



DATA SHEET

SEMICONDUCTOR

P4KE Series

GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR 400 Watt Peak Power 1.0 Watt Steady State VOLTAGE- 6.8 to 540 Volts



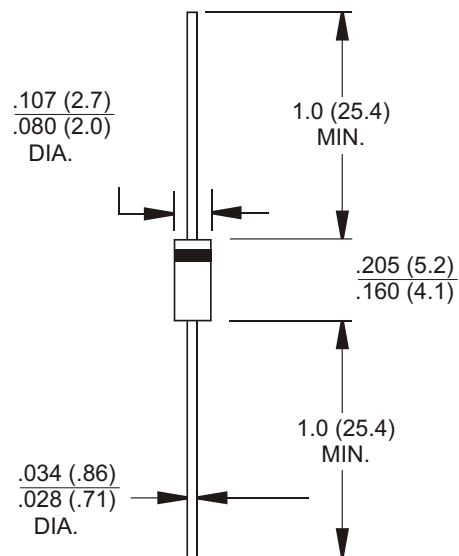
FEATURES

DO-41 Unit:inch(mm)

- Plastic package has Underwriters Laboratory Flammability Classification 94V-O
- Glass passivated chip junction in DO-41 package
- 600W surge capability at 1ms
- Excellent clamping capability
- Low zener impedance
- Fast response time: typically less than 1.0 ps from 0 volts to BV min
- Typical IR less than 1µA above 10V
- High temperature soldering guaranteed: 260°C/10 seconds/.375"(.95mm) lead length/5lbs., (2.3kg) tension
- High temperature soldering : 260°C / 10 seconds at terminals
- Pb free product at available : 99% Sn above meet RoHS environment substance directive request

MECHANICAL DATA

- Case: JEDEC DO-41 Molded plastic
- Terminals: Axial leads, solderable per MIL-STD-202, Method 208
- Polarity: Color band denoted cathode except Bipolar
- Mounting Position: Any
- Quantify Per Reel : 5000 pcs



DEVICES FOR BIPOLAR APPLICATIONS

- For Bidirectional use C or CA Suffix for types
- Electrical characteristics apply in both directions.

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified. Resistive or inductive load, 60Hz.

For Capacitive load derate current by 20%.

| RATING | SYMBOL | VALUE | UNITS |
|---|-----------------------------------|-------------|-------|
| Peak Power Dissipation on 10/1000us waveform (Note 1.2 , Fig.1) | P _{pp} | 400 | Watts |
| Peak Forward Surge Current, 8.3ms single half sine - wave uni- directional only(JEDEC method) (Notes 2,3) | I _{FSM} | 40 | Amps |
| Peak Pulse Current on 10/1000s waveform(Note 1 , Fig.3) | I _{PP} | See Table 1 | Amps |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 ~ +150 | °C |

NOTES:

- Non-repetitive current pulse, per Fig.3 and derated above TA = 25°C per Fig.2.
- Mounted on 5.0 mm²(0.13mm thick) land areas.
- Measured on 8.3ms, single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

