ES1A THRU ES1K

1.0A Super Fast Recovery Rectifier

Characteristics

Io	1.0	A
V_{RRM}	50~800	V
I_{FSM}	30.0	A
VF	0.95~1.85	V

Features

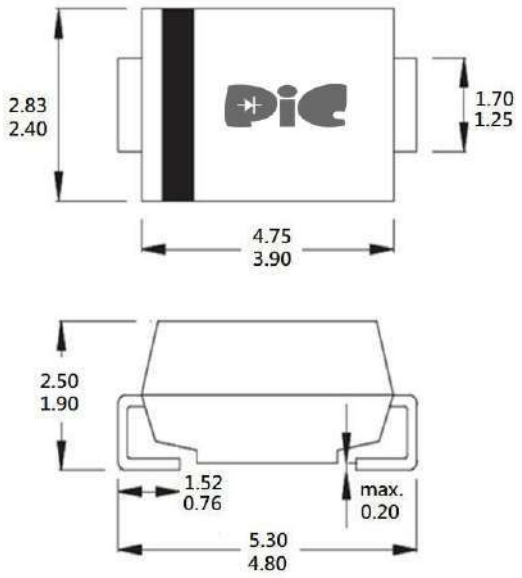
- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- High forward surge current capability
- Super fast reverse recovery time
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 ° C

Mechanical Data

- Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant
- Terminals: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- Polarity: Cathode line denotes the cathode end

Package Outline Dimensions

SMA



Unit : millimeters

Maximum Ratings (TA=25°C unless otherwise noted)

		Symbol	ES1A	ES1B	ES1D	ES1G	ES1J	ES1K	UNITS
Marking Code		-	ES1A	ES1B	ES1D	ES1G	ES1J	ES1K	-
Max. Repetitive Peak Reverse Voltage		V_{RRM}	50	100	200	400	600	800	Volts
Max. RMS Voltage		V_{RMS}	35	70	140	280	420	560	Volts
Max. DC blocking Voltage		V_{DC}	50	100	200	400	600	800	Volts
Average rectified output current @60Hz sine wave, Resistance load, TL (Fig.1)		I_o	1.0						Amps
Forward Surge Current (Non-repetitive) @60Hz Half-sine wave,1 cycle, Tj=25℃		I_{FSM}	30.0						Amps
Forward voltage at 1.0A		V_F	0.95			1.30	1.70	1.85	Volts
Maximum DC reverse current at rated DC blocking voltage per diode @ $V_{RM}=V_{RRM}$	Ta=25℃	I_{RRM}	5						μA
	Ta=125℃		100						
Typical thermal resistance (1)		$R_{\theta J-A}$	65						℃/W
		$R_{\theta J-L}$	20						
Maximum reverse recovery time I_F=0.5A, I_R=1.0A, I_{rr}=0.25A		T_{RR}	35						nS
Operating junction and storage temperature range		T_J, T_{STG}	-55 to +150						℃

Notes:

(1) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.2"x0.2" (5.0mmx5.0 mm) copper pad areas

