastic package has underwrites laboratory flammability Classification 94V-0 Glass passivated chip junction Built-in strain relief Super Fast switiching speed for high efficiency High temperature soldering guaranteed 250°C/10 second

### **MECHANICAL DATA**

Case: Transfer molded plastic Terminals: Solder plated, Solderable per MIL-STD-750, Method 2026 Polarity: Color band denotes cathode end Weight: 0.002ounce, 0.064 gram

#### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25℃ ambient temperature unless otherwise specified. Single phase, half wave, 60Hz, resistive or inductive load.

#### Dimensions in inches and (millimeters)

039(1.0)

1- Thermal resistance from Junction to ambient and from junction to lead mounted on P.C.B. with 0.2 × 0.2" (5.0 × 5.0mm) copper pad areas.

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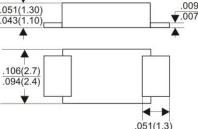
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For capacitive load derate current by 20%												
	SYMBOL	ES1A	ES1B	ES1C	ES1D	ES1E	ES1G	ES1J	UNIT			
Maximum Repetitive Peak Reverse Voltage		50	100	150	200	300	400	600	VOLTS			
Maximum RMS Voltage		35	70	105	140	210	280	420	VOLTS			
Maximum DC Blocking Voltage		50	100	150	200	300	400	600	VOLTS			
Maximum Average Forward Rectified CurrentAt $T_A = 55^{\circ}C$ Peak Forward Surge Current 8.3ms single half sine-wavesuperimposed on rated load (JEDEC Method)Maximum instantaneous forward voltage per at 1.0A		1.0						Amps				
		30						Amps				
		0.95 1.25 1.7						VOLTS				
<b>T</b> <sub>A</sub> =25℃	la la	5.0 100						– uA				
T <sub>A</sub> =125℃	IR											
Maximum Reverse Recovery Time Test conditions I <sub>F</sub> =0.5A, I <sub>R</sub> =1.0A, I <sub>RR</sub> =0.25A		35					nS					
Typical Junction Capacitance (Measured at 1.0MHz and applied reverse voltage of 4.0V)		10			8		pF					
Typical Thermal Resistance (Note 1)		88						°CW				
		28										
Operating Junction Temperature		-55 to +150						°C				
Storage Temperature Rang		-55 to +150						°C				
	current by 20%         everse Voltage         ge         iffied Current         ms single half sine-wave         DEC Method)         voltage per at 1.0A $T_A=25^{\circ}C$ $T_A=125^{\circ}C$ Time         0A, I <sub>RR</sub> =0.25A         (Measured at 1.0MHz and V)         Note 1)	current by 20%SYMBOLAverse Voltage $V_{RMM}$ averse Voltage $V_{RMS}$ ge $V_{DC}$ ified Current $I_{(AV)}$ ms single half sine-wave DEC Method)IFSMvoltage per at 1.0A $V_F$ $T_A=25^{\circ}C$ $I_R$ $T_A=125^{\circ}C$ $I_R$ Time 0A, $I_{RR}=0.25A$ $t_{rr}$ (Measured at 1.0MHz and V) $C_J$ Note 1)ReJA	current by 20%SYMBOLES1Aeverse Voltage $V_{RM}$ 50 $V_{RMS}$ 35 $V_{RMS}$ 35ge $V_{DC}$ 50 $V_{DC}$ 50ified Current $I_{(AV)}$ $I_{(AV)}$ $I_{SM}$ ms single half sine-wave DEC Method) $I_{FSM}$ $I_{FSM}$ voltage per at 1.0A $V_F$ $I_{RSM}$ $T_A=25^{\circ}C$ $I_R$ $I_R$ $T_A=25^{\circ}C$ $I_R$ $I_R$ Time 0A, $I_{RR}=0.25A$ $t_{rr}$ $I_R$ (Measured at 1.0MHz and V) $C_J$ $R_{BJA}$ Note 1) $R_{BJL}$ $I_R$ ure $T_J$ $I_R$	Current by 20%SYMBOLES1AES1BEverse Voltage $V_{RRM}$ 50100 $V_{RMS}$ 3570ge $V_{DC}$ 50100ified Current $I_{(AV)}$ $I_{(AV)}$ ms single half sine-wave DEC Method)IFSM $I_{FSM}$ voltage per at 1.0A $V_F$ $O.$ $T_A=25^{\circ}C$ $I_R$ $I_R$ $T_A=25^{\circ}C$ $I_R$ $I_R$ Time OA, I_{RR}=0.25A $t_{rr}$ $I_r$ (Measured at 1.0MHz and V) $C_J$ $1$ Note 1) $R_{\Theta JA}$ $R_{\Theta JA}$ ure $T_J$ $I_R$	current by 20%SYMBOLES1AES1BES1Ceverse Voltage $V_{RM}$ 50100150 $V_{RMS}$ 3570105je $V_{DC}$ 50100150ified Current $I_{(AV)}$ $V_{DC}$ 50100150ified Current $I_{(AV)}$ $I_{FSM}$ $V_{F}$ $0.95$ voltage per at 1.0A $V_{F}$ $0.95$ $T_{A}=25^{\circ}C$ $I_{R}$ $T_{A}=25^{\circ}C$ $I_{R}$ $I_{R}$ $I_{R}$ $OA, I_{RR}=0.25A$ $t_{rr}$ $I_{rr}$ $I_{rr}$ (Measured at 1.0MHz and V) $C_{J}$ $10$ $I_{O}$ Note 1) $R_{0JA}$ $I_{R}$ $I_{R}$ ure $T_{J}$ $I_{rr}$ $I_{rr}$	Current by 20%           SYMBOL         ES1A         ES1B         ES1C         ES1D           everse Voltage $V_{RRM}$ 50         100         150         200 $V_{RMS}$ 35         70         105         140           ge $V_{RMS}$ 35         70         105         140           ge $V_{DC}$ 50         100         150         200           ified Current $I_{(AV)}$ $-50$ 100         150         200           ms single half sine-wave $I_{FSM}$ $-50$ 100         150         200           voltage per at 1.0A $V_F$ $0.95$ $-10$ $-50$ $-10$ T_A=25°C $I_R$ $I_R$ $-50$ $-50$ $-100$ Time $0.25A$ $t_{rr}$ $35$ $-50$ $-50$ $-50$ (Measured at 1.0MHz and V) $C_J$ $-10$ $-55$ $-55$ to +16           Note 1) $R_{0JL}$ $-55$ to +16 $-55$ $-55$ to +16	Current by 20%           SYMBOL         ES1A         ES1B         ES1C         ES1D         ES1E           everse Voltage $V_{RM}$ 50         100         150         200         300           ge $V_{RMS}$ 35         70         105         140         210           ge $V_{DC}$ 50         100         150         200         300           ified Current $I_{(AV)}$ $V_{DC}$ 50         100         150         200         300           ms single half sine-wave $I_{(AV)}$ $I_{FSM}$ $I_{C}$ $I_{O}$	Current by 20%           SYMBOL         ES1A         ES1B         ES1C         ES1D         ES1E         ES1G           werse Voltage         VRRM         50         100         150         200         300         400           Werse Voltage         VRMS         35         70         105         140         210         280           ye         VDc         50         100         150         200         300         400           iffied Current         I         I         100         150         200         300         400           voltage per at 1.0A         VF         0.95         1.25         1.25         1.25         1.25           T_A=125°C         IR         IR         10         35         5.0         1.25         1.0         8           V)         AReJA         ReJA         <	Current by 20%           SYMBOL         ES1A         ES1B         ES1C         ES1D         ES1E         ES1G         ES1J           vverse Voltage $V_{RRM}$ 50         100         150         200         300         400         600 $V_{RMS}$ 35         70         105         140         210         280         420           je $V_{DC}$ 50         100         150         200         300         400         600           iffied Current $I_{(AV)}$ $U_{DC}$ 50         100         150         200         300         400         600           iffied Current $I_{(AV)}$ $U_{DC}$ 50         100         150         200         300         400         600           voltage per at 1.0A $V_F$ $0.95$ $1.25$ $1.7$ $T_A=25^{\circ}C$ $I_R$ $100$ $T_T$ $T_A=125^{\circ}C$ $I_R$ $I_$			

