SURFACE MOUNT FAST RECOVERY RECTIFIER RS1A ~ RS1M

DO-214AC (SMA)

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Surface Mount
Plastic Package
RoHS compliant

FEATURE:

1. This product is available in AEC-Q101 Compliant and PPAP Capable also.

Note: For AEC-Q101 compliant products, please use suffix -AQ in the part number while ordering

APPLICATION:

1. Fast Recovery Times for High Efficiency

ABSOLUTE MAXIMUM RATINGS (Ta = 25 ℃ Unless otherwise specified)

PARAMETER		SYMBOL	RS1A	RS1B	RS1D	RS1G	RS1J	RS1K	RS1M	UNIT
Peak Repetitive Reverse Voltage		V_{RRM}	50	100	200	400	600	800	1000	V
RMS Voltage		V_{RMS}	35	70	140	280	420	560	700	V
DC Blocking Voltage		V_{DC}	50	100	200	400	600	800	1000	V
Average Forward Rectified Current @ T_L=90°C		$I_{(AV)}$	1.0							A
Peak Forward Surge Current 8.3ms single half sine-wave superimposed on rated load		I_{FSM}	30							A
Forward Voltage @ 1.0A		V_F	1.3							V
DC Reverse Current	T_a=25°C	I_R	5.0							μA
@ Rated DC Blocking Voltage	T_a=125°C		150							
Junction Capacitance [1]		C_j	TYP 12							pF
Thermal Resistance [2]		$R_{th\ (J-L)}$	TYP 32							°C/W
Reverse Recovery Time [3]		T_{RR}	150				250	500		ns
Storage Operating Junction Temperature Range		T_j, T_{stg}	-55 to +150							°C

Notes:

1. Measured @ 1MHz and Applied Reverse Voltage of 4.0V
2. Thermal Resistance from Junction to Lead Mounted on P.C.B. with 0.3" x 0.3" (8 x 8mm) Copper Pad Areas
3. Reverse Recovery Test Conditions : I_F = 0.5A, I_R = 1.0A, I_{RR} = 0.25A

Recommended Reflow Solder Profiles

The recommended reflow solder profiles for Pb and Pb-free devices are shown below.

Figure 1 shows the recommended solder profile for devices that have Pb-free terminal plating, and where a Pb-free solder is used.

Figure 2 shows the recommended solder profile for devices with Pb-free terminal plating used with leaded solder, or for devices with leaded terminal plating used with a leaded solder.

Figure 1

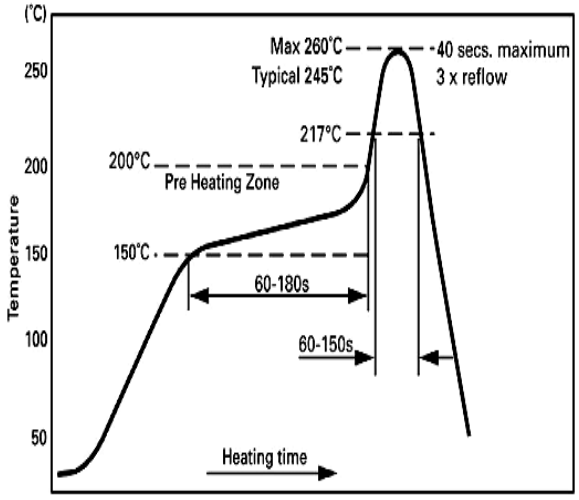
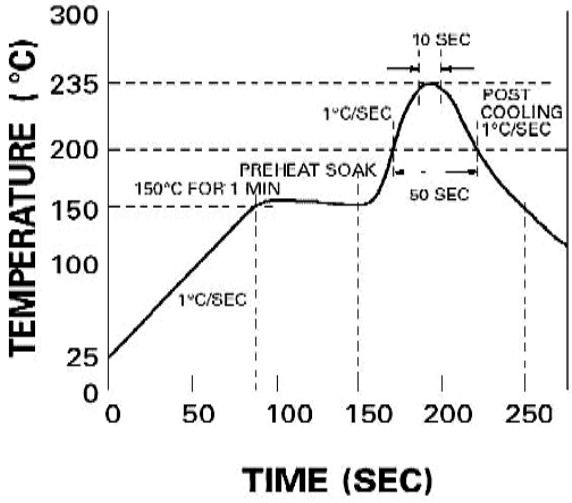


