



# US1A THRU US1M

VOLTAGE RANGE 50 to 1000 Volts  
 CURRENT 1.0 Ampere



## Features

- Fast recovery glass passivated chip
- Low forward voltage drop
- Low leakage current
- High forward surge capability
- High temperature soldering: 260°C/10S at terminals
- Component in accordance to ROHS 2002/95/1 and WEEE 2002/96/EC



DO-214AC (SMA)

## Mechanical Data

- Case: JEDEC DO-214AC mold plastic Body over glass passivated chip
- Terminals: Solder plated, solderable per J-STD-002B and JESD22-B102D
- Polarity: Laser band denote cathode band
- Weight: 0.0024 ounce, 0.068 gram

## Maximum Ratings and Electrical Characteristics

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

TYPE NUMBER	SYMBOLS	US 1A	US 1B	US 1D	US 1G	US 1J	US 1K	US 1M	UNIT
Maximum Repetitive Peak Reverse Voltage	$V_{RRM}$	50	100	200	400	600	800	1000	Volts
Maximum RMS Voltage	$V_{RMS}$	35	70	140	280	420	560	700	Volts
Maximum DC Blocking Voltage	$V_{DC}$	50	100	200	400	600	800	1000	Volts
Maximum Average Forward Rectified Current At $T_A=100^\circ\text{C}$	$I_{(AV)}$	1.0							Amps
Peak Forward Surge Current 8.3ms single half sine wave superimposed on rated load (JEDEC Method)	$I_{FSM}$	50							Amps
Maximum Instantaneous Forward Voltage per at 1.0A	$V_F$	1.0		1.30		1.70		Volts	
Maximum DC Reverse Current at rated DC Blocking Voltage	$I_R$	$T_A = 25^\circ\text{C}$							$\mu\text{A}$
		$T_A = 125^\circ\text{C}$							
Typical Reverse Recovery Time Test conditions (Note 3)	$T_{RR}$	50				75		nS	
Typical Junction Capacitance (Note 2)	$C_J$	20				15		pF	
Typical Thermal Resistance (Note 1)	$R_{\theta JA}$	180							$^\circ\text{C}/\text{W}$
	$R_{\theta JL}$	120							
Operating Junction Temperature	$T_J$	(-55 to +150)							$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	(-55 to +150)							$^\circ\text{C}$

### Notes:

1. Thermal resistance from Junction to ambient and from junction to lead mounted on PCB. with 0.2×0.2"(5.0 × 5.0mm) copper pad areas.
2. Measured at 1.0MHz and applied reverse voltage of 4.0V
3. Reverse Recovery Test Conditions:  $I_f=0.5\text{A}$ ,  $I_r=1.0\text{A}$ ,  $I_{rr}=0.25\text{A}$ .



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## Ratings and Characteristic Curves (TA=25°C unless otherwise noted)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

