# SMDJxxx(C)A

Transient Voltage Suppressor

## Features

- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- 3000W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Fast response time
- Typical IR less than 1μA above 10V
- High Temperature soldering: 260℃/10 seconds at terminals
- Plastic package has underwriters laboratory flammability 94V-0
- Meets MSL level 1, per J-STD-020
- Safety certification: UL
- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance




SMC
(DO-214AB)

## Mechanical Data

- Case: JEDEC SMC(DO-214AB) molded plastic over glass passivated junction
- Terminals: Solderable per MIL-STD-750,Method 2026
- Polarity: Polarity symbol marking on body Mounting
- Standard Packaging: 16mm tape (EIA STD RS-481)
- Weight: 0.28g

## Applications

- I/O interface
- AC/DC power supply
- Low frequency signal transmission line (RS232,RS485,etc.)

## Maximum Ratings (Ta=25°C unless otherwise noted)

| | | | |
|---|---|---|---|
| Peak pulse power dissipation at 10/1000μs waveform (Note1, Note2, Fig.1) | $P_{PPM}$ | 3000 | W |
| Peak pulse current of at 10/1000μs waveform (Note 1, Fig.3) | $I_{PPM}$ | See Tale | A |
| Steady state power dissipation at $T_A$=50℃ (Fig.5) | $P_{M(AV)}$ | 6.5 | W |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note3, Fig.6) | $I_{FSM}$ | 300 | A |
| Operating junction and Storage Temperature Range. | $T_J$,$T_{STG}$ | -65 to +150 | °C |
| Typical thermal resistance junction to lead | $R_{\theta JL}$ | 15 | °C/W |
| Typical thermal resistance junction to ambient | $R_{\theta JA}$ | 75 | °C/W |

Notes:1. Non-repetitive current pulse, per Fig.3 and derated above $T_A$=25℃ per Fig.2.
2. Mounted on 5.0mm×5.0mm (0.03mm thick) copper pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.

