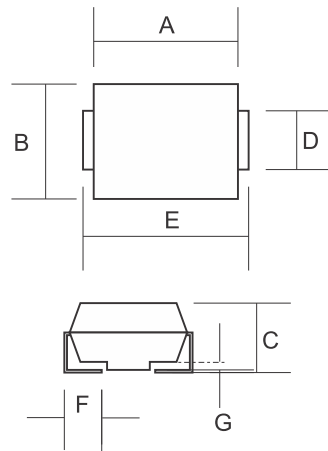


■ **DIAGRAM** DO-214



■ **FEATURES**

- Glass Passivated Chip Junction
- Excellent clamping capability
- Low zener impedance
- Fast response time, typically less than 1ps from 0 volts to BV min
- Typical IR less than 1 uA above 10V

■ **MECHANICAL DATA**

- Molded Plastic Case (UL 94V-0 Rated)
- Polarity: Color Band Denotes Cathode for Unidirectional

■ **DIMENSIONS**

| Series | A | | B | | C | | D | | F | | G | | |
|--------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | |
| SMAJ | in | 1.670 | 1.870 | 0.094 | 0.111 | 0.075 | 0.094 | 0.049 | 0.062 | 0.030 | 0.056 | 0.003 | 0.008 |
| | mm | 4.250 | 4.750 | 2.240 | 2.830 | 1.900 | 2.300 | 1.250 | 1.580 | 0.780 | 1.410 | 0.008 | 0.200 |
| SMBJ | in | 1.670 | 1.870 | 0.130 | 0.155 | 0.078 | 0.103 | 0.073 | 0.085 | 0.035 | 0.056 | 0.004 | 0.008 |
| | mm | 4.250 | 4.750 | 3.300 | 3.994 | 1.990 | 2.610 | 1.850 | 2.215 | 0.090 | 1.410 | 0.100 | 0.200 |
| SMCJ | in | 0.260 | 0.280 | 0.220 | 0.245 | 0.078 | 0.103 | 0.112 | 0.129 | 0.030 | 0.060 | 0.004 | 0.008 |
| | mm | 6.600 | 7.110 | 5.590 | 6.220 | 1.990 | 2.610 | 2.850 | 3.270 | 0.760 | 1.520 | 0.200 | 0.200 |

■ **MAXIMUM RATINGS** (T_a=25°C Unless otherwise specified)

| Item | Symbol | SMAJ | SMBJ | SMCJ | Units |
|--|--------------|-------------|------|-----------------------------|--------|
| Peak Power Dissipation (10/1000 ΩS with a 10/1000 ΩS waveform) | P PPM | 400 | 600 | 1500 | Watts |
| Power Dissipation (T _A = 50 on infinite heat sink) | P D | 3.3 | 5 | 6.5 | Watts |
| Peak Forward Surge Current (8.3ms single half sine-wave unidirectional only) | I FSM | 40 | 100 | 200 | Amps |
| Operating & Storage Temperature Range | T J T STG | -55 ~ + 150 | | | °C |
| Max Instantaneous Forward Voltage | V F | 3.5 | 3.5 | 3.5 @100A Unidirectional | Volts |
| Thermal Resistance | | | | | |
| Junction - Ambient | R OJA | 120 | 100 | 75 | °C / w |
| Junction - Lead | R OJL | 30 | 20 | 15 | |

Note: 1. Non-repetitive current pulse per fig. 3 and derated above T_A = 25°C
2. Mounted on 8.0 x 8.0mm copper pads for each terminal

■ **ELECTRICAL CHARACTERISTICS** (T_a=25°C Unless otherwise specified)

