



SMAJ5.0A(CA) - SMAJ440A(CA)

SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR DIODE

VOLTAGE RANGE: 5.0 - 440 V
POWER: 400Watts

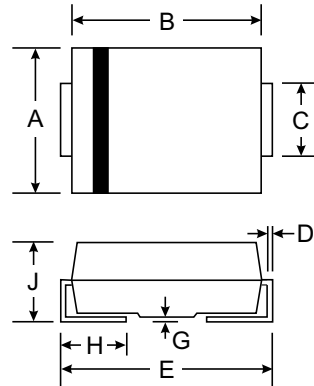
Features

- Glass Passivated Die Construction
- Uni- and Bi-Directional Versions Available
- Excellent Clamping Capability
- Fast Response Time
- Plastic Material: UL Flammability Classification Rating 94V-0



Mechanical Data

- Case: SMA/DO-214AC, Molded Plastic
- Terminals: Solder Plated, Solderable per MIL-STD-750, Method 2026
- Polarity: Cathode Band or Cathode Notch
- Marking: Type Number
- Weight: 0.064 grams (approx.)



| SMA(DO-214AC) | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 2.29 | 2.92 |
| B | 4.00 | 4.60 |
| C | 1.27 | 1.63 |
| D | 0.15 | 0.31 |
| E | 4.80 | 5.59 |
| G | 0.10 | 0.20 |
| H | 0.76 | 1.52 |
| J | 2.01 | 2.62 |
| All Dimensions in mm | | |

Maximum Ratings @ T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Peak Pulse Power Dissipation (Non repetitive current pulse derated above T _A = 25°C) (Note 1) | P _{PK} | 400 | W |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Notes 1, 2, & 3) | I _{FSM} | 40 | A |
| Instantaneous Forward Voltage @ I _{PP} = 35A (Notes 1, 2, & 3) | V _F | 3.5 | V |
| Operating and Storage Temperature Range | T _j , T _{STG} | -55 to +150 | °C |

- Notes:
1. Valid provided that terminals are kept at ambient temperature.
 2. Measured with 8.3ms single half sine-wave. Duty cycle = 4 pulses per minute maximum.
 3. Unidirectional units only.



