

# DATA SHEET

## SUPER FAST RECOVERY RECTIFIER GENERAL PURPOSE

### ES1 SERIES

RoHS compliant & Halogen free

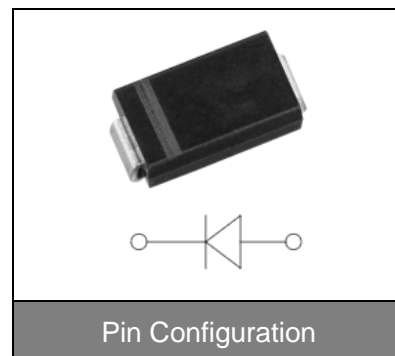
Product specification— July 26, 2023 V.0



## Super Fast Recovery Rectifier Data Sheet

### Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- High forward surge capability
- Super fast reverse recovery time  $t_{rr_{max}}: 35ns$
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C



### Typical Applications

For use in high frequency rectification of power supplies, inverters, converters, and freewheeling diodes for consumer and telecommunication.

### Mechanical Data

- Package: DO-214AC (SMA) Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- Terminals: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- Polarity: Cathode line denotes the cathode end

### Maximum Ratings (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOLS	ES1A	ES1B	ES1D	ES1G	ES1J	UNITS
Marking Code	/	ES1A	ES1B	ES1D	ES1G	ES1J	/
Maximum Repetitive Peak Reverse Voltage	$V_{RRM}$	50	100	200	400	600	V
Maximum RMS Voltage	$V_{RMS}$	35	70	140	280	420	V
Maximum DC blocking Voltage	$V_{DC}$	50	100	200	400	600	V
Average rectified output current @ 60Hz sine wave, Resistance load, TL (FIG.1)	$I_o$	1.0					A
Forward Surge Current (Non-repetitive) @60Hz Half-sine wave, 1 cycle, Tj=25°C	$I_{FSM}$	30					A
Forward Surge Current (Non-repetitive) @1ms, square wave, 1 cycle, Tj=25°C	$I^2t$	3.7					A <sup>2</sup> s
Typical Thermal Resistance	$R_{\theta JA}^{(1)}$	85					°C/W
Storage temperature	$T_{Stg}$	-55 ~ +150					°C
Junction temperature	$T_j$	-55 ~ +150					°C

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

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

PARAMETER	SYMBOLS	TEST CONDITIONS	ES1A	ES1B	ES1D	ES1G	ES1J	UNITS
Maximum instantaneous forward voltage	V <sub>F</sub>	I <sub>FM</sub> =1.0A	0.95			1.3	1.7	V
Maximum reverse recovery time	trr	I <sub>F</sub> =0.5A, I <sub>R</sub> =1.0A , I <sub>rr</sub> =0.25A	35					ns
Maximum DC reverse current at rated DC blocking voltage	I <sub>R</sub>	@T <sub>a</sub> =25°C	5.0					uA
		@T <sub>a</sub> =125°C	200					

