

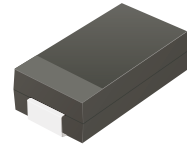
## ASMAJ5.0(C)A-HF Thru. ASMAJ440(C)A-HF

Working Peak Reverse Voltage: 5.0 to 440 Volts

Power Dissipation: 400 Watts

RoHS Device

Halogen Free

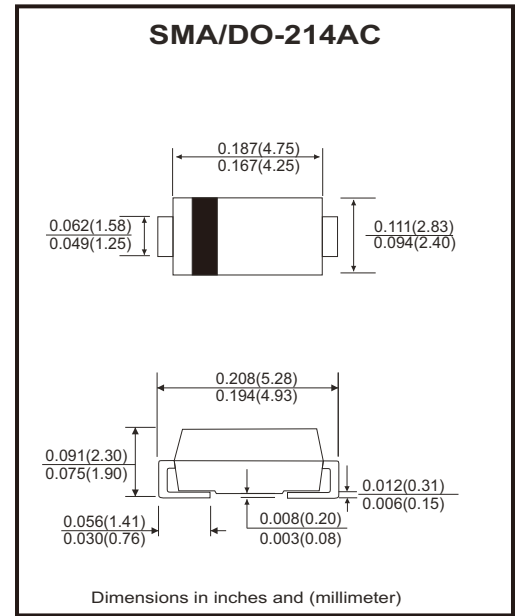


### Features

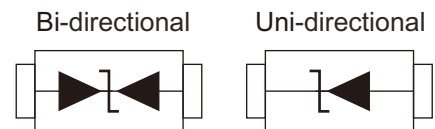
- 400W peak pulse power capability with a 10/1000 $\mu$ s waveform, repetitive rate (duty cycle):0.01%
- For surface mounted applications to optimize board space
- Low incremental surge impedance
- Excellent clamping capability
- Very fast response time
- Uni and Bidirectional unit
- Plastic package has underwriters laboratory flammability 94V-0
- Meet Halogen free and RoHS compliant
- Comply with AEC-Q101

### Mechanical data

- Case: SMA/DO-214AC, molded plastic.
- Terminals: solderable per MIL-STD-750, method 2026.
- Polarity: Color band denotes positive end (cathode) bi-directional models



### Circuit Diagram



### Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Single phase, half wave, 60Hz resistive or inductive load. For capacitive load, derate current by 20%.

| Characteristics                                                                       | Symbol                            | Value          | Units |
|---------------------------------------------------------------------------------------|-----------------------------------|----------------|-------|
| Peak power dissipation on a 10/1000 $\mu$ s waveform (Note 1)                         | P <sub>PP</sub>                   | 400            | W     |
| Peak pulse current on a 10/1000 $\mu$ s waveform (Note 1)                             | I <sub>PP</sub>                   | See Next Table | A     |
| Steady state power dissipation at T <sub>L</sub> =50°C                                | P <sub>D</sub>                    | 1.0            | W     |
| Peak forward surge current, 8.3ms single half sine-wave uni-directional only (Note 2) | I <sub>FSM</sub>                  | 40             | A     |
| Maximum instantaneous forward voltage at 25 A for uni-directional only                | V <sub>F</sub>                    | 3.5/5.0        | V     |
| Operation junction and storage temperature range                                      | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150    | °C    |