Rating and Characteristics Curves

Fig. 1 I_o-TL Curve

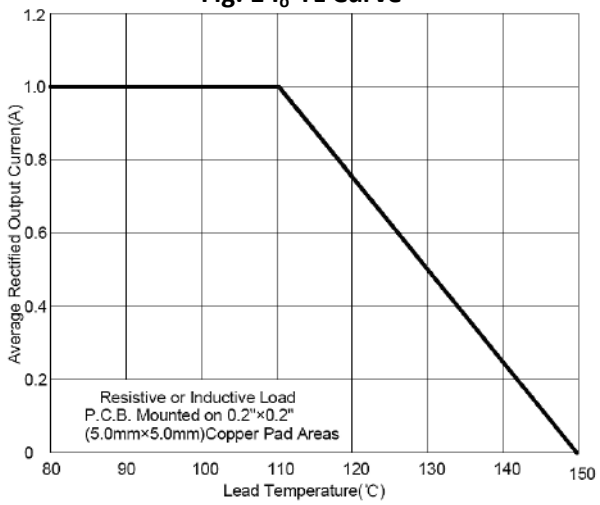


Fig. 2 Forward Surge Current Capability

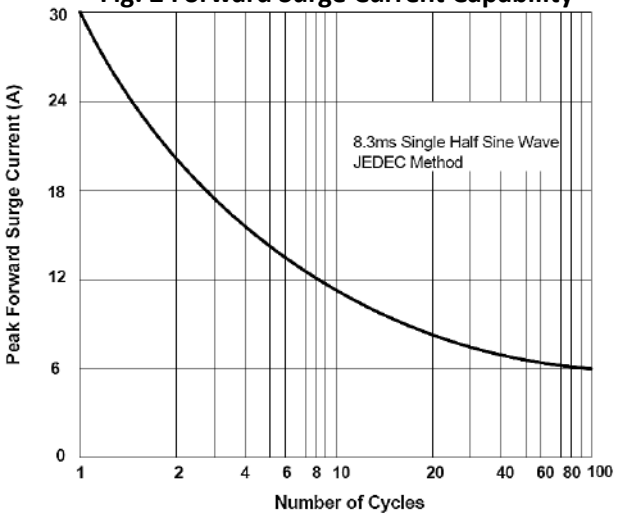


Fig. 3 Typical Forward Characteristics

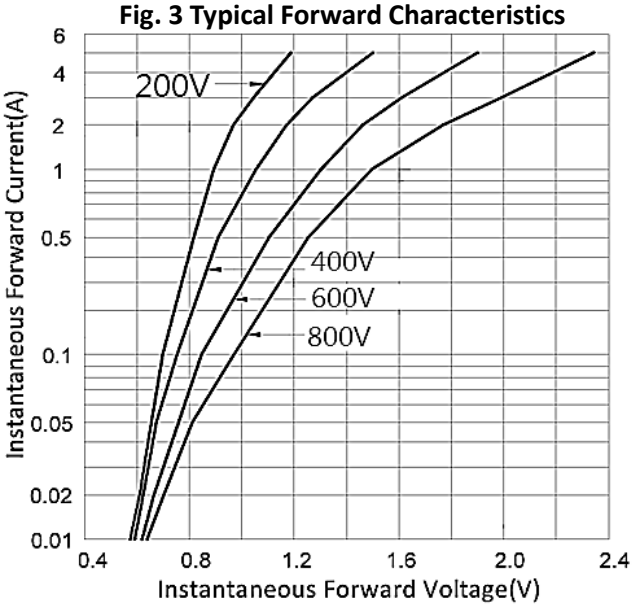


Fig. 4 Typical Reverse Characteristics

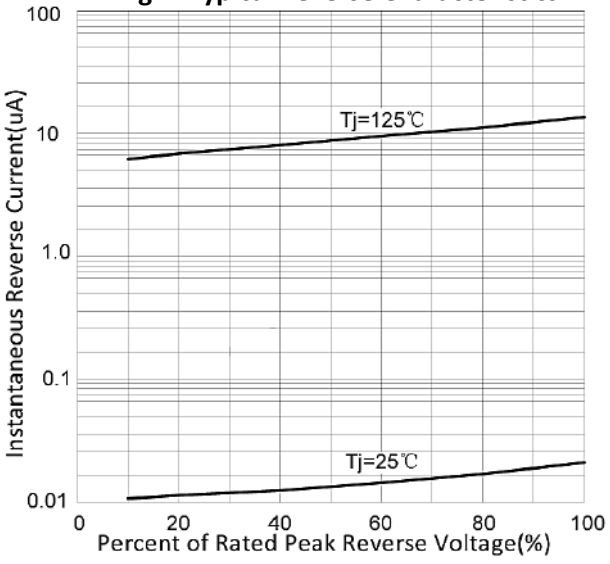
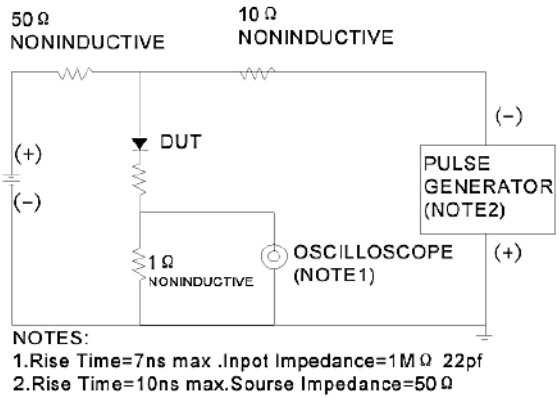
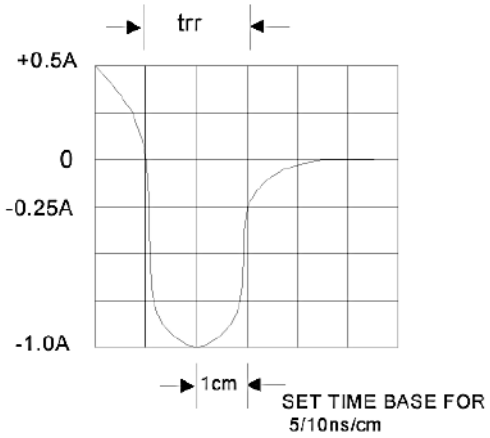
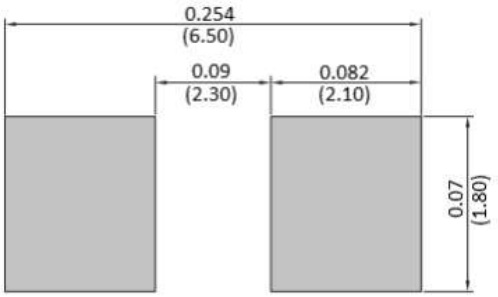


