

600 W Unidirectional and Bidirectional Surface Mounted Transient Voltage Suppressor Diodes

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|--|--|
| <p>Dimensions in mm.</p> <p>CASE: SMB/DO-214AA</p> | <p>Voltage 6.8 to 250 V</p> <p>Power 600 W/ms</p> |
| | <ul style="list-style-type: none"> • Glass passivated junction • Typical I_{RM} less than $1\mu A$ above 10V • Response time typically $< 1ns$ • The plastic material carries UL 94 V-0 • Low profile package • Easy pick and place • High temperature soldering $260\text{ }^{\circ}C$ 10 sec |
| | <p>MECHANICAL DATA</p> <p>Terminals: Solder plated, solderable per IEC 68-2-20. Standard Packaging: 8 mm. tape (EIA-RS-481). Weight: 0.093 g.</p> |

Maximum Ratings and Electrical Characteristics at 25 °C

| | | |
|-----------------|---|------------------|
| P_{PPM} | Peak Pulse Power Dissipation with 10/1000 μs exponential pulse | 600 W |
| I_{FSM} | Peak Forward Surge Current 8.3 ms. (Jedec Method) (Note 1) | 100 A |
| V_F | Max. forward voltage drop at $I_F = 100 A$ (Note 1) | 3.5 V |
| $T_J - T_{STG}$ | Operating Junction and Storage Temperature Range | - 65 to + 175 °C |

Note 1: Only for Unidirectional

| Type | | Maximum Reverse Leakage Current | | (1) Breakdown Voltage | | | | Max. Clamping Voltage | |
|----------------|--------------|---------------------------------|-------------|-----------------------|------|------|----------|-----------------------|------|
| | | I_{RM} | at V_{RM} | V_{BR} at I_R | | | V_{CL} | at I_{PP} | |
| Unidirectional | Marking Code | (μA) | (V) | Min. | Nom. | Max. | (mA) | (V) | (A) |
| P6SMB6V8 | KD | 1000 | 5.50 | 6.12 | 6.8 | 7.48 | 10 | 10.8 | 56 |
| P6SMB6V8A | KE | 1000 | 5.80 | 6.45 | 6.8 | 7.14 | 10 | 10.5 | 57 |
| P6SMB7V5 | KF | 500 | 6.05 | 6.75 | 7.5 | 8.25 | 10 | 11.7 | 51 |
| P6SMB7V5A | KG | 500 | 6.40 | 7.13 | 7.5 | 7.88 | 10 | 11.3 | 53 |
| P6SMB8V2 | KH | 200 | 6.63 | 7.38 | 8.2 | 9.02 | 10 | 12.5 | 48 |
| P6SMB8V2A | KK | 200 | 7.02 | 7.79 | 8.2 | 8.61 | 10 | 12.1 | 50 |