Notes: 1. Non-repetitive current pulse, and derated above T<sub>A</sub>=25°C

2. Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal

3. V<sub>F</sub><3.5V for devices of VBR<200V and V<sub>F</sub><5.0V for devices of VBR>201V

## Electrical Characteristics (at TA=25°C, unless otherwise specified)

| Part No.        | Breakdown voltage<br>VBR @ IT |             |            | Maximum<br>Reverse<br>Leakage<br>@VRWM<br>IR (μA) | Working<br>Peak<br>Reverse<br>Voltage<br>VRWM (V) | Maximum<br>Reverse<br>Surge<br>Current<br>IPP (A) | Maximum<br>Clamping<br>Voltage<br>@IPP<br>VC (V) | Marking<br>Code |    |
|-----------------|-------------------------------|-------------|------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|--------------------------------------------------|-----------------|----|
|                 | Min.<br>(V)                   | Max.<br>(V) | IT<br>(mA) |                                                   |                                                   |                                                   |                                                  | UNI             | BI |
| ASMAJ5.0(C)A-HF | 6.40                          | 7.25        | 10         | 800                                               | 5.0                                               | 43.5                                              | 9.2                                              | AE              | WE |
| ASMAJ6.0(C)A-HF | 6.67                          | 7.37        | 10         | 800                                               | 6.0                                               | 38.8                                              | 10.3                                             | AG              | WG |
| ASMAJ6.5(C)A-HF | 7.22                          | 7.98        | 10         | 500                                               | 6.5                                               | 35.7                                              | 11.2                                             | AK              | WK |
| ASMAJ7.0(C)A-HF | 7.78                          | 8.60        | 10         | 200                                               | 7.0                                               | 33.3                                              | 12.0                                             | AM              | WM |
| ASMAJ7.5(C)A-HF | 8.33                          | 9.21        | 1          | 100                                               | 7.5                                               | 31.0                                              | 12.9                                             | AP              | WP |
| ASMAJ8.0(C)A-HF | 8.89                          | 9.83        | 1          | 50                                                | 8.0                                               | 29.4                                              | 13.6                                             | AR              | WR |
| ASMAJ8.5(C)A-HF | 9.44                          | 10.40       | 1          | 10                                                | 8.5                                               | 27.8                                              | 14.4                                             | AT              | WT |
| ASMAJ9.0(C)A-HF | 10.00                         | 11.10       | 1          | 5                                                 | 9.0                                               | 26.0                                              | 15.4                                             | AV              | WV |
| ASMAJ10(C)A-HF  | 11.10                         | 12.30       | 1          | 5                                                 | 10.0                                              | 23.5                                              | 17.0                                             | AX              | WX |
| ASMAJ11(C)A-HF  | 12.20                         | 13.50       | 1          | 5                                                 | 11.0                                              | 22.0                                              | 18.2                                             | AZ              | WZ |
| ASMAJ12(C)A-HF  | 13.30                         | 14.70       | 1          | 5                                                 | 12.0                                              | 20.1                                              | 19.9                                             | BE              | XE |
| ASMAJ13(C)A-HF  | 14.40                         | 15.90       | 1          | 5                                                 | 13.0                                              | 18.6                                              | 21.5                                             | BG              | XG |
| ASMAJ14(C)A-HF  | 15.60                         | 17.20       | 1          | 5                                                 | 14.0                                              | 17.2                                              | 23.2                                             | BK              | XK |
| ASMAJ15(C)A-HF  | 16.70                         | 18.50       | 1          | 5                                                 | 15.0                                              | 16.4                                              | 24.4                                             | BM              | XM |
| ASMAJ16(C)A-HF  | 17.80                         | 19.70       | 1          | 5                                                 | 16.0                                              | 15.4                                              | 26.0                                             | BP              | XP |
| ASMAJ17(C)A-HF  | 18.90                         | 20.90       | 1          | 5                                                 | 17.0                                              | 14.5                                              | 27.6                                             | BR              | XR |
| ASMAJ18(C)A-HF  | 20.00                         | 22.10       | 1          | 5                                                 | 18.0                                              | 13.7                                              | 29.2                                             | BT              | XT |
| ASMAJ20(C)A-HF  | 22.20                         | 24.50       | 1          | 5                                                 | 20.0                                              | 12.3                                              | 32.4                                             | BV              | XV |
