

## Surface Mount Rectifier

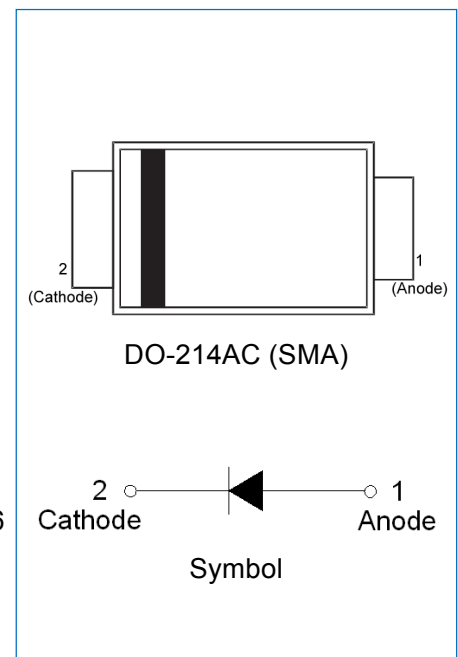
### SM512A~SM520A

#### DESCRIPTION

- ✧ For surface mounted applications in order to optimize board space
- ✧ Easy pick and place
- ✧ Plastic package has underwriters laboratories flammability classification 94V-O
- ✧ Low forward drop
- ✧ High temperature soldering: 260°C/10s at terminals
- ✧ Glass passivated chip junction
- ✧ Lead free in compliance with EU RoHS 2011/65/EU directive

#### MECHANICAL DATA

- ✧ Case: JEDEC DO-214AC Molded plastic
- ✧ Terminals: Solder plated, solderable per MIL-STD-750, method 2026
- ✧ Polarity: Color band denotes cathode end
- ✧ Standard packaging: 12mm tape (EIA-481)
- ✧ Weight: 0.002 ounce, 0.067 gram



#### ABSOLUTE MAXIMUM RATING AND ELECTRICAL CHARACTERISTICS (Rating at 25°C ambient temperature unless otherwise specified.)

Parameter	Symbol	SM512A	SM514A	SM516A	SM518A	SM520A	Unit	
Maximum repetitive peak reverse voltage	$V_{RRM}$	1200	1400	1600	1800	2000	V	
Maximum non-repetitive peak reverse voltage	$V_{RSM}$	1300	1500	1700	1900	2100	V	
Maximum RMS voltage	$V_{RMS}$	840	980	1120	1260	1400	V	
Maximum DC blocking voltage	$V_{DC}$	1200	1400	1600	1800	2000	V	
Maximum average forward current at $T_L=100^\circ\text{C}$	$I_{F(AV)}$	1					A	
Peak forward surge current: 8.3ms single half sine-wave superimposed on rated load (JEDEC method)	$I_{FSM}$	30					A	
Maximum Forward Voltage @IF=1A	$V_F$	1.15					V	
Maximum DC Reverse Current at Rated DC blocking Voltage	$T_j=25^\circ\text{C}$	$I_R$					5	$\mu\text{A}$
	$T_j=125^\circ\text{C}$						500	$\mu\text{A}$
Typical Junction Capacitance $V_R=4.0\text{V}$ , $f=1\text{MHz}$	$C_J$	25	18			pF		
Operating junction and storage temperature range	$T_j, T_{stg}$	-55 to +150					$^\circ\text{C}$	

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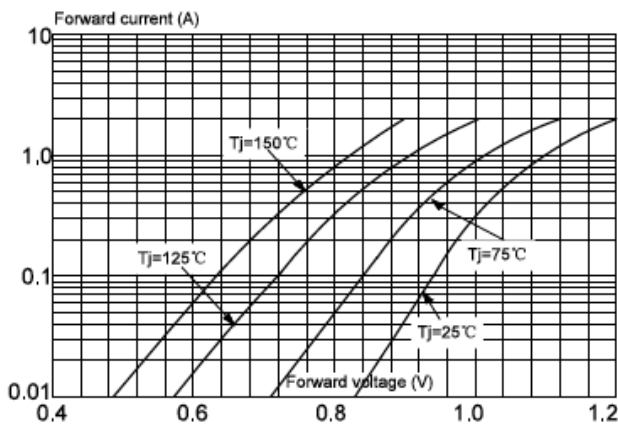
**SM512A~SM520A**