| P6SMB9V1 | KL | 50 | 7.37 | 8.19 | 9.1 | 10.0 | 1 | 13.8 | 44 |
| P6SMB9V1A | KM | 50 | 7.78 | 8.65 | 9.1 | 9.55 | 1 | 13.4 | 45 |
| P6SMB10 | KN | 10 | 8.10 | 9.00 | 10 | 11.0 | 1 | 15.0 | 40 |
| P6SMB10A | KP | 10 | 8.55 | 9.50 | 10 | 10.5 | 1 | 14.5 | 41 |
| P6SMB11 | KQ | 5 | 8.92 | 9.90 | 11 | 12.1 | 1 | 16.2 | 37 |
| P6SMB11A | KR | 5 | 9.40 | 10.5 | 11 | 11.6 | 1 | 15.6 | 38 |
| P6SMB12 | KS | 5 | 9.72 | 10.8 | 12 | 13.2 | 1 | 17.3 | 35 |
| P6SMB12A | KT | 5 | 10.2 | 11.4 | 12 | 12.6 | 1 | 16.7 | 36 |
| P6SMB13 | KU | 5 | 10.5 | 11.7 | 13 | 14.3 | 1 | 19.0 | 32 |
| P6SMB13A | KV | 5 | 11.1 | 12.4 | 13 | 13.7 | 1 | 18.2 | 33 |
| P6SMB15 | KW | 5 | 12.1 | 13.5 | 15 | 16.5 | 1 | 22.0 | 27 |
| P6SMB15A | KX | 5 | 12.8 | 14.3 | 15 | 15.8 | 1 | 21.2 | 28 |
| P6SMB16 | KY | 5 | 12.9 | 14.4 | 16 | 17.6 | 1 | 23.5 | 26 |
| P6SMB16A | KZ | 5 | 13.6 | 15.2 | 16 | 16.8 | 1 | 22.5 | 27 |
| P6SMB18 | LD | 5 | 14.5 | 16.2 | 18 | 19.8 | 1 | 26.5 | 23 |
| P6SMB18A | LE | 5 | 15.3 | 17.1 | 18 | 18.9 | 1 | 25.5 | 24 |
| P6SMB20 | LF | 5 | 16.2 | 18.0 | 20 | 22.0 | 1 | 29.1 | 21 |
| P6SMB20A | LG | 5 | 17.1 | 19.0 | 20 | 21.0 | 1 | 27.7 | 22 |
| P6SMB22 | LH | 5 | 17.8 | 19.8 | 22 | 24.2 | 1 | 31.9 | 19 |
| P6SMB22A | LK | 5 | 18.8 | 20.9 | 22 | 23.1 | 1 | 30.6 | 20 |
| P6SMB24 | LL | 5 | 19.4 | 21.6 | 24 | 26.4 | 1 | 34.7 | 17 |
| P6SMB24A | LM | 5 | 20.5 | 22.8 | 24 | 25.2 | 1 | 33.2 | 18 |
| P6SMB27 | LN | 5 | 21.8 | 24.3 | 27 | 29.7 | 1 | 39.1 | 15 |
| P6SMB27A | LP | 5 | 23.1 | 25.7 | 27 | 28.4 | 1 | 37.5 | 16 |
| P6SMB30 | LQ | 5 | 24.3 | 27.0 | 30 | 33.0 | 1 | 43.5 | 14 |
| P6SMB30A | LR | 5 | 25.6 | 28.5 | 30 | 31.5 | 1 | 41.4 | 14.4 |
| P6SMB33 | LS | 5 | 26.8 | 29.7 | 33 | 36.3 | 1 | 47.7 | 12.6 |
| P6SMB33A | LT | 5 | 28.2 | 31.4 | 33 | 34.7 | 1 | 45.7 | 13.2 |
| P6SMB36 | LU | 5 | 29.1 | 32.4 | 36 | 39.6 | 1 | 52.0 | 11.6 |
| P6SMB36A | LV | 5 | 30.8 | 34.2 | 36 | 37.8 | 1 | 49.9 | 12 |
| P6SMB39 | LW | 5 | 31.6 | 35.1 | 39 | 42.9 | 1 | 56.4 | 10.6 |
| P6SMB39A | LX | 5 | 33.3 | 37.1 | 39 | 41.0 | 1 | 53.9 | 11.2 |

