



## SMAG Plastic-Encapsulate Diodes

### ES1A THRU ES1J Super Fast Recovery Rectifier Diodes

#### Features

- $I_{F(AV)}$  1A
- $V_{RRM}$  50V-600V
- High surge current capability
- Polarity: Color band denotes cathode

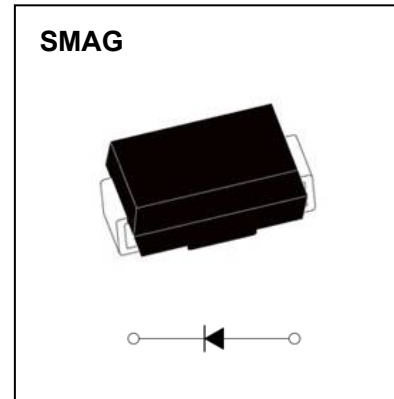
#### Applications

- Rectifier

#### Marking

- ES1X

X : From A To J



#### Limiting Values (Absolute Maximum Rating)

Item	Symbol	Unit	Test Conditions	ES1							
				A	B	C	D	E	G	H	J
Repetitive Peak Reverse Voltage	$V_{RRM}$	V		50	100	150	200	300	400	500	600
Maximum RMS Voltage	$V_{RMS}$	V		35	70	105	140	210	280	350	420
Average Forward Current	$I_{F(AV)}$	A	60Hz Half-sine wave, Resistance load	1.0							
Surge(Non-repetitive)Forward Current	$I_{FSM}$	A	60Hz Half-sine wave, 1 cycle, $T_a=25^\circ\text{C}$	30							
Operation Junction and Storage Temperature Range	$T_J, T_{STG}$	$^\circ\text{C}$		-55 ~ +150							

#### Electrical Characteristics (T=25 °C Unless otherwise specified )

Item	Symbol	Unit	Test Condition	ES1							
				A	B	C	D	E	G	H	J
Peak Forward Voltage	$V_F$	V	$I_F=1.0\text{A}$	0.95			1.25		1.70		
Maximum reverse recovery time	$t_{rr}$	ns	$I_F=0.5\text{A}, I_R=1.0\text{A}, I_{rr}=0.25\text{A}$	35							
Peak Reverse Current	$I_{RRM1}$	$\mu\text{A}$	$V_{RM}=V_{RRM}$	$T_a=25^\circ\text{C}$		5					
	$I_{RRM2}$			$T_a=125^\circ\text{C}$		50					
Thermal Resistance(Typical)	$R_{\theta J-A}$	$^\circ\text{C/W}$	Between junction and ambient		75						
	$R_{\theta J-L}$		Between junction and terminal		27						
Juction Capacitance (Typical)	$C_j$	pF	Measured at 1MHZ and Applied Reverse Voltage of 4.0 V.D.C		14		12		10		

#### Notes:

Thermal resistance from junction to ambient and from junction to lead mounted on FR4 PCB double sided copper mini pad