Figure 2

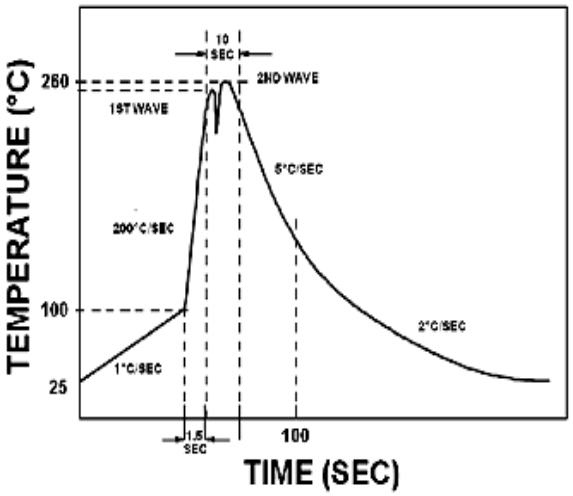


Reflow profiles in tabular form

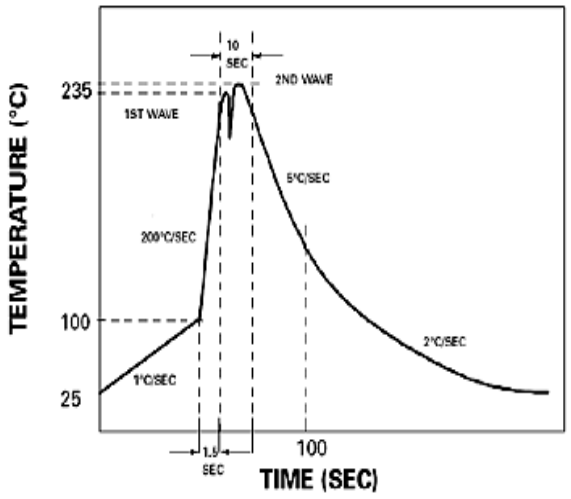
Profile Feature	Sn-Pb System	Pb-Free System
Average Ramp-Up Rate	~3°C/second	~3°C/second
Preheat – Temperature Range – Time	 150-170°C 60-180 seconds	 150-200°C 60-180 seconds
Time maintained above: – Temperature – Tim	 200°C 30-50 seconds	 217°C 60-150 seconds
Peak Temperature	235°C	260°C max.
Time within +0 -5°C of actual Peak	10 seconds	40 seconds
Ramp-Down Rate	3°C/second max.	6°C/second max

Recommended Wave Solder Profiles

The Recommended solder Profile For Devices with Pb-free terminal plating where a Pb-free solder is used



The Recommended solder Profile For Devices with Pb-free terminal plating used with leaded solder, or for devices with leaded terminal plating used with leaded solder



Wave Profiles in Tabular Form

Profile Feature	Sn-Pb System	Pb-free System
Average Ramp-Up Rate	~200°C/second	~200°C/second
Heating rate during preheat	Typical 1-2, Max 4°C/sec	Typical 1-2, Max 4°C/Sec
Final preheat Temperature	Within 125°C of Solder Temp	Within 125°C of Solder Temp
Peak Temperature	235°C	260°C max.
Time within +0 -5°C of actual	10 seconds	10 seconds
Ramp-Down Rate	5°C/second max.	5°C/second max.

