Surface Mount Glass Passivated Junction Rectifiers

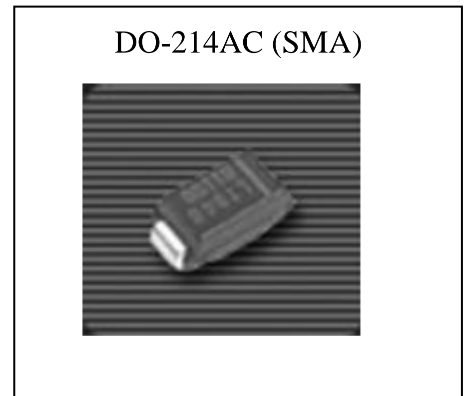
Reverse Voltage 50V to 1000V   Forward Current 1.0A

S1A thru S1M

Features

- For surface mounted applications
- Glass passivated junction chip
- Low profile package
- Built-in stain relief, ideal for automatic placement
- High temperature soldering guaranteed : 260˚C/10 seconds at terminals
- Plastic material used carries UL flammability classification 94V-0

Outline

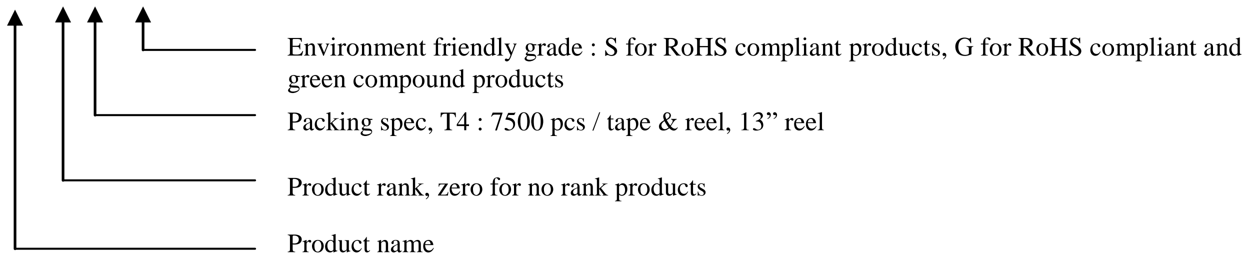


Mechanical Data

- Case: JEDEC DO-214AC(SMA) molded plastic
- Terminals: Pure tin plated, solderable per MIL-STD-750 method 2026
- Polarity: Color band denotes cathode end
- Mounting position : Any
- Weight: 0.064 gram, 0.002 ounce

Ordering Information

Device	Package	Shipping	Marking
S1A-0-T4-G	SMA (Pb-free lead plating and halogen-free package)	7500 pcs / Tape & Reel	S1A
S1B-0-T4-G			S1B
S1D-0-T4-G			S1D
S1G-0-T4-G			S1G
S1J-0-T4-G			S1J
S1K-0-T4-G			S1K
S1M-0-T4-G			S1M



Maximum Ratings and Electrical Characteristics

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

Parameter		Symbol	Type							Units
			S1A	S1B	S1D	S1G	S1J	S1K	S1M	
Maximum repetitive peak reverse voltage		V_{RRM}	50	100	200	400	600	800	1000	V
Maximum RMS voltage		V_{RMS}	35	70	140	280	420	560	700	V
Maximum DC blocking voltage		V_R	50	100	200	400	600	800	1000	V
Maximum instantaneous forward voltage, I_F=1A		V_F	1.1							V
Maximum average forward rectified current, see Fig. 1		$I_{F(AV)}$	1							A
Peak forward surge current @8.3ms single half sine wave superimposed on rated load (JEDEC method) T_L=90˚C		I_{FSM}	30							A
Maximum DC reverse current at Rated DC blocking voltage	T_A=25˚C	I_R	5							μA
	T_A=125˚C		50							
Typical reverse recovery time (Note 1)		trr	1.8							μs
Typical junction capacitance @ f=1MHz and applied 4V reverse voltage		C_J	12							pF
Typical thermal resistance (Note 2)		$R_{\theta JA}$	50							˚C/W
		$R_{\theta JL}$	90							
Operating junction and Storage temperature range		T_J;T_{STG}	-55 ~ +150							℃

Note: 1.Reverse recovery test conditions : I_F=0.5A, I_R=1A, I_{RR}=0.25A
2.Thermal resistance from junction to ambient and from junction to lead mounted on PCB with 0.2”×0.2”(5mm×5mm) copper pad areas.

