



**DONGGUAN NANJING ELECTRONICS LTD.,**  
**SMAF Plastic-Encapsulate Diodes**

**ES3AF THRU ES3MF** High Efficient Rectifier Diodes

**Features**

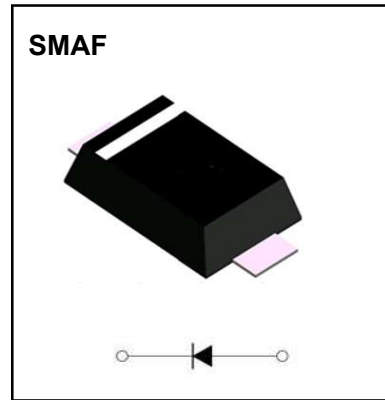
- $I_{F(AV)}$         3A
- $V_{RRM}$          50V-1000V
- High surge current capability
- Polarity: Color band denotes cathode

**Applications**

- Rectifier

**Marking**

- ES3XF
- X : From A To M



**Limiting Values(Absolute Maximum Rating)**

Item	Symbol	Unit	Test Conditions	ES3						
				AF	BF	DF	GF	JF	KF	MF
Repetitive Peak Reverse Voltage	$V_{RRM}$	V		50	100	200	400	600	800	1000
Maximum RMS Voltage	$V_{RMS}$	V		35	70	140	280	420	560	700
Average Forward Current	$I_{F(AV)}$	A	60Hz Half-sine wave, Resistance load, $T_L=110^\circ\text{C}$	3.0						
Surge(Non-repetitive)Forward Current	$I_{FSM}$	A	60Hz Half-sine wave, 1 cycle, $T_a=25^\circ\text{C}$	200						
Operation Junction and Storage Temperature Range	$T_J, T_{STG}$	$^\circ\text{C}$		-55 ~ +150						

**Electrical Characteristics ( $T=25^\circ\text{C}$  Unless otherwise specified)**

Item	Symbol	Unit	Test Condition	ES3					
				AF	BF	DF	GF	JF	KF
Peak Forward Voltage	$V_F$	V	$I_F=3.0\text{A}$	1.0		1.25	1.60		
Maximum reverse recovery time	$t_{rr}$	ns	$I_F=0.5\text{A}, I_R=1.0\text{A}, I_{ir}=0.25\text{A}$	35					50
Peak Reverse Current	$I_{RRM1}$	$\mu\text{A}$	$V_{RM}=V_{RRM}$	$T_a=25^\circ\text{C}$		5			
	$I_{RRM2}$			$T_a=100^\circ\text{C}$		200			
Thermal Resistance(Typical)	$R_{\theta J-A}$	$^\circ\text{C/W}$	Between junction and ambient		47				
	$R_{\theta J-L}$		Between junction and terminal		13				

**Notes:**

Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.27" x 0.27" (7.0 mm x 7.0 mm) copper pad areas