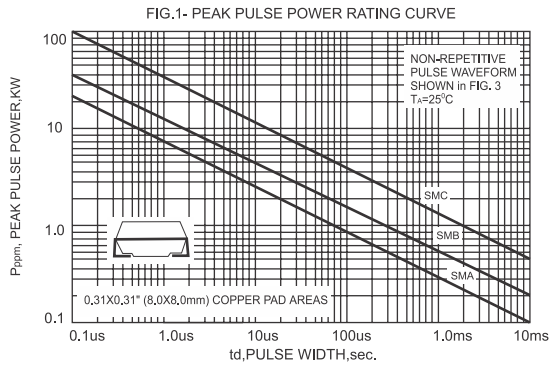
| Part Number (Unidirectional) | Part Number (Bidirectional) | Working Peak Reverse Voltage V _{RWM} (V) | Break Down Voltage | | | Maximum Clamping Voltage V _{RSM} (V) | Maximum Reverse Current & Leakage | | | | | |
|---------------------------------|--------------------------------|--|---------------------|-----|-----------------------|--|-----------------------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|
| | | | V _{BR} (V) | | @ I _T (mA) | | * A Size | | * B Size | | * C Size | |
| | | | Min | Max | | | Current | Leakage | Current | Leakage | Current | Leakage |
| | | | | | | | I _{PPM} (A) | at V _{NWM} IR (μA) | I _{PPM} (A) | at V _{NWM} IR (μA) | I _{PPM} (A) | at V _{NWM} IR (μA) |
| SM*J5.0 | SM*J5.0C | 5 | 6.4 | 7.3 | 10 | 9.6 | 41.7 | 800 | 62.5 | 800 | 156 | 1000 |
| SM*J5.0A | SM*J5.0CA | 5 | 6.4 | 7 | 10 | 9.2 | 43.5 | 800 | 65.2 | 800 | 163 | 1000 |
| SM*J6.0 | SM*J6.0C | 6 | 6.7 | 8.2 | 10 | 11.4 | 35.1 | 800 | 52.6 | 800 | 131.6 | 1000 |
| SM*J6.0A | SM*J6.0CA | 6 | 6.7 | 7.4 | 10 | 10.3 | 38.8 | 800 | 58.3 | 800 | 145 | 1000 |
| SM*J6.5 | SM*J6.5C | 6.5 | 7.2 | 8.8 | 10 | 12.3 | 32.5 | 500 | 48.8 | 500 | 122 | 500 |
| SM*J6.5A | SM*J6.5CA | 6.5 | 7.2 | 8 | 10 | 11.2 | 35.7 | 500 | 53.6 | 500 | 133.9 | 500 |
| SM*J7.0 | SM*J7.0C | 7 | 7.8 | 9.5 | 10 | 13.3 | 30.1 | 200 | 45.1 | 200 | 112.8 | 200 |
| SM*J7.0A | SM*J7.0CA | 7 | 7.8 | 8.6 | 10 | 12 | 33.3 | 200 | 50 | 200 | 125 | 200 |
| SM*J7.5 | SM*J7.5C | 7.5 | 8.3 | 10 | 1 | 14.3 | 28 | 100 | 42 | 100 | 104.9 | 100 |
| SM*J7.5A | SM*J7.5CA | 7.5 | 8.3 | 9.2 | 1 | 12.9 | 31 | 100 | 46.5 | 100 | 116.3 | 100 |
| SM*J8.0 | SM*J8.0C | 8 | 8.9 | 11 | 1 | 15 | 20.7 | 50 | 40 | 50 | 100 | 50 |
| SM*J8.0A | SM*J8.0CA | 8 | 8.9 | 9.8 | 1 | 13.6 | 29.4 | 50 | 44.1 | 50 | 110.3 | 50 |
| SM*J8.5 | SM*J8.5C | 8.5 | 9.4 | 12 | 1 | 15.9 | 25.2 | 10 | 37.7 | 10 | 94.3 | 20 |
| SM*J8.5A | SM*J8.5CA | 8.5 | 9.4 | 10 | 1 | 14.4 | 27.8 | 10 | 41.7 | 10 | 104.2 | 20 |
| SM*J9.0 | SM*J9.0C | 9 | 10 | 12 | 1 | 16.9 | 23.7 | 5.0 | 35.5 | 5.0 | 88.8 | 10 |
| SM*J9.0A | SM*J9.0CA | 9 | 10 | 11 | 1 | 15.4 | 26 | 5.0 | 39 | 5.0 | 97.4 | 10 |
| SM*J10 | SM*J10C | 10 | 11 | 14 | 1 | 18.8 | 21.3 | 1.0 | 31.9 | 1.0 | 79.8 | 5.0 |
| SM*J10A | SM*J10CA | 10 | 11 | 12 | 1 | 17 | 23.5 | 1.0 | 35.3 | 1.0 | 88.2 | 5.0 |
