

FEATURES

- | Low profile package
- | Ideal for automated placement
- | 1500 Watt peak pulse power capability with a 10/1000 μ s waveform
- | For surface mounted applications to optimize board space
- | Excellent clamping capability
- | Very fast response time
- | Low incremental surge resistance



DO-214AB(SMC)



Uni-directional



Bi-directional

APPLICATIONS

- | Power supply protection
- | Automotive application
- | Industrial application
- | Power management

APPROVALS

| | |
|-------------|------------------------------------|
| RoHS | Compliance with 2011/65/EU |
| HF | Compliance with IEC61249-2-21:2003 |

MAXIMUM RATINGS ($T_A=25^\circ\text{C}$)

| Parameter | Symbo | Value | Unit |
|--|-----------|-------|-------|
| Peak Pulse Power Dissipation on 10/1000 μ s waveform (Note1, Note2). | P_{PPM} | 1500 | Watts |
| Steady State Power Dissipation at $T_L=50^\circ\text{C}$, Lead lengths.375"(9.5mm) (Note2) | P_D | 6.5 | Watts |

- Notes :** 1.Non-repetitive current pulse, $T_A=25^\circ\text{C}$.
 2.Mounted on 5.0mm*5.0mm (0.03mm thick) Copper Pads to each terminal.

THERMAL CONSIDERATIONS

| Parameter | Symbol | Value | Unit |
|--|-----------------|-------------|---------------------------|
| Operating Junction Temperature | T_J | -55 to +150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{STG} | -55 to +150 | $^\circ\text{C}$ |
| Junction to Ambient on printed circuit | $R_{\theta JA}$ | 75 | $^\circ\text{C}/\text{W}$ |