| TYPE | | Marking | | 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) | (Bi) | (Uni) | (Bi) | V _{RWM} (V) | V _{BR MIN} (V) | V _{BR MAX} (V) | I _T (mA) | V _C (V) | I _{PP} (A) | I _R (uA) |
| SMAJ5.0 | SMAJ5.0C | HD | TD | 5.0 | 6.40 | 7.55 | 10.0 | 9.6 | 41.7 | 800.0 |
| SMAJ5.0A | SMAJ5.0CA | HE | TE | 5.0 | 6.40 | 7.25 | 10.0 | 9.2 | 43.5 | 800.0 |
| SMAJ6.0 | SMAJ6.0C | HF | TF | 6.0 | 6.67 | 8.45 | 10.0 | 11.4 | 35.1 | 800.0 |
| SMAJ6.0A | SMAJ6.0CA | HG | TG | 6.0 | 6.67 | 7.67 | 10.0 | 10.3 | 38.8 | 800.0 |
| SMAJ6.5 | SMAJ6.5C | HH | TH | 6.5 | 7.22 | 9.14 | 10.0 | 12.3 | 32.5 | 500.0 |
| SMAJ6.5A | SMAJ6.5CA | HK | TK | 6.5 | 7.22 | 8.30 | 10.0 | 11.2 | 35.7 | 500.0 |
| SMAJ7.0 | SMAJ7.0C | HL | TL | 7.0 | 7.78 | 9.86 | 10.0 | 13.3 | 30.1 | 200.0 |
| SMAJ7.0A | SMAJ7.0CA | HM | TM | 7.0 | 7.78 | 8.95 | 10.0 | 12.0 | 33.3 | 200.0 |
| SMAJ7.5 | SMAJ7.5C | HN | TN | 7.5 | 8.33 | 10.67 | 1.0 | 14.3 | 28.0 | 100.0 |
| SMAJ7.5A | SMAJ7.5CA | HP | TP | 7.5 | 8.33 | 9.58 | 1.0 | 12.9 | 31.0 | 100.0 |
| SMAJ8.0 | SMAJ8.0C | HQ | TQ | 8.0 | 8.89 | 11.3 | 1.0 | 15.0 | 26.7 | 50.0 |
| SMAJ8.0A | SMAJ8.0CA | HR | TR | 8.0 | 8.89 | 10.23 | 1.0 | 13.6 | 29.4 | 50.0 |
| SMAJ8.5 | SMAJ8.5C | HS | TS | 8.5 | 9.44 | 11.92 | 1.0 | 15.9 | 25.2 | 20.0 |
| SMAJ8.5A | SMAJ8.5CA | HT | TT | 8.5 | 9.44 | 10.82 | 1.0 | 14.4 | 27.8 | 20.0 |
| SMAJ9.0 | SMAJ9.0C | HU | TU | 9.0 | 10.0 | 12.6 | 1.0 | 16.9 | 23.7 | 10.0 |
| SMAJ9.0A | SMAJ9.0CA | HV | TV | 9.0 | 10.0 | 11.5 | 1.0 | 15.4 | 26.0 | 10.0 |
| SMAJ10 | SMAJ10C | HW | TW | 10 | 11.1 | 14.1 | 1.0 | 18.8 | 21.3 | 5.0 |
| SMAJ10A | SMAJ10CA | HX | TX | 10 | 11.1 | 12.8 | 1.0 | 17.0 | 23.5 | 5.0 |