| SM*J11 | SM*J11C | 11 | 12 | 15 | 1 | 20.1 | 19.9 | 1.0 | 29.9 | 1.0 | 74.6 | 5.0 |
| SM*J11A | SM*J11CA | 11 | 12 | 14 | 1 | 18.2 | 22 | 1.0 | 33 | 1.0 | 82.4 | 5.0 |
| SM*J12 | SM*J12C | 12 | 13 | 16 | 1 | 22 | 18.2 | 1.0 | 27.3 | 1.0 | 68.2 | 5.0 |
| SM*J12A | SM*J12CA | 12 | 13 | 15 | 1 | 19.9 | 20.1 | 1.0 | 30.2 | 1.0 | 75.4 | 5.0 |
| SM*J13 | SM*J13C | 13 | 14 | 18 | 1 | 23.8 | 16.8 | 1.0 | 25.2 | 1.0 | 63 | 1.0 |
| SM*J13A | SM*J13CA | 13 | 14 | 16 | 1 | 21.5 | 18.6 | 1.0 | 27.9 | 1.0 | 69.8 | 1.0 |
| SM*J14 | SM*J14C | 14 | 16 | 19 | 1 | 25.8 | 15.5 | 1.0 | 23.3 | 1.0 | 58.1 | 1.0 |
| SM*J14A | SM*J14CA | 14 | 16 | 17 | 1 | 23.2 | 17.2 | 1.0 | 25.9 | 1.0 | 64.7 | 1.0 |
| SM*J15 | SM*J15C | 15 | 17 | 20 | 1 | 26.9 | 14.9 | 1.0 | 22.3 | 1.0 | 55.8 | 1.0 |
| SM*J15A | SM*J15CA | 15 | 17 | 19 | 1 | 24.4 | 16.4 | 1.0 | 24.6 | 1.0 | 61.5 | 1.0 |
| SM*J16 | SM*J16C | 16 | 18 | 22 | 1 | 28.8 | 13.9 | 1.0 | 20.8 | 1.0 | 52.1 | 1.0 |
| SM*J16A | SM*J16CA | 16 | 18 | 20 | 1 | 26 | 15.4 | 1.0 | 28.1 | 1.0 | 57.7 | 1.0 |
| SM*J17 | SM*J17C | 17 | 19 | 23 | 1 | 30.5 | 13.1 | 1.0 | 19.7 | 1.0 | 49.2 | 1.0 |
| SM*J17A | SM*J17CA | 17 | 19 | 21 | 1 | 27.6 | 14.5 | 1.0 | 21.7 | 1.0 | 54.3 | 1.0 |
| SM*J18 | SM*J18C | 18 | 20 | 24 | 1 | 32.2 | 12.4 | 1.0 | 18.6 | 1.0 | 46.6 | 1.0 |
| SM*J18A | SM*J18CA | 18 | 20 | 22 | 1 | 29.2 | 13.7 | 1.0 | 20.5 | 1.0 | 51.4 | 1.0 |
| SM*J20 | SM*J20C | 20 | 22 | 27 | 1 | 35.8 | 11.2 | 1.0 | 16.8 | 1.0 | 41.9 | 1.0 |
| SM*J20A | SM*J20CA | 20 | 22 | 25 | 1 | 32.4 | 12.3 | 1.0 | 18.5 | 1.0 | 46.3 | 1.0 |
| SM*J22 | SM*J22C | 22 | 24 | 30 | 1 | 39.4 | 10.2 | 1.0 | 15.2 | 1.0 | 38.1 | 1.0 |
| SM*J22A | SM*J22CA | 22 | 24 | 27 | 1 | 35.5 | 16.3 | 1.0 | 16.9 | 1.0 | 42.3 | 1.0 |
| SM*J24 | SM*J24C | 24 | 27 | 33 | 1 | 43 | 9.3 | 1.0 | 14 | 1.0 | 34.9 | 1.0 |
| SM*J24A | SM*J24CA | 24 | 27 | 30 | 1 | 38.9 | 10.3 | 1.0 | 15.4 | 1.0 | 38.6 | 1.0 |
| SM*J26 | SM*J26C | 26 | 29 | 35 | 1 | 46.6 | 8.6 | 1.0 | 12 | 1.0 | 32.2 | 1.0 |
| SM*J26A | SM*J26CA | 26 | 29 | 32 | 1 | 42.1 | 9.5 | 1.0 | 14.3 | 1.0 | 35.6 | 1.0 |
| SM*J28 | SM*J28C | 28 | 31 | 38 | 1 | 50 | 8.0 | 1.0 | 12 | 1.0 | 30 | 1.0 |
| SM*J28A | SM*J28CA | 28 | 31 | 34 | 1 | 45.4 | 8.8 | 1.0 | 13.2 | 1.0 | 33 | 1.0 |
| SM*J30 | SM*J30C | 30 | 33 | 41 | 1 | 53.5 | 7.5 | 1.0 | 11.2 | 1.0 | 28 | 1.0 |
| SM*J30A | SM*J30CA | 30 | 33 | 37 | 1 | 48.4 | 8.3 | 1.0 | 12.4 | 1.0 | 31 | 1.0 |