# Typical Characteristics

FIG.1: FORWARD CURRENT DERATING CURVE

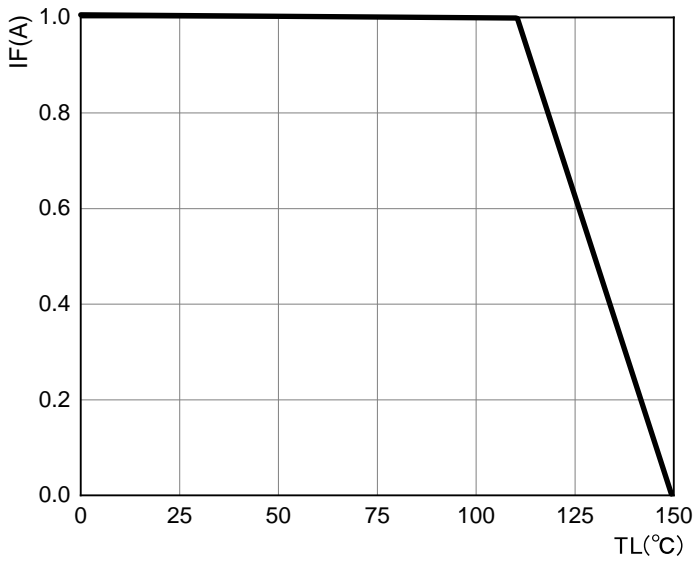
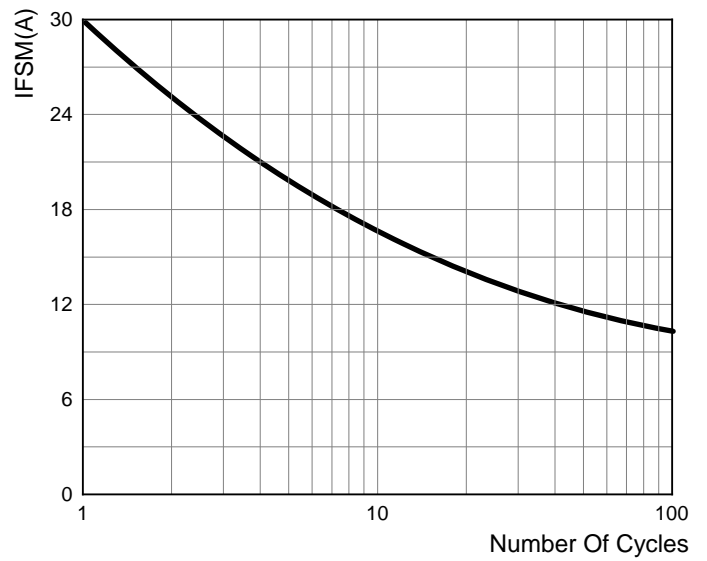
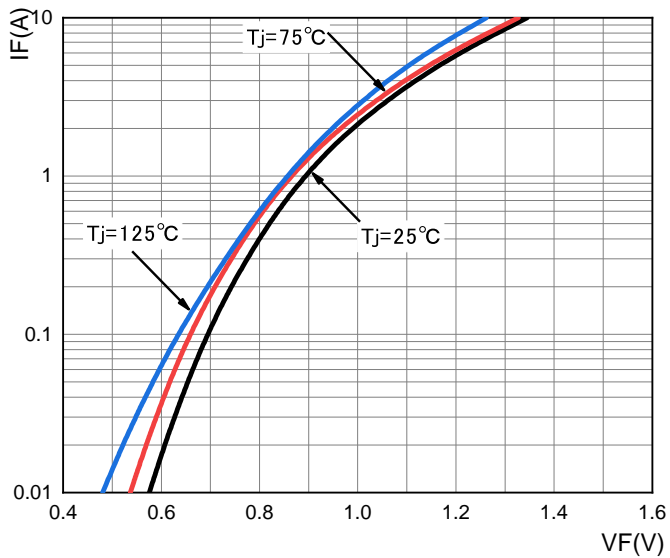