(1) Tested with pulses.
Pulse test: $t_p \leq 50$ ms; $\delta < 2\%$

| Type | | Maximum Reverse Leakage Current I_{RM} at V_{RM} | | (1) Breakdown Voltage V_{BR} at I_R (V) | | | | Max. Clamping Voltage V_{CL} at I_{PP} max. lms. Expo. | |
|----------------|--------------|---|------|---|------|------|------|--|------|
| Unidirectional | Marking Code | (μ A) | (V) | Min. | Nom. | Max. | (mA) | (V) | (A) |
| P6SMB43 | LY | 5 | 34.8 | 38.7 | 43 | 47.3 | 1 | 61.9 | 9.6 |
| P6SMB43A | LZ | 5 | 36.8 | 40.9 | 43 | 45.2 | 1 | 59.3 | 10.1 |
| P6SMB47 | MD | 5 | 38.1 | 42.3 | 47 | 51.7 | 1 | 67.8 | 8.9 |
| P6SMB47A | ME | 5 | 40.2 | 44.7 | 47 | 49.4 | 1 | 64.8 | 9.3 |
| P6SMB51 | MF | 5 | 41.3 | 45.9 | 51 | 56.1 | 1 | 73.5 | 8.2 |
| P6SMB51A | MG | 5 | 43.6 | 48.5 | 51 | 53.6 | 1 | 70.1 | 8.6 |
| P6SMB56 | MH | 5 | 45.4 | 50.4 | 56 | 61.6 | 1 | 80.5 | 7.4 |
| P6SMB56A | MK | 5 | 47.8 | 53.2 | 56 | 58.8 | 1 | 77.0 | 7.8 |
| P6SMB62 | ML | 5 | 50.2 | 55.8 | 62 | 68.2 | 1 | 89.0 | 6.8 |
| P6SMB62A | MM | 5 | 53.0 | 58.9 | 62 | 65.1 | 1 | 85.0 | 7.1 |
| P6SMB68 | MN | 5 | 55.1 | 61.2 | 68 | 74.8 | 1 | 98.0 | 6.1 |
| P6SMB68A | MP | 5 | 58.1 | 64.6 | 68 | 71.4 | 1 | 92.0 | 6.5 |
| P6SMB75 | MQ | 5 | 60.7 | 67.5 | 75 | 82.5 | 1 | 108 | 5.5 |
| P6SMB75A | MR | 5 | 64.1 | 71.3 | 75 | 78.8 | 1 | 103 | 5.8 |
| P6SMB82 | MS | 5 | 66.4 | 73.8 | 82 | 90.2 | 1 | 118 | 5.1 |
| P6SMB82A | MT | 5 | 70.1 | 77.9 | 82 | 86.1 | 1 | 113 | 5.3 |
| P6SMB91 | MU | 5 | 73.7 | 81.9 | 91 | 100 | 1 | 131 | 4.5 |
| P6SMB91A | MV | 5 | 77.8 | 86.5 | 91 | 95.5 | 1 | 125 | 4.8 |
| P6SMB100 | MW | 5 | 81.0 | 90.0 | 100 | 110 | 1 | 144 | 4.2 |
| P6SMB100A | MX | 5 | 85.5 | 95.0 | 100 | 105 | 1 | 137 | 4.4 |
| P6SMB110 | MY | 5 | 89.2 | 99.0 | 110 | 121 | 1 | 158 | 3.8 |
| P6SMB110A | MZ | 5 | 94.0 | 105 | 110 | 116 | 1 | 152 | 4.0 |
| P6SMB120 | ND | 5 | 97.2 | 108 | 120 | 132 | 1 | 173 | 3.5 |
| P6SMB120A | NE | 5 | 102 | 114 | 120 | 126 | 1 | 165 | 3.6 |
| P6SMB130 | NF | 5 | 105 | 117 | 130 | 143 | 1 | 187 | 3.2 |
| P6SMB130A | NG | 5 | 111 | 124 | 130 | 137 | 1 | 179 | 3.3 |
| P6SMB150 | NH | 5 | 121 | 135 | 150 | 165 | 1 | 215 | 2.8 |
| P6SMB150A | NK | 5 | 128 | 143 | 150 | 158 | 1 | 207 | 2.9 |
| P6SMB160 | NL | 5 | 130 | 144 | 160 | 176 | 1 | 230 | 2.6 |
| P6SMB160A | NM | 5 | 136 | 152 | 160 | 168 | 1 | 219 | 2.7 |
| P6SMB170 | NN | 5 | 138 | 153 | 170 | 187 | 1 | 244 | 2.5 |
| P6SMB170A | NP | 5 | 145 | 162 | 170 | 179 | 1 | 234 | 2.6 |
| P6SMB180 | NQ | 5 | 146 | 162 | 180 | 198 | 1 | 258 | 2.3 |
| P6SMB180A | NR | 5 | 154 | 171 | 180 | 189 | 1 | 246 | 2.4 |
| P6SMB200 | NS | 5 | 162 | 180 | 200 | 220 | 1 | 287 | 2.1 |
| P6SMB200A | NT | 5 | 171 | 190 | 200 | 210 | 1 | 274 | 2.2 |
| P6SMB220 | NU | 5 | 175 | 198 | 220 | 242 | 1 | 344 | 1.75 |
| P6SMB220A | NV | 5 | 185 | 209 | 220 | 231 | 1 | 328 | 1.83 |
| P6SMB250 | NW | 5 | 202 | 225 | 250 | 275 | 1 | 360 | 1.67 |
| P6SMB250A | NX | 5 | 214 | 237 | 250 | 263 | 1 | 344 | 1.75 |