Ratings and Characteristic Curves

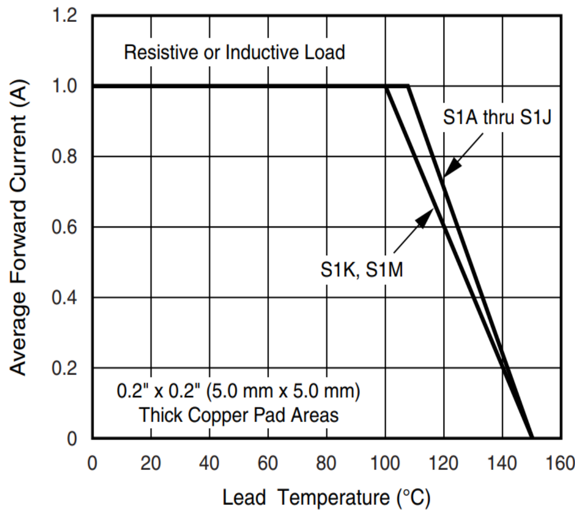


Fig. 1 - Forward Current Derating Curve

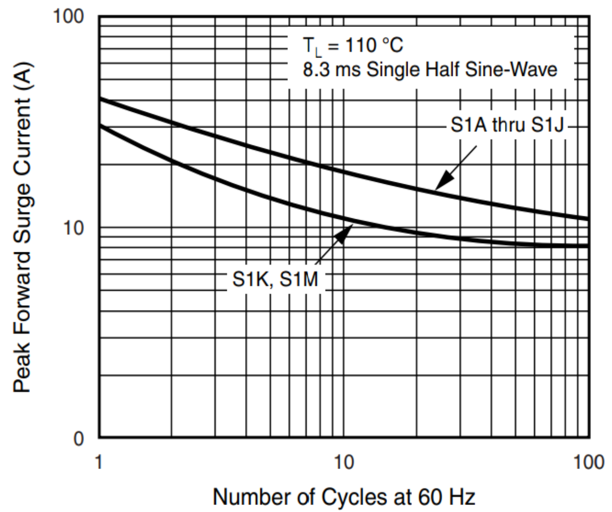


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

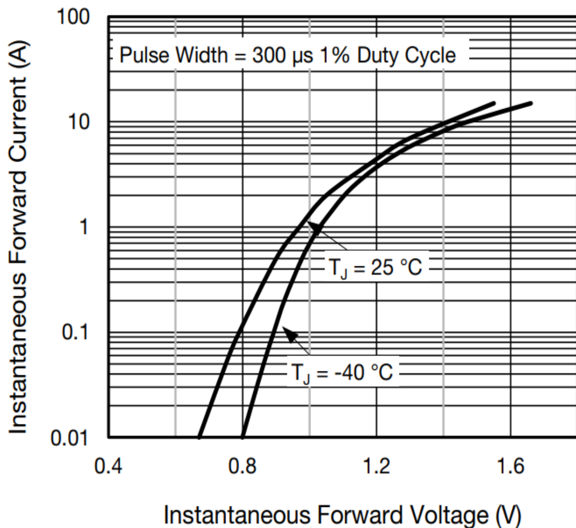


