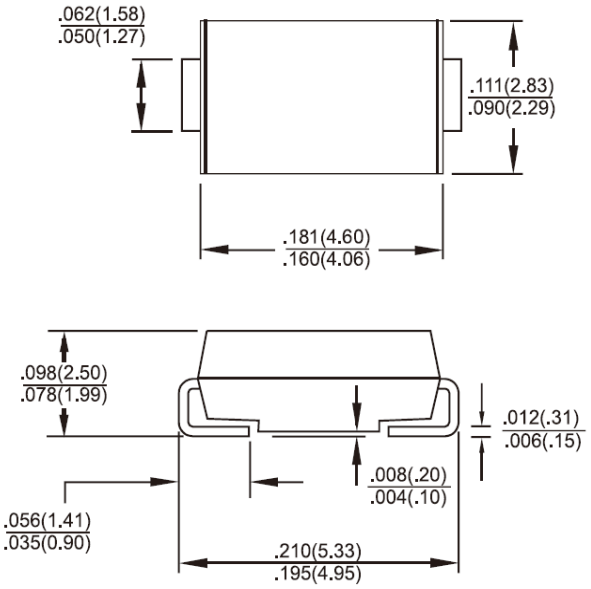
TAIWAN SEMICONDUCTOR

ES1A - ES1J

1.0AMP. Surface Mount Super Fast Rectifiers

SMA/DO-214AC

RoHS COMPLIANCE



Features

- ✧ Glass passivated junction chip
- ✧ For surface mounted application
- ✧ Low profile package
- ✧ Built-in strain rellef
- ✧ Ideal for automated placement
- ✧ Easy pick and place
- ✧ Super fast recovery time for high efficiency
- ✧ Glass passivated chip junction
- ✧ High temperature soldering: 260℃/10 seconds at terminals
- ✧ Plastic material used carries Underwriters Laboratory Classification 94V-0
- ✧ Qualified as per AEC-Q101
- ✧ Green compound with suffix "G" on packing code & prefix "G" on datecode

Mechanical Data

- ✧ Cases: Molded plastic
- ✧ Terminals: Pure tin plated, lead free
- ✧ Polarity: Indicated by cathode band
- ✧ Packing: 12mm tape per EIA STD RS-481
- ✧ Weight: 0.064 grams

Dimensions in inches and (millimeters)

Marking Diagram

ES1X = Specific Device Code
G = Green Compound
Y = Year
M = Work Month

Maximum Ratings and Electrical Characteristics

Rating at 25 ℃ ambient temperature unless otherwise specified.
Single phase, half wave, 60 Hz, resistive or inductive load.
For capacitive load, derate current by 20%

Type Number	Symbol	ES 1A	ES 1B	ES 1C	ES 1D	ES 1F	ES 1G	ES 1H	ES 1J	Units
Maximum Recurrent Peak Reverse Voltage	V_{RRM}	50	100	150	200	300	400	500	600	V
Maximum RMS Voltage	V_{RMS}	35	70	105	140	210	280	350	420	V
Maximum DC Blocking Voltage	V_{DC}	50	100	150	200	300	400	500	600	V
Maximum Average Forward Rectified Current	$I_{F(AV)}$	1								A
Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method)	I_{FSM}	30								A
Maximum Instantaneous Forward Voltage (Note 1) @ 1 A	V_F	0.95				1.3		1.7		V
Maximum DC Reverse Current at Rated @ T_A=25 ℃ DC Blocking Voltage @ T_A=125 ℃	I_R	5 100								uA uA
Maximum Reverse Recovery Time (Note 2)	Trr	35								nS
Typical Junction Capacitance (Note 3)	Cj	16				18				pF
Maximum Thermal Resistance	$R_{\theta JA}$ $R_{\theta JL}$	85 35								^{O}C/W
Operating Temperature Range	T_J	- 55 to + 150								^{O}C
Storage Temperature Range	T_{STG}	- 55 to + 150								^{O}C

Note 1: Pulse Test with PW=300 usec, 1% Duty Cycle
Note 2: Reverse Recovery Test Conditions: I_F=0.5A, I_R=1.0A, I_{RR}=0.25A
Note 3: Measured at 1 MHz and Applied V_R=4.0 Volts

RATINGS AND CHARACTERISTIC CURVES (ES1A THRU ES1J)