## Electrical Characteristics (Ta=25°C)

| Part Number | | Device Marking Code | | Reverse Stand-Off Voltage | Breakdown Voltage @$I_T$ | Test Current | Maximum Clamping Voltage @$I_{PP}$ | Peak Pulse Current | Reverse Leakage @$V_{RWM}$ |
|---|---|---|---|---|---|---|---|---|---|
| Unidirectional | Bidirectional | UNI | BI | $V_{RWM}$(V) | $V_{BR}$(V) | $I_T$(mA) | $V_C$(V) | $I_{PP}$(A) | $I_R$(μA) |
| SMDJ5.0A | SMDJ5.0CA | RDE | DDE | 5.0 | 6.40~7.00 | 10 | 9.2 | 326.1 | 800 |
| SMDJ6.0A | SMDJ6.0CA | RDG | DDG | 6.0 | 6.67~7.37 | 10 | 10.3 | 291.3 | 800 |
| SMDJ6.5A | SMDJ6.5CA | RDK | DDK | 6.5 | 7.22~7.98 | 10 | 11.2 | 267.9 | 500 |
| SMDJ7.0A | SMDJ7.0CA | PDM | DDM | 7.0 | 7.78~8.60 | 10 | 12.0 | 250.0 | 200 |
| SMDJ7.5A | SMDJ7.5CA | PDP | DDP | 7.5 | 8.33~9.21 | 1 | 12.9 | 232.6 | 100 |
| SMDJ8.0A | SMDJ8.0CA | PDR | DDR | 8.0 | 8.89~9.83 | 1 | 13.6 | 220.6 | 50 |
| SMDJ8.5A | SMDJ8.5CA | PDT | DDT | 8.5 | 9.44~10.40 | 1 | 14.4 | 208.3 | 20 |
| SMDJ9.0A | SMDJ9.0CA | PDV | DDV | 9.0 | 10.00~11.10 | 1 | 15.4 | 194.8 | 10 |
| SMDJ10A | SMDJ10CA | PDX | DDX | 10.0 | 11.10~12.30 | 1 | 17.0 | 176.5 | 5 |
| SMDJ11A | SMDJ11CA | PDZ | DDZ | 11.0 | 12.20~13.50 | 1 | 18.2 | 164.8 | 2 |
| SMDJ12A | SMDJ12CA | PEE | DEE | 12.0 | 13.30~14.70 | 1 | 19.9 | 150.8 | 2 |
| SMDJ13A | SMDJ13CA | PEG | DEG | 13.0 | 14.40~15.90 | 1 | 21.5 | 139.5 | 2 |
| SMDJ14A | SMDJ14CA | PEK | DEK | 14.0 | 15.60~17.20 | 1 | 23.2 | 129.3 | 2 |
| SMDJ15A | SMDJ15CA | PEM | DEM | 15.0 | 16.70~18.50 | 1 | 24.4 | 123.0 | 2 |
| SMDJ16A | SMDJ16CA | PEP | DEP | 16.0 | 17.80~19.70 | 1 | 26.0 | 115.4 | 2 |
| SMDJ17A | SMDJ17CA | PER | DER | 17.0 | 18.90~20.90 | 1 | 27.6 | 108.7 | 2 |
| SMDJ18A | SMDJ18CA | PET | DET | 18.0 | 20.00~22.10 | 1 | 29.2 | 102.7 | 2 |
| SMDJ20A | SMDJ20CA | PEV | DEV | 20.0 | 22.20~24.50 | 1 | 32.4 | 92.6 | 2 |
| SMDJ22A | SMDJ22CA | PEX | DEX | 22.0 | 24.40~26.90 | 1 | 35.5 | 84.5 | 2 |
| SMDJ24A | SMDJ24CA | PEZ | DEZ | 24.0 | 26.70~29.50 | 1 | 38.9 | 77.1 | 2 |
| SMDJ26A | SMDJ26CA | PFE | DFE | 26.0 | 28.90~31.90 | 1 | 42.1 | 71.3 | 2 |
| SMDJ28A | SMDJ28CA | PFG | DFG | 28.0 | 31.10~34.40 | 1 | 45.4 | 66.1 | 2 |
| SMDJ30A | SMDJ30CA | PFK | DFK | 30.0 | 33.30~36.80 | 1 | 48.4 | 62.0 | 2 |
| SMDJ33A | SMDJ33CA | PFM | DFM | 33.0 | 36.70~40.60 | 1 | 53.3 | 56.3 | 2 |
| SMDJ36A | SMDJ36CA | PFP | DFP | 36.0 | 40.00~44.20 | 1 | 58.1 | 51.6 | 2 |
| SMDJ40A | SMDJ40CA | PFR | DFR | 40.0 | 44.40~49.10 | 1 | 64.5 | 46.5 | 2 |
| SMDJ43A | SMDJ43CA | PFT | DFT | 43.0 | 47.80~52.80 | 1 | 69.4 | 43.2 | 2 |
| SMDJ45A | SMDJ45CA | PFV | DFV | 45.0 | 50.00~55.30 | 1 | 72.7 | 41.3 | 2 |
| SMDJ48A | SMDJ48CA | PFX | DFX | 48.0 | 53.30~58.90 | 1 | 77.4 | 38.8 | 2 |
| SMDJ51A | SMDJ51CA | PFZ | DFZ | 51.0 | 56.70~62.70 | 1 | 82.4 | 36.4 | 2 |
| SMDJ54A | SMDJ54CA | PGE | DGE | 54.0 | 60.00~66.30 | 1 | 87.1 | 34.4 | 2 |
| SMDJ58A | SMDJ58CA | PGG | DGG | 58.0 | 64.40~71.20 | 1 | 93.6 | 32.1 | 2 |
| SMDJ60A | SMDJ60CA | PGK | DGK | 60.0 | 66.70~73.70 | 1 | 96.8 | 31.0 | 2 |