Fig. 3 - Typical Instantaneous Forward Characteristics

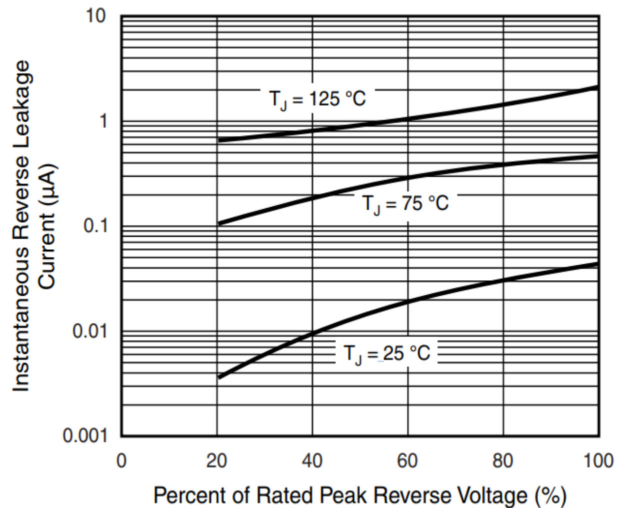


Fig. 4 - Typical Reverse Leakage Characteristics

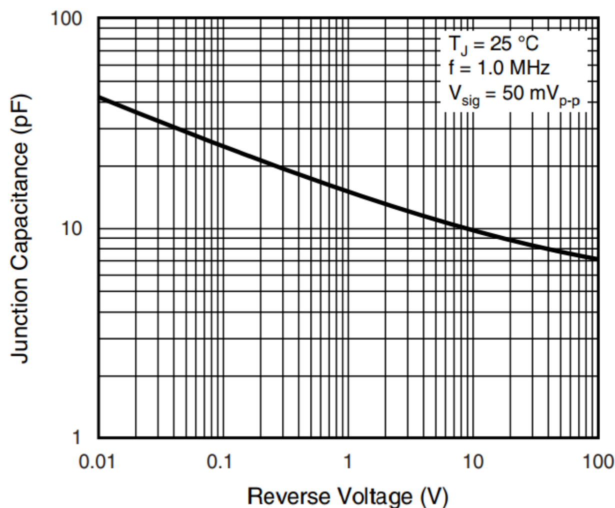


Fig. 5 - Typical Junction Capacitance

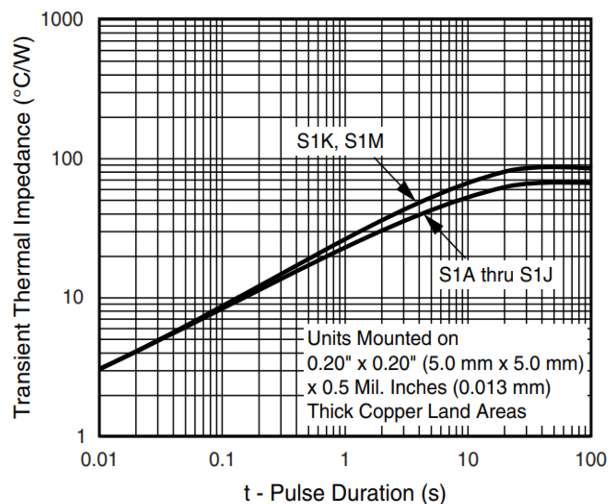
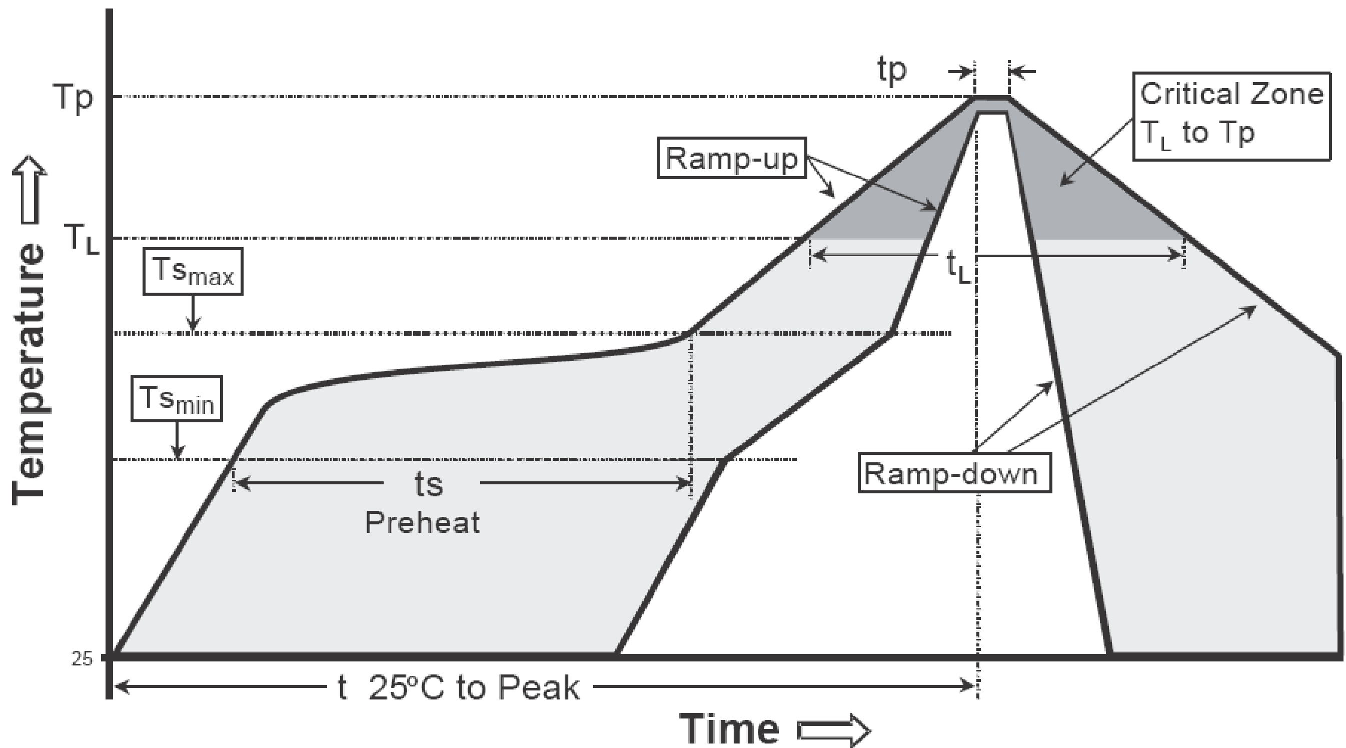