**THERMAL RESISTANCES**

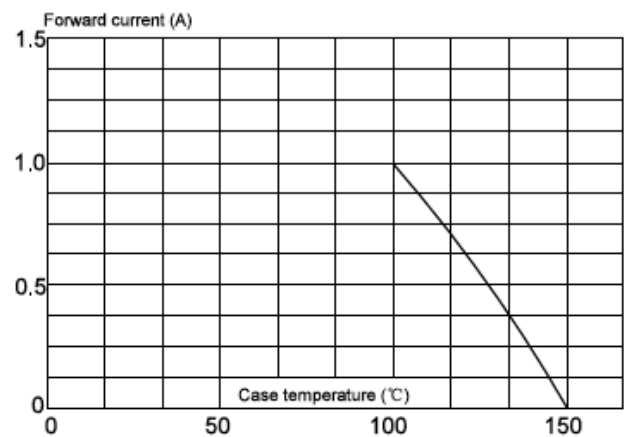
Symbol	Parameter	SM512	SM514	SM516	SM518	SM520	Unit
$R_{th(j-a)}$	Junction to ambient	75					°C/W

**Characteristic Curves**

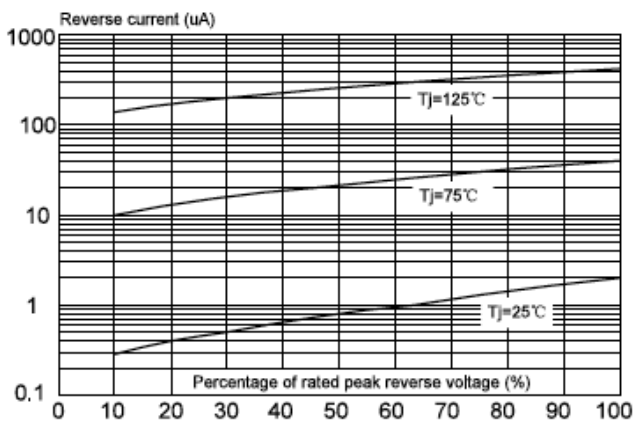
**FIG.1: Typical forward characteristics**



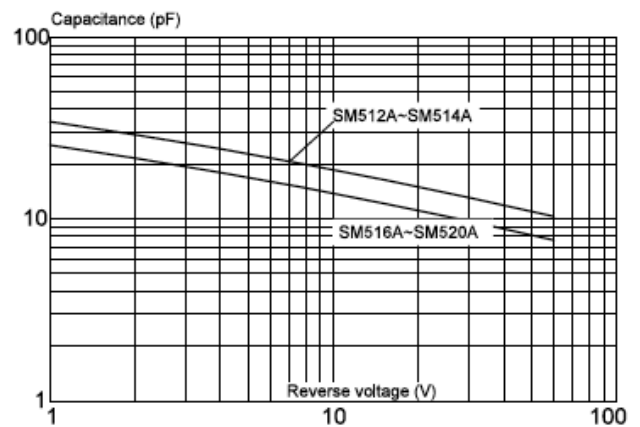
**FIG.2: Forward current derating curve**