| Part Number | | Device Marking Code | | Reverse Stand-Off Voltage | Breakdown Voltage @$I_T$ | Test Current | Maximum Clamping Voltage @$I_{PP}$ | Peak Pulse Current | Reverse Leakage @$V_{RWM}$ |
|---|---|---|---|---|---|---|---|---|---|
| Unidirectional | Bidirectional | UNI | BI | $V_{RWM}$(V) | $V_{BR}$(V) | $I_T$(mA) | $V_C$(V) | $I_{PP}$(A) | $I_R$(μA) |
| SMDJ64A | SMDJ64CA | PGM | DGM | 64.0 | 71.10~78.60 | 1 | 103.0 | 29.1 | 2 |
| SMDJ70A | SMDJ70CA | PGP | DGP | 70.0 | 77.80~86.00 | 1 | 113.0 | 26.5 | 2 |
| SMDJ75A | SMDJ75CA | PGR | DGR | 75.0 | 83.30~92.10 | 1 | 121.0 | 24.8 | 2 |
| SMDJ78A | SMDJ78CA | PGT | DGT | 78.0 | 86.70~95.80 | 1 | 126.0 | 23.8 | 2 |
| SMDJ85A | SMDJ85CA | PGV | DGV | 85.0 | 94.40~104.00 | 1 | 137.0 | 21.9 | 2 |
| SMDJ90A | SMDJ90CA | PGX | DGX | 90.0 | 100.00~111.00 | 1 | 146.0 | 20.5 | 2 |
| SMDJ100A | SMDJ100CA | PGZ | DGZ | 100.0 | 111.00~123.00 | 1 | 162.0 | 18.5 | 2 |
| SMDJ110A | SMDJ110CA | PHE | DHE | 110.0 | 122.00~135.00 | 1 | 177.0 | 16.9 | 2 |
| SMDJ120A | SMDJ120CA | PHG | DHG | 120.0 | 133.00~147.00 | 1 | 193.0 | 15.5 | 2 |
| SMDJ130A | SMDJ130CA | PHK | DHK | 130.0 | 144.00~159.00 | 1 | 209.0 | 14.4 | 2 |
| SMDJ150A | SMDJ150CA | PHM | DHM | 150.0 | 167.00~185.00 | 1 | 243.0 | 12.3 | 2 |
| SMDJ160A | SMDJ160CA | PHP | DHP | 160.0 | 178.00~197.00 | 1 | 259.0 | 11.6 | 2 |
| SMDJ170A | SMDJ170CA | PHR | DHR | 170.0 | 189.00~209.00 | 1 | 275.0 | 10.9 | 2 |
| SMDJ180A | SMDJ180CA | HHT | IHT | 180.0 | 201.00~222.00 | 1 | 292.0 | 10.3 | 2 |
| SMDJ190A | SMDJ190CA | HHV | IHV | 190.0 | 211.00~233.00 | 1 | 308.0 | 9.7 | 2 |
| SMDJ200A | SMDJ200CA | HHX | IHX | 200.0 | 224.00~247.00 | 1 | 324.0 | 9.3 | 2 |
| SMDJ210A | SMDJ210CA | HHZ | IHZ | 210.0 | 237.00~263.00 | 1 | 340.0 | 8.8 | 2 |
| SMDJ220A | SMDJ220CA | HIE | IIE | 220.0 | 246.00~272.00 | 1 | 356.0 | 8.4 | 2 |

