

## SMC Plastic-Encapsulate Diodes

General Purpose Rectifier Diode

### Features

- $I_{F(AV)}$  10A
- $V_{RWM}$  50V- 1000V
- High surge current capability
- Polarity: Color band denotes cathode

### Applications

- Rectifier

### Marking

- S12X  
X: From A To M  
Limiting Values(Absolute Maximum Rating)

SMC



### Limiting Values (Absolute Maximum Rating)

| Item                                             | Symbol         | Unit             | Test Conditions                                      | S12        |     |     |     |     |     |      |
|--------------------------------------------------|----------------|------------------|------------------------------------------------------|------------|-----|-----|-----|-----|-----|------|
|                                                  |                |                  |                                                      | A          | B   | D   | G   | J   | K   | M    |
| Repetitive Peak Reverse Voltage                  | $V_{RRM}$      | V                |                                                      | 50         | 100 | 200 | 400 | 600 | 800 | 1000 |
| Maximum RMS Voltage                              | $V_{RMS}$      | V                |                                                      | 35         | 70  | 140 | 280 | 420 | 560 | 700  |
| Average Forward Current                          | $I_{F(AV)}$    | A                | 60Hz Half-sine wave, Resistance load                 | 12         |     |     |     |     |     |      |
| Surge(Non-repetitive)Forward Current             | $I_{FSM}$      | A                | 60Hz Half-sine wave, 1 cycle, $T_a=25^\circ\text{C}$ | 300        |     |     |     |     |     |      |
| Operation Junction and Storage Temperature Range | $T_J, T_{STG}$ | $^\circ\text{C}$ |                                                      | -55 ~ +150 |     |     |     |     |     |      |

### Electrical Characteristics ( $T_a=25^\circ\text{C}$ Unless otherwise specified)

| Item                          | Symbol           | Unit               | Test Condition                                            | S12                     |   |   |   |   |   |   |
|-------------------------------|------------------|--------------------|-----------------------------------------------------------|-------------------------|---|---|---|---|---|---|
|                               |                  |                    |                                                           | A                       | B | D | G | J | K | M |
| Peak Forward Voltage          | $V_F$            | V                  | $I_F=12.0\text{A}$                                        | 1.0                     |   |   |   |   |   |   |
| Peak Reverse Current          | $I_{RRM1}$       | $\mu\text{A}$      | $V_{RM}=V_{RRM}$                                          | $T_a=25^\circ\text{C}$  |   |   |   |   |   |   |
|                               | $I_{RRM2}$       |                    |                                                           | $T_a=125^\circ\text{C}$ |   |   |   |   |   |   |
| Thermal Resistance(Typical)   | $R_{\theta J-A}$ | $^\circ\text{C/W}$ | Between junction and ambient                              | 44                      |   |   |   |   |   |   |
|                               | $R_{\theta J-L}$ |                    | Between junction and terminal                             | 9                       |   |   |   |   |   |   |
| Juction Capacitance (Typical) | $C_j$            | pF                 | Measured at 1MHZ and Applied Reverse Voltage of 4.0 V.D.C | 76                      |   |   |   |   |   |   |

### Notes:

Thermal resistance from junction to ambient and from junction to lead mounted on 1" x 1"(25.4mm x 25.4mm) FR4 PCB, double sided copper, with minimum pad layout

