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U.S.A.

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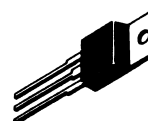
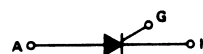
## Thyristors Silicon Controlled Rectifiers

... designed primarily for half-wave ac control applications, such as motor controls, heating controls and power supply crowbar circuits.

- Glass Passivated Junctions with Center Gate Fire for Greater Parameter Uniformity and Stability
- Small, Rugged, Thermowatt Constructed for Low Thermal Resistance, High Heat Dissipation and Durability
- Blocking Voltage to 1000 Volts
- 300 A Surge Current Capability

**2N6504  
thru  
2N6509  
MCR225-5  
MCR225-7  
MCR225-9  
MCR225-12**

**SCRs  
50 thru 100 VOLTS**



**CASE 221A-02  
TO-220AB**

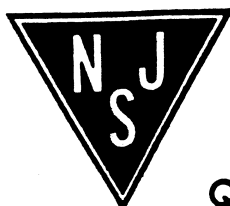
### MAXIMUM RATINGS

| Rating  | Symbol                                    | Value      | Unit  |
|---|---|------------|-------|
| Peak Reverse Blocking Voltage (1)   | V <sub>RRM</sub>                          | 50         | Volts |
| *2N6504   |   | 100        |       |
| *2N6505   |   | 200        |       |
| *2N6506   |   | 300        |       |
| MCR225-5  |   | 400        |       |
| *2N6507   |   | 500        |       |
| MCR225-7  |   | 600        |       |
| *2N6508   |   | 700        |       |
| MCR225-9  |   | 800        |       |
| *2N6509   | I <sub>T(RMS)</sub><br>I <sub>T(AV)</sub> | 1000       | Amps  |
| MCR225-12   |   |            |       |
| Forward Current (T <sub>C</sub> = 85°C)<br>(All Conduction Angles)          |   | 25<br>16   | Amps  |
| Peak Non-Repetitive Surge Current — 8.3 ms<br>(1/2 Cycle, Sine Wave) 1.5 ms | I <sub>TSM</sub>                          | 300<br>350 | Amps  |

\*Indicates JEDEC Registered Data.

(cont.)

(1) V<sub>RRM</sub> for all types can be applied on a continuous dc basis without incurring damage. Ratings apply for zero or negative gate voltage. Devices should not be tested for blocking capability in a manner such that the voltage supplied exceeds the rated blocking voltage.



**Quality Semi-Conductors**

# New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.  
SPRINGFIELD, NEW JERSEY 07081  
U.S.A.

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## 2N6504 thru 2N6509 • MCR225-5 • MCR225-7 • MCR225-9 • MCR225-12

### MAXIMUM RATINGS — continued

| Rating                               | Symbol           | Value       | Unit  |
|--------------------------------------|------------------|-------------|-------|
| Forward Peak Gate Power              | PGM              | 20          | Watts |
| Forward Average Gate Power           | PG(AV)           | 0.5         | Watt  |
| Forward Peak Gate Current            | IGM              | 2           | Amps  |
| Operating Junction Temperature Range | T <sub>J</sub>   | -40 to +125 | °C    |
| Storage Temperature Range            | T <sub>stg</sub> | -40 to +150 | °C    |

### \*THERMAL CHARACTERISTICS

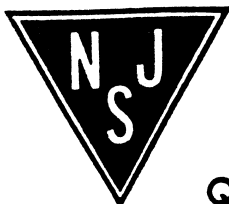
| Characteristic                       | Symbol           | Max | Unit |
|--------------------------------------|------------------|-----|------|
| Thermal Resistance, Junction to Case | R <sub>θJC</sub> | 1.5 | °C/W |

### ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted.)

| Characteristic   | Symbol                              | Min  | Typ  | Max  | Unit     |
|--|-------------------------------------|--|--|--|----------|
| Peak Forward Blocking Voltage<br>(T <sub>J</sub> = 125°C)  | V <sub>DRM</sub>                    | 50<br>100<br>200<br>300<br>400<br>500<br>600<br>700<br>800<br>1000 | —<br>—<br>—<br>—<br>—<br>—<br>—<br>—<br>—<br>— | —<br>—<br>—<br>—<br>—<br>—<br>—<br>—<br>—<br>— | Volts    |
| *Peak Forward or Reverse Blocking Current<br>(Rated V <sub>DRM</sub> or V <sub>RRM</sub> ) T <sub>J</sub> = 25°C<br>T <sub>J</sub> = 125°C                                     | I <sub>DRM</sub> , I <sub>RRM</sub> | —<br>—   | —<br>—   | 10<br>2  | μA<br>mA |
| *Forward "On" Voltage (1)<br>(I <sub>TM</sub> = 50 A)  | V <sub>TM</sub>                     | —  | —  | 1.8  | Volts    |
| *Gate Trigger Current (Continuous dc)<br>(Anode Voltage = 12 Vdc, R <sub>L</sub> = 100 Ohms) T <sub>C</sub> = 25°C<br>T <sub>C</sub> = -40°C                                   | I <sub>GT</sub>                     | —<br>—   | —<br>25  | 40<br>75                                       | mA       |
| *Gate Trigger Voltage (Continuous dc)<br>(Anode Voltage = 12 Vdc, R <sub>L</sub> = 100 Ohms, T <sub>C</sub> = -40°C)   | V <sub>GT</sub>                     | —  | 1  | 1.5  | Volts    |
| Gate Non-Trigger Voltage<br>(Anode Voltage = Rated V <sub>DRM</sub> , R <sub>L</sub> = 100 Ohms, T <sub>J</sub> = 125°C)   | V <sub>GD</sub>                     | 0.2  | —  | —  | Volts    |
| *Holding Current<br>(Anode Voltage = 12 Vdc, T <sub>C</sub> = -40°C)   | I <sub>H</sub>                      | —  | 35   | 40   | mA       |
| *Turn-On Time<br>(I <sub>TM</sub> = 25 A, I <sub>GT</sub> = 50 mAdc)   | t <sub>gt</sub>                     | —  | 1.5  | 2  | μs       |
| Turn-Off Time (V <sub>DRM</sub> = rated voltage)<br>(I <sub>TM</sub> = 25 A, I <sub>R</sub> = 25 A)<br>(I <sub>TM</sub> = 25 A, I <sub>R</sub> = 25 A, T <sub>J</sub> = 125°C) | t <sub>q</sub>                      | —<br>—   | 15<br>35                                       | —<br>—   | μs       |
| Critical Rate of Rise of Off-State Voltage<br>(Gate Open, Rated V <sub>DRM</sub> , Exponential Waveform)   | dv/dt                               | —  | 50   | —  | V/μs     |

\*Indicates JEDEC Registered Data.

(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.



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