(1) Tested with pulses.
Pulse test: $t_p \leq 50$ ms; $\delta < 2\%$

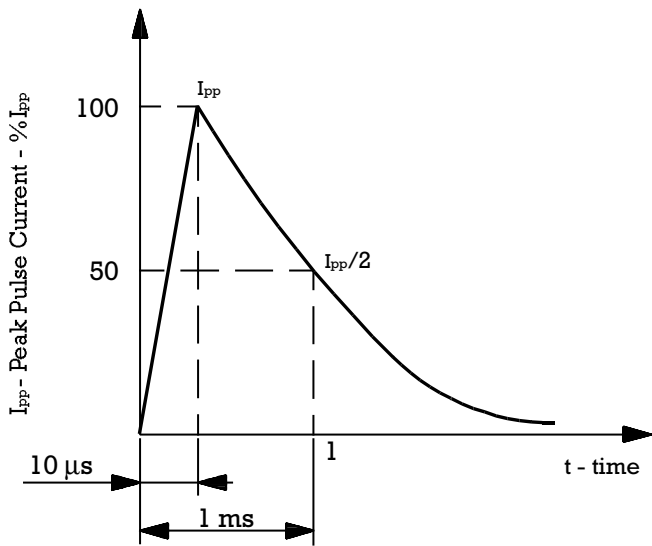
| Type | | Maximum Reverse Leakage Current I_{RM} at V_{RM} | | (1) Breakdown Voltage V_{BR} at I_R (V) | | | | Max. Clamping Voltage V_{CL} at I_{PP} max. 1ms. Expo. | |
|---------------|--------------|---|------|---|------|------|------|--|------|
| Bidirectional | Marking Code | (μ A) | (V) | Min. | Nom. | Max. | (mA) | (V) | (A) |
| P6SMB6V8C | PD | 1000 | 5.50 | 6.12 | 6.8 | 7.48 | 10 | 10.8 | 56 |
| P6SMB6V8CA | PE | 1000 | 5.80 | 6.45 | 6.8 | 7.14 | 10 | 10.5 | 57 |
| P6SMB7V5C | PF | 500 | 6.05 | 6.75 | 7.5 | 8.25 | 10 | 11.7 | 51 |
| P6SMB7V5CA | PG | 500 | 6.40 | 7.13 | 7.5 | 7.88 | 10 | 11.3 | 53 |
| P6SMB8V2C | PH | 200 | 6.63 | 7.38 | 8.2 | 9.02 | 10 | 12.5 | 48 |
| P6SMB8V2CA | PK | 200 | 7.02 | 7.79 | 8.2 | 8.61 | 10 | 12.1 | 50 |
| P6SMB9V1C | PL | 50 | 7.37 | 8.19 | 9.1 | 10.0 | 1 | 13.8 | 44 |
| P6SMB9V1CA | PM | 50 | 7.78 | 8.65 | 9.1 | 9.55 | 1 | 13.4 | 45 |
| P6SMB10C | PN | 10 | 8.10 | 9.00 | 10 | 11.0 | 1 | 15.0 | 40 |
| P6SMB10CA | PP | 10 | 8.55 | 9.50 | 10 | 10.5 | 1 | 14.5 | 41 |
| P6SMB11C | PQ | 5 | 8.92 | 9.90 | 11 | 12.1 | 1 | 16.2 | 37 |
| P6SMB11CA | PR | 5 | 9.40 | 10.5 | 11 | 11.6 | 1 | 15.6 | 38 |
| P6SMB12C | PS | 5 | 9.72 | 10.8 | 12 | 13.2 | 1 | 17.3 | 35 |
| P6SMB12CA | PT | 5 | 10.2 | 11.4 | 12 | 12.6 | 1 | 16.7 | 36 |
| P6SMB13C | PU | 5 | 10.5 | 11.7 | 13 | 14.3 | 1 | 19.0 | 32 |