Fig. 6 - Typical Transient Thermal Impedance

Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

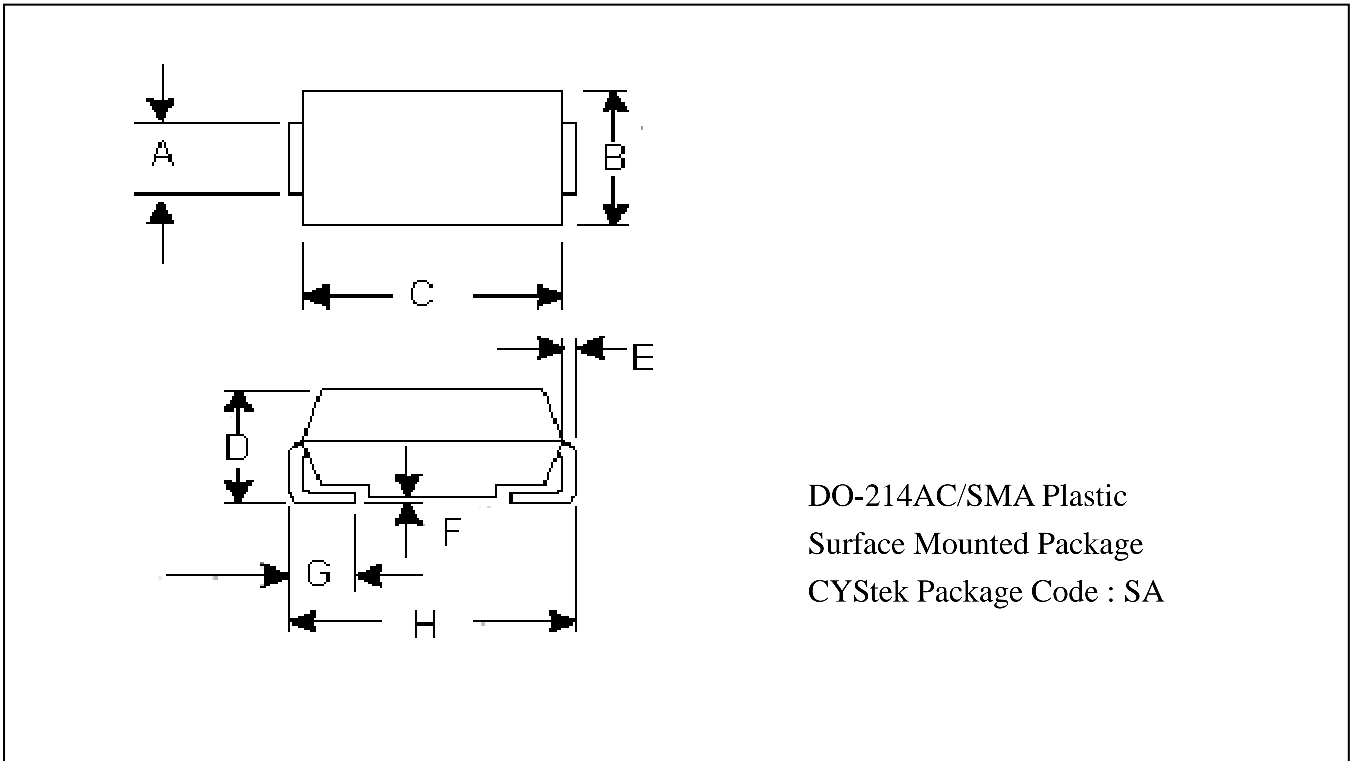
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(Ts min) −Temperature Max(Ts max) −Time(ts min to ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: −Temperature (T_L) − Time (t_L)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(T_P)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

DO-214AC/SMA Dimension



DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.049	0.065	1.25	1.65	E	0.006	0.012	0.15	0.31
B	0.100	0.110	2.54	2.79	F	0.004	0.008	0.10	0.20
C	0.157	0.177	3.99	4.50	G	0.030	0.060	0.76	1.50
D	0.078	0.090	1.98	2.29	H	0.194	0.208	4.91	5.28

Notes : 1.Controlling dimension : millimeters.
2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material :

- Lead : Pure tin plated.
- Mold Compound : Epoxy resin family, flammability solid burning class:UL94V-0.

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