| SMAJ11 | SMAJ11C | HY | TY | 11 | 12.2 | 15.4 | 1.0 | 20.1 | 19.9 | 5.0 |
| SMAJ11A | SMAJ11CA | HZ | TZ | 11 | 12.2 | 14.0 | 1.0 | 18.2 | 22.0 | 5.0 |
| SMAJ12 | SMAJ12C | ID | UD | 12 | 13.3 | 16.9 | 1.0 | 22.0 | 18.2 | 5.0 |
| SMAJ12A | SMAJ12CA | IE | UE | 12 | 13.3 | 15.3 | 1.0 | 19.9 | 20.1 | 5.0 |
| SMAJ13 | SMAJ13C | IF | UF | 13 | 14.4 | 18.2 | 1.0 | 23.8 | 16.8 | 5.0 |
| SMAJ13A | SMAJ13CA | IG | UG | 13 | 14.4 | 16.5 | 1.0 | 21.5 | 18.6 | 5.0 |
| SMAJ14 | SMAJ14C | IH | UH | 14 | 15.6 | 19.8 | 1.0 | 25.8 | 15.5 | 5.0 |
| SMAJ14A | SMAJ14CA | IK | UK | 14 | 15.6 | 17.9 | 1.0 | 23.2 | 17.2 | 5.0 |
| SMAJ15 | SMAJ15C | IL | UL | 15 | 16.7 | 21.1 | 1.0 | 26.9 | 14.9 | 5.0 |
| SMAJ15A | SMAJ15CA | IM | UM | 15 | 16.7 | 19.2 | 1.0 | 24.4 | 16.4 | 5.0 |
| SMAJ16 | SMAJ16C | IN | UN | 16 | 17.8 | 22.6 | 1.0 | 28.8 | 13.9 | 5.0 |
| SMAJ16A | SMAJ16CA | IP | UP | 16 | 17.8 | 20.5 | 1.0 | 26.0 | 15.4 | 5.0 |
| SMAJ17 | SMAJ17C | IQ | UQ | 17 | 18.9 | 23.9 | 1.0 | 30.5 | 13.1 | 5.0 |
| SMAJ17A | SMAJ17CA | IR | UR | 17 | 18.9 | 21.7 | 1.0 | 27.6 | 14.5 | 5.0 |
| SMAJ18 | SMAJ18C | IS | US | 18 | 20.0 | 25.3 | 1.0 | 32.2 | 12.4 | 5.0 |
| SMAJ18A | SMAJ18CA | IT | UT | 18 | 20.0 | 23.3 | 1.0 | 29.2 | 13.7 | 5.0 |
| SMAJ20 | SMAJ20C | IU | UU | 20 | 22.2 | 28.1 | 1.0 | 35.8 | 11.2 | 5.0 |
| SMAJ20A | SMAJ20CA | IV | UV | 20 | 22.2 | 25.5 | 1.0 | 32.4 | 12.3 | 5.0 |
| SMAJ22 | SMAJ22C | IW | UW | 22 | 24.4 | 30.9 | 1.0 | 39.4 | 10.2 | 5.0 |
| SMAJ22A | SMAJ22CA | IX | UX | 22 | 24.4 | 28.0 | 1.0 | 35.5 | 11.3 | 5.0 |
| SMAJ24 | SMAJ24C | IY | UY | 24 | 26.7 | 33.8 | 1.0 | 43.0 | 9.3 | 5.0 |