| ASMAJ22(C)A-HF  | 24.40                         | 26.90       | 1          | 5                                                 | 22.0                                              | 11.3                                              | 35.5                                             | BX              | XX |
| ASMAJ24(C)A-HF  | 26.70                         | 29.50       | 1          | 5                                                 | 24.0                                              | 10.3                                              | 38.9                                             | BZ              | XZ |
| ASMAJ26(C)A-HF  | 28.90                         | 31.90       | 1          | 5                                                 | 26.0                                              | 9.5                                               | 42.1                                             | CE              | YE |
| ASMAJ28(C)A-HF  | 31.10                         | 34.40       | 1          | 5                                                 | 28.0                                              | 8.8                                               | 45.4                                             | CG              | YG |
| ASMAJ30(C)A-HF  | 33.30                         | 36.80       | 1          | 5                                                 | 30.0                                              | 8.3                                               | 48.4                                             | CK              | YK |
| ASMAJ33(C)A-HF  | 36.70                         | 40.60       | 1          | 5                                                 | 33.0                                              | 7.5                                               | 53.3                                             | CM              | YM |
| ASMAJ36(C)A-HF  | 40.00                         | 44.20       | 1          | 5                                                 | 36.0                                              | 6.9                                               | 58.1                                             | CP              | YP |
| ASMAJ40(C)A-HF  | 44.40                         | 49.10       | 1          | 5                                                 | 40.0                                              | 6.2                                               | 64.5                                             | CR              | YR |
| ASMAJ43(C)A-HF  | 47.80                         | 52.80       | 1          | 5                                                 | 43.0                                              | 5.8                                               | 69.4                                             | CT              | YT |
| ASMAJ45(C)A-HF  | 50.00                         | 55.30       | 1          | 5                                                 | 45.0                                              | 5.5                                               | 72.7                                             | CV              | YV |
| ASMAJ48(C)A-HF  | 53.30                         | 58.90       | 1          | 5                                                 | 48.0                                              | 5.2                                               | 77.4                                             | CX              | YX |
| ASMAJ51(C)A-HF  | 56.70                         | 62.70       | 1          | 5                                                 | 51.0                                              | 4.9                                               | 82.4                                             | CZ              | YZ |
| ASMAJ54(C)A-HF  | 60.00                         | 66.30       | 1          | 5                                                 | 54.0                                              | 4.6                                               | 87.1                                             | RE              | ZE |
| ASMAJ58(C)A-HF  | 64.40                         | 71.20       | 1          | 5                                                 | 58.0                                              | 4.3                                               | 93.6                                             | RG              | ZG |
| ASMAJ60(C)A-HF  | 66.70                         | 73.70       | 1          | 5                                                 | 60.0                                              | 4.1                                               | 96.8                                             | RK              | ZK |
| ASMAJ64(C)A-HF  | 71.10                         | 78.60       | 1          | 5                                                 | 64.0                                              | 3.9                                               | 103.0                                            | RM              | ZM |
| ASMAJ70(C)A-HF  | 77.80                         | 86.00       | 1          | 5                                                 | 70.0                                              | 3.5                                               | 113.0                                            | RP              | ZP |
| ASMAJ75(C)A-HF  | 83.30                         | 92.10       | 1          | 5                                                 | 75.0                                              | 3.3                                               | 121.0                                            | RR              | ZR |
| ASMAJ78(C)A-HF  | 86.70                         | 95.80       | 1          | 5                                                 | 78.0                                              | 3.2                                               | 126.0                                            | RT              | ZT |
| ASMAJ85(C)A-HF  | 94.40                         | 104.00      | 1          | 5                                                 | 85.0                                              | 2.9                                               | 137.0                                            | RV              | ZV |
| ASMAJ90(C)A-HF  | 100.00                        | 111.00      | 1          | 5                                                 | 90.0                                              | 2.7                                               | 146.0                                            | RX              | ZX |
| ASMAJ100(C)A-HF | 111.00                        | 123.00      | 1          | 5                                                 | 100.0                                             | 2.4                                               | 162.0                                            | RZ              | ZZ |