# Typical Characteristics

FIG.1: FORWARD CURRENT DERATING CURVE

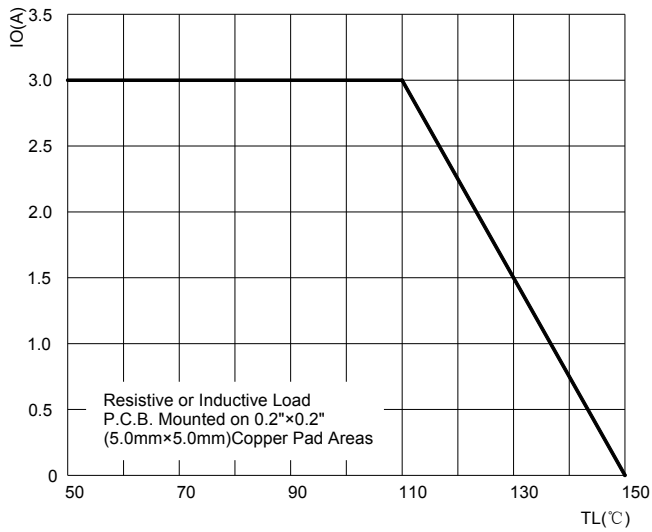


FIG.2: MAXIMUM NON-REPETITIVE FORWARD URGE CURRENT

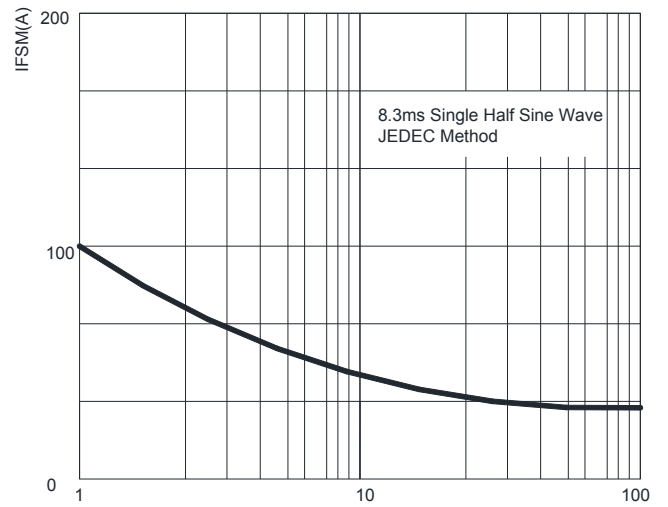


FIG.3: TYPICAL FORWARD CHARACTERISTICS

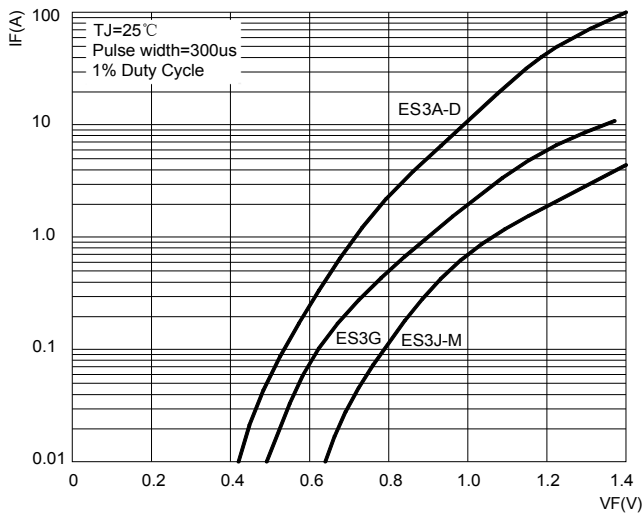


FIG.4: TYPICAL REVERSE CHARACTERISTICS