## Typical Characteristics

FIG.1: FORWARD CURRENT DERATING CURVE

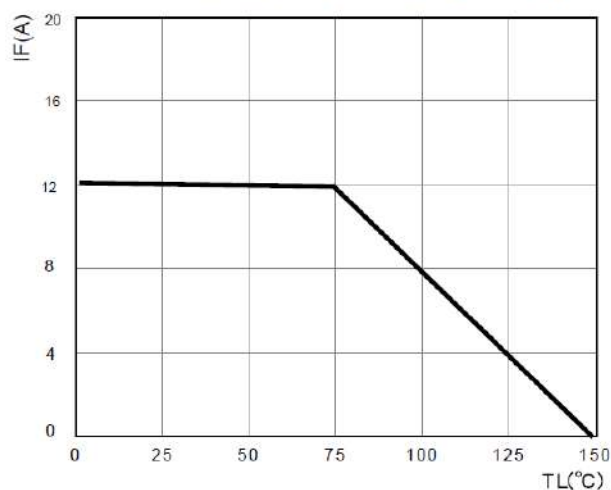


FIG.2: MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

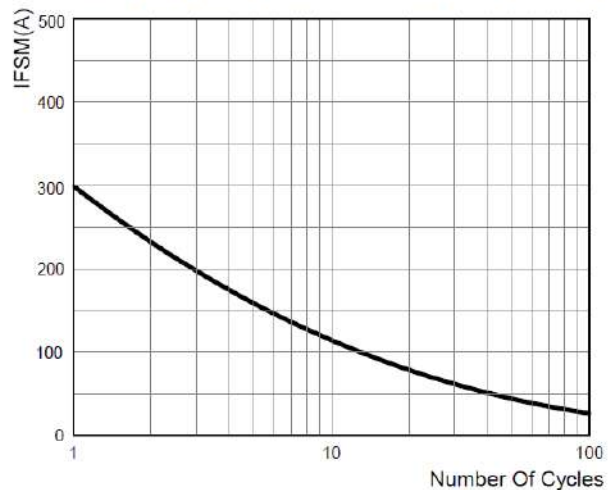


FIG.3 : TYPICAL FORWARD CHARACTERISTICS

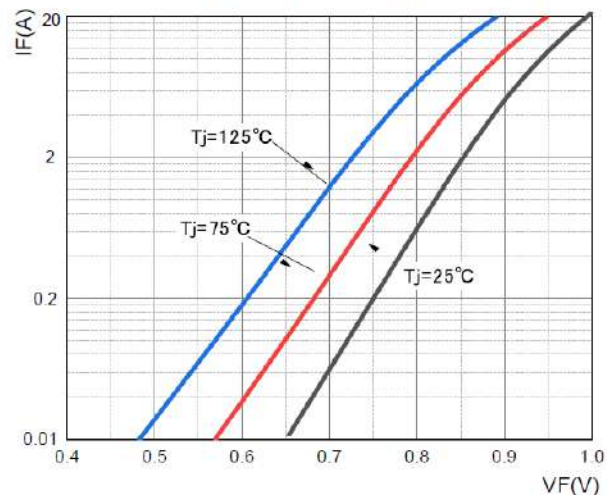
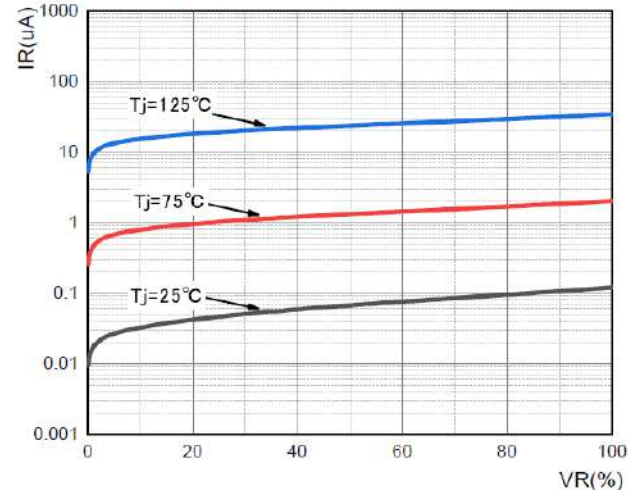
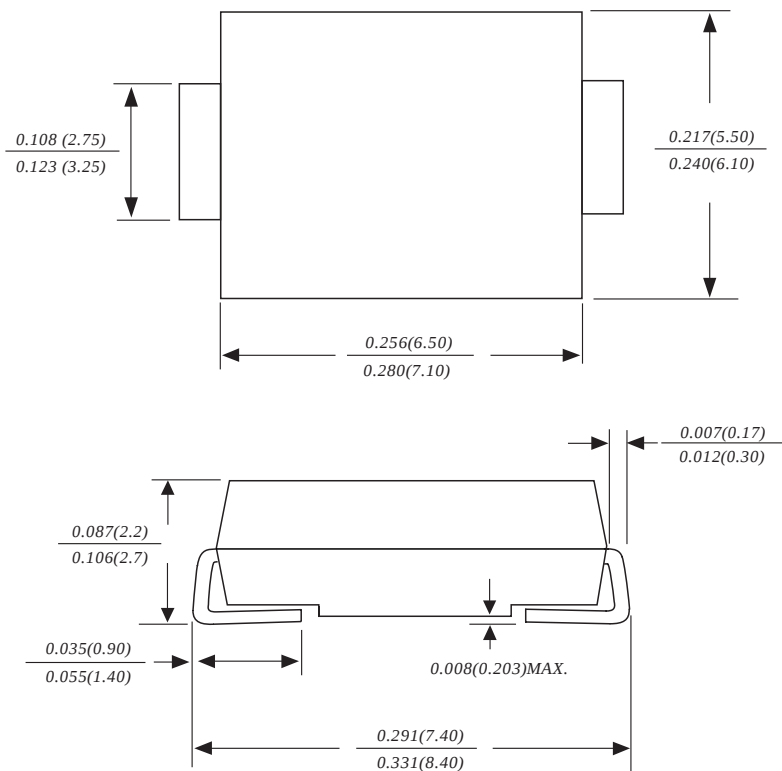


FIG.4 TYPICAL REVERSE CHARACTERISTICS

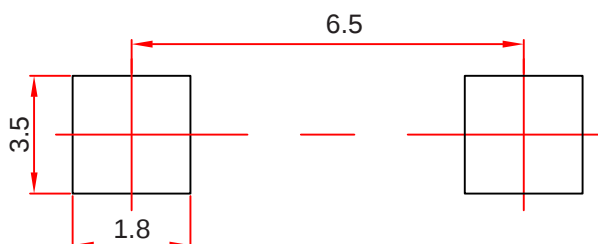


## SMC Package Outline Dimensions



Dimensions in inches and (millimeters)