Fig. 5 Diagram of circuit and Testing wave form of reverse recovery time





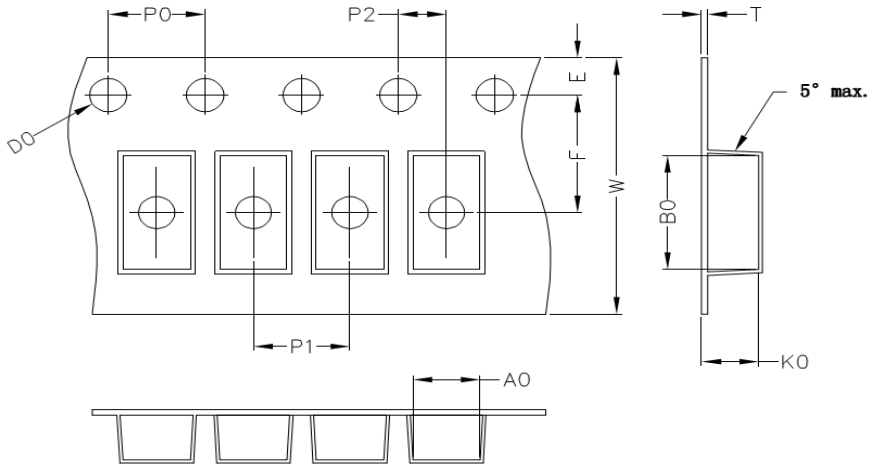
Pad Layout

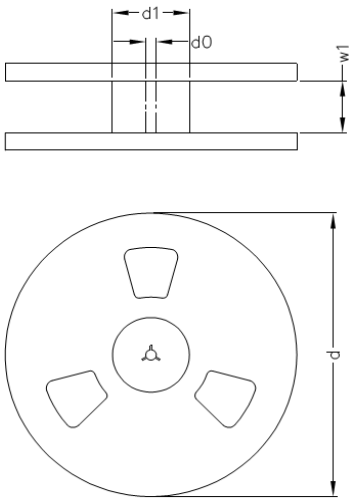


Unit: mm

Packaging Specifications

Package	A0 (mm)	B0 (mm)	K0 (mm)	D0 (mm)	E (mm)	F (mm)	P0 (mm)	P1 (mm)	P2 (mm)	T (mm)	W (mm)
SMA	2.8±0.1	5.33±0.1	2.36±0.1	1.55±0.1	1.75±0.1	5.50±0.1	4.0±0.1	4.0±0.01	2±0.1	0.25±0.1	9.4±0.1
SMB	3.8±0.1	5.40±0.1	2.45±0.1	1.55±0.1	1.75±0.1	5.50±0.1	4.0±0.1	8.0±0.01	2±0.1	0.25±0.1	9.4±0.1
SMC	6.05±0.1	8.31±0.1	2.54±0.1	1.55±0.1	1.75±0.1	7.50±0.1	4.0±0.1	8.0±0.05	2±0.1	0.25±0.1	12±0.1