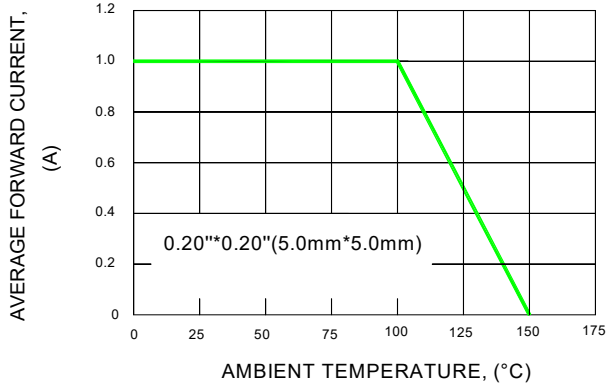


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

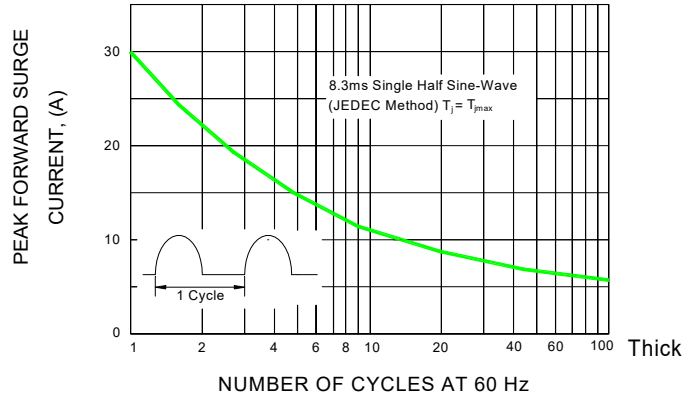


FIG.3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

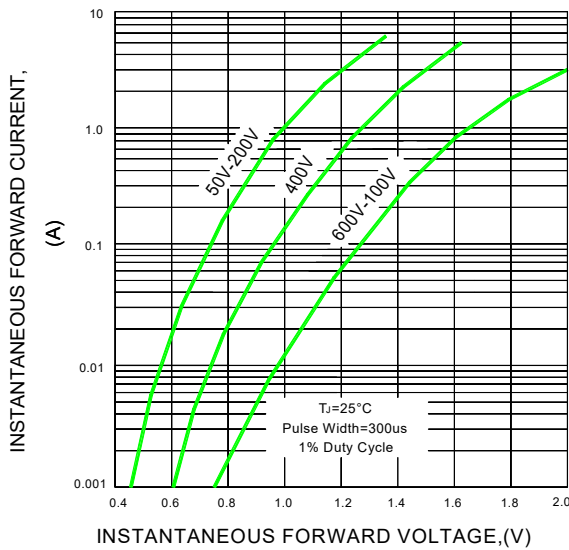


FIG.4-TYPICAL REVERSE CHARACTERISTICS

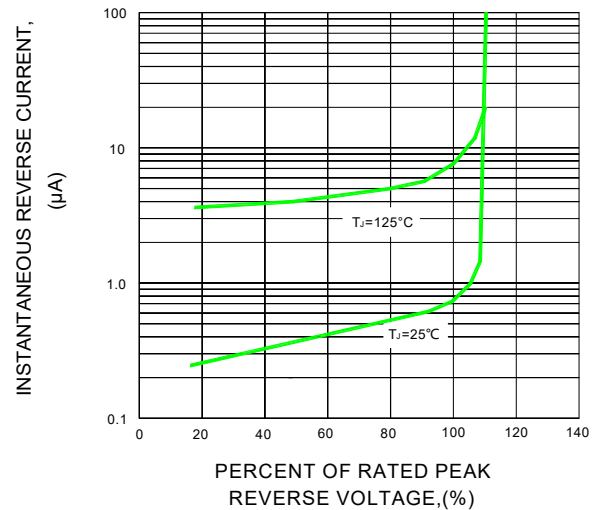


FIG.5-TYPICAL JUNCTION CAPACITANCE

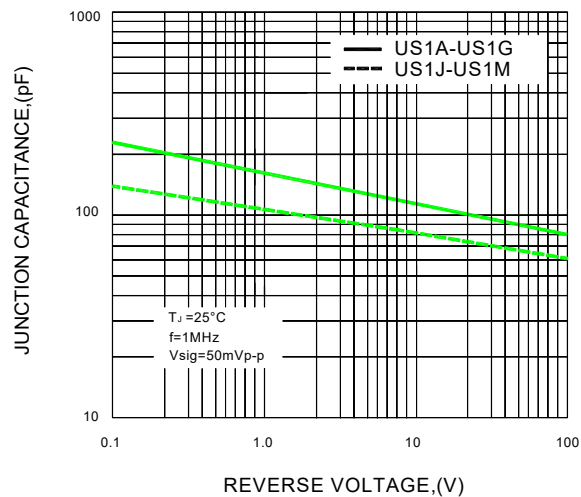
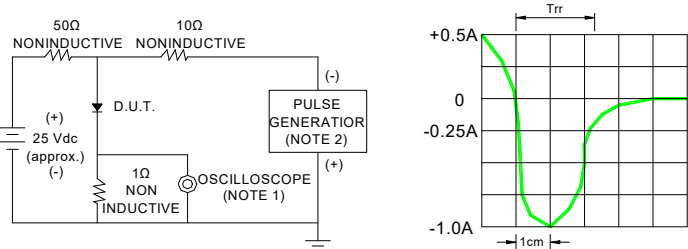
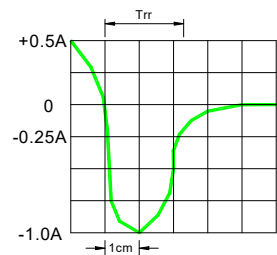


FIG.6-TEST CIRCUIT DIAGRAM AND REVERSE RECOVERY TIME CHARACTERISTIC



- NOTES : 1. Rise Time=7ns max. Input Impedance= 1 magohm. 22pF  
2. Rise time=10ns max. Source Impedance= 50 ohms



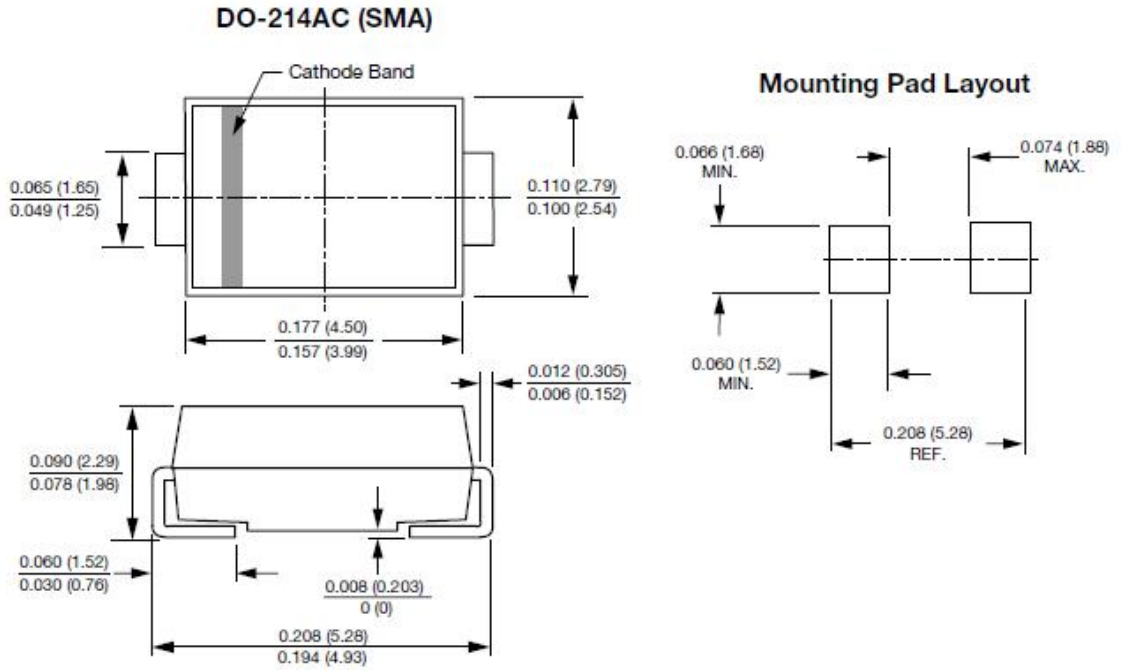
SET TIME BASE FOR 50/100ns/cm



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## Package Outline Dimensions in inches (millimeters)