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

Figure 1. Peak Pulse Power Rating Curve

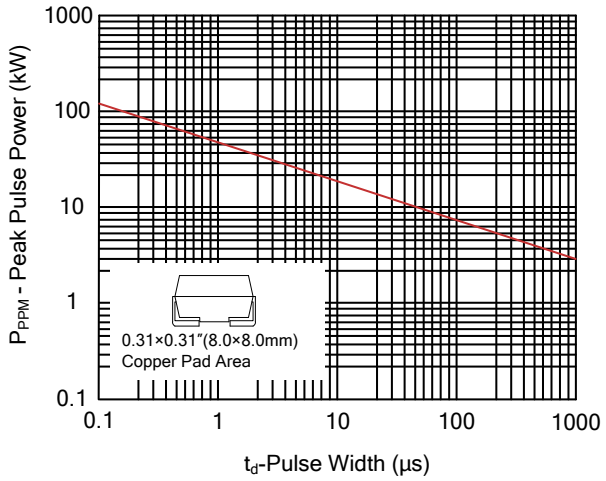



Figure 2. Pulse Derating Curve

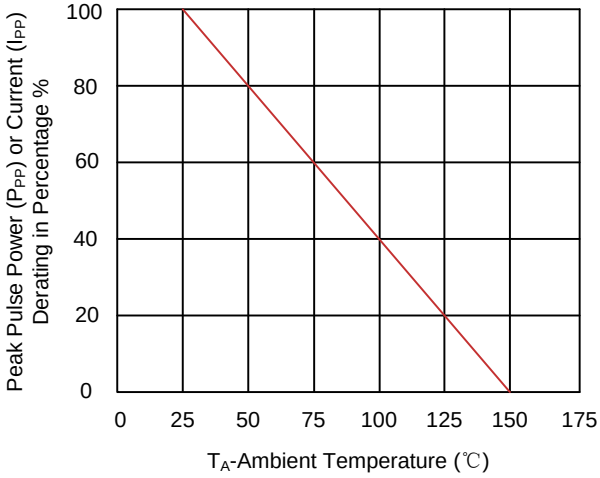



Figure 3. Pulse Waveform

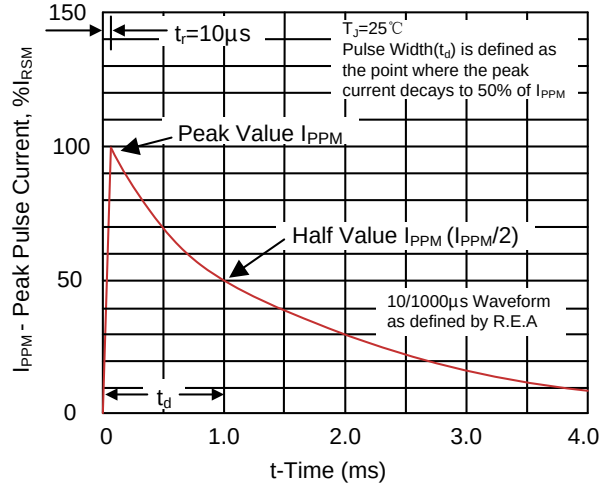