## Typical Characteristics Curves

Figure 1. Io-TL Curve

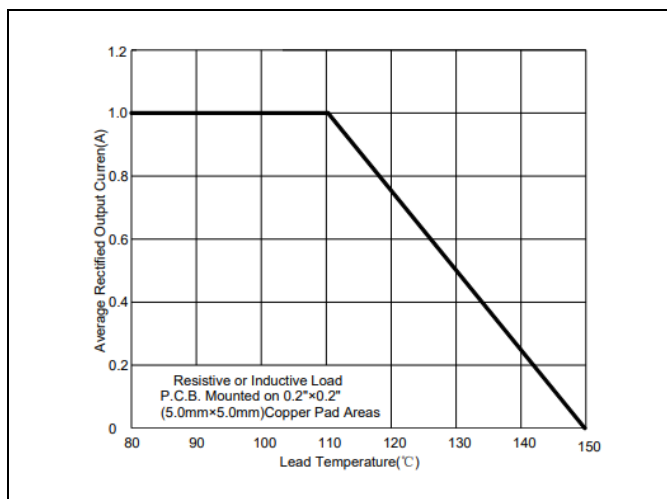


Figure 1. Surge Forward Current Capability

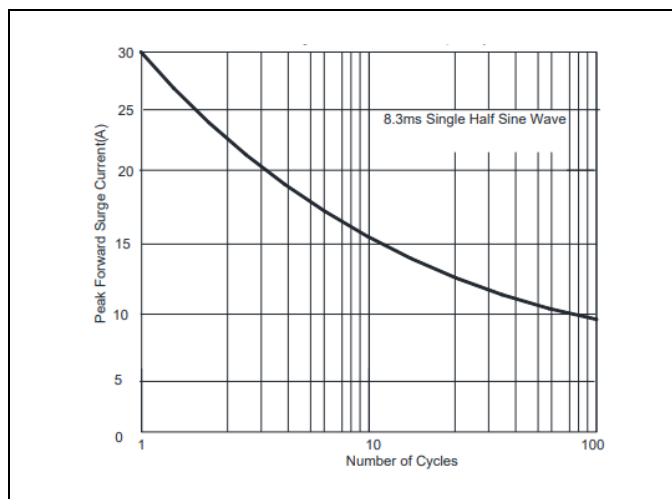


Figure 3. Typical Forward Voltage

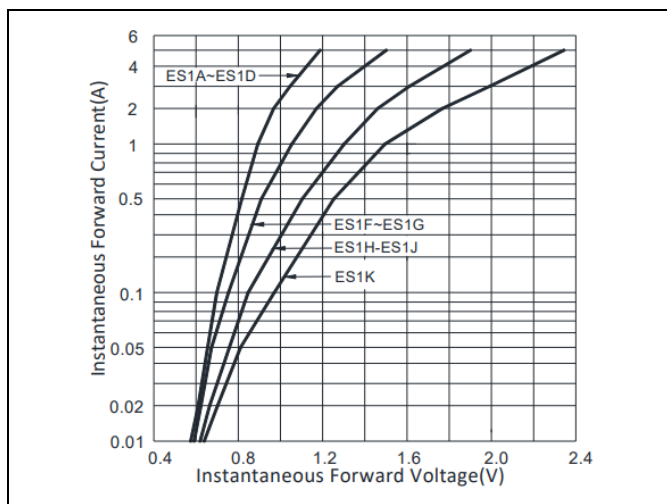


Figure 4. Typical Reverse Characteristics

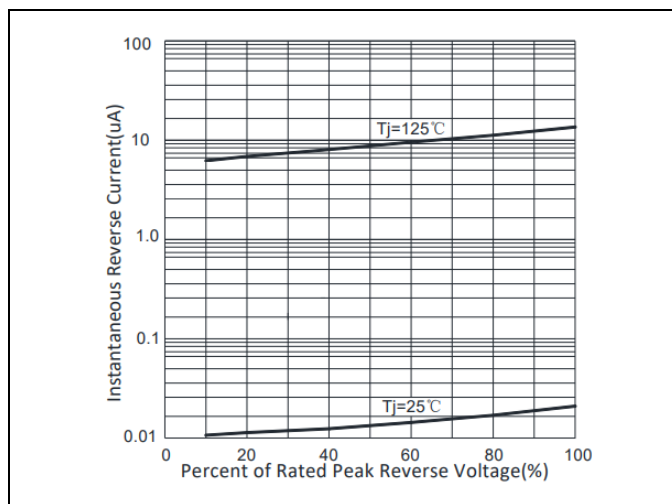
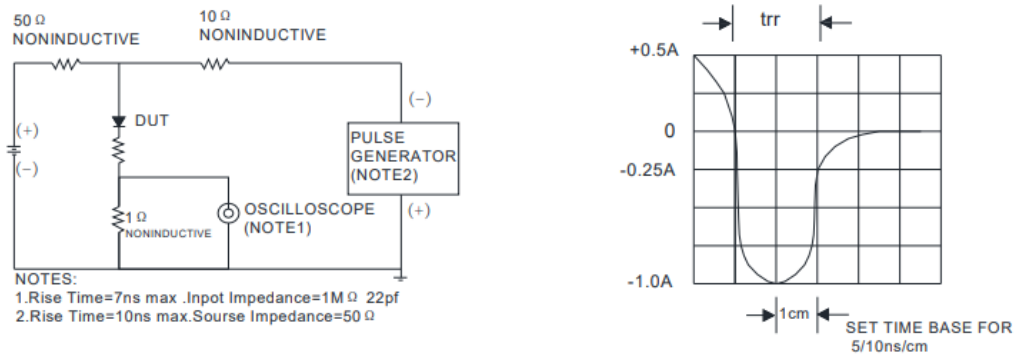