P4KE Series

| Part Number | | Reverse Stand-off Voltage | Breakdown Voltage | | Test Current | Reverse Leakage | | Max. Clamp Voltage | Peak Pulse Current | Package | | | |
|-----------------------------------|-----------|---------------------------|-------------------|-------|--------------|-----------------|-----------|--------------------|--------------------|---------|--------|-----|-----|
| | | | VBR@ I T | | | I T | I R@ VRWM | | | | Vc@Ipp | Ipp | |
| | | | VRWM | Min. | | | Max. | | | | | | UNI |
| UNI | BI | V | V | V | m A | µA | µA | V | A | | | | |
| 400W Transient Voltage Suppressor | | | | | | | | | | | | | |
| P4KE6.8 | P4KE6.8C | 5.5 | 6.12 | 7.48 | 10 | 1000.0 | 2000.0 | 10.8 | 37.0 | DO-41 | | | |
| P4KE6.8A | P4KE6.8CA | 5.8 | 6.45 | 7.14 | 10 | 1000.0 | 2000.0 | 10.5 | 38.1 | DO-41 | | | |
| P4KE7.5 | P4KE7.5C | 6.1 | 6.75 | 8.25 | 10 | 500.0 | 1000.0 | 11.7 | 34.2 | DO-41 | | | |
| P4KE7.5A | P4KE7.5CA | 6.4 | 7.13 | 7.88 | 10 | 500.0 | 1000.0 | 11.3 | 35.4 | DO-41 | | | |
| P4KE8.2 | P4KE8.2C | 6.6 | 7.38 | 9.02 | 10 | 200.0 | 400.0 | 12.5 | 32.0 | DO-41 | | | |
| P4KE8.2A | P4KE8.2CA | 7.0 | 7.79 | 8.61 | 10 | 200.0 | 400.0 | 12.1 | 33.1 | DO-41 | | | |
| P4KE9.1 | P4KE9.1C | 7.4 | 8.19 | 10.00 | 1 | 50.0 | 100.0 | 13.8 | 29.0 | DO-41 | | | |
| P4KE9.1A | P4KE9.1CA | 7.8 | 8.65 | 9.55 | 1 | 50.0 | 100.0 | 13.4 | 29.9 | DO-41 | | | |
| P4KE10 | P4KE10C | 8.1 | 9.00 | 11.00 | 1 | 10.0 | 20.0 | 15.0 | 26.7 | DO-41 | | | |
| P4KE10A | P4KE10CA | 8.6 | 9.50 | 10.50 | 1 | 10.0 | 20.0 | 14.5 | 27.6 | DO-41 | | | |
| P4KE11 | P4KE11C | 8.9 | 9.90 | 12.10 | 1 | 5.0 | 10.0 | 16.2 | 24.7 | DO-41 | | | |
| P4KE11A | P4KE11CA | 9.4 | 10.50 | 11.60 | 1 | 5.0 | 10.0 | 15.6 | 25.6 | DO-41 | | | |
| P4KE12 | P4KE12C | 9.7 | 10.80 | 13.20 | 1 | 5.0 | 10.0 | 17.3 | 23.1 | DO-41 | | | |
| P4KE12A | P4KE12CA | 10.2 | 11.40 | 12.60 | 1 | 5.0 | 5.0 | 16.7 | 24.0 | DO-41 | | | |
| P4KE13 | P4KE13C | 10.5 | 11.70 | 14.30 | 1 | 5.0 | 5.0 | 19.0 | 21.1 | DO-41 | | | |
| P4KE13A | P4KE13CA | 11.1 | 12.40 | 13.70 | 1 | 5.0 | 5.0 | 18.2 | 22.0 | DO-41 | | | |
| P4KE15 | P4KE15C | 12.1 | 13.50 | 16.50 | 1 | 5.0 | 5.0 | 22.0 | 18.2 | DO-41 | | | |
| P4KE15A | P4KE15CA | 12.8 | 14.30 | 15.80 | 1 | 5.0 | 5.0 | 21.2 | 18.9 | DO-41 | | | |