TYPICAL CHARACTERISTICS CURVES

Fig 1: Forward Current DERATING Curve

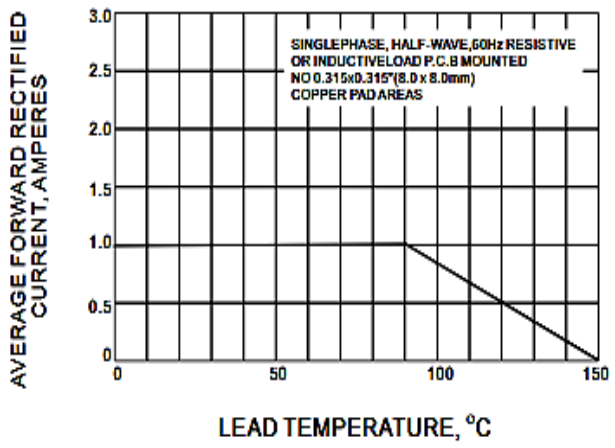


Fig 2: Typical Instantaneous Forward Characteristics

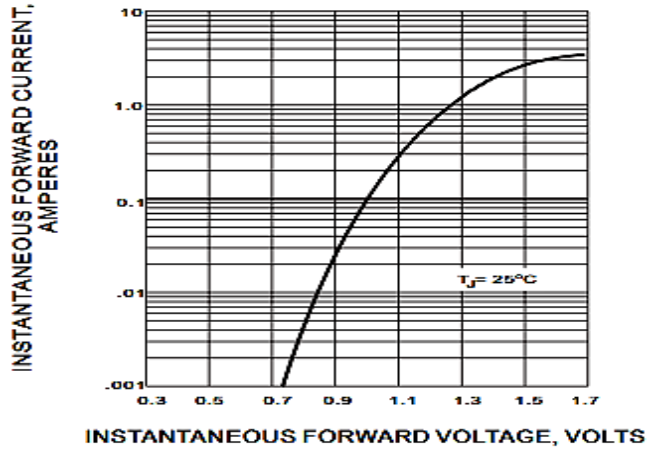


Fig 3: Typical Reverse Characteristic

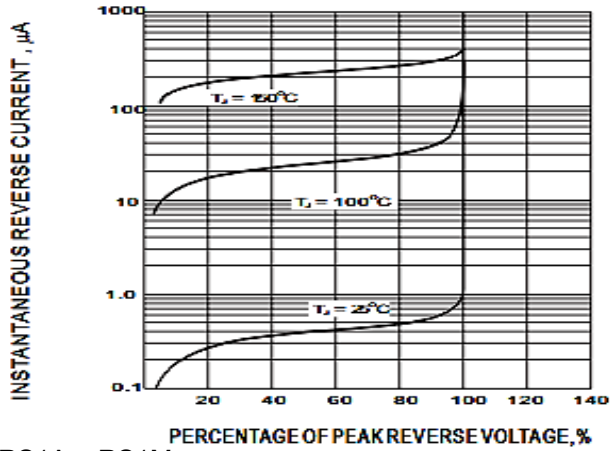


Fig 4: Maximum Non-Repetitive Peak Forward Surge Current

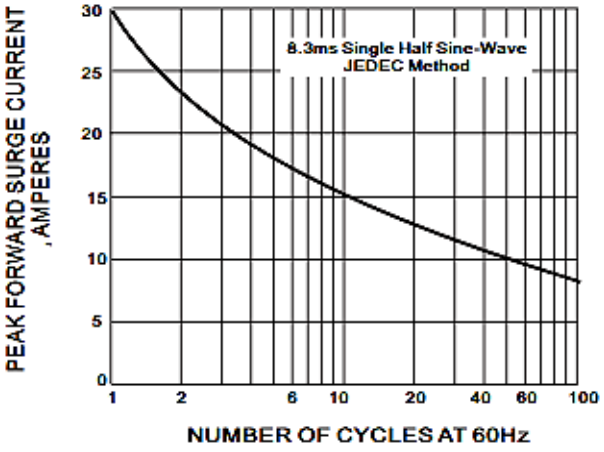
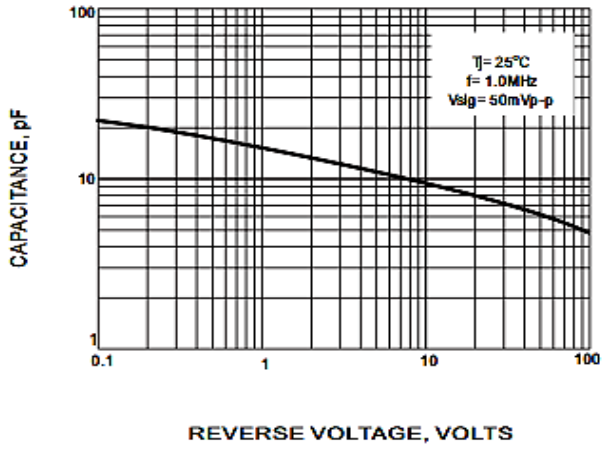