# .146(3.7) .130(3.3) 063(1 051(1.3 .193(4.9) .173(4.4) .009(0.23) .051(1.30) .043(1.10)

ES1A THRU



R

# **RATINGS AND CHARACTERISTIC CURVES**

PEAK FORWARD SURGE

INSTANTANEOUS REVERSE CURRENT,

(HA)

30

10

100

10

1.0

0.1

100

NONINDUCTIVE

1 magohm. 22pF

NDUCTIVE

50 ohms

0

20

PULSE

ENERATIO

(NOTE 2)

OSCILLOSCOPE (NOTE 1)

2.Rise time=10ns max. Source Impedance=

40

F1G.6-TEST CIRCUIT DIAGRAM AND

REVERSE RECOVERY TIME CHARACTERISTIC

(A)

CURRENT, 20

ES1A THRU ES1.

FIG.2-MAXIMUM NON-REPETITIVE PEAK

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(ethod) T

FORWARD SURGE CURRENT

JEDEC

10

NUMBER OF CYCLES AT 60 Hz

T = 125°C

80

PERCENT OF RATED PEAK

REVERSE VOLTAGE,(%)

+0.5/

0

-0.25/

-1.0A

=25%

100

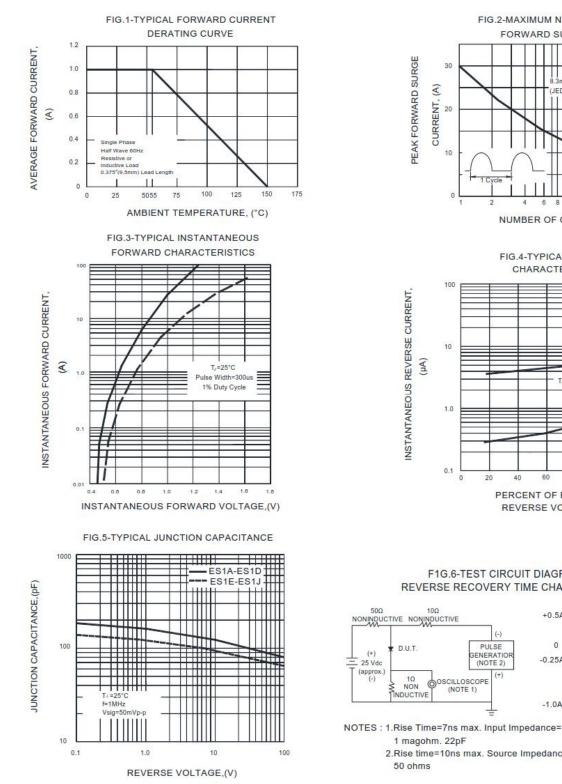
140

SET TIME BASE FOR

50/100ns/cm

120

FIG.4-TYPICAL REVERSE CHARACTERISTICS



Note: Specifications are subject to change without notice.

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