| P6SMB13CA | PV | 5 | 11.1 | 12.4 | 13 | 13.7 | 1 | 18.2 | 33 |
| P6SMB15C | PW | 5 | 12.1 | 13.5 | 15 | 16.5 | 1 | 22.0 | 27 |
| P6SMB15CA | PX | 5 | 12.8 | 14.3 | 15 | 15.8 | 1 | 21.2 | 28 |
| P6SMB16C | PY | 5 | 12.9 | 14.4 | 16 | 17.6 | 1 | 23.5 | 26 |
| P6SMB16CA | PZ | 5 | 13.6 | 15.2 | 16 | 16.8 | 1 | 22.5 | 27 |
| P6SMB18C | QD | 5 | 14.5 | 16.2 | 18 | 19.8 | 1 | 26.5 | 23 |
| P6SMB18CA | QE | 5 | 15.3 | 17.1 | 18 | 18.9 | 1 | 25.5 | 24 |
| P6SMB20C | QF | 5 | 16.2 | 18.0 | 20 | 22.0 | 1 | 29.1 | 21 |
| P6SMB20CA | QG | 5 | 17.1 | 19.0 | 20 | 21.0 | 1 | 27.7 | 22 |
| P6SMB22C | QH | 5 | 17.8 | 19.8 | 22 | 24.2 | 1 | 31.9 | 19 |
| P6SMB22CA | QK | 5 | 18.8 | 20.9 | 22 | 23.1 | 1 | 30.6 | 20 |
| P6SMB24C | QL | 5 | 19.4 | 21.6 | 24 | 26.4 | 1 | 34.7 | 17 |
| P6SMB24CA | QM | 5 | 20.5 | 22.8 | 24 | 25.2 | 1 | 33.2 | 18 |
| P6SMB27C | QN | 5 | 21.8 | 24.3 | 27 | 29.7 | 1 | 39.1 | 15 |
| P6SMB27CA | QP | 5 | 23.1 | 25.7 | 27 | 28.4 | 1 | 37.5 | 16 |
| P6SMB30C | QQ | 5 | 24.3 | 27.0 | 30 | 33.0 | 1 | 43.5 | 14 |
| P6SMB30CA | QR | 5 | 25.6 | 28.5 | 30 | 31.5 | 1 | 41.4 | 14.4 |
| P6SMB33C | QS | 5 | 26.8 | 29.7 | 33 | 36.3 | 1 | 47.7 | 12.6 |
| P6SMB33CA | QT | 5 | 28.2 | 31.4 | 33 | 34.7 | 1 | 45.7 | 13.2 |
| P6SMB36C | QU | 5 | 29.1 | 32.4 | 36 | 39.6 | 1 | 52.0 | 11.6 |
| P6SMB36CA | QV | 5 | 30.8 | 34.2 | 36 | 37.8 | 1 | 49.9 | 12 |
| P6SMB39C | QW | 5 | 31.6 | 35.1 | 39 | 42.9 | 1 | 56.4 | 10.6 |
| P6SMB39CA | QX | 5 | 33.3 | 37.1 | 39 | 41.0 | 1 | 53.9 | 11.2 |