FIG.1- MAXIMUM FORWARD CURRENT DERATING CURVE

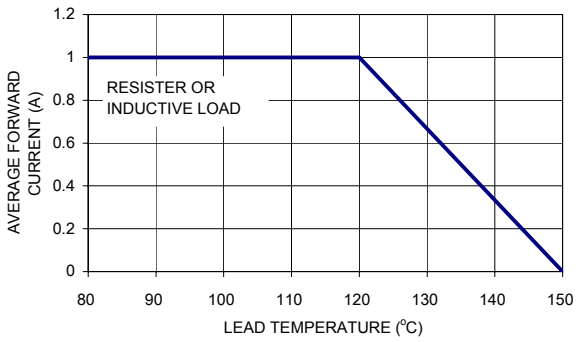


FIG. 2- TYPICAL INSTANTANEOUS FORWARD CHARACTERISRICS

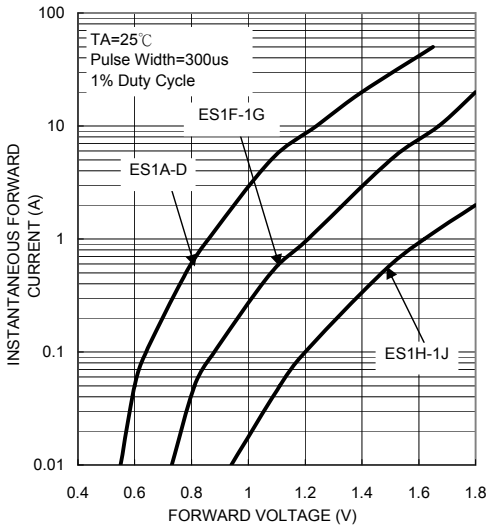


FIG. 3- MAXIMUM NON-REPETITIVE FORWARD PEAK SURGE CURRENT

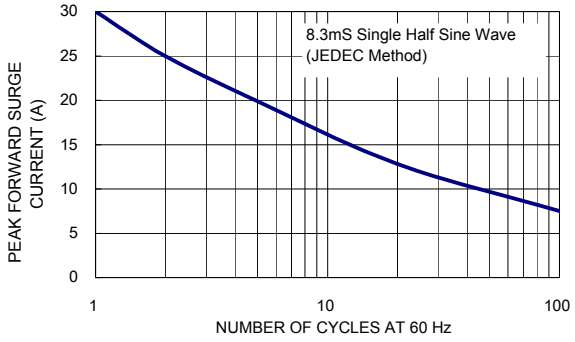


FIG. 4- TYPICAL JUNCTION CAPACITANCE

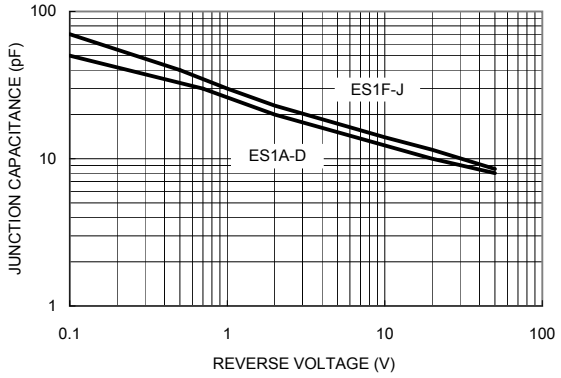


FIG. 5- TYPICAL REVERSE CHARACTERISTICS

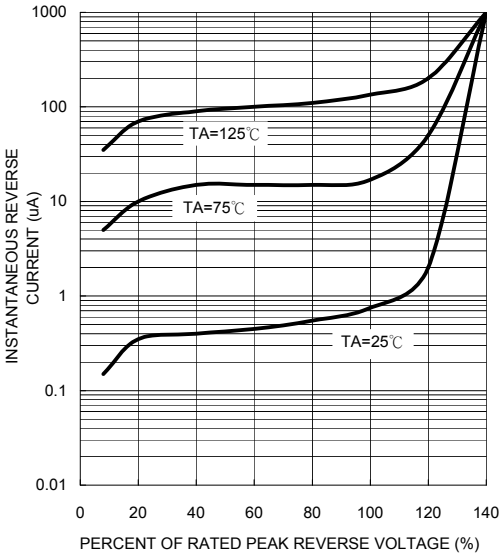


FIG.6- REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM