



## ES3A THRU ES3K

VOLTAGE RANGE 50 to 800 Volts  
CURRENT 3.0 Ampere



## Features

- Glass passivated chip
- Plastic package has underwrites laboratory flammability
- Classification 94V-0
- For surface mounted applications
- Low profile package
- Built-in strain relief, ideal for automated placement
- Glass Passivated chip junction
- High temperature soldering:250°C/10 second at terminals



DO-214AB (SMC)

## Mechanical Data

- Case: JEDED DO-214AA molded plastic over glass passivated chip
- Terminals: Solder plated, Solderable per MIL-STD-750, method 2026
- Polarity: Color band denotes cathode end
- Weight: 0.003ounce, 0.093 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	SYMBOL	ES 3A	ES 3B	ES 3C	ES 3D	ES 3E	ES 3G	ES 3J	ES 3K	UNIT
Maximum Repetitive Peak Reverse Voltage	$V_{RRM}$	50	100	150	200	300	400	600	800	Volts
Maximum RMS Voltage	$V_{RMS}$	35	70	105	140	210	280	420	560	Volts
Maximum DC Blocking Voltage	$V_{DC}$	50	100	150	200	300	400	600	800	Volts
Maximum Average Forward Rectified Current At $T_A=100^{\circ}C$ <sup>(NOTE 1)</sup>	$I_{(AV)}$	3.0								Amps
Peak Forward Surge Current 8.3ms single half sine wave superimposed on rated load (JEDEC Method)	$I_{FSM}$	80								Amps
Maximum Instantaneous Forward Voltage at 3.0A	$V_F$	0.95			1.25		1.70			Volts
Maximum DC Reverse Current at rated DC blocking voltage at	$T_A = 25^{\circ}C$	5.0								$\mu A$
	$T_A = 125^{\circ}C$	100								
Maximum Reverse Recovery Time <sup>(NOTE 3)</sup>	$T_{RR}$	35								nS
Typical Junction Capacitance <sup>(NOTE 2)</sup>	$C_j$	60				45				pF
Typical Thermal Resistance <sup>(NOTE 1)</sup>	$R_{\theta JA}$	75								$^{\circ}C/W$
	$R_{\theta JL}$	30								
Operating Junction Temperature	$T_J$	(-55 to +150)								$^{\circ}C$
Storage Temperature Range	$T_{STG}$	(-55 to +150)								$^{\circ}C$

## Notes:

1. Thermal resistance from Junction to ambient and from junction to lead mounted on P.C.B.with0.3×0.3"(8.0 × 8.0mm) copper pad areas.
2. Measured at 1.0MHz and applied reverse voltage of 4.0V
3. Test conditions  $I_F = 0.5A$ ,  $I_R = 1.0A$ ,  $IRR = 0.25A$



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Ratings and Characteristic Curves ( $T_A=25^\circ\text{C}$  unless otherwise noted)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

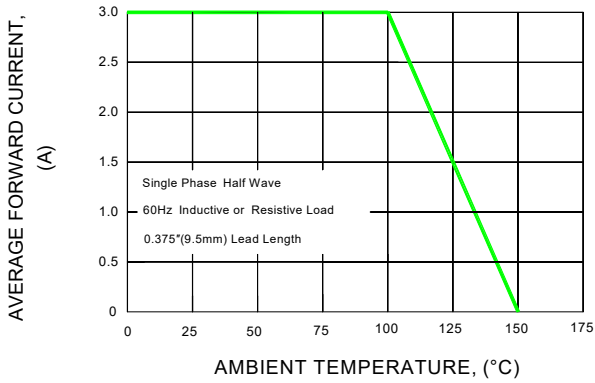


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

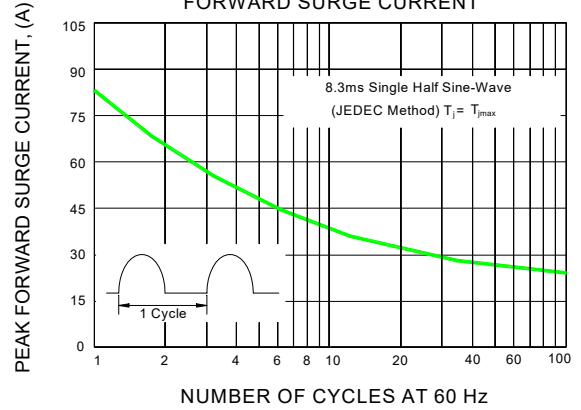


FIG.3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

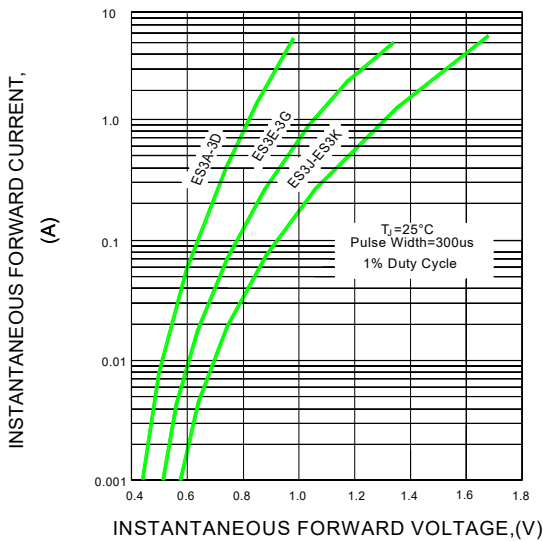


FIG.4-TYPICAL REVERSE CHARACTERISTICS

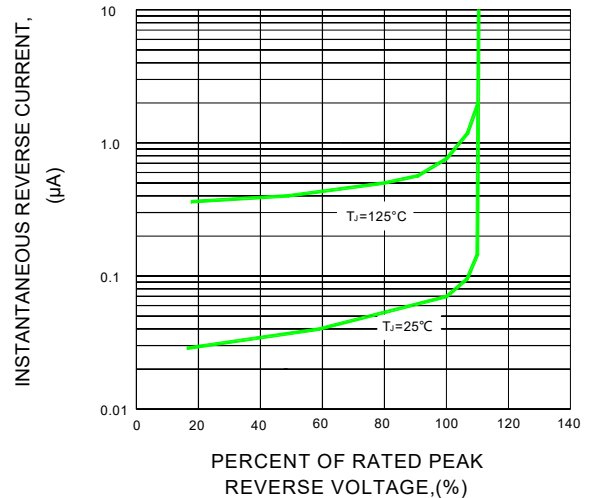


FIG.5-TYPICAL JUNCTION CAPACITANCE

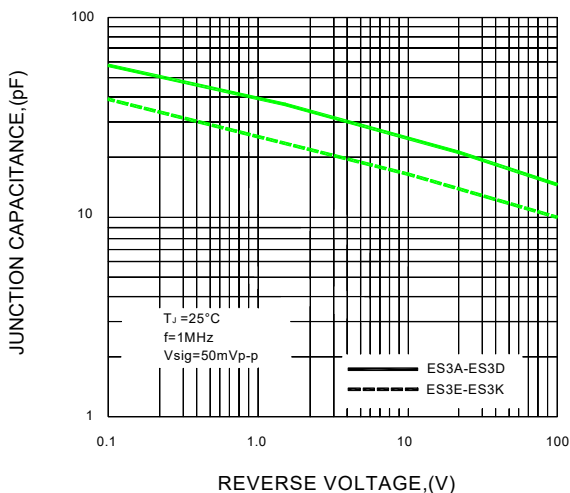
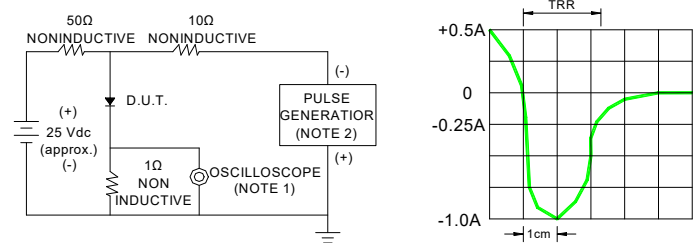


FIG.6-TEST CIRCUIT DIAGRAM AND REVERSE RECOVERY TIME CHARACTERISTIC



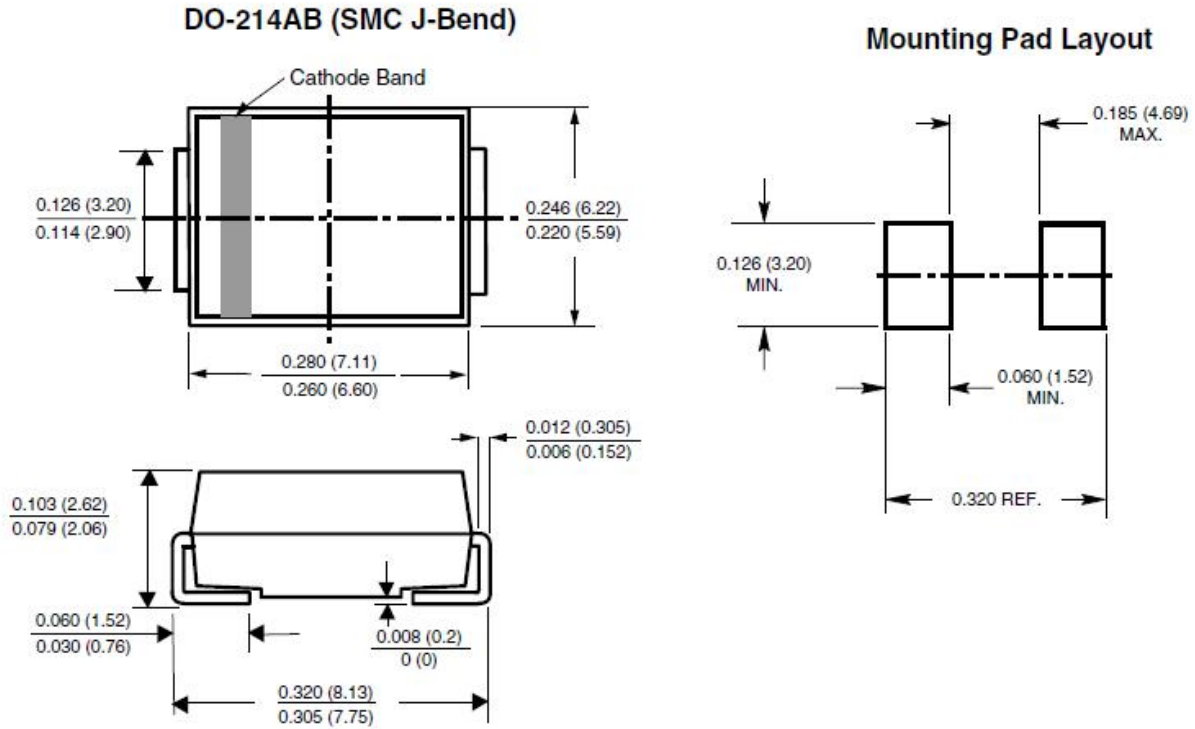
NOTES : 1. Rise Time=7ns max. Input Impedance= 1 megohm. 22pF  
2. Rise time=10ns max. Source Impedance= 50 ohms  
SET TIME BASE FOR 50/100ns/cm



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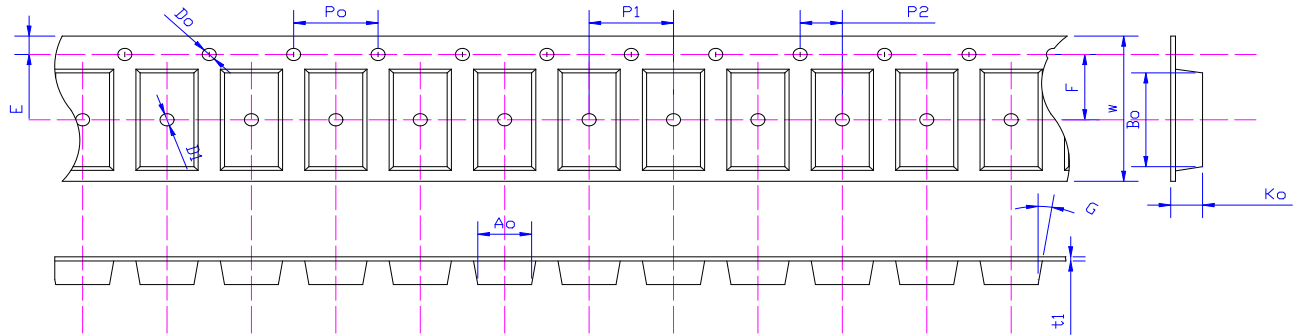
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Package Outline Dimensions in inches (millimeters)

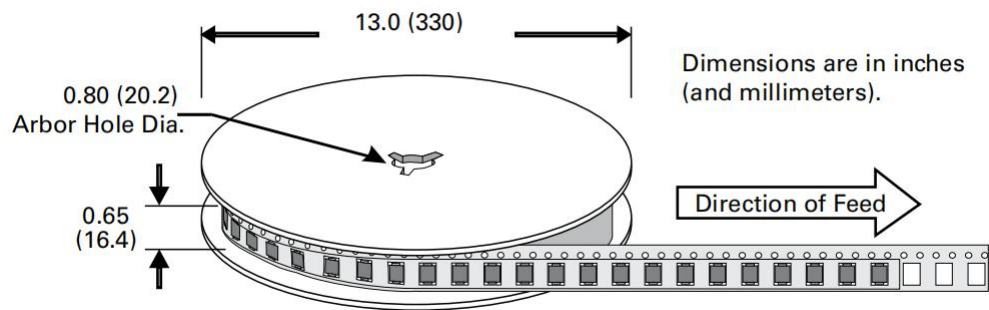




Package Reel Information



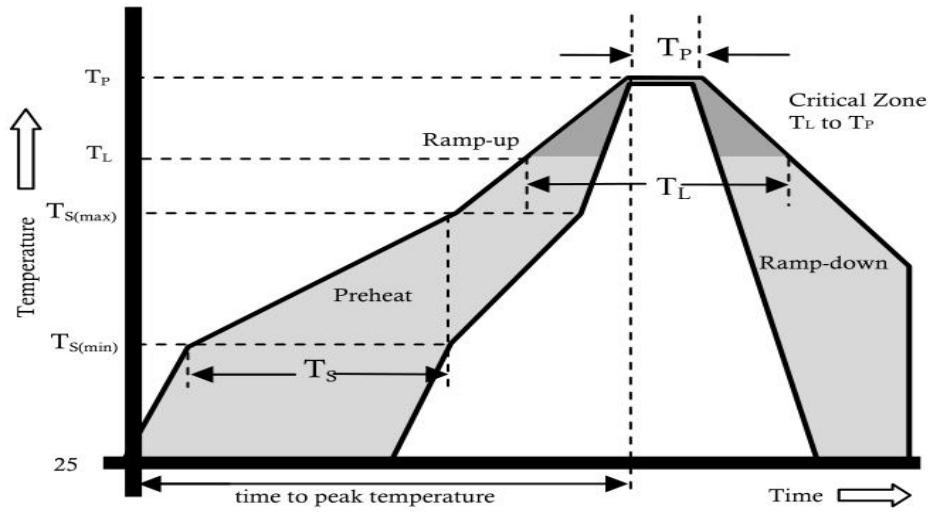
Specifications	Ao	Bo	Ko	Po	W	t1
SMC	6.05±0.10	8.31±0.10	2.54±0.10	4.00±0.1	16.0±0.30	0.30±0.02



DEVICE TYPE	Tape Width	13" Reel			07" Reel			
		Q'TY/REEL(pcs)	BOX/CARTOON	Q'TY/CARTON(pcs)	Q'TY/REEL(pcs)	REEL/BOX	BOX/CARTOON	Q'TY/CARTON(pcs)
SMC	16mm	3000	8	48000	800	3	8	19200



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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