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

| Part Number | | Device Marking Code | | Reverse Stand-off Voltage | Breakdown Voltage Min.@I _T | Breakdown Voltage Max.@I _T | Test Current | Maximum Clamping Voltage @I _{PP} | Peak Pulse Current | Reverse Leakage @V _{RWM} |
|-------------|-----------|---------------------|-----|---------------------------|---------------------------------------|---------------------------------------|---------------------|---|---------------------|-----------------------------------|
| Uni-Polar | Bi-Polar | Uni | Bi | V _{RWM} (V) | V _{BR} (V) | V _{BR} (V) | I _T (mA) | V _C (V) | I _{PP} (A) | I _R (uA) |
| SMCJ5.0A | SMCJ5.0CA | GDE | BDE | 5.0 | 6.40 | 7.00 | 10 | 9.2 | 163.0 | 800 |
| SMCJ6.0A | SMCJ6.0CA | GDG | BDG | 6.0 | 6.67 | 7.37 | 10 | 10.3 | 145.7 | 800 |
| SMCJ6.5A | SMCJ6.5CA | GDK | BDK | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 134.0 | 500 |
| SMCJ7.0A | SMCJ7.0CA | GDM | BDM | 7.0 | 7.78 | 8.60 | 10 | 12.0 | 125.0 | 200 |
| SMCJ7.5A | SMCJ7.5CA | GDP | BDP | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 116.3 | 100 |
| SMCJ8.0A | SMCJ8.0CA | GDR | BDR | 8.0 | 8.89 | 9.83 | 1 | 13.6 | 110.3 | 50 |
| SMCJ8.5A | SMCJ8.5CA | GDT | BDT | 8.5 | 9.44 | 10.40 | 1 | 14.4 | 104.2 | 20 |
| SMCJ9.0A | SMCJ9.0CA | GDV | BDV | 9.0 | 10.00 | 11.10 | 1 | 15.4 | 97.4 | 10 |
| SMCJ10A | SMCJ10CA | GDX | BDX | 10.0 | 11.10 | 12.30 | 1 | 17.0 | 88.3 | 5 |
| SMCJ11A | SMCJ11CA | GDZ | BDZ | 11.0 | 12.20 | 13.50 | 1 | 18.2 | 82.5 | 1 |
| SMCJ12A | SMCJ12CA | GEE | BEE | 12.0 | 13.30 | 14.70 | 1 | 19.9 | 75.4 | 1 |
| SMCJ13A | SMCJ13CA | GEG | BEG | 13.0 | 14.40 | 15.90 | 1 | 21.5 | 69.8 | 1 |
| SMCJ14A | SMCJ14CA | GEK | BEK | 14.0 | 15.60 | 17.20 | 1 | 23.2 | 64.7 | 1 |
| SMCJ15A | SMCJ15CA | GEM | BEM | 15.0 | 16.70 | 18.50 | 1 | 24.4 | 61.5 | 1 |
| SMCJ16A | SMCJ16CA | GEP | BEP | 16.0 | 17.80 | 19.70 | 1 | 26.0 | 57.7 | 1 |
| SMCJ17A | SMCJ17CA | GER | BER | 17.0 | 18.90 | 20.90 | 1 | 27.6 | 54.4 | 1 |
| SMCJ18A | SMCJ18CA | GET | BET | 18.0 | 20.00 | 22.10 | 1 | 29.2 | 51.4 | 1 |
| SMCJ20A | SMCJ20CA | GEV | BEV | 20.0 | 22.20 | 24.50 | 1 | 32.4 | 46.3 | 1 |
| SMCJ22A | SMCJ22CA | GEX | BEX | 22.0 | 24.40 | 26.90 | 1 | 35.5 | 42.3 | 1 |
| SMCJ24A | SMCJ24CA | GEZ | BEZ | 24.0 | 26.70 | 29.50 | 1 | 38.9 | 38.6 | 1 |
| SMCJ26A | SMCJ26CA | GFE | BFE | 26.0 | 28.90 | 31.90 | 1 | 42.1 | 35.7 | 1 |
| SMCJ28A | SMCJ28CA | GFG | BFG | 28.0 | 31.10 | 34.40 | 1 | 45.4 | 33.1 | 1 |
| SMCJ30A | SMCJ30CA | GFK | BFK | 30.0 | 33.30 | 36.80 | 1 | 48.4 | 31.0 | 1 |
| SMCJ33A | SMCJ33CA | GFM | BFM | 33.0 | 36.70 | 40.60 | 1 | 53.3 | 28.2 | 1 |
| SMCJ36A | SMCJ36CA | GFP | BFP | 36.0 | 40.00 | 44.20 | 1 | 58.1 | 25.9 | 1 |
| SMCJ40A | SMCJ40CA | GFR | BFR | 40.0 | 44.40 | 49.10 | 1 | 64.5 | 23.3 | 1 |
| SMCJ43A | SMCJ43CA | GFT | BFT | 43.0 | 47.80 | 52.80 | 1 | 69.4 | 21.7 | 1 |
| SMCJ45A | SMCJ45CA | GFV | BFV | 45.0 | 50.00 | 55.30 | 1 | 72.7 | 20.6 | 1 |
| SMCJ48A | SMCJ48CA | GFX | BFX | 48.0 | 53.30 | 58.90 | 1 | 77.4 | 19.4 | 1 |
| SMCJ51A | SMCJ51CA | GFZ | BFZ | 51.0 | 56.70 | 62.70 | 1 | 82.4 | 18.2 | 1 |
| SMCJ54A | SMCJ54CA | GGE | BGE | 54.0 | 60.00 | 66.30 | 1 | 87.1 | 17.3 | 1 |
| SMCJ58A | SMCJ58CA | GGG | BGG | 58.0 | 64.40 | 71.20 | 1 | 93.6 | 16.1 | 1 |