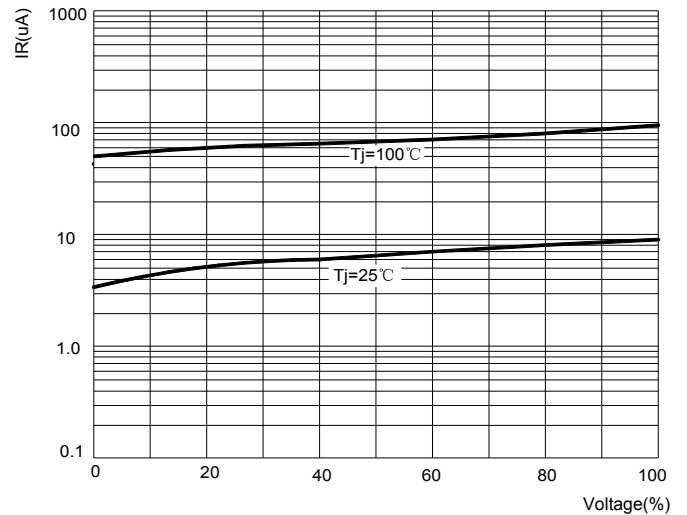
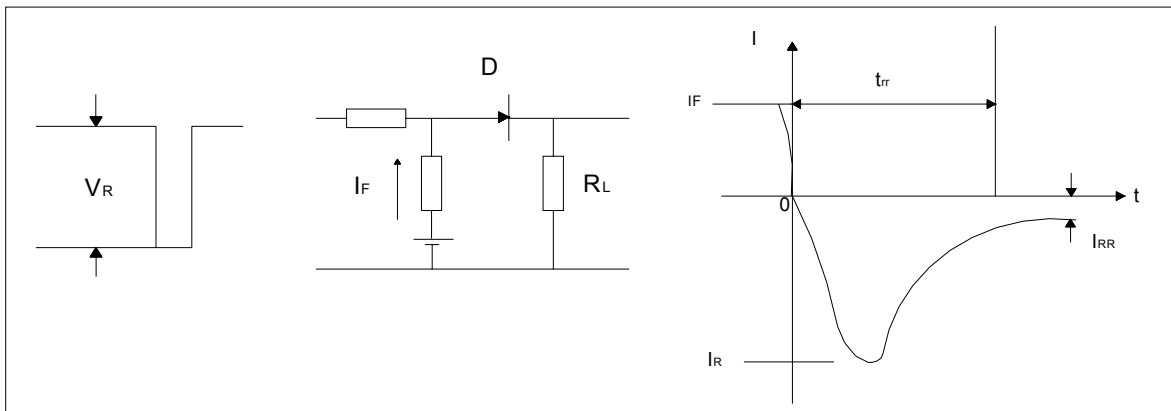
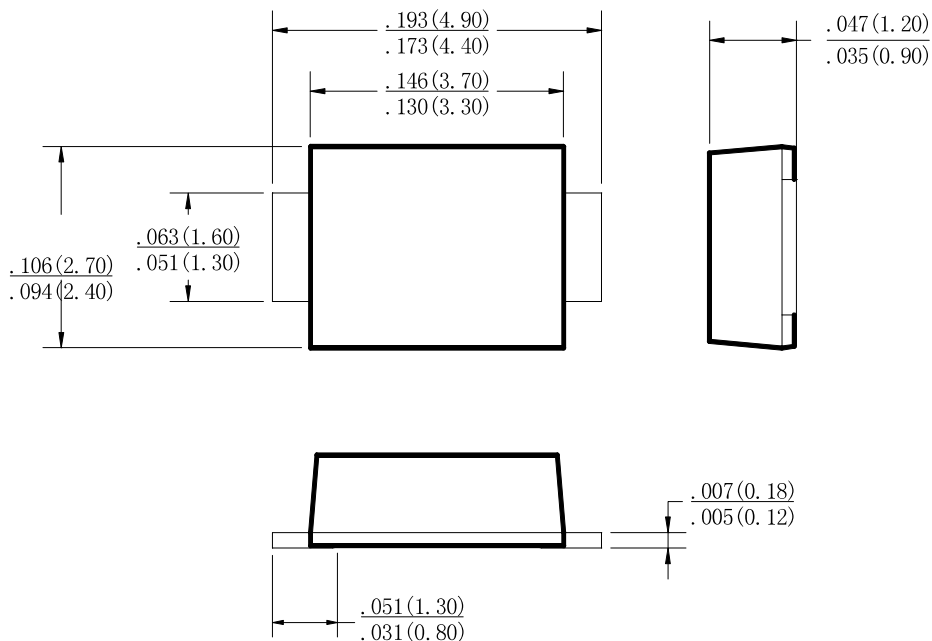


FIG.5: Diagram of circuit and Testing wave form of reverse recovery time

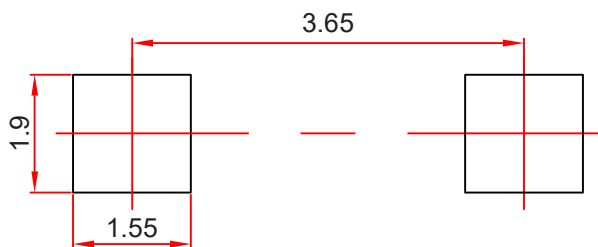


# SMAF Package Outline Dimensions



Dimensions in inches and (millimeters)