| P4KE16 | P4KE16C | 12.9 | 14.40 | 17.60 | 1 | 5.0 | 5.0 | 23.5 | 17.0 | DO-41 | | | |
| P4KE16A | P4KE16CA | 13.6 | 15.20 | 16.80 | 1 | 5.0 | 5.0 | 22.5 | 17.8 | DO-41 | | | |
| P4KE18 | P4KE18C | 14.5 | 16.20 | 19.80 | 1 | 5.0 | 5.0 | 26.5 | 15.1 | DO-41 | | | |
| P4KE18A | P4KE18CA | 15.3 | 17.10 | 18.90 | 1 | 5.0 | 5.0 | 25.2 | 15.9 | DO-41 | | | |
| P4KE20 | P4KE20C | 16.2 | 18.00 | 22.00 | 1 | 5.0 | 5.0 | 29.1 | 13.7 | DO-41 | | | |
| P4KE20A | P4KE20CA | 17.1 | 19.00 | 21.00 | 1 | 5.0 | 5.0 | 27.7 | 14.4 | DO-41 | | | |
| P4KE22 | P4KE22C | 17.8 | 19.80 | 24.20 | 1 | 5.0 | 5.0 | 31.9 | 12.5 | DO-41 | | | |
| P4KE22A | P4KE22CA | 18.8 | 20.90 | 23.10 | 1 | 5.0 | 5.0 | 30.6 | 13.1 | DO-41 | | | |
| P4KE24 | P4KE24C | 19.4 | 21.60 | 26.40 | 1 | 5.0 | 5.0 | 34.7 | 11.5 | DO-41 | | | |
| P4KE24A | P4KE24CA | 20.5 | 22.80 | 25.20 | 1 | 5.0 | 5.0 | 33.2 | 12.0 | DO-41 | | | |
| P4KE27 | P4KE27C | 21.8 | 24.30 | 29.70 | 1 | 5.0 | 5.0 | 39.1 | 10.2 | DO-41 | | | |
| P4KE27A | P4KE27CA | 23.1 | 25.70 | 28.40 | 1 | 5.0 | 5.0 | 37.5 | 10.7 | DO-41 | | | |
| P4KE30 | P4KE30C | 24.3 | 27.00 | 33.00 | 1 | 5.0 | 5.0 | 43.5 | 9.2 | DO-41 | | | |
| P4KE30A | P4KE30CA | 25.6 | 28.50 | 31.50 | 1 | 5.0 | 5.0 | 41.4 | 9.7 | DO-41 | | | |
| P4KE33 | P4KE33C | 26.8 | 29.70 | 36.30 | 1 | 5.0 | 5.0 | 47.7 | 8.4 | DO-41 | | | |
| P4KE33A | P4KE33CA | 28.2 | 31.40 | 34.70 | 1 | 5.0 | 5.0 | 45.7 | 8.8 | DO-41 | | | |
| P4KE36 | P4KE36C | 29.1 | 32.40 | 39.60 | 1 | 5.0 | 5.0 | 52.0 | 7.7 | DO-41 | | | |
| P4KE36A | P4KE36CA | 30.8 | 34.20 | 37.80 | 1 | 5.0 | 5.0 | 49.9 | 8.0 | DO-41 | | | |
| P4KE39 | P4KE39C | 31.6 | 35.10 | 42.90 | 1 | 5.0 | 5.0 | 56.4 | 7.1 | DO-41 | | | |
| P4KE39A | P4KE39CA | 33.3 | 37.10 | 41.00 | 1 | 5.0 | 5.0 | 53.9 | 7.4 | DO-41 | | | |
| P4KE43 | P4KE43C | 34.8 | 38.70 | 47.30 | 1 | 5.0 | 5.0 | 61.9 | 6.5 | DO-41 | | | |
| P4KE43A | P4KE43CA | 36.8 | 40.90 | 45.20 | 1 | 5.0 | 5.0 | 59.3 | 6.7 | DO-41 | | | |
| P4KE47 | P4KE47C | 38.1 | 42.30 | 51.70 | 1 | 5.0 | 5.0 | 67.8 | 5.9 | DO-41 | | | |
| P4KE47A | P4KE47CA | 40.2 | 44.70 | 49.40 | 1 | 5.0 | 5.0 | 64.8 | 6.2 | DO-41 | | | |
| P4KE51 | P4KE51C | 41.3 | 45.90 | 56.10 | 1 | 5.0 | 5.0 | 73.5 | 5.4 | DO-41 | | | |
| P4KE51A | P4KE51CA | 43.6 | 48.50 | 53.60 | 1 | 5.0 | 5.0 | 70.1 | 5.7 | DO-41 | | | |