| Part Number | | Device Marking Code | | Reverse Stand-off Voltage | Breakdown Voltage Min.@I _T | Breakdown Voltage Max.@I _T | Test Current | Maximum Clamping Voltage @I _{PP} | Peak Pulse Current | Reverse Leakage @V _{RWM} |
|-------------|-----------|---------------------|-----|---------------------------|---------------------------------------|---------------------------------------|---------------------|---|---------------------|-----------------------------------|
| Uni-Polar | Bi-Polar | Uni | Bi | V _{RWM} (V) | V _{BR} (V) | V _{BR} (V) | I _T (mA) | V _C (V) | I _{PP} (A) | I _R (uA) |
| SMCJ60A | SMCJ60CA | GGK | BGK | 60.0 | 66.7 | 73.7 | 1 | 96.8 | 15.5 | 1 |
| SMCJ64A | SMCJ64CA | GGM | BGM | 64.0 | 71.1 | 78.6 | 1 | 103.0 | 14.6 | 1 |
| SMCJ70A | SMCJ70CA | GGP | BGP | 70.0 | 77.8 | 86.0 | 1 | 113.0 | 13.3 | 1 |
| SMCJ75A | SMCJ75CA | GGR | BGR | 75.0 | 83.3 | 92.1 | 1 | 121.0 | 12.4 | 1 |
| SMCJ78A | SMCJ78CA | GGT | BGT | 78.0 | 86.7 | 95.8 | 1 | 126.0 | 11.9 | 1 |
| SMCJ85A | SMCJ85CA | GGV | BGV | 85.0 | 94.4 | 104.0 | 1 | 137.0 | 11.0 | 1 |
| SMCJ90A | SMCJ90CA | GGX | BGX | 90.0 | 100.0 | 111.0 | 1 | 146.0 | 10.3 | 1 |
| SMCJ100A | SMCJ100CA | GGZ | BGZ | 100.0 | 111.0 | 123.0 | 1 | 162.0 | 9.3 | 1 |
| SMCJ110A | SMCJ110CA | GHE | BHE | 110.0 | 122.0 | 135.0 | 1 | 177.0 | 8.5 | 1 |
| SMCJ120A | SMCJ120CA | GHG | BHG | 120.0 | 133.0 | 147.0 | 1 | 193.0 | 7.8 | 1 |
| SMCJ130A | SMCJ130CA | GHK | BHK | 130.0 | 144.0 | 159.0 | 1 | 209.0 | 7.2 | 1 |
| SMCJ150A | SMCJ150CA | GHM | BHM | 150.0 | 167.0 | 185.0 | 1 | 243.0 | 6.2 | 1 |
| SMCJ160A | SMCJ160CA | GHP | BHP | 160.0 | 178.0 | 197.0 | 1 | 259.0 | 5.8 | 1 |
| SMCJ170A | SMCJ170CA | GHR | BHR | 170.0 | 189.0 | 209.0 | 1 | 275.0 | 5.5 | 1 |
| SMCJ180A | SMCJ180CA | GHT | BHT | 180.0 | 201.0 | 222.0 | 1 | 292.0 | 5.1 | 1 |
| SMCJ200A | SMCJ200CA | GHV | BHV | 200.0 | 224.0 | 247.0 | 1 | 324.0 | 4.6 | 1 |
| SMCJ220A | SMCJ220CA | GHX | BHX | 220.0 | 246.0 | 272.0 | 1 | 356.0 | 4.2 | 1 |
| SMCJ250A | SMCJ250CA | GHZ | BHZ | 250.0 | 279.0 | 309.0 | 1 | 405.0 | 3.7 | 1 |
| SMCJ300A | SMCJ300CA | GJE | BJE | 300.0 | 335.0 | 371.0 | 1 | 486.0 | 3.1 | 1 |
| SMCJ350A | SMCJ350CA | GJG | BJG | 350.0 | 391.0 | 432.0 | 1 | 567.0 | 2.6 | 1 |
| SMCJ400A | SMCJ400CA | GJK | BJK | 400.0 | 447.0 | 494.0 | 1 | 648.0 | 2.3 | 1 |
| SMCJ440A | SMCJ440CA | GJM | BJM | 440.0 | 492.0 | 543.0 | 1 | 713.0 | 2.1 | 1 |
| SMCJ480A | SMCJ480CA | GJP | BJP | 480.0 | 536.0 | 593.0 | 1 | 750.0 | 2.0 | 1 |
| SMCJ520A | SMCJ520CA | GJR | BJR | 520.0 | 578.0 | 640.0 | 1 | 762.0 | 2.0 | 1 |
| SMCJ550A | SMCJ550CA | GJT | BJT | 550.0 | 615.0 | 680.0 | 1 | 860.0 | 1.7 | 1 |