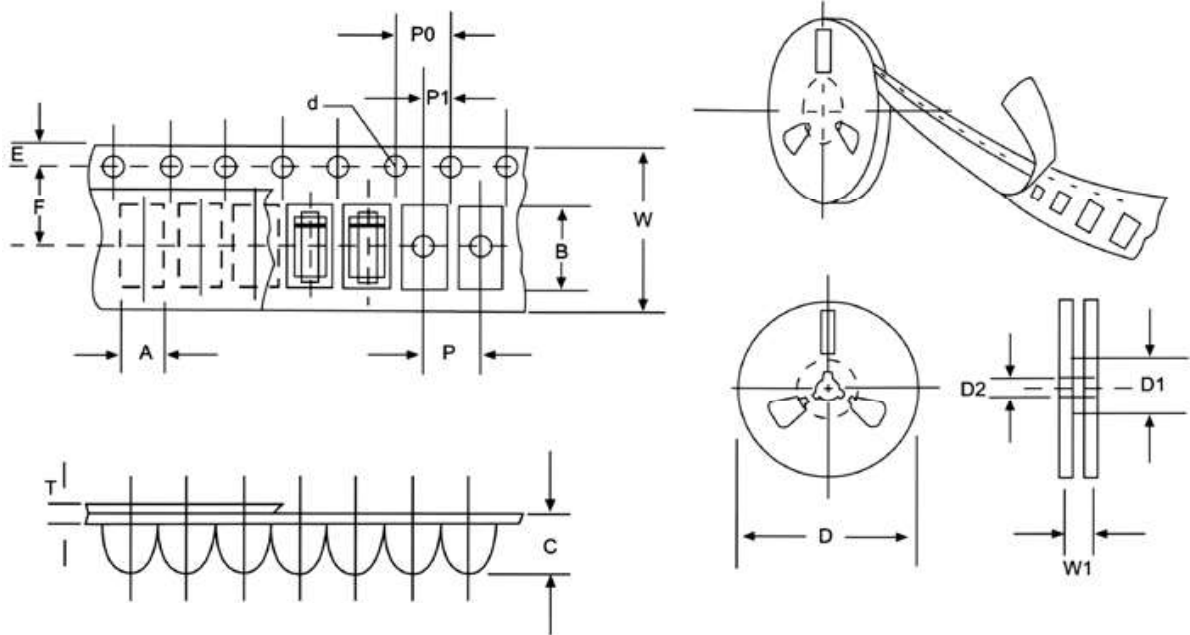
# SMAF Suggested Pad Layout



**Note:**

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

## Reel Taping Specifications For Surface Mount Devices- SMAF



**FIG: CONFIGURATION OF SURFACE MOUNTED DEVICES TAPING**

ITEM	SYMBOL	SMAF mm(inch)
Carrier width	A	2.83+0.1(0.112+0.004)
Carrier length	B	4.90+0.1(0.193+0.004)
Carrier depth	C	1.45+0.1(0.057+0.004)
Sprocket hole	d	1.55+0.05(0.061+0.002)
Reel outside diameter	D	178+2.0(7.0+0.079)
Reel inner diameter	D1	54±1.0(2.13±0.039)
Feed hole diameter	D2	13+0.5(0.512+0.020)
Sprocket hole position	E	1.75+0.1(0.069+0.004)
Punch hole position	F	5.5+0.05(0.217+0.002)
Punch hole pitch	P	4.0+0.1(0.157+0.004)
Sprocket hole pitch	P0	4.0+0.1(0.157+0.004)
Embossment center	P1	2.0+0.1(0.079+0.004)
Total tape thickness	T	0.23-0.29(0.009-0.011)
Tape width	W	12.0+0.1(0.472+0.004)
Reel width	W1	16.8+2.0(0.661+0.079)

NOTE: Devices are packed in accordance with EIA standard RS-481-A and specification given above.