FIG 2: MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT



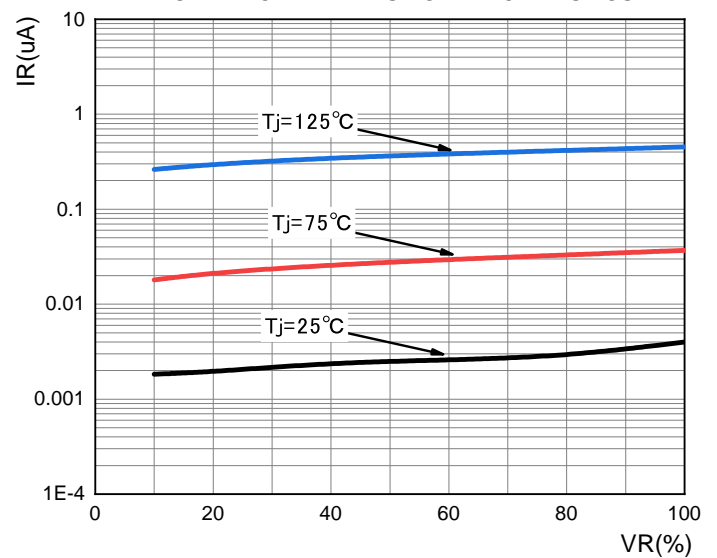
ES1A-ES1D

FIG.3 : TYPICAL FORWARD CHARACTERISTICS



ES1A-ES1D

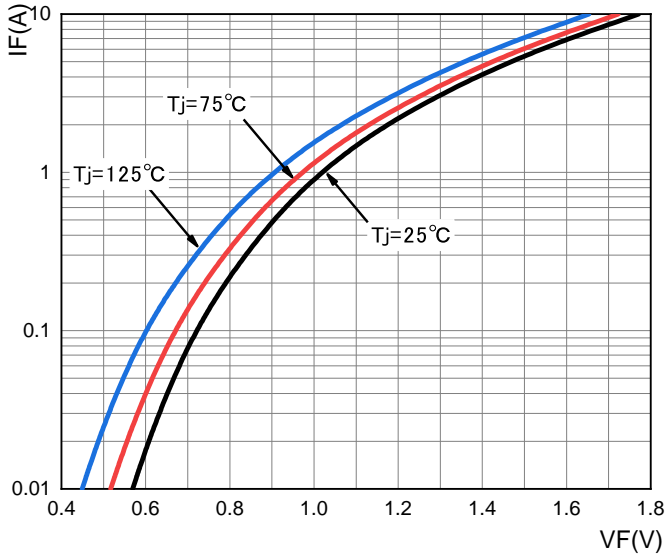
FIG.4 TYPICAL REVERSE CHARACTERISTICS



# Typical Characteristics

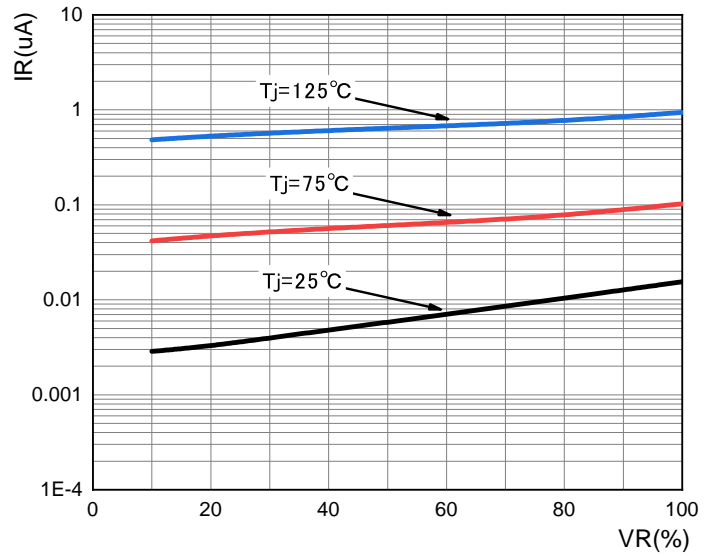
ES1E-ES1G

FIG.5 : TYPICAL FORWARD CHARACTERISTICS