## Electrical Characteristics (at TA=25°C, unless otherwise specified)

| Part No.        | Breakdown voltage<br>V <sub>BR</sub> @ I <sub>T</sub> |             |                        | Maximum<br>Reverse<br>Leakage<br>@V <sub>RWM</sub><br>I <sub>R</sub> (μA) | Working<br>Peak<br>Reverse<br>Voltage<br>V <sub>RWM</sub> (V) | Maximum<br>Reverse<br>Surge<br>Current<br>I <sub>PP</sub> (A) | Maximum<br>Clamping<br>Voltage<br>@I <sub>PP</sub><br>V <sub>C</sub> (V) | Marking<br>Code |    |
|-----------------|-------------------------------------------------------|-------------|------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------|-----------------|----|
|                 | Min.<br>(V)                                           | Max.<br>(V) | I <sub>T</sub><br>(mA) |                                                                           |                                                               |                                                               |                                                                          | UNI             | BI |
| ASMAJ110(C)A-HF | 122.0                                                 | 135.0       | 1                      | 5                                                                         | 110.0                                                         | 2.2                                                           | 177.0                                                                    | SE              | VE |
| ASMAJ120(C)A-HF | 133.0                                                 | 147.0       | 1                      | 5                                                                         | 120.0                                                         | 2.1                                                           | 193.0                                                                    | SG              | VG |
| ASMAJ130(C)A-HF | 144.0                                                 | 159.0       | 1                      | 5                                                                         | 130.0                                                         | 1.9                                                           | 209.0                                                                    | SK              | VK |
| ASMAJ150(C)A-HF | 167.0                                                 | 185.0       | 1                      | 5                                                                         | 150.0                                                         | 1.6                                                           | 243.0                                                                    | SM              | VM |
| ASMAJ160(C)A-HF | 178.0                                                 | 197.0       | 1                      | 5                                                                         | 160.0                                                         | 1.5                                                           | 259.0                                                                    | SP              | VP |
| ASMAJ170(C)A-HF | 189.0                                                 | 209.0       | 1                      | 5                                                                         | 170.0                                                         | 1.4                                                           | 275.0                                                                    | SR              | VR |
| ASMAJ180(C)A-HF | 200.0                                                 | 220.0       | 1                      | 5                                                                         | 180.0                                                         | 1.3                                                           | 291.6                                                                    | ST              | VT |
| ASMAJ200(C)A-HF | 224.0                                                 | 247.0       | 1                      | 1                                                                         | 200.0                                                         | 1.2                                                           | 324.0                                                                    | SV              | VV |
| ASMAJ220(C)A-HF | 246.0                                                 | 272.0       | 1                      | 1                                                                         | 220.0                                                         | 1.1                                                           | 356.0                                                                    | SX              | VX |
| ASMAJ250(C)A-HF | 279.0                                                 | 309.0       | 1                      | 1                                                                         | 250.0                                                         | 1.0                                                           | 405.0                                                                    | SZ              | VZ |
| ASMAJ300(C)A-HF | 335.0                                                 | 371.0       | 1                      | 1                                                                         | 300.0                                                         | 0.8                                                           | 486.0                                                                    | TE              | UE |
| ASMAJ350(C)A-HF | 391.0                                                 | 432.0       | 1                      | 1                                                                         | 350.0                                                         | 0.7                                                           | 567.0                                                                    | TG              | UG |
| ASMAJ400(C)A-HF | 447.0                                                 | 494.0       | 1                      | 1                                                                         | 400.0                                                         | 0.6                                                           | 648.0                                                                    | TK              | UK |
| ASMAJ440(C)A-HF | 492.0                                                 | 543.0       | 1                      | 1                                                                         | 440.0                                                         | 0.6                                                           | 713.0                                                                    | TM              | UM |