■ ELECTRICAL CHARACTERISTICS (T_a=25°C Unless otherwise specified)

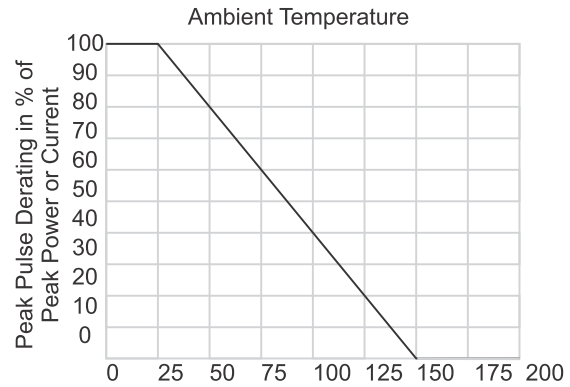
| Part Number (Unidirectional) | Part Number (Bidirectional) | Working Peak Reverse Voltage VRWM (V) | Break Down Voltage | | | Maximum Clamping Voltage VRSM (V) | Maximum Reverse Current & Leakage | | | | | |
|---------------------------------|--------------------------------|--|-----------------------|------|--------------|---|--------------------------------------|--------------------------------|------------------------|--------------------------------|------------------------|--------------------------------|
| | | | V BR (V) | | @ IT (mA) | | * A Size | | * B Size | | * C Size | |
| | | | Min | Max | | | Current IPPM (A) | Leakage at V NWM IR (µA) | Current IPPM (A) | Leakage at V NWM IR (µA) | Current IPPM (A) | Leakage at V NWM IR (µA) |
| SM*J33 | SM*J33C | 33 | 37 | 44.9 | 1 | 59 | 6.8 | 1.0 | 10.2 | 1.0 | 25.4 | 1.0 |
| SM*J33A | SM*J33CA | 33 | 37 | 40.6 | 1 | 53.3 | 7.5 | 1.0 | 11.3 | 1.0 | 28.1 | 1.0 |
| SM*J36 | SM*J36C | 36 | 40 | 48.9 | 1 | 64.3 | 6.2 | 1.0 | 9.3 | 1.0 | 23.3 | 1.0 |
| SM*J36A | SM*J36CA | 36 | 40 | 44.2 | 1 | 58.1 | 6.9 | 1.0 | 10.3 | 1.0 | 25.8 | 1.0 |
| SM*J40 | SM*J40C | 40 | 44 | 54.3 | 1 | 71.4 | 5.6 | 1.0 | 8.4 | 1.0 | 21.0 | 1.0 |
| SM*J40A | SM*J40CA | 40 | 44 | 49.1 | 1 | 64.5 | 6.2 | 1.0 | 9.3 | 1.0 | 23.3 | 1.0 |
| SM*J43 | SM*J43C | 43 | 48 | 58.4 | 1 | 76.7 | 5.2 | 1.0 | 7.8 | 1.0 | 19.6 | 1.0 |
| SM*J43A | SM*J43CA | 43 | 48 | 52.8 | 1 | 69.4 | 5.8 | 1.0 | 8.6 | 1.0 | 21.6 | 1.0 |
| SM*J45 | SM*J45C | 45 | 50 | 61.1 | 1 | 80.3 | 5.0 | 1.0 | 7.5 | 1.0 | 18.7 | 1.0 |
| SM*J45A | SM*J45CA | 45 | 50 | 55.3 | 1 | 72.7 | 5.5 | 1.0 | 8.3 | 1.0 | 20.6 | 1.0 |
| SM*J48 | SM*J48C | 48 | 53 | 65.1 | 1 | 85.5 | 4.7 | 1.0 | 7.0 | 1.0 | 12.5 | 1.0 |
| SM*J48A | SM*J48CA | 48 | 53 | 58.9 | 1 | 77.4 | 5.2 | 1.0 | 7.8 | 1.0 | 19.4 | 1.0 |
| SM*J51 | SM*J51C | 51 | 57 | 69.3 | 1 | 91.1 | 4.4 | 1.0 | 6.6 | 1.0 | 16.5 | 1.0 |
| SM*J51A | SM*J51CA | 51 | 57 | 62.7 | 1 | 82.4 | 4.9 | 1.0 | 7.3 | 1.0 | 18.2 | 1.0 |
| SM*J54 | SM*J54C | 54 | 60 | 73.3 | 1 | 96.3 | 4.2 | 1.0 | 6.2 | 1.0 | 15.6 | 1.0 |
| SM*J54A | SM*J54CA | 54 | 60 | 66 | 1 | 87.1 | 4.6 | 1.0 | 6.9 | 1.0 | 18.2 | 1.0 |
| SM*J58 | SM*J58C | 58 | 64 | 78.7 | 1 | 103 | 3.9 | 1.0 | 5.8 | 1.0 | 14.6 | 1.0 |
| SM*J58A | SM*J58CA | 58 | 64 | 71.2 | 1 | 93.6 | 4.3 | 1.0 | 6.4 | 1.0 | 16.0 | 1.0 |
| SM*J60 | SM*J60C | 60 | 67 | 81.5 | 1 | 107 | 3.7 | 1.0 | 5.6 | 1.0 | 14.0 | 1.0 |