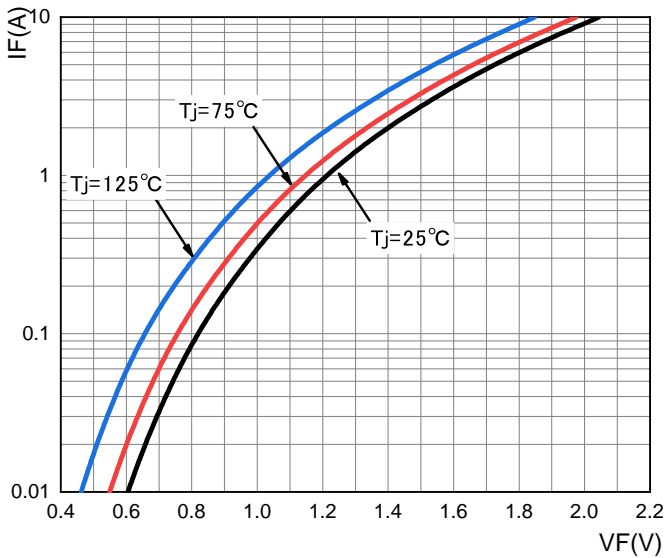
ES1E-ES1G

FIG.6 TYPICAL REVERSE CHARACTERISTICS



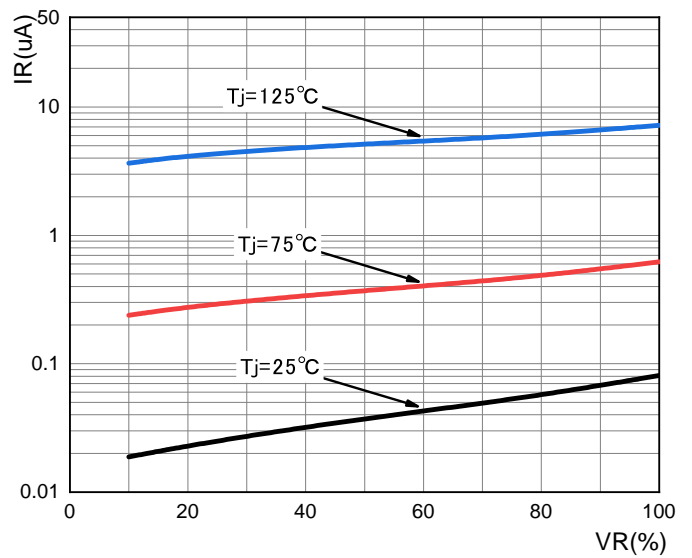
ES1H-ES1J

FIG.7 : TYPICAL FORWARD CHARACTERISTICS

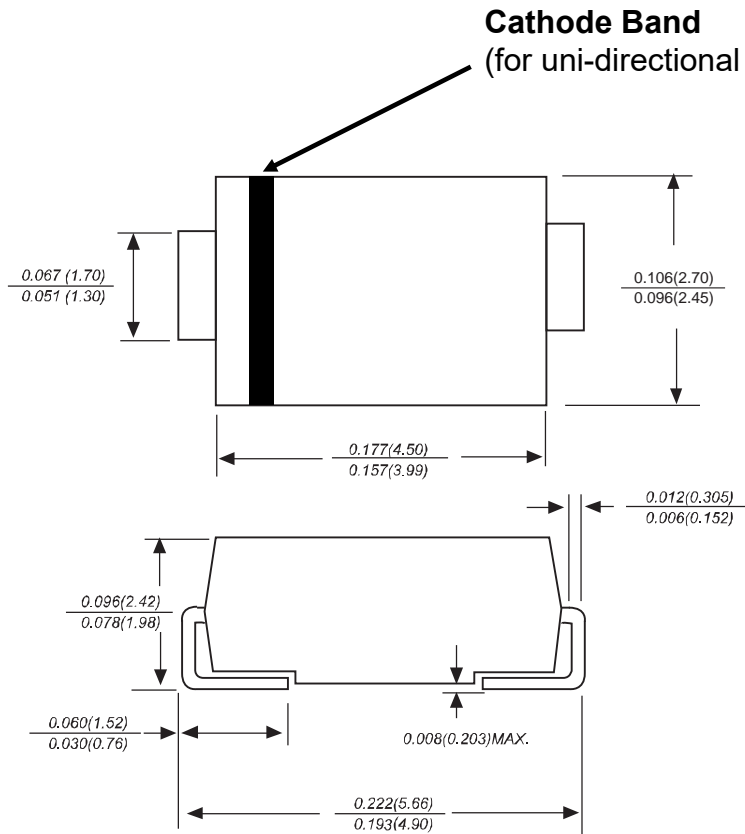


ES1H-ES1J

FIG.8 TYPICAL REVERSE CHARACTERISTICS

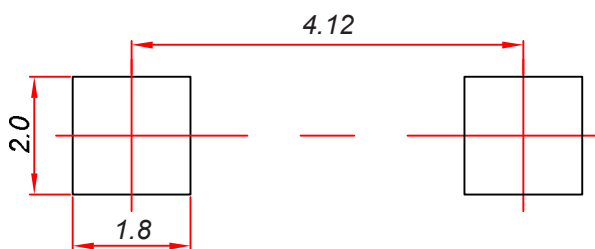


## SMAG Package Outline Dimensions



Dimensions in inches and (millimeters)