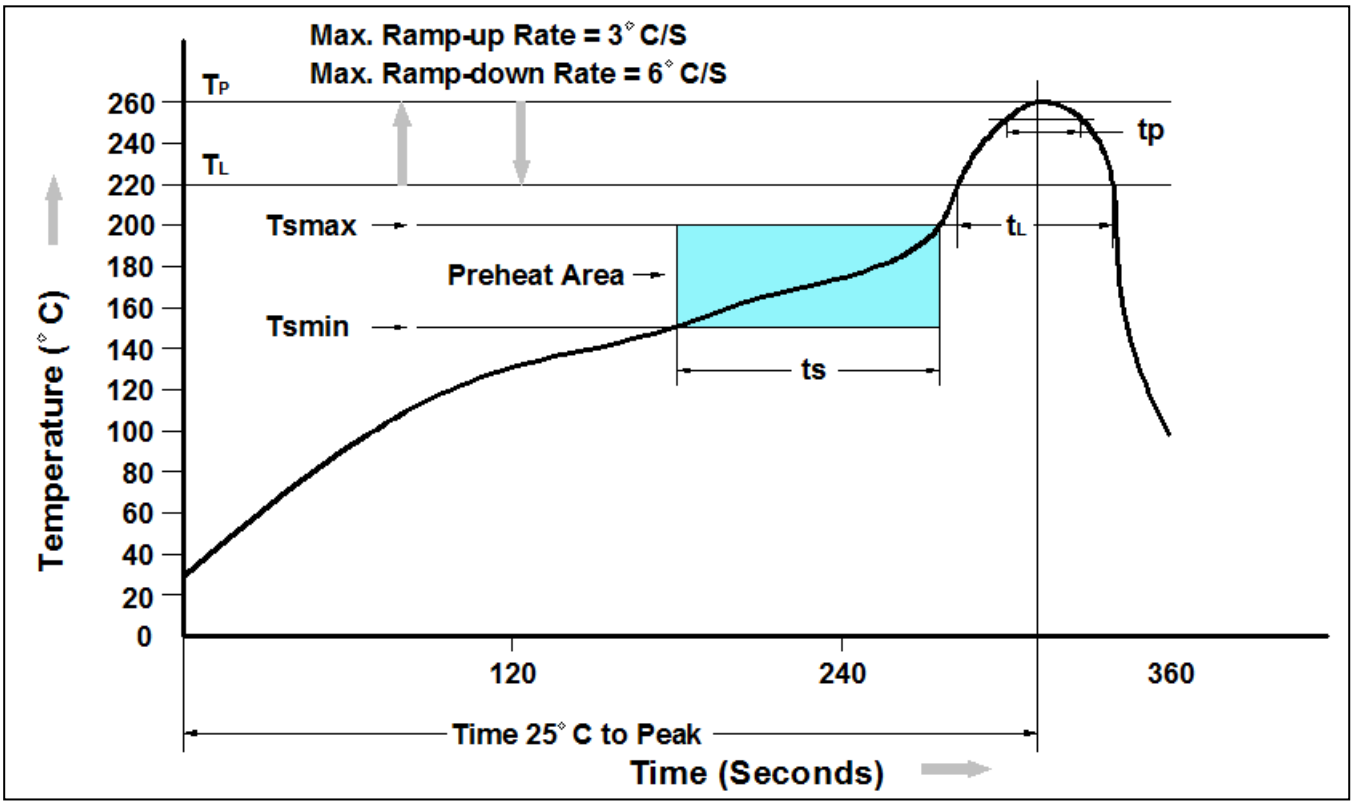




Package	D1 (mm)	D0 (mm)	W1 (mm)	D (mm)
SMA	75	13.5	13.5	330
SMB	75	13.5	13.5	330
SMC	75	13.5	17.0	330

NOTE：The tolerance of reel is ±2mm

Recommand IR Reflow Soldering Thermal Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	150°C
Temperature Max. (Tsmax)	200°C
Time (ts) from (Tsmin to Tsmax)	60-120 seconds
Average Ramp-up Rate (tL to tP)	3°C/second max.
Liquidous Temperature (TL)	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds
Peak Temperature	260°C +0°C / -5°C
Time (tP) within 5°C of actual Peak Temperature	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.

Ordering Information

Part Number	Description	Quantity
ES1A ~ ES1K	SMA Reel	5000 pcs

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