P4KE Series

| Part Number | | Reverse Stand-off Voltage | Breakdown Voltage | | Test Current | Reverse Leakage | | Max. Clamp Voltage | Peak Pulse Current | Package |
|--|-----------|---------------------------|-------------------|--------|--------------|-----------------|-----|--------------------|--------------------|---------|
| | | | VBR@ I T | | | I R@ VRWM | | | | |
| | | | VRWM | Min. | | Max. | UNI | | | |
| UNI | BI | V | V | V | m A | μA | μA | V | A | |
| 400W Transient Voltage Suppressor | | | | | | | | | | |
| P4KE56 | P4KE56C | 45.4 | 50.40 | 61.60 | 1 | 5.0 | 5.0 | 80.5 | 5.0 | DO-41 |
| P4KE56A | P4KE56CA | 47.8 | 53.20 | 58.80 | 1 | 5.0 | 5.0 | 77.0 | 5.2 | DO-41 |
| P4KE62 | P4KE62C | 50.2 | 55.80 | 68.20 | 1 | 5.0 | 5.0 | 89.0 | 4.5 | DO-41 |
| P4KE62A | P4KE62CA | 53.0 | 58.90 | 65.10 | 1 | 5.0 | 5.0 | 85.0 | 4.7 | DO-41 |
| P4KE68 | P4KE68C | 55.1 | 61.20 | 74.80 | 1 | 5.0 | 5.0 | 98.0 | 4.1 | DO-41 |
| P4KE68A | P4KE68CA | 58.1 | 64.40 | 71.40 | 1 | 5.0 | 5.0 | 92.0 | 4.3 | DO-41 |
| P4KE75 | P4KE75C | 60.7 | 67.50 | 82.50 | 1 | 5.0 | 5.0 | 108.0 | 3.7 | DO-41 |
| P4KE75A | P4KE75CA | 64.1 | 71.30 | 78.80 | 1 | 5.0 | 5.0 | 103.0 | 3.9 | DO-41 |
| P4KE82 | P4KE82C | 66.4 | 73.80 | 90.20 | 1 | 5.0 | 5.0 | 118.0 | 3.4 | DO-41 |
| P4KE82A | P4KE82CA | 70.1 | 77.90 | 86.10 | 1 | 5.0 | 5.0 | 113.0 | 3.5 | DO-41 |
| P4KE91 | P4KE91C | 73.7 | 81.90 | 100.00 | 1 | 5.0 | 5.0 | 131.0 | 3.1 | DO-41 |
| P4KE91A | P4KE91CA | 77.8 | 86.50 | 95.50 | 1 | 5.0 | 5.0 | 125.0 | 3.2 | DO-41 |
| P4KE100 | P4KE100C | 81.0 | 90.00 | 110.00 | 1 | 5.0 | 5.0 | 144.0 | 2.8 | DO-41 |
| P4KE100A | P4KE100CA | 85.5 | 95.00 | 105.00 | 1 | 5.0 | 5.0 | 137.0 | 2.9 | DO-41 |
| P4KE110 | P4KE110C | 89.2 | 99.00 | 121.00 | 1 | 5.0 | 5.0 | 158.0 | 2.5 | DO-41 |
| P4KE110A | P4KE110CA | 94.0 | 105.00 | 116.00 | 1 | 5.0 | 5.0 | 152.0 | 2.6 | DO-41 |
| P4KE120 | P4KE120C | 97.2 | 108.00 | 132.00 | 1 | 5.0 | 5.0 | 173.0 | 2.3 | DO-41 |
| P4KE120A | P4KE120CA | 102.0 | 114.00 | 126.00 | 1 | 5.0 | 5.0 | 165.0 | 2.4 | DO-41 |
| P4KE130 | P4KE130C | 105.0 | 117.00 | 143.00 | 1 | 5.0 | 5.0 | 187.0 | 2.1 | DO-41 |
| P4KE130A | P4KE130CA | 111.0 | 124.00 | 137.00 | 1 | 5.0 | 5.0 | 179.0 | 2.2 | DO-41 |
| P4KE150 | P4KE150C | 121.0 | 135.00 | 165.00 | 1 | 5.0 | 5.0 | 215.0 | 1.9 | DO-41 |