## Rating and Characteristic Curves (ASMAJ5.0(C)A-HF Thru. ASMAJ440(C)A-HF)

Fig.1 - Pulse Derating Curve

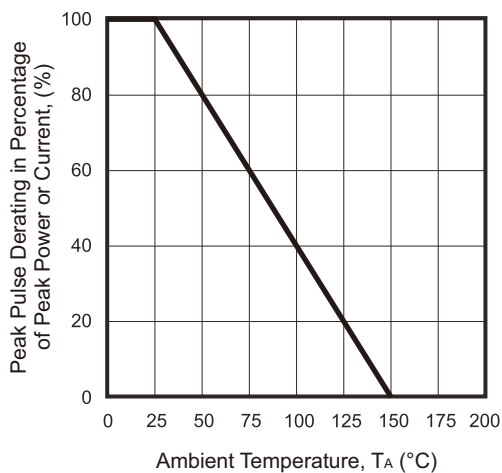


Fig.2 - Maximum Non-Repetitive Surge Current

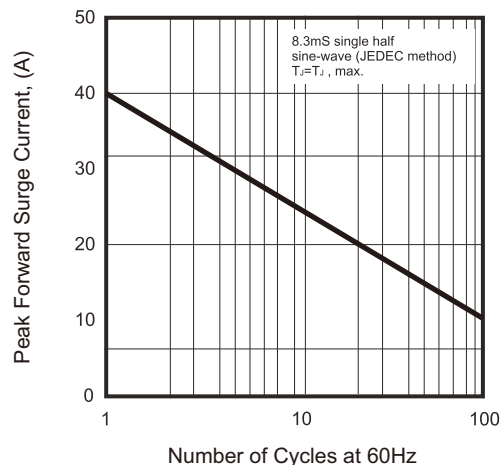


Fig.3 - Steady State Power Derating Curve

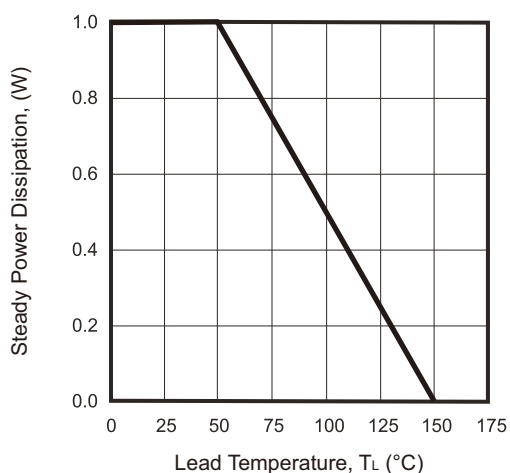


Fig.4 - Peak Pulse Power Rating Curve

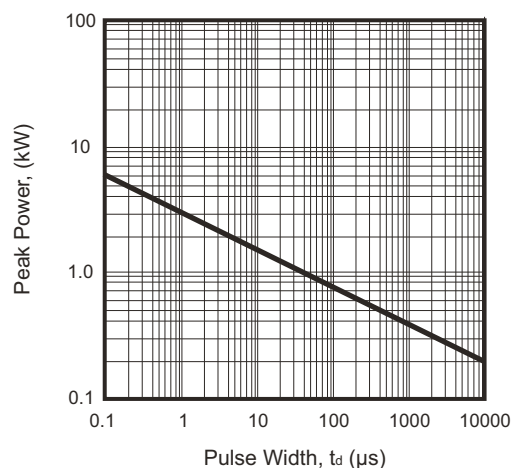
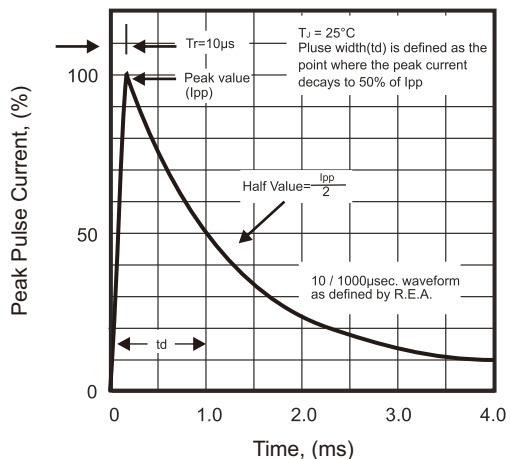
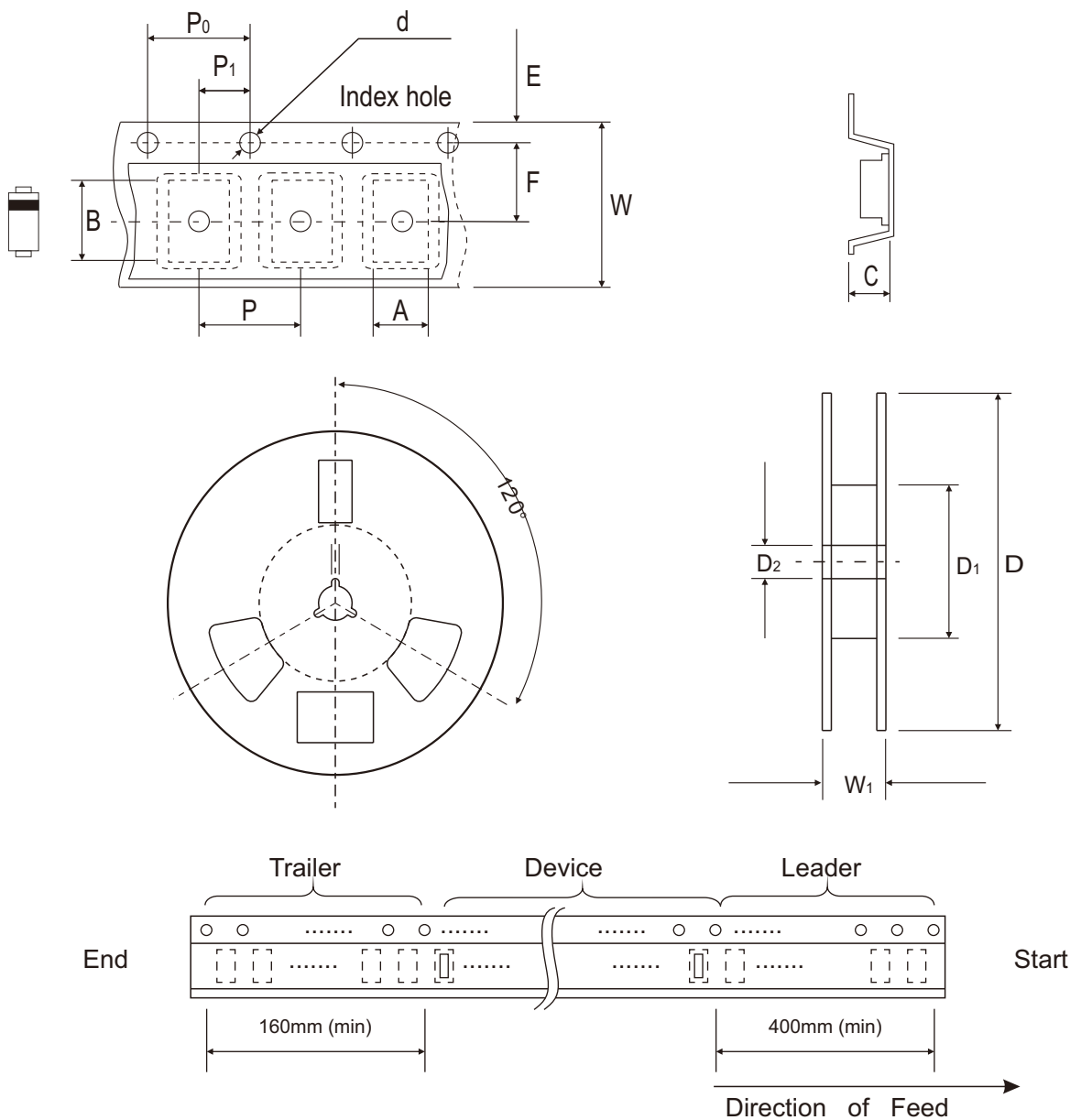