| TYPE | | Marking | | 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) | (Bi) | (Uni) | (Bi) | V _{RWM} (V) | V _{BR MIN} (V) | V _{BR MAX} (V) | I _T (mA) | V _C (V) | I _{PP} (A) | I _R (uA) |
| SMAJ24A | SMAJ24CA | IZ | UZ | 24 | 26.7 | 30.7 | 1.0 | 38.9 | 10.3 | 5.0 |
| SMAJ26 | SMAJ26C | JD | VD | 26 | 28.9 | 36.6 | 1.0 | 46.6 | 8.6 | 5.0 |
| SMAJ26A | SMAJ26CA | JE | VE | 26 | 28.9 | 33.2 | 1.0 | 42.1 | 9.5 | 5.0 |
| SMAJ28 | SMAJ28C | JF | VF | 28 | 31.1 | 39.4 | 1.0 | 50.0 | 8.0 | 5.0 |
| SMAJ28A | SMAJ28CA | JG | VG | 28 | 31.1 | 35.8 | 1.0 | 45.4 | 8.8 | 5.0 |
| SMAJ30 | SMAJ30C | JH | VH | 30 | 33.3 | 42.2 | 1.0 | 53.5 | 7.5 | 5.0 |
| SMAJ30A | SMAJ30CA | JK | VK | 30 | 33.3 | 38.3 | 1.0 | 48.4 | 8.3 | 5.0 |
| SMAJ33 | SMAJ33C | JL | VL | 33 | 36.7 | 46.5 | 1.0 | 59.0 | 6.8 | 5.0 |
| SMAJ33A | SMAJ33CA | JM | VM | 33 | 36.7 | 42.2 | 1.0 | 53.3 | 7.5 | 5.0 |
| SMAJ36 | SMAJ36C | JN | VN | 36 | 40.0 | 50.7 | 1.0 | 64.3 | 6.2 | 5.0 |
| SMAJ36A | SMAJ36CA | JP | VP | 36 | 40.0 | 46.0 | 1.0 | 58.1 | 6.9 | 5.0 |
| SMAJ40 | SMAJ40C | JQ | VQ | 40 | 44.4 | 56.3 | 1.0 | 71.4 | 5.6 | 5.0 |
| SMAJ40A | SMAJ40CA | JR | VR | 40 | 44.4 | 51.1 | 1.0 | 64.5 | 6.2 | 5.0 |
| SMAJ43 | SMAJ43C | JS | VS | 43 | 47.7 | 60.5 | 1.0 | 76.7 | 5.2 | 5.0 |
| SMAJ43A | SMAJ43CA | JT | VT | 43 | 47.8 | 54.9 | 1.0 | 69.4 | 5.8 | 5.0 |
| SMAJ45 | SMAJ45C | JU | VU | 45 | 50.0 | 63.3 | 1.0 | 80.3 | 5.0 | 5.0 |
| SMAJ45A | SMAJ45CA | JV | VV | 45 | 50.0 | 57.5 | 1.0 | 72.7 | 5.5 | 5.0 |
| SMAJ48 | SMAJ48C | JW | VW | 48 | 53.3 | 67.5 | 1.0 | 85.5 | 4.7 | 5.0 |
| SMAJ48A | SMAJ48CA | JX | VX | 48 | 53.3 | 61.3 | 1.0 | 77.4 | 5.2 | 5.0 |
| SMAJ51 | SMAJ51C | JY | VY | 51 | 56.7 | 71.8 | 1.0 | 91.1 | 4.4 | 5.0 |
| SMAJ51A | SMAJ51CA | JZ | VZ | 51 | 56.7 | 65.2 | 1.0 | 82.4 | 4.9 | 5.0 |
| SMAJ54 | SMAJ54C | RD | WD | 54 | 60.0 | 76.0 | 1.0 | 96.3 | 4.2 | 5.0 |
| SMAJ54A | SMAJ54CA | RE | WE | 54 | 60.0 | 69.0 | 1.0 | 87.1 | 4.6 | 5.0 |
| SMAJ58 | SMAJ58C | RF | WF | 58 | 64.4 | 81.6 | 1.0 | 103 | 3.9 | 5.0 |
| SMAJ58A | SMAJ58CA | RG | WG | 58 | 64.4 | 74.1 | 1.0 | 93.6 | 4.3 | 5.0 |
| SMAJ60 | SMAJ60C | RH | WH | 60 | 66.7 | 84.5 | 1.0 | 107 | 3.7 | 5.0 |
| SMAJ60A | SMAJ60CA | RK | WK | 60 | 66.7 | 76.7 | 1.0 | 96.8 | 4.1 | 5.0 |
| SMAJ64 | SMAJ64C | RL | WL | 64 | 71.1 | 90.1 | 1.0 | 114 | 3.5 | 5.0 |
| SMAJ64A | SMAJ64CA | RM | WM | 64 | 71.1 | 81.8 | 1.0 | 103 | 3.9 | 5.0 |
| SMAJ70 | SMAJ70C | RN | WN | 70 | 77.8 | 98.6 | 1.0 | 125 | 3.2 | 5.0 |
| SMAJ70A | SMAJ70CA | RP | WP | 70 | 77.8 | 89.5 | 1.0 | 113 | 3.5 | 5.0 |
| SMAJ75 | SMAJ75C | RQ | WQ | 75 | 83.0 | 105.7 | 1.0 | 134 | 3.0 | 5.0 |
| SMAJ75A | SMAJ75CA | RR | WR | 75 | 83.0 | 95.8 | 1.0 | 121 | 3.3 | 5.0 |
| SMAJ78 | SMAJ78C | RS | WS | 78 | 86.0 | 109.8 | 1.0 | 139 | 2.9 | 5.0 |
| SMAJ78A | SMAJ78CA | RT | WT | 78 | 86.0 | 99.7 | 1.0 | 126 | 3.2 | 5.0 |