Figure 4. Typical Junction Capacitance

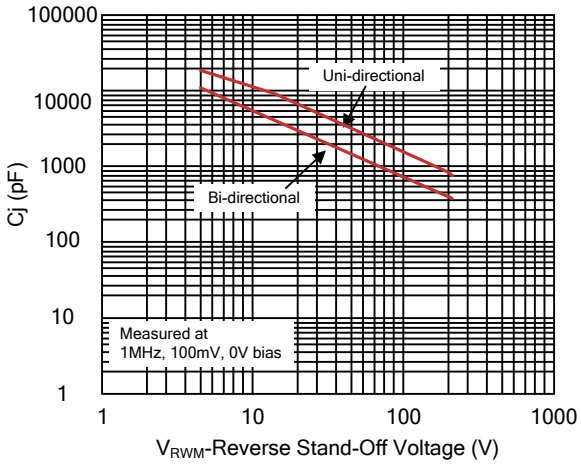



Figure 5. Steady State Power Dissipation Derating Curve

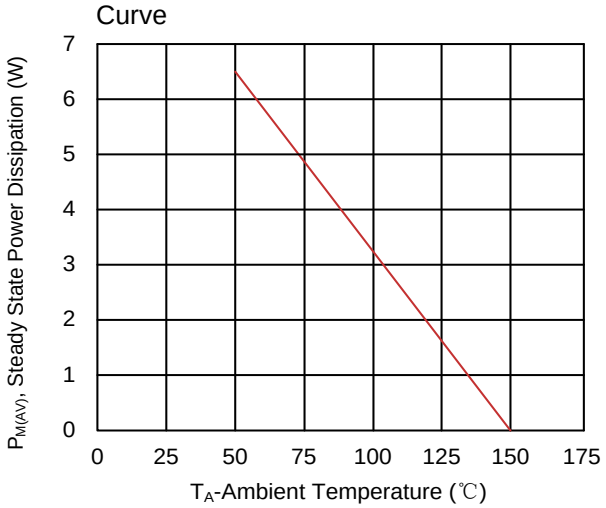
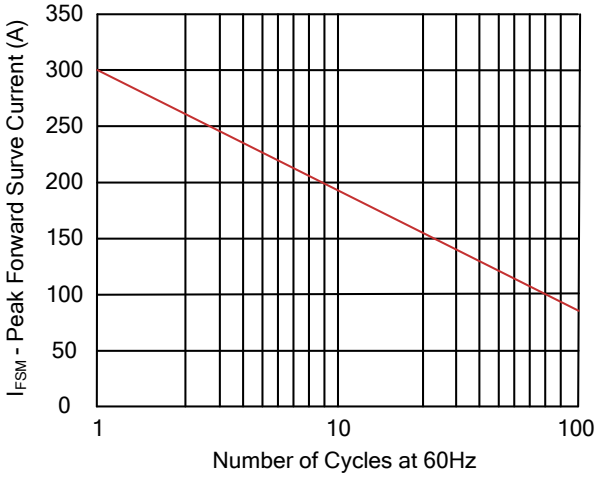
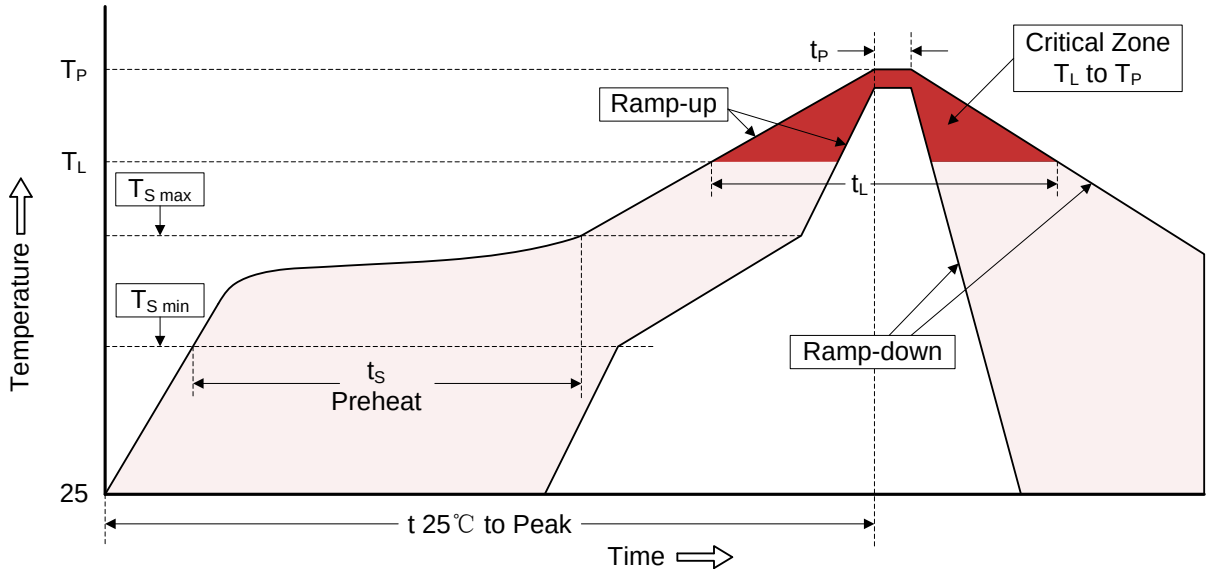