(1) Tested with pulses.
Pulse test: $t_p \leq 50$ ms; $\delta < 2\%$

| Type | | Maximum Reverse Leakage Current | | (1) Breakdown Voltage | | | | Max. Clamping Voltage | |
|---------------|--------------|---------------------------------|-------------|-----------------------|------|------|----------|-----------------------|------|
| | | I_{RM} | at V_{RM} | V_{BR} at I_R | | | V_{CL} | at I_{PP} | |
| Bidirectional | Marking Code | (μ A) | (V) | Min. | Nom. | Max. | (mA) | (V) | (A) |
| P6SMB43C | QY | 5 | 34.8 | 38.7 | 43 | 47.3 | 1 | 61.9 | 9.6 |
| P6SMB43CA | QZ | 5 | 36.8 | 40.9 | 43 | 45.2 | 1 | 59.3 | 10.1 |
| P6SMB47C | TD | 5 | 38.1 | 42.3 | 47 | 51.7 | 1 | 67.8 | 8.9 |
| P6SMB47CA | TE | 5 | 40.2 | 44.7 | 47 | 49.4 | 1 | 64.8 | 9.3 |
| P6SMB51C | TF | 5 | 41.3 | 45.9 | 51 | 56.1 | 1 | 73.5 | 8.2 |
| P6SMB51CA | TG | 5 | 43.6 | 48.5 | 51 | 53.6 | 1 | 70.1 | 8.6 |
| P6SMB56C | TH | 5 | 45.4 | 50.4 | 56 | 61.6 | 1 | 80.5 | 7.4 |
| P6SMB56CA | TK | 5 | 47.8 | 53.2 | 56 | 58.8 | 1 | 77.0 | 7.8 |
| P6SMB62C | TL | 5 | 50.2 | 55.8 | 62 | 68.2 | 1 | 89.0 | 6.8 |
| P6SMB62CA | TM | 5 | 53.0 | 58.9 | 62 | 65.1 | 1 | 85.0 | 7.1 |
| P6SMB68C | TN | 5 | 55.1 | 61.2 | 68 | 74.8 | 1 | 98.0 | 6.1 |
| P6SMB68CA | TP | 5 | 58.1 | 64.6 | 68 | 71.4 | 1 | 92.0 | 6.5 |
| P6SMB75C | TQ | 5 | 60.7 | 67.5 | 75 | 82.5 | 1 | 108 | 5.5 |
| P6SMB75CA | TR | 5 | 64.1 | 71.3 | 75 | 78.8 | 1 | 103 | 5.8 |
| P6SMB82C | TS | 5 | 66.4 | 73.8 | 82 | 90.2 | 1 | 118 | 5.1 |
| P6SMB82CA | TT | 5 | 70.1 | 77.9 | 82 | 86.1 | 1 | 113 | 5.3 |
| P6SMB91C | TU | 5 | 73.7 | 81.9 | 91 | 100 | 1 | 131 | 4.5 |
| P6SMB91CA | TV | 5 | 77.8 | 86.5 | 91 | 95.5 | 1 | 125 | 4.8 |
| P6SMB100C | TW | 5 | 81.0 | 90.0 | 100 | 110 | 1 | 144 | 4.2 |
| P6SMB100CA | TX | 5 | 85.5 | 95.0 | 100 | 105 | 1 | 137 | 4.4 |
| P6SMB110C | TY | 5 | 89.2 | 99.0 | 110 | 121 | 1 | 158 | 3.8 |
| P6SMB110CA | TZ | 5 | 94.0 | 105 | 110 | 116 | 1 | 152 | 4.0 |
| P6SMB120C | VD | 5 | 97.2 | 108 | 120 | 132 | 1 | 173 | 3.5 |
| P6SMB120CA | VE | 5 | 102 | 114 | 120 | 126 | 1 | 165 | 3.6 |
| P6SMB130C | VF | 5 | 105 | 117 | 130 | 143 | 1 | 187 | 3.2 |
| P6SMB130CA | VG | 5 | 111 | 124 | 130 | 137 | 1 | 179 | 3.3 |
| P6SMB150C | VH | 5 | 121 | 135 | 150 | 165 | 1 | 215 | 2.8 |
| P6SMB150CA | VK | 5 | 128 | 143 | 150 | 158 | 1 | 207 | 2.9 |
| P6SMB160C | VL | 5 | 130 | 144 | 160 | 176 | 1 | 230 | 2.6 |
| P6SMB160CA | VM | 5 | 136 | 152 | 160 | 168 | 1 | 219 | 2.7 |
| P6SMB170C | VN | 5 | 138 | 153 | 170 | 187 | 1 | 244 | 2.5 |
| P6SMB170CA | VP | 5 | 145 | 162 | 170 | 179 | 1 | 234 | 2.6 |
| P6SMB180C | VQ | 5 | 146 | 162 | 180 | 198 | 1 | 258 | 2.3 |
| P6SMB180CA | VR | 5 | 154 | 171 | 180 | 189 | 1 | 246 | 2.4 |
| P6SMB200C | VS | 5 | 162 | 180 | 200 | 220 | 1 | 287 | 2.1 |
| P6SMB200CA | VT | 5 | 171 | 190 | 200 | 210 | 1 | 274 | 2.2 |
| P6SMB220C | VU | 5 | 175 | 198 | 220 | 242 | 1 | 344 | 1.75 |
| P6SMB220CA | VV | 5 | 185 | 209 | 220 | 231 | 1 | 328 | 1.83 |
| P6SMB250C | VW | 5 | 202 | 225 | 250 | 275 | 1 | 360 | 1.67 |
| P6SMB250CA | VX | 5 | 214 | 237 | 250 | 263 | 1 | 344 | 1.75 |

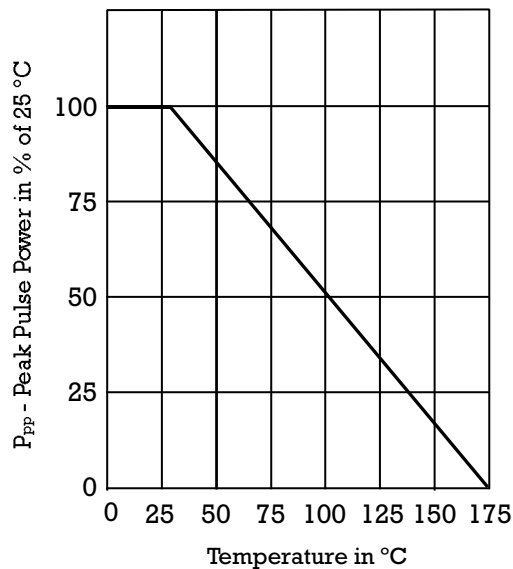
(1) Tested with pulses.
Pulse test: $t_p \leq 50$ ms; $\delta < 2\%$

Rating And Characteristic Curves



Pulse wave form 10/1000

DERATING CURVE



PEAK PULSE POWER RATING CURVE