| SM*J60A | SM*J60CA | 60 | 67 | 73.7 | 1 | 96.8 | 4.1 | 1.0 | 6.2 | 1.0 | 15.5 | 1.0 |
| SM*J64 | SM*J64C | 64 | 71 | 86.9 | 1 | 114 | 3.5 | 1.0 | 5.3 | 1.0 | 13.2 | 1.0 |
| SM*J64A | SM*J64CA | 64 | 71 | 78.6 | 1 | 103 | 3.9 | 1.0 | 5.8 | 1.0 | 14.6 | 1.0 |
| SM*J70 | SM*J70C | 70 | 78 | 95.1 | 1 | 125 | 3.2 | 1.0 | 4.8 | 1.0 | 12.0 | 1.0 |
| SM*J70A | SM*J70CA | 70 | 78 | 86 | 1 | 113 | 3.5 | 1.0 | 5.3 | 1.0 | 13.3 | 1.0 |
| SM*J75 | SM*J75C | 75 | 83 | 102 | 1 | 134 | 3.0 | 1.0 | 4.5 | 1.0 | 11.2 | 1.0 |
| SM*J75A | SM*J75CA | 75 | 83 | 92 | 1 | 121 | 3.3 | 1.0 | 5.0 | 1.0 | 12.4 | 1.0 |
| SM*J78 | SM*J78C | 78 | 87 | 106 | 1 | 139 | 2.9 | 1.0 | 4.3 | 1.0 | 10.8 | 1.0 |
| SM*J78A | SM*J78CA | 78 | 87 | 96 | 1 | 126 | 3.2 | 1.0 | 4.8 | 1.0 | 11.9 | 1.0 |
| SM*J85 | SM*J85C | 85 | 94 | 115 | 1 | 151 | 2.0 | 1.0 | 4.0 | 1.0 | 9.9 | 1.0 |
| SM*J85A | SM*J85CA | 85 | 94 | 104 | 1 | 137 | 2.2 | 1.0 | 4.4 | 1.0 | 10.9 | 1.0 |
| SM*J90 | SM*J90C | 90 | 100 | 122 | 1 | 160 | 1.9 | 1.0 | 3.8 | 1.0 | 9.4 | 1.0 |
| SM*J90A | SM*J90CA | 90 | 100 | 111 | 1 | 146 | 2.1 | 1.0 | 4.1 | 1.0 | 10.3 | 1.0 |
| SM*J100 | SM*J100C | 100 | 111 | 136 | 1 | 179 | 1.7 | 1.0 | 3.4 | 1.0 | 8.4 | 1.0 |
| SM*J100A | SM*J100CA | 100 | 111 | 123 | 1 | 162 | 1.9 | 1.0 | 3.7 | 1.0 | 9.3 | 1.0 |
| SM*J110 | SM*J110C | 110 | 122 | 149 | 1 | 196 | 1.5 | 1.0 | 3.1 | 1.0 | 7.7 | 1.0 |
| SM*J110A | SM*J110CA | 110 | 122 | 135 | 1 | 177 | 1.7 | 1.0 | 3.4 | 1.0 | 8.5 | 1.0 |
| SM*J120 | SM*J120C | 120 | 133 | 163 | 1 | 214 | 1.4 | 1.0 | 2.8 | 1.0 | 7.0 | 1.0 |
| SM*J120A | SM*J120CA | 120 | 133 | 147 | 1 | 193 | 1.6 | 1.0 | 3.1 | 1.0 | 7.6 | 1.0 |
| SM*J130 | SM*J130C | 130 | 144 | 176 | 1 | 231 | 1.3 | 1.0 | 2.6 | 1.0 | 6.5 | 1.0 |
| SM*J130A | SM*J130CA | 130 | 144 | 159 | 1 | 209 | 1.4 | 1.0 | 2.9 | 1.0 | 7.2 | 1.0 |
| SM*J150 | SM*J150C | 150 | 167 | 204 | 1 | 268 | 1.1 | 1.0 | 2.2 | 1.0 | 5.6 | 1.0 |
| SM*J150A | SM*J150CA | 150 | 167 | 185 | 1 | 243 | 1.2 | 1.0 | 2.5 | 1.0 | 6.2 | 1.0 |
| SM*J160 | SM*J160C | 160 | 178 | 218 | 1 | 287 | 1.0 | 1.0 | 2.1 | 1.0 | 5.2 | 1.0 |
| SM*J160A | SM*J160CA | 160 | 178 | 197 | 1 | 259 | 1.2 | 1.0 | 2.3 | 1.0 | 5.8 | 1.0 |
| SM*J170 | SM*J170C | 170 | 189 | 231 | 1 | 304 | 0.99 | 1.0 | 2.0 | 1.0 | 4.9 | 1.0 |
| SM*J170A | SM*J170CA | 170 | 189 | 209 | 1 | 275 | 1.1 | 1.0 | 2.2 | 1.0 | 5.5 | 1.0 |
| SM*J188 | SM*J188C | 188 | 209 | 255 | 1 | 344 | 0.90 | 1.0 | 4.4 | 1.0 | | |
| SM*J188A | SM*J188CA | 188 | 209 | 231 | 1 | 328 | 91.0 | 1.0 | 4.6 | 1.0 | | |