**FIG.3: Typical reverse characteristics**



**FIG.4: Typical junction capacitance**

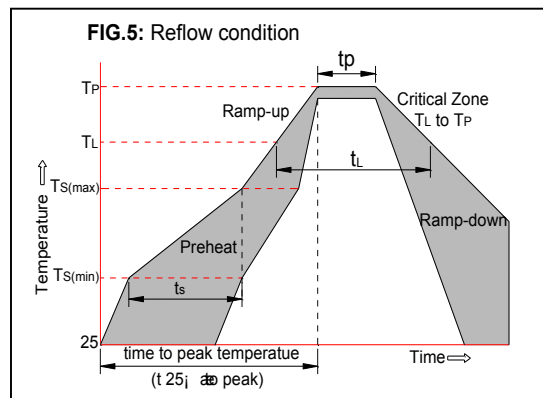


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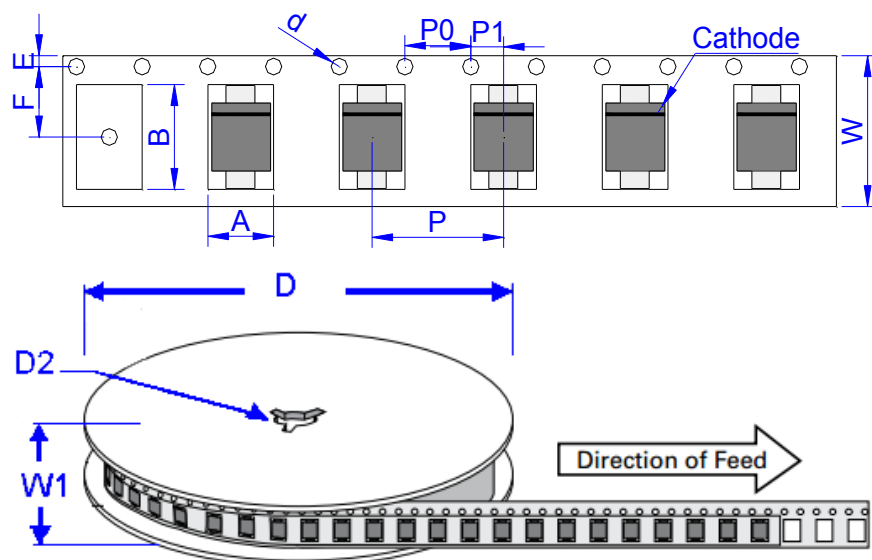
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#### SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.5)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time (Min to Max) ( $t_s$ )	60-180 secs.
Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak)		3°C/sec. Max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature( $T_L$ )(Liquid us)	+217°C
	-Temperature( $t_L$ )	60-150 secs.
Peak Temp ( $T_p$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp ( $T_p$ )		8 min. Max
Do not exceed		+260°C



#### TAPE AND REEL SPECIFICATION-SMA



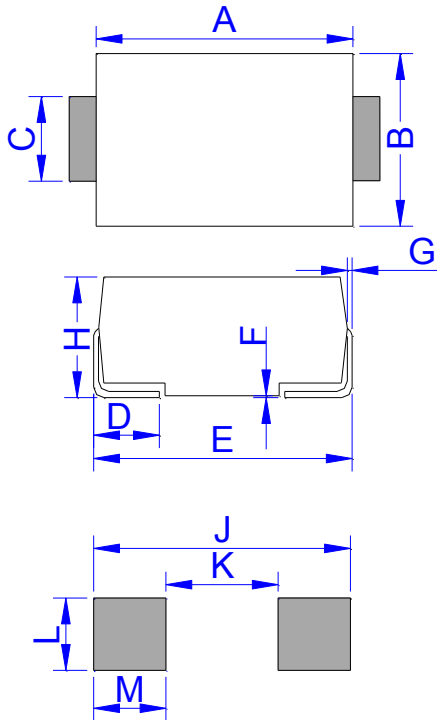
Ref.	Dimensions	
	Millimeters	Inches
A	2.79 ± 0.3	0.110 ± 0.012
B	5.33 ± 0.3	0.210 ± 0.012
d	1.5 ± 0.1	0.059 ± 0.004
D	330.0	13.0
D2	13 ± 1	0.512 ± 0.039
E	1.5 ± 0.2	0.059 ± 0.008
F	5.65 ± 0.2	0.222 ± 0.008
P	4.0 ± 0.2	0.157 ± 0.008
P0	4.0 ± 0.2	0.157 ± 0.008
P1	2.0 ± 0.2	0.079 ± 0.008
W	12.0 ± 0.2	0.472 ± 0.008
W1	16.8 ± 2.0	0.661 ± 0.079

OUTLINE	REEL (PCS)	PER CARTON (PCS)	REEL DIAMETERS (mm)
TAPING	7,500	120,000	330

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### PACKAGE MECHANICAL DATA



DO-214AC (SMA)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.00	4.60	0.157	0.181
B	2.50	2.90	0.098	0.114
C	1.20	1.60	0.047	0.062
D	0.76	1.52	0.030	0.060
E	4.80	5.28	0.188	0.208
F	0.051	0.203	0.002	0.008
G	0.152	0.305	0.006	0.012
H	2.00	2.44	0.078	0.096
J	5.80		0.228	
K		1.66		0.065
L	2.06		0.081	
M	2.07		0.082	