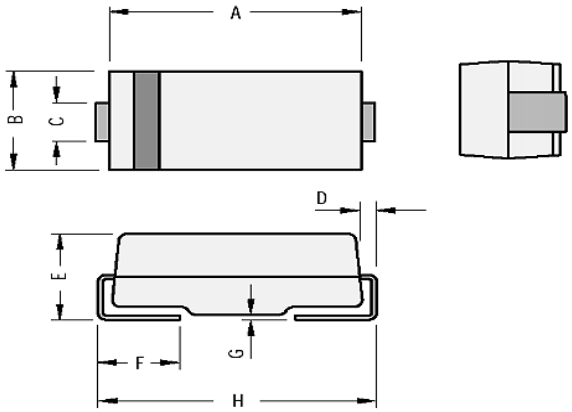
Fig 5: Typical Junction Capacitance



RS1A ~ RS1M
Rev01_ 01092022E

Package Details

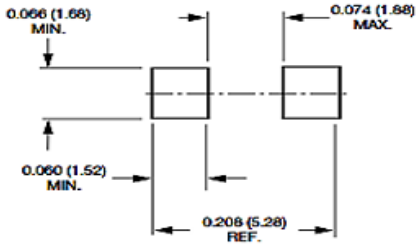
DO-201AC (SMA) SMD Plastic Package



DIM	MIN	MAX
A	4.06	4.57
B	2.18	2.79
C	1.29	1.70
D	1.152	0.305
E	1.70	2.31
F	0.89	1.50
G	0.102	0.203
H	4.70	5.31

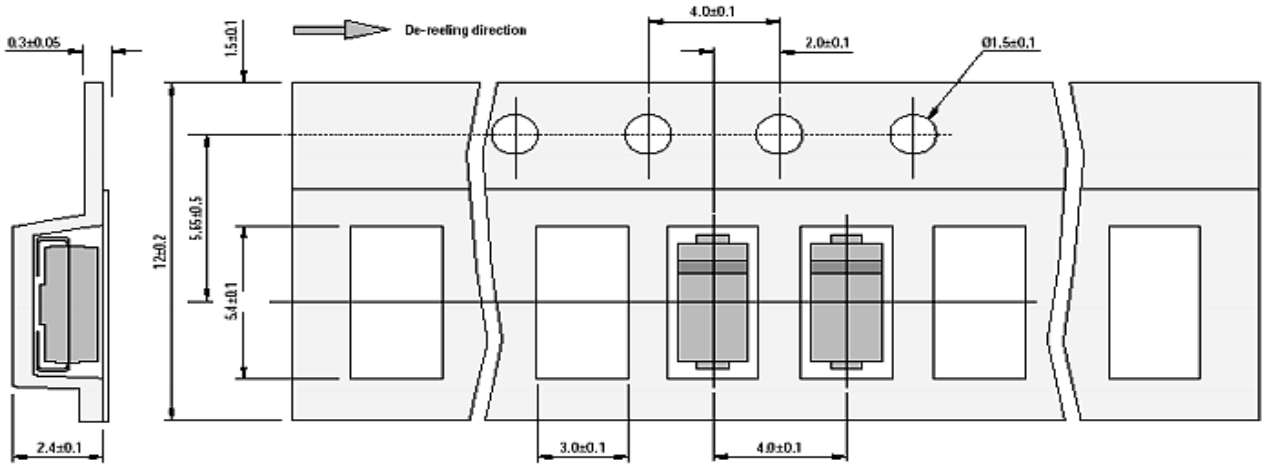
Dimensions in inches and (millimeters)

SOLDER PAD LAYOUT



Dimensions in inches and (millimeters)