- Note: 1. Pulse test: $t_p \leq 50 \mu s$
 2. Surge Current waveform per Fig-3 and derated per Fig-2
 3. For bi-directional types having V_{wm} of 10V and less the Ir limit is doubled.
 4. For the bi-directional SMAJ 5.0CA, the maximum V_{BR} is 7.25V
 5. A suffix is 5% tolerance, no suffix is 10% tolerance

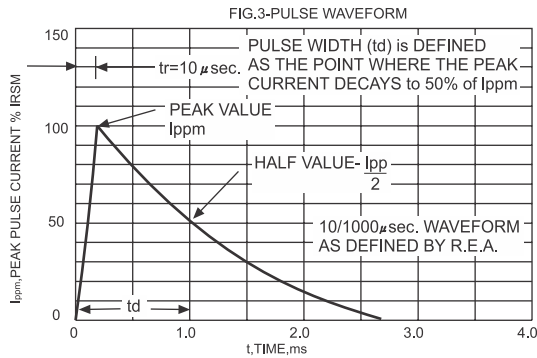
■ **FIGURE 1 - PULSE RATING CURVE**



■ **FIGURE 2 - PULSE DERATING CURVE**



■ **FIGURE 3 - PULSE WAVEFORM**



■ **FIGURE 4 - MAXIMUM NON-REPETITIVE SURGE CURRENT**