Fig.5 - Pulse Waveform



Reel Taping Specification

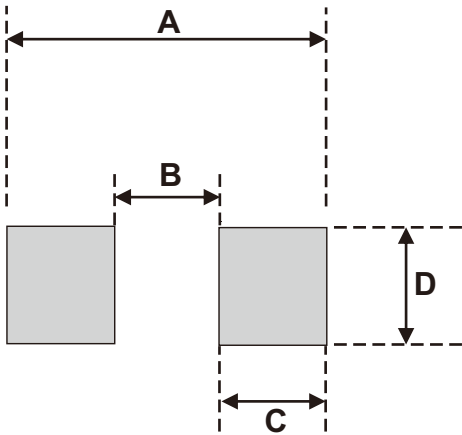


| SMA/DO-214AC | SYMBOL | A                 | B                 | C           | d                 | D        | D1         | D2                |
|--------------|--------|-------------------|-------------------|-------------|-------------------|----------|------------|-------------------|
|              | (mm)   | $2.79 \pm 0.10$   | $5.33 \pm 0.10$   | 4.50 (max)  | $1.75 \pm 0.10$   | 330MAX   | 50.0 MIN.  | $13.0 \pm 0.2$    |
|              | (inch) | $0.110 \pm 0.004$ | $0.210 \pm 0.004$ | 0.177 (max) | $0.069 \pm 0.004$ | 13.00MAX | 1.969 MIN. | $0.512 \pm 0.008$ |

| SMA/DO-214AC | SYMBOL | E                 | F                 | P                 | P0                | P1                | W                 | W1         |
|--------------|--------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------|
|              | (mm)   | $1.75 \pm 0.10$   | $5.50 \pm 0.05$   | $4.00 \pm 0.10$   | $4.00 \pm 0.10$   | $2.00 \pm 0.05$   | $12.0 \pm 0.30$   | 18.4 MAX.  |
|              | (inch) | $0.069 \pm 0.004$ | $0.216 \pm 0.002$ | $0.157 \pm 0.004$ | $0.157 \pm 0.004$ | $0.079 \pm 0.002$ | $0.472 \pm 0.012$ | 0.724 MAX. |

Suggested PAD Layout

| SIZE | DO-214AC(SMA) |        |
|------|---------------|--------|
|      | (mm)          | (inch) |
| A    | 5.58          | 0.220  |
| B    | 1.66          | 0.065  |
| C    | 1.96          | 0.077  |
| D    | 2.04          | 0.080  |



Standard Packaging

| Case Type    | REEL PACK       |                     |
|--------------|-----------------|---------------------|
|              | REEL<br>( pcs ) | Reel Size<br>(inch) |
| SMA/DO-214AC | 5,000           | 13                  |