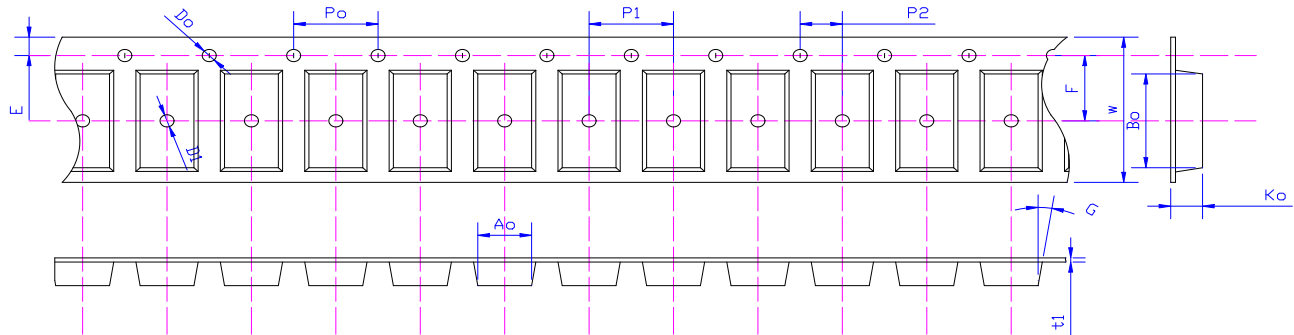




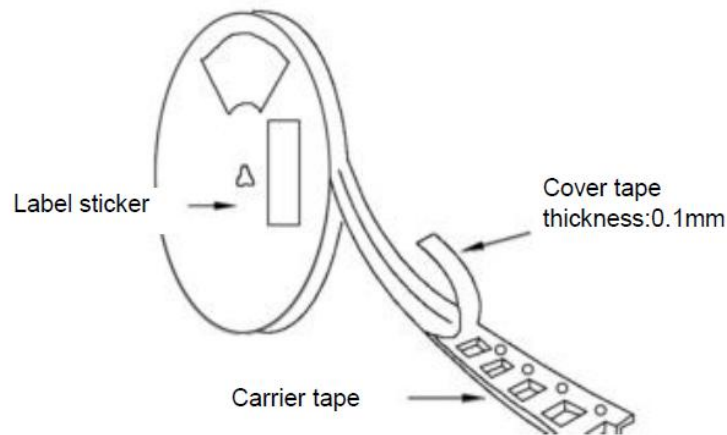
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## Package Reel Information



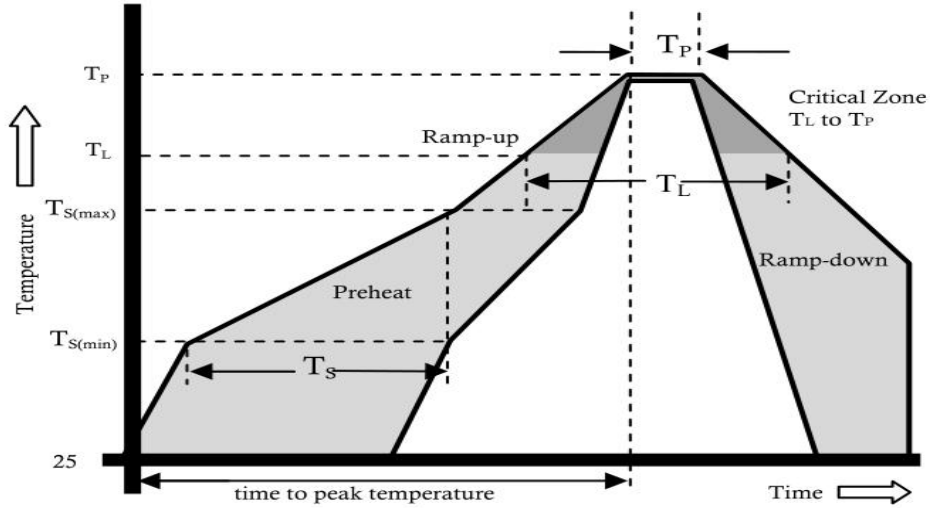
Specifications	$A_0$	$B_0$	$K_0$	$P_0$	$W$	$t_1$
SMA	$2.55 \pm 0.10$	$5.10 \pm 0.10$	$2.36 \pm 0.10$	$4.00 \pm 0.1$	$12.0 \pm 0.05$	$0.23 \pm 0.02$



DEVICE TYPE	Tape Width	13"Reel			07"Reel			
		Q'TY/REEL(pcs)	BOX/CARTON	Q'TY/CARTON(pcs)	Q'TY/REEL(pcs)	REEL/BOX	BOX/CARTON	Q'TY/CARTON(pcs)
SMA	12mm	5000	8	80000	1500	2	16	48000



Reflow Profile



Reflow Condition		Pb-Free Assembly
Pre Heat	Temperature Min.	+150°C
	Temperature Max.	+200°C
	Time(Min to Max)	60-180 secs.
Average ramp up rate(Liquidus Temp( $T_L$ ) to peak)		3°C/sec. Max.
$T_S(max)$ to $T_L$ - Ramp-up Rate		3°C/sec. Max.
Reflow	Temperature ( $T_L$ )(Liquidus)	+217°C
	Temperature ( $T_L$ )	60-150 secs.
Peak Temp ( $T_P$ )		+(260+0/-5) °C
Time within 5°C of actual Peak Temp ( $T_P$ )		25 secs.
Ramp-down Rate		6°C/sec. Max.
Time 25°C to peak Temp ( $T_P$ )		8 min. Max.
Do not exceed		+260°C

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