| P4KE150A | P4KE150CA | 128.0 | 143.00 | 158.00 | 1 | 5.0 | 5.0 | 207.0 | 1.9 | DO-41 |
| P4KE160 | P4KE160C | 130.0 | 144.00 | 176.00 | 1 | 5.0 | 5.0 | 230.0 | 1.7 | DO-41 |
| P4KE160A | P4KE160CA | 136.0 | 152.00 | 168.00 | 1 | 5.0 | 5.0 | 219.0 | 1.8 | DO-41 |
| P4KE170 | P4KE170C | 138.0 | 153.00 | 187.00 | 1 | 5.0 | 5.0 | 244.0 | 1.6 | DO-41 |
| P4KE170A | P4KE170CA | 145.0 | 162.00 | 179.00 | 1 | 5.0 | 5.0 | 234.0 | 1.7 | DO-41 |
| P4KE180 | P4KE180C | 146.0 | 162.00 | 198.00 | 1 | 5.0 | 5.0 | 258.0 | 1.6 | DO-41 |
| P4KE180A | P4KE180CA | 154.0 | 171.00 | 189.00 | 1 | 5.0 | 5.0 | 246.0 | 1.6 | DO-41 |
| P4KE200 | P4KE200C | 162.0 | 180.00 | 220.00 | 1 | 5.0 | 5.0 | 287.0 | 1.4 | DO-41 |
| P4KE200A | P4KE200CA | 171.0 | 190.00 | 210.00 | 1 | 5.0 | 5.0 | 274.0 | 1.5 | DO-41 |
| P4KE220 | P4KE220C | 175.0 | 198.00 | 242.00 | 1 | 5.0 | 5.0 | 344.0 | 1.2 | DO-41 |
| P4KE220A | P4KE220CA | 185.0 | 209.00 | 231.00 | 1 | 5.0 | 5.0 | 328.0 | 1.2 | DO-41 |
| P4KE250 | P4KE250C | 202.0 | 225.00 | 275.00 | 1 | 5.0 | 5.0 | 360.0 | 1.1 | DO-41 |
| P4KE250A | P4KE250CA | 214.0 | 237.00 | 263.00 | 1 | 5.0 | 5.0 | 344.0 | 1.2 | DO-41 |
| P4KE300 | P4KE300C | 243.0 | 270.00 | 330.00 | 1 | 5.0 | 5.0 | 430.0 | 0.9 | DO-41 |
| P4KE300A | P4KE300CA | 256.0 | 285.00 | 315.00 | 1 | 5.0 | 5.0 | 414.0 | 1.0 | DO-41 |
| P4KE350 | P4KE350C | 284.0 | 315.00 | 385.00 | 1 | 5.0 | 5.0 | 504.0 | 0.8 | DO-41 |
| P4KE350A | P4KE350CA | 300.0 | 333.00 | 368.00 | 1 | 5.0 | 5.0 | 482.0 | 0.8 | DO-41 |
| P4KE400 | P4KE400C | 324.0 | 360.00 | 440.00 | 1 | 5.0 | 5.0 | 574.0 | 0.7 | DO-41 |
| P4KE400A | P4KE400CA | 342.0 | 380.00 | 420.00 | 1 | 5.0 | 5.0 | 548.0 | 0.7 | DO-41 |
| P4KE440 | P4KE440C | 356.0 | 396.00 | 484.00 | 1 | 5.0 | 5.0 | 631.0 | 0.6 | DO-41 |
| P4KE440A | P4KE440CA | 376.0 | 418.00 | 462.00 | 1 | 5.0 | 5.0 | 602.0 | 0.7 | DO-41 |
| P4KE480 | P4KE480C | 389.0 | 432.00 | 528.00 | 1 | 5.0 | 5.0 | 686.0 | 0.6 | DO-41 |
| P4KE480A | P4KE480CA | 408.0 | 456.00 | 504.00 | 1 | 5.0 | 5.0 | 658.0 | 0.6 | DO-41 |
| P4KE510 | P4KE510C | 413.0 | 459.00 | 561.00 | 1 | 5.0 | 5.0 | 729.0 | 0.6 | DO-41 |
| P4KE510A | P4KE510CA | 434.0 | 485.00 | 535.00 | 1 | 5.0 | 5.0 | 698.0 | 0.6 | DO-41 |
| P4KE540 | P4KE540C | 437.0 | 486.00 | 594.00 | 1 | 5.0 | 5.0 | 772.0 | 0.5 | DO-41 |
| P4KE540A | P4KE540CA | 459.0 | 513.00 | 567.00 | 1 | 5.0 | 5.0 | 740.0 | 0.5 | DO-41 |