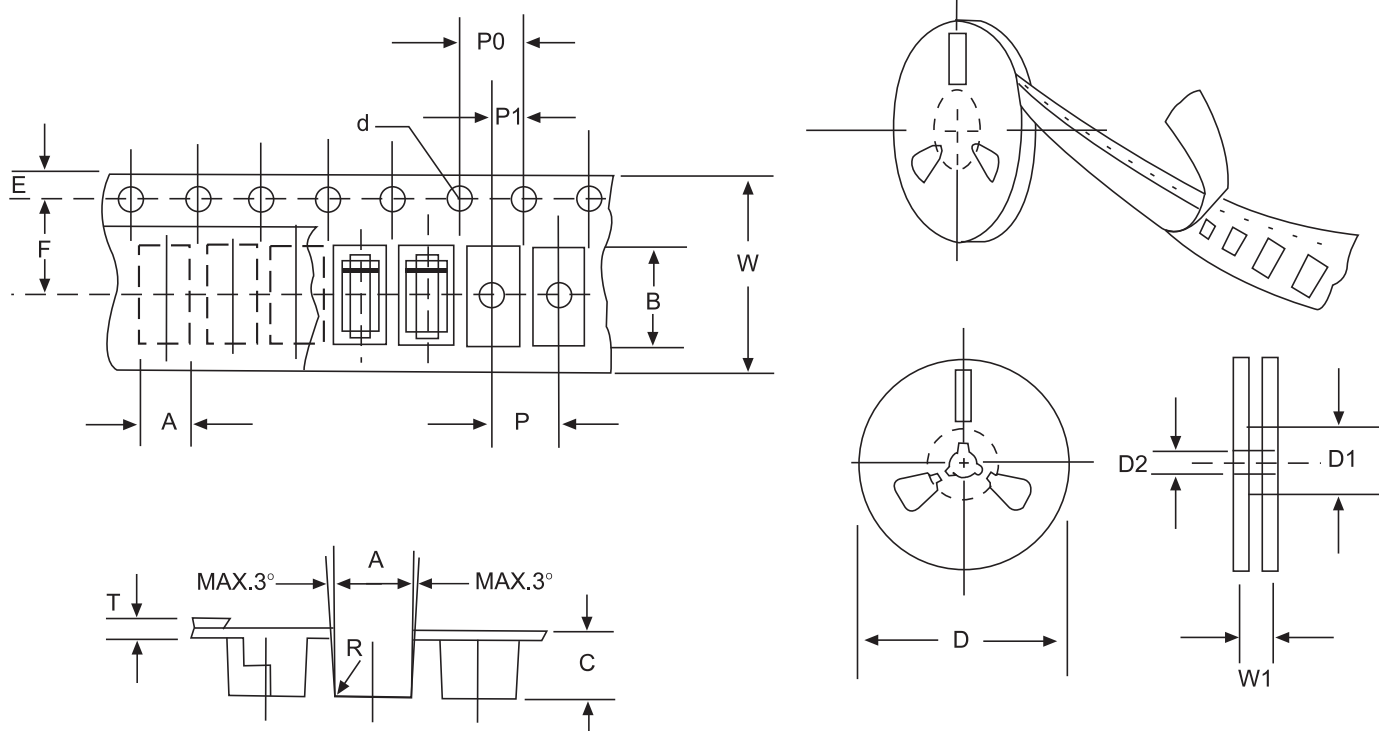
## SMC Suggested Pad Layout



### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05$ mm.
3. The pad layout is for reference purposes only.

## Reel Taping Specifications For Surface Mount Devices-SMC



**FIG:CONFIGURATION OF SURFACE MOUNTED DEVICES TAPING**

| ITEM                  | SYMBOL | SMC mm(inch)            |
|-----------------------|--------|-------------------------|
| Carrier width         | A      | 6.05±0.1(0.238±0.004)   |
| Carrier length        | B      | 8.31±0.1(0.327±0.004)   |
| Carrier depth         | C      | 2.70±0.1(0.106±0.004)   |
| Sprocket hole         | d      | 1.55±0.05 (0.061±0.002) |
| Reel outside diameter | D      | 330±2.0(13±0.079)       |
| Reel inner diameter   | D1     | 75 ±1.0 ( 2.95 ±0.039)  |
| Feed hole diameter    | D2     | 13±0.5(0.512±0.020)     |
| Stroket hole position | E      | 1.75 ±0.1(0.069±0.004)  |
| Punch hole position   | F      | 7.65±0.05(0.301±0.002)  |
| Punch hole pitch      | P      | 8.0±0.1(0.315±0.004)    |
| Sprocket hole pitch   | P0     | 4.0±0.1(0.157±0.004)    |
| Embossment center     | P1     | 2.0±0.1(0.079±0.004)    |
| Totall tape thickness | T      | 0.3± 0.1 (0.012±0.004)  |
| Tape width            | W      | 16.0±0.2(0.630±0.008)   |
| Reel width            | W1     | 24.0±2.0(0.945±0.079)   |

NOTE:Devices are packed in accordance with EIA standard RS-481-A and specification given above.