| TYPE | | Marking | | 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) | (Bi) | (Uni) | (Bi) | V _{RWM} (V) | V _{BR MIN} (V) | V _{BR MAX} (V) | I _T (mA) | V _C (V) | I _{PP} (A) | I _R (uA) |
| SMAJ85 | SMAJ85C | RU | WU | 85 | 94.0 | 119.2 | 1.0 | 151 | 2.6 | 5.0 |
| SMAJ85A | SMAJ85CA | RV | WV | 85 | 94.0 | 108.2 | 1.0 | 137 | 2.9 | 5.0 |
| SMAJ90 | SMAJ90C | RW | WW | 90 | 100 | 126.5 | 1.0 | 160 | 2.5 | 5.0 |
| SMAJ90A | SMAJ90CA | RX | WX | 90 | 100 | 115.5 | 1.0 | 146 | 2.7 | 5.0 |
| SMAJ100 | SMAJ100C | RY | WY | 100 | 111 | 141.0 | 1.0 | 179 | 2.2 | 5.0 |
| SMAJ100A | SMAJ100CA | RZ | WZ | 100 | 111 | 128.0 | 1.0 | 162 | 2.5 | 5.0 |
| SMAJ110 | SMAJ110C | SD | XD | 110 | 122 | 154.5 | 1.0 | 196 | 2.0 | 5.0 |
| SMAJ110A | SMAJ110CA | SE | XE | 110 | 122 | 140.5 | 1.0 | 177 | 2.3 | 5.0 |
| SMAJ120 | SMAJ120C | SF | XF | 120 | 133 | 169.0 | 1.0 | 214 | 1.9 | 5.0 |
| SMAJ120A | SMAJ120CA | SG | XG | 120 | 133 | 153.0 | 1.0 | 193 | 2.1 | 5.0 |
| SMAJ130 | SMAJ130C | SH | XH | 130 | 144 | 182.5 | 1.0 | 231 | 1.7 | 5.0 |
| SMAJ130A | SMAJ130CA | SK | XK | 130 | 144 | 165.5 | 1.0 | 209 | 1.9 | 5.0 |
| SMAJ150 | SMAJ150C | SL | XL | 150 | 167 | 211.5 | 1.0 | 268 | 1.5 | 5.0 |
| SMAJ150A | SMAJ150CA | SM | XM | 150 | 167 | 192.5 | 1.0 | 243 | 1.6 | 5.0 |
| SMAJ160 | SMAJ160C | SN | XN | 160 | 178 | 226.0 | 1.0 | 287 | 1.4 | 5.0 |
| SMAJ160A | SMAJ160CA | SP | XP | 160 | 178 | 205.0 | 1.0 | 259 | 1.5 | 5.0 |
| SMAJ170 | SMAJ170C | SQ | XQ | 170 | 189 | 239.5 | 1.0 | 304 | 1.3 | 5.0 |
| SMAJ170A | SMAJ170CA | SR | XR | 170 | 189 | 217.5 | 1.0 | 275 | 1.5 | 5.0 |
| SMAJ180 | SMAJ180C | SS | XS | 180 | 200 | 253.8 | 1.0 | 321 | 1.2 | 5.0 |
| SMAJ180A | SMAJ180CA | ST | XT | 180 | 200 | 230.4 | 1.0 | 290 | 1.4 | 5.0 |
| SMAJ190 | SMAJ190C | SU | XU | 190 | 211 | 267.9 | 1.0 | 339 | 1.2 | 5.0 |
| SMAJ190A | SMAJ190CA | SV | XV | 190 | 211 | 243.2 | 1.0 | 306 | 1.3 | 5.0 |
| SMAJ200 | SMAJ200C | SW | XW | 200 | 222 | 282.0 | 1.0 | 356 | 1.1 | 5.0 |
| SMAJ200A | SMAJ200CA | SX | XX | 200 | 222 | 256.0 | 1.0 | 322 | 1.2 | 5.0 |
| SMAJ210 | SMAJ210C | SY | XY | 210 | 233 | 296.1 | 1.0 | 375 | 1.1 | 5.0 |
| SMAJ210A | SMAJ210CA | SZ | XZ | 210 | 233 | 268.8 | 1.0 | 339 | 1.2 | 5.0 |
| SMAJ220 | SMAJ220C | ZD | YD | 220 | 244 | 310.2 | 1.0 | 392 | 1.0 | 5.0 |
| SMAJ220A | SMAJ220CA | ZE | YE | 220 | 244 | 281.6 | 1.0 | 355 | 1.1 | 5.0 |
| SMAJ250 | SMAJ250C | ZF | YF | 250 | 278 | 342.5 | 1.0 | 447 | 0.9 | 5.0 |
| SMAJ250A | SMAJ250CA | ZG | YG | 250 | 278 | 309.0 | 1.0 | 403 | 1.0 | 5.0 |
| SMAJ300 | SMAJ300C | ZH | YH | 300 | 333 | 411.0 | 1.0 | 535 | 0.7 | 5.0 |
| SMAJ300A | SMAJ300CA | ZK | YK | 300 | 333 | 371.0 | 1.0 | 484 | 0.8 | 5.0 |
| SMAJ350 | SMAJ350C | ZL | YL | 350 | 389 | 479.5 | 1.0 | 624 | 0.6 | 5.0 |
| SMAJ350A | SMAJ350CA | ZM | YM | 350 | 389 | 432.0 | 1.0 | 565 | 0.7 | 5.0 |
| SMAJ400 | SMAJ400C | ZN | YN | 400 | 444 | 548.0 | 1.0 | 687 | 0.6 | 5.0 |
| SMAJ400A | SMAJ400CA | ZP | YP | 400 | 444 | 494.0 | 1.0 | 645 | 0.6 | 5.0 |
| SMAJ440 | SMAJ440C | ZQ | YQ | 440 | 489 | 602.8 | 1.0 | 786 | 0.5 | 5.0 |
| SMAJ440A | SMAJ440CA | ZR | YR | 440 | 489 | 543.0 | 1.0 | 710 | 0.6 | 5.0 |