DEVICE CHARACTERISTICS

P4KE Series

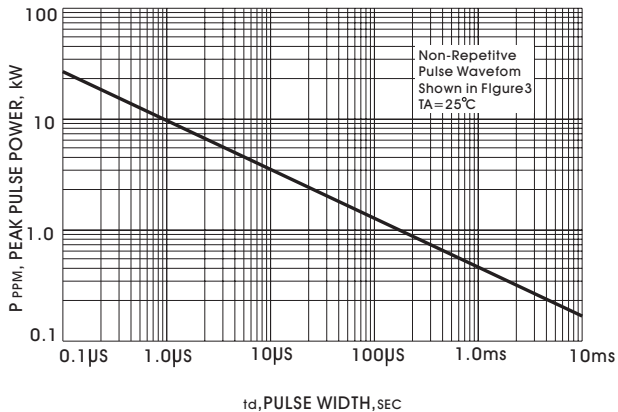


FIGURE 1-PEAK PULSE POWER RATING VERSUS PULSE TIME CURVE

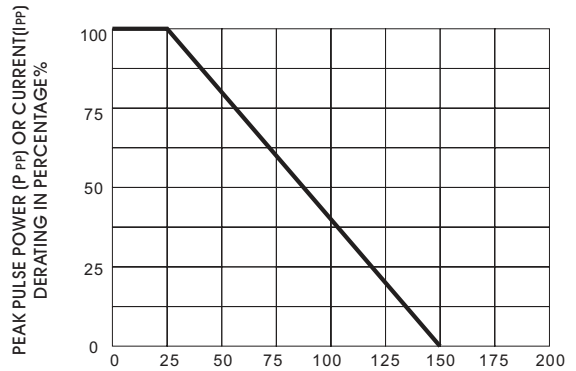


FIGURE 2-PULSE DERATING CURVE

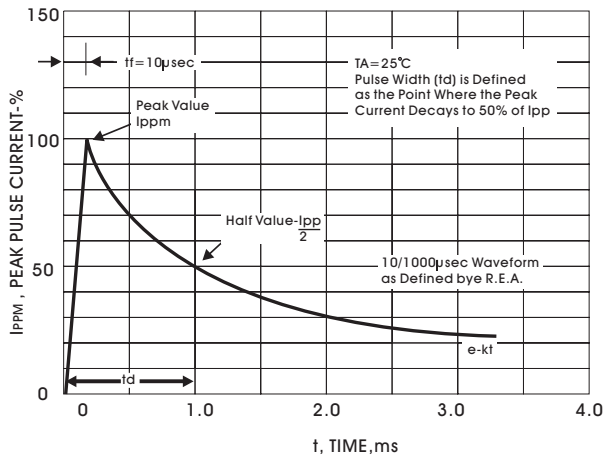


FIGURE 3-PULSE WAVEFORM

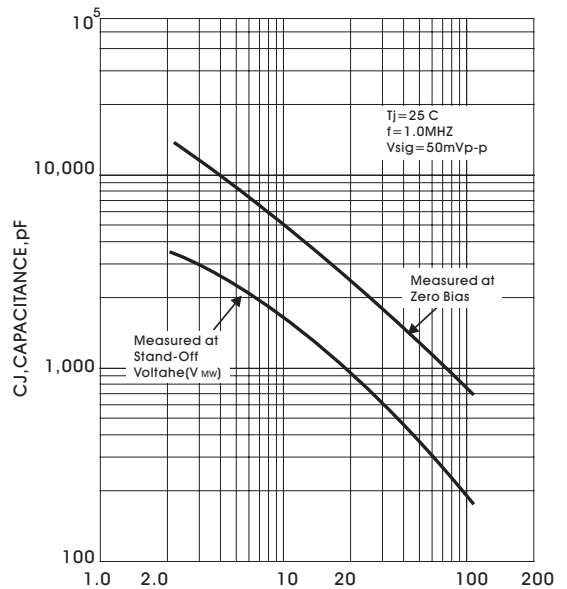


FIG. 4-TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

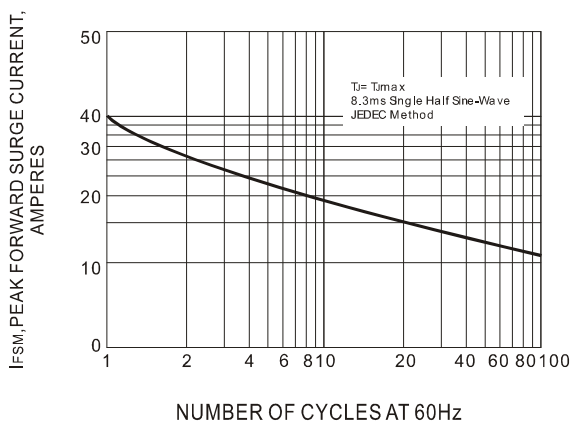


FIG. 5-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT UNIDIRECTIONAL