SMA Packaging Tape

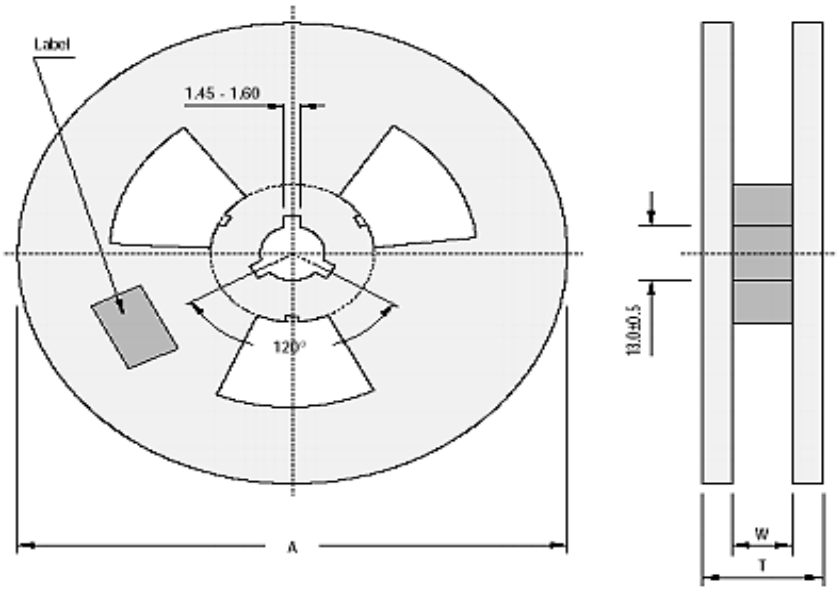


All Dimensions are in mm

Packaging Information

Package/ Case Type	Packaging Type	Std. Packing	Inner Carton			Outer Carton		
		Qty	Qty	Size L x W x H (cm)	Gross Weight (Kg)	Qty	Size L x W x H (cm)	Gross Weight (Kg)
DO-214AC (SMA)	T&R	5,000				50K	46 x 38 x 22	7.9

Reel Dimensions and Components/Reel for SMD Package



Reel Specifications				
Package	Tape Width	Reel Dia A - Max	Inside Thickness W	Reel Thickness T - max
DO-214AC (SMA)	12	330	12.4 ± 2	18.4

All Dimensions are in mm

RS1A ~ RS1M
Rev01_ 01092022E

Recommended Product Storage Environment for Discrete Semiconductor Devices

This storage environment assumes that the Diodes and transistors are packed properly inside the original packing supplied by CDIL.

- Temperature 5 °C to 30 °C
- Humidity between 40 to 70 %RH
- Air should be clean.
- Avoid harmful gas or dust.
- Avoid outdoor exposure or storage in areas subject to rain or water spraying .
- Avoid storage in areas subject to corrosive gas or dust. Product shall not be stored in areas exposed to direct sunlight.
- Avoid rapid change of temperature.
- Avoid condensation.
- Mechanical stress such as vibration and impact shall be avoided.
- The product shall not be placed directly on the floor.
- The product shall be stored on a plane area. They should not be turned upside down. They should not be placed against the wall.

Shelf Life of CDIL Products

The shelf life of products is the period from product manufacture to shipment to customers. The product can be unconditionally shipped within this period. The period is defined as 2 years.
If products are stored longer than the shelf life of 2 years the products shall be subjected to quality check as per CDIL quality procedure.
The products are further warranted for another one year after the date of shipment subject to the above conditions in CDIL original packing.

Floor Life of CDIL Products and MSL Level

When the products are opened from the original packing, the floor life will start.
For this, the following JEDEC table may be referred:

JEDEC MSL Level		
Level	**Time**	**Condition**
1	Unlimited	≤30 °C / 85% RH
2	1 Year	≤30 °C / 60% RH
2a	4 Weeks	≤30 °C / 60% RH
3	168 Hours	≤30 °C / 60% RH
4	72 Hours	≤30 °C / 60% RH
5	48 Hours	≤30 °C / 60% RH
5a	24 Hours	≤30 °C / 60% RH
6	Time on Label(TOL)	≤30 °C / 60% RH

Customer Notes

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

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