CHARACTERISTIC CURVES

TVS Transients Clamping Waveform



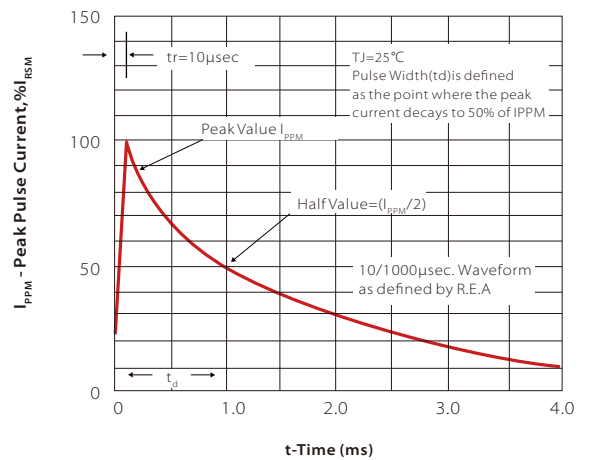
Peak Pulse Power Rating Curve

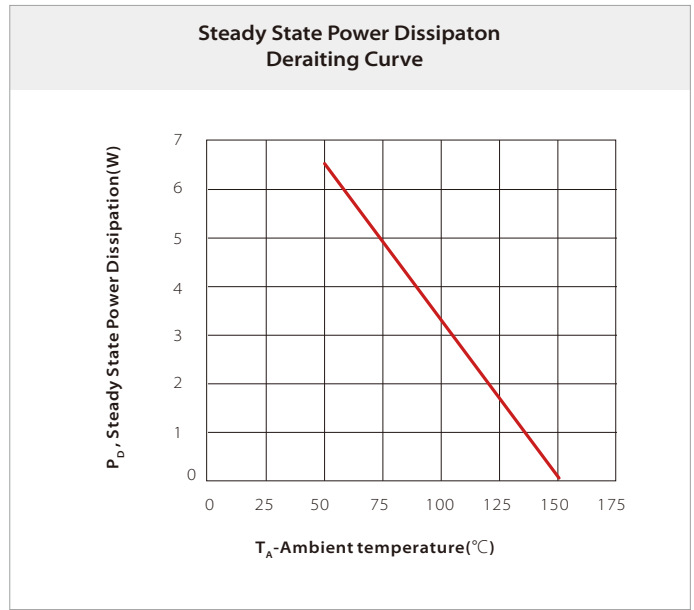


Pulse Derating Curve



Pulse Waveform





SOLDERING PARAMETERS

| Reflow Condition | | Lead-free assembly |
|--|----------------------------------|--------------------|
| Pre Heat | Temperature Max ($T_{s(min)}$) | 150°C |
| | Temperature Max ($T_{s(max)}$) | 200°C |
| | Time (min to max) (t_2) | 60 – 180 secs |
| Average ramp up rate (Liquidus Temp (T_L) to peak) | | 3°C/second max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3°C/second max |
| Reflow | Temperature (T_L) (Liquidus) | 217°C |
| | Time (min to max) (t_1) | 60 – 150 seconds |
| Peak Temperature (T_p) | | 260°C |
| Time within 5°C of actual peak Temperature (t_p) | | 20 – 40 seconds |
| Ramp-down Rate | | 6°C/second max |
| Time 25°C to peak Temperature (T_p) | | 8 minutes max. |
| Do not exceed | | 260°C |



DO-214AB(SMC) PACKAGE INFORMATION



| Ref. | Millimeters | | Inches | |
|------|-------------|------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 2.80 | 3.20 | 0.110 | 0.126 |
| B | 6.60 | 7.20 | 0.260 | 0.283 |
| C | 5.70 | 6.10 | 0.224 | 0.240 |
| D | 2.15 | 2.75 | 0.085 | 0.108 |
| E | 1.00 | 1.60 | 0.039 | 0.063 |
| F | 0.02 | 0.20 | 0.000 | 0.008 |
| G | 7.60 | 8.00 | 0.299 | 0.315 |
| H | 0.15 | 0.30 | 0.006 | 0.012 |

RECOMMENDED PAD LAYOUT DIMENSIONS



| Ref. | Millimeters | | Inches | |
|------|-------------|------|----------|-------|
| | Min. | Max. | Min. | Max. |
| A | 3.30 | - | 0.129 | - |
| B | 2.40 | - | 0.094 | - |
| C | - | 4.20 | - | 0.165 |
| D | 2.40 | - | 0.094 | - |
| E | 8.20REF | | 0.323REF | |

ORDERING INFORMATION

| Part Number | Component Package | QTY/Reel | Reel Size |
|-------------|-------------------|----------|-----------|
| SMCJxx(C)A | DO-214AB(SMC) | 3000PCS | 13" |

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