Ratings and Characteristic Curves $T_A=25^\circ\text{C}$ unless otherwise noted

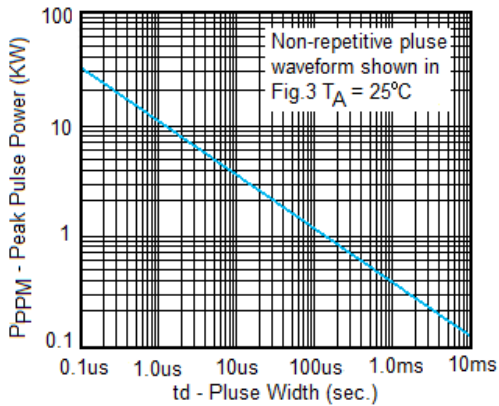


Fig. 1 Peak Pulse Power Rating

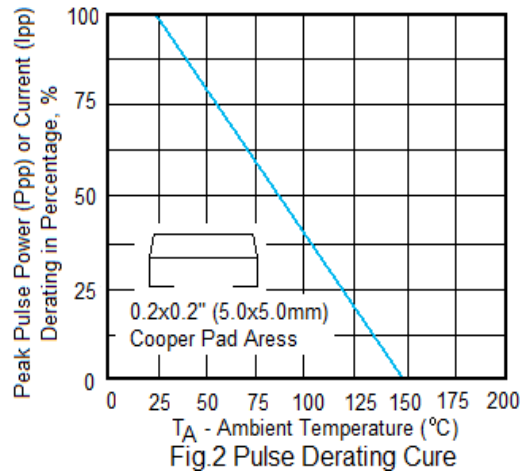


Fig.2 Pulse Derating Curve

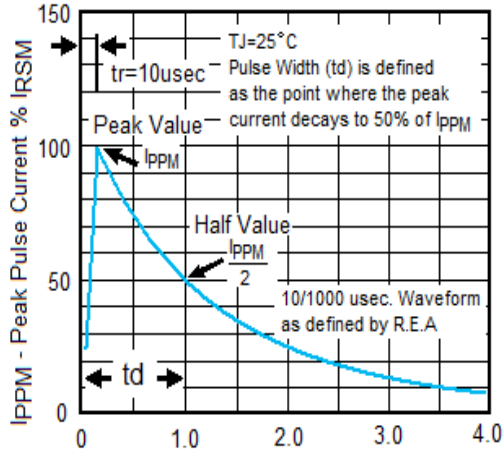


Fig.3 Pulse Waveform

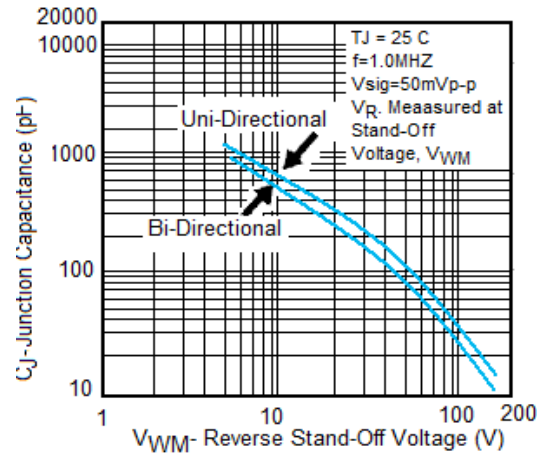


Fig. 4- Typical Junction Capacitance

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