Figure 6. Maximum Non-Repetitive Forward Surge Current Uni Directional Only



## Recommended Soldering Conditions

Reflow Soldering

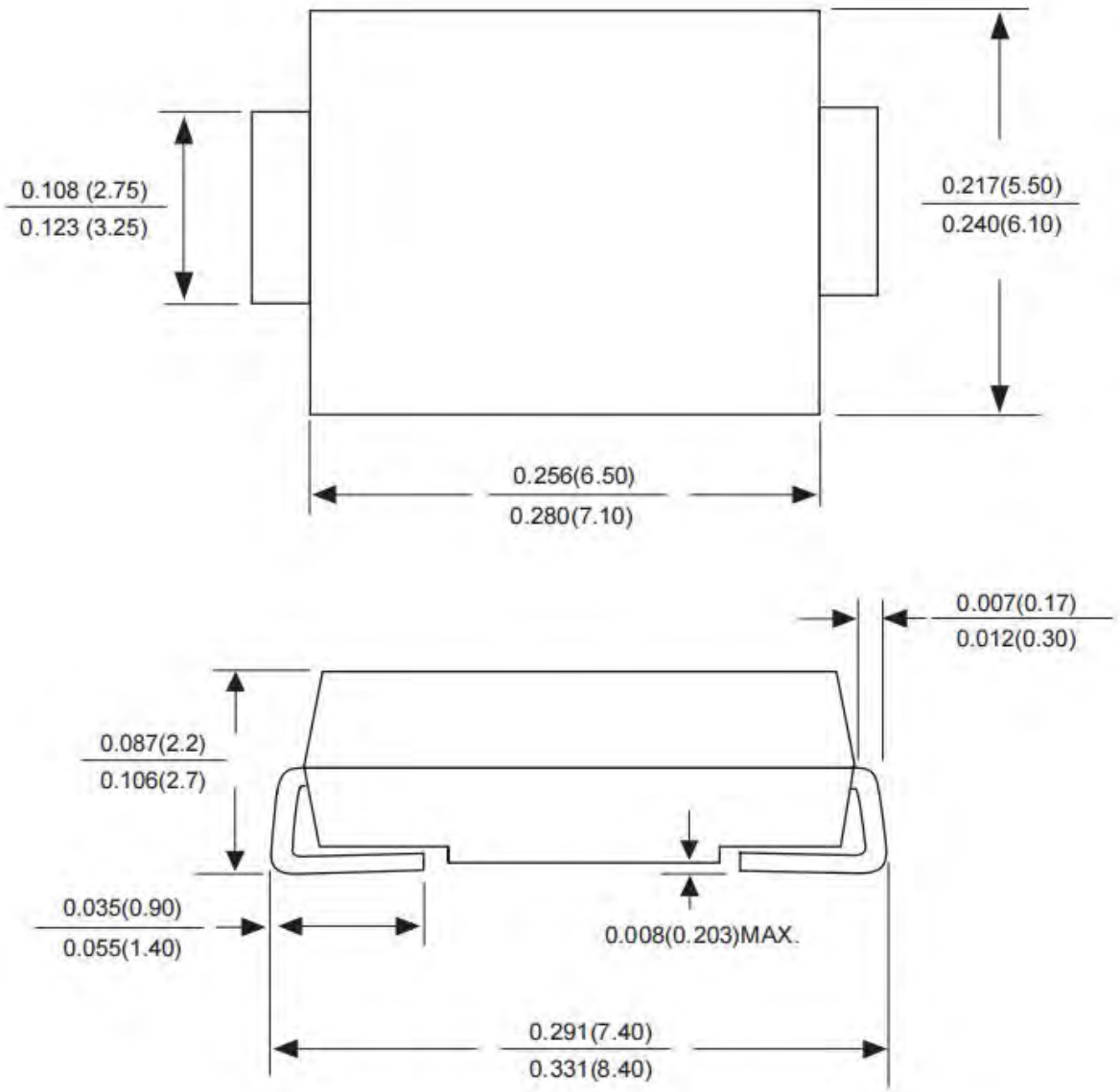



Recommended Conditions

| Profile Feature | Pb-Free Assembly |
|---|---|
| Average ramp-up rate ($T_L$ to $T_P$) | 3℃/second max. |
| Preheat<br>-Temperature Min ($T_{S\ min}$)<br>-Temperature Max ($T_{S\ max}$)<br>-Time (min to max) ($t_S$) | <br>150℃<br>200℃<br>60-180 seconds |
| $T_{S\ max}$ to $T_L$<br>-Ramp-up Rate | <br>3℃/second max. |
| Time maintained above:<br>-Temperature ($T_L$)<br>-Time ($t_L$) | <br>217℃<br>60-150 seconds |
| Peak Temperature ($T_P$) | 260℃ |
| Time within 5℃ of actual Peak Temperature ($t_P$) | 20-40 seconds |
| Ramp-down Rate | 6℃/second max. |
| Time 25℃ to Peak Temperature | 8 minutes max. |

## Package Outline Dimensions

SMC(DO-214AB)




Dimensions in inches and (millimeters)

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# Unikeyic Electronics

Global Electronic Components Distributor

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## HXY MOSFET:

SGM3798YG/TR TPS7A0533PDBZR-HXY AOD403-HXY IDL10G65C5XUMA2 ISL28233FUZ-T7
S4D15120H SS5150 1SMB5930BT3G 1SMB5934B BD237STU C4D08120E-TR MSC040SMA120B4
S3D08065E C3M0040120D CH440G E4D10120A MUR1040FCT Si2323DS-T1-E3-HXY TPD1E0B04DPYR
C6D06065Q-TR DMPH6250SQ-13 IRLML2244TRPBF-HXY ISL28133FHZ-T7 PTVSHC3D5VU
TLV74318PDBVR-HXY 2N7002-HXY DSC06065 MJD127G SG3525-HXY HBAS40-05LT1G