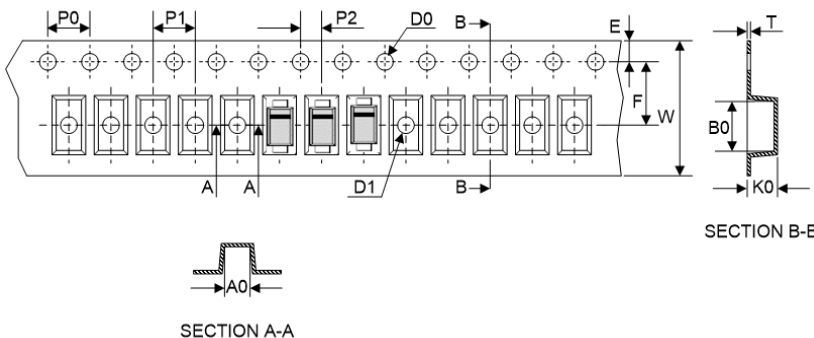
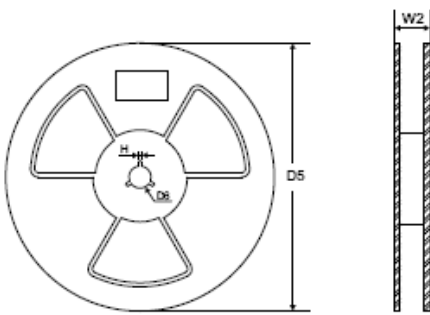
Figure 5. Diagram of circuit and Testing wave form of reverse recovery time



Dimensions (SMA /DO-214AC)

Product	Symbol	Millimeters		Inches	
		Min.	Max.	Min.	Max.
<p>Pad:</p>	L	3.99	4.75	0.157	0.187
	D	2.40	2.83	0.095	0.112
	D1	1.20	1.65	0.047	0.065
	T	4.93	5.66	0.194	0.223
	T1	0.76	1.52	0.030	0.060
	d	0.15	0.31	0.006	0.012
	H	1.90	2.42	0.075	0.095
	Pad:	1.96mm	1.66mm	1.96mm	2.04mm

Packaging

Tape <div></div>	Symbol	Dimension (mm)
	W	12.0±0.15
	P0	4.00±0.10
	P1	4.00±0.10
	P2	2.00±0.10
	D0	Φ1.55±0.05
	D1	Φ1.55±0.05
	E	1.75±0.05
	F	5.50±0.10
	A0	2.79±0.10
	B0	5.33±0.10
	K0	2.36±0.10
	T	0.22±0.10
13" Reel <div></div>	D5	Φ330±1.00
	D6	Φ17.0+1/-0.50
	H	3.0max.
	W2	16.0±0.50
	Quantity: 5000pcs	

## LEGAL DISCLAIMER

YAGEO, its distributors and agents (collectively, "YAGEO"), hereby disclaims any and all liabilities for any errors, inaccuracies or incompleteness contained in any product related information, including but not limited to product specifications, datasheets, pictures and/or graphics. YAGEO may make changes, modifications and/or improvements to product related information at any time and without notice.

YAGEO makes no representation, warranty, and/or guarantee about the fitness of its products for any particular purpose or the continuing production of any of its products. To the maximum extent permitted by law, YAGEO disclaims (i) any and all liability arising out of the application or use of any YAGEO product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for a particular purpose, non-infringement and merchantability.

YAGEO products are designed for general purpose applications under normal operation and usage conditions. Please contact YAGEO for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property: Aerospace equipment (artificial satellite, rocket, etc.), Atomic energy-related equipment, Aviation equipment, Disaster prevention equipment, crime prevention equipment, Electric heating apparatus, burning equipment, Highly public information network equipment, data-processing equipment, Medical devices, Military equipment, Power generation control equipment, Safety equipment, Traffic signal equipment, Transportation equipment and Undersea equipment, or for any other application or use in which the failure of YAGEO products could result in personal injury or death, or serious property damage. Particularly **YAGEO Corporation and its affiliates do not recommend the use of commercial or automotive grade products for high reliability applications or manned space flight.**

Information provided here is intended to indicate product specifications only. YAGEO reserves all the rights for revising this content without further notification, as long as products are unchanged. Any product change will be announced by PCN.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

YAGEO:

[ES1A](#) [ES1B](#) [ES1D](#) [ES1G](#) [ES1J](#)