## SMAG Suggested Pad Layout



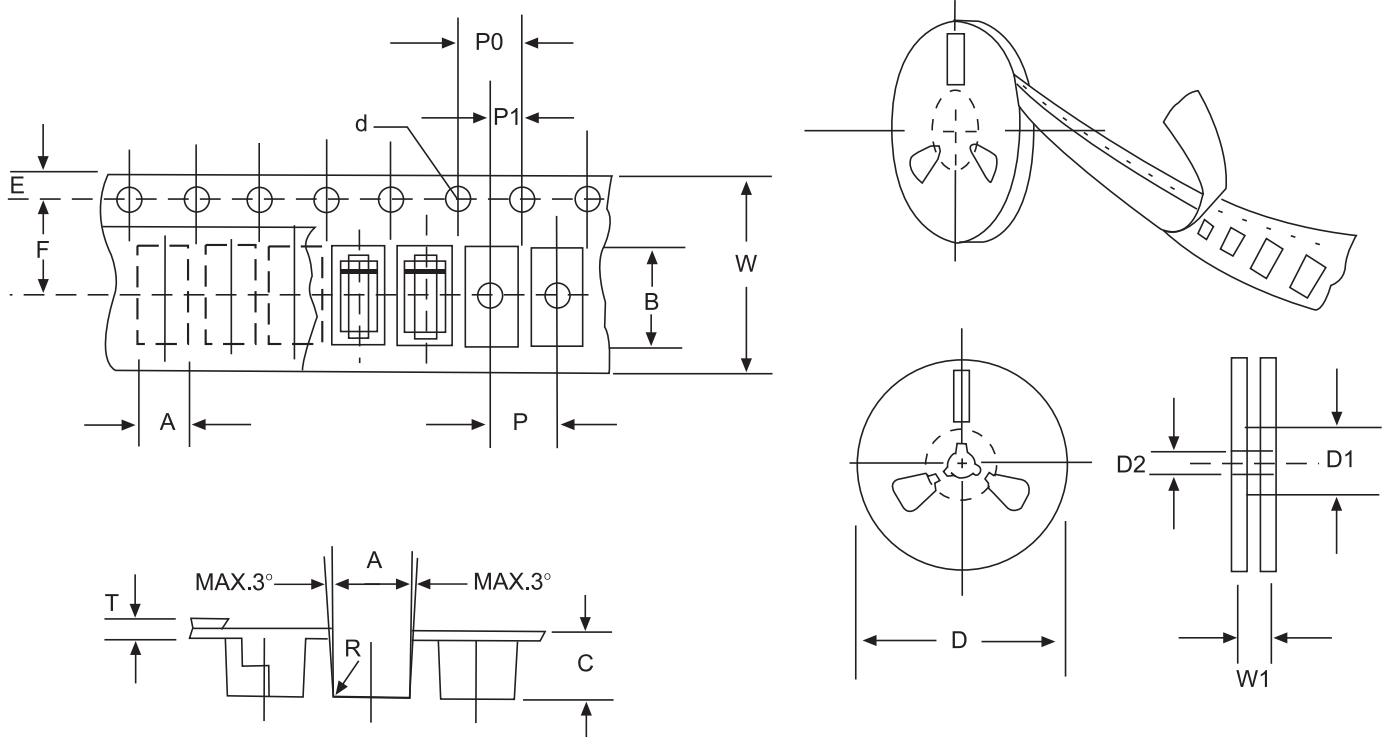
**Note:**

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

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## Reel Taping Specifications For Surface Mount Devices- SMAG



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

ITEM	SYMBOL	SMAG mm(inch)
Carrier width	A	2.79±0.1(0.110±0.004)
Carrier length	B	5.33±0.1(0.210±0.004)
Carrier depth	C	2.36±0.1(0.093±0.004)
Sprocket hole	d	1.55±0.05(0.061±0.002)
Reel outside diameter	D	279±2.0 (11± 0.079)
Reel inner diameter	D1	75 ±1.0 ( 2.95 ±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	0.28±0.02(0.011±0.0008)
Tape width	W	12.0±0.2(0.472±0.008)
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.

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