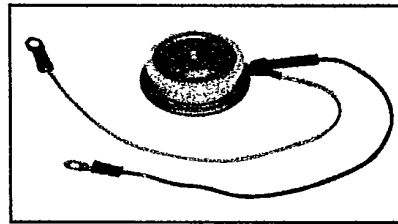
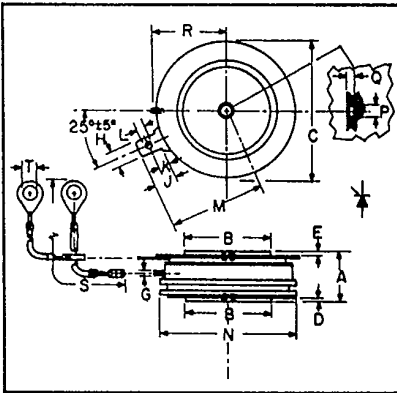




C430__X555

Powerex, Inc. Hills Street, Youngwood, Pennsylvania 15697 (412) 925-7272
 Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (43) 72.75.15

Phase Control SCR
760 Amperes Avg
500-1300 Volts



C430__X555
Phase Control SCR
 760 Amperes/500-1300 Volts

C430__X555
Outline Drawing

| Dimensions | Inches | | Millimeters | |
|------------|--------|--------|-------------|--------|
| | Min. | Max. | Min. | Max. |
| A | .560 | .605 | 14.22 | 15.37 |
| B | .985 | .995 | 25.01 | 25.27 |
| C | 1.600 | 1.650 | 40.64 | 41.91 |
| D | .030 | — | .76 | — |
| E | .040 | — | 1.01 | — |
| G | .057 | .059 | 1.44 | 1.50 |
| H | .186 | .191 | 4.72 | 4.85 |
| J | .245 | .255 | 6.22 | 6.48 |
| K | .115 | .130 | 2.92 | 3.30 |
| L | .064 | .070 | 1.62 | 1.78 |
| M | — | 1.120 | — | 28.45 |
| N | — | 1.585 | — | 40.26 |
| P | .135 | .145 | 3.42 | 3.68 |
| Q | .070 | .084 | 1.77 | 2.13 |
| R | — | .875 | — | 22.23 |
| S | 12.219 | 12.343 | 310.36 | 313.51 |
| T | .137 | .153 | 3.47 | 3.89 |

Description

Powerex Silicon Controlled Rectifiers (SCR) are designed for phase control applications. These are all-diffused, Press-Pak (Pow-R-Disc) devices employing the field-proven amplifying (di/namic) gate.

Features:

- Low On-State Voltage
- High di/dt
- High dv/dt
- Hermetic Packaging
- Excellent Surge and I²t Ratings
- High Temperature Operation

Applications:

- Power Supplies
- Battery Chargers
- Motor Control
- Light Dimmers
- VAR Generators

Ordering Information

Example: Select the complete nine or ten digit part number you desire from the table - i.e. C430NX555 is a 800 Volt, 760 Ampere Phase Control SCR.

| Type | Voltage | | Current |
|------------|--------------------------------------|------|---------|
| | V _{ORM} V _{RRM} | Code | |
| C430__X555 | 500 | E | 760 |
| | 600 | M | |
| | 700 | S | |
| | 800 | N | |
| | 900 | T | |
| | 1000 | P | |
| | 1100 | PA | |
| | 1200 | PB | |
| | 1300 | PC | |



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C430_X555

Phase Control SCR

760 Amperes Avg/500-1300 Volts

Absolute Maximum Ratings

| | Symbol | C430_X555 | Units |
|---|--------------|-------------|--------------------|
| RMS On-State Current | $I_{T(RMS)}$ | 1200 | Amperes |
| Average On-State Current | $I_{T(av)}$ | 760 | Amperes |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz) | I_{TSM} | 8000 | Amperes |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz) | I_{TSM} | 7300 | Amperes |
| Critical Rate-of-Rise of On-State Current (Non-Repetitive) | di/dt | 400 | Amperes/ μ s |
| Critical Rate-of-Rise of On-State Current (Repetitive) | di/dt | 150 | Amperes/ μ s |
| I^2t (for Fusing), One Cycle at 60Hz | I^2t | 265,000 | A ² sec |
| Peak Gate Power Dissipation | P_{GM} | 200 | Watts |
| Average Gate Power Dissipation | $P_{G(av)}$ | 5 | Watts |
| Storage Temperature | T_{STG} | -40 to 150 | °C |
| Operating Temperature | T_J | -40 to 150 | °C |
| Mounting Force [Ⓞ] | | 800 to 2500 | lb. |
| Mounting Force [Ⓞ] | | 3.6 to 11.1 | KN |

Electrical and Thermal Characteristics

| Characteristics | Symbol | Test Conditions | C430_X555 | Units |
|---|-----------------|--|-----------|--------------------|
| Voltage—Blocking State Maximums[Ⓞ] | | | | |
| Forward Leakage, Peak | I_{DRM} | $T_J = 150^\circ\text{C}, V = V_{DRM}$ | 50 | mA |
| Reverse Leakage, Peak | I_{RRM} | $T_J = 150^\circ\text{C}, V = V_{RRM}$ | 50 | mA |
| Current—Conducting State Maximums | | | | |
| Peak On-State Voltage (2000 lb.) | V_{TM} | $I_{TM} = 3000\text{A Peak}, T_C = 25^\circ\text{C},$ Duty Cycle $\leq 0.01\%$ | 2.4 | Volts |
| Peak On-State Voltage (800 lb.) | V_{TM} | $I_{TM} = 3000\text{A Peak}, T_C = 25^\circ\text{C},$ Duty Cycle $\leq 0.01\%$ | 2.53 | Volts |
| Switching | | | | |
| Typical Turn-Off Time | t_d | $T_J = 150^\circ\text{C}, I_{TM} = 1000\text{A}, V_R = 50\text{V Min};$ V_{DRM} (Reapplied); Reapplied $dv/dt = 200\text{V}/\mu\text{sec}$ (linear); Commutation $di/dt = 25\text{A}/\mu\text{sec};$ Repetition Rate = 1pps, Gate Bias during Turn-Off Interval = 0V, 100 Ω | 100 | μsec |
| Typical Delay Time | t_d | $T_C = 25^\circ\text{C}, I_T = 50\text{A},$ Gate Supply: 20V, 20 Ω , 0.1 μsec rise time | .7 | μsec |
| Min. Critical dv/dt exponential to V_{DRM} | dv/dt | $T_J = 150^\circ\text{C},$ gate open | 100 | V/ μsec |
| Thermal and Mechanical | | | | |
| Maximum Thermal Resistance [Ⓞ] double sided cooling | | | | |
| Junction to Case (2000 lb. force) | $R_{\theta JC}$ | | .045 | °C/Watt |
| Case to Sink, Lubricated (2000 lb. force) | $R_{\theta CS}$ | | .02 | °C/Watt |
| Gate—Maximum Parameters | | | | |
| Gate Current to Trigger | I_{GT} | $V_D = 6\text{Vdc}, R_L = 3\text{ ohms}, T_J = 150^\circ\text{C}$ | 150 | mA |
| Gate Voltage to Trigger | V_{GT} | $V_D = 6\text{Vdc}, T_J = -40\text{ to }150^\circ\text{C}$ | 5 | Volts |
| Non-Triggering Gate Voltage | V_{GDM} | | .15 | Volts |
| Peak Forward Gate Current | I_{GTM} | | 10 | Amperes |
| Peak Reverse Gate Voltage | V_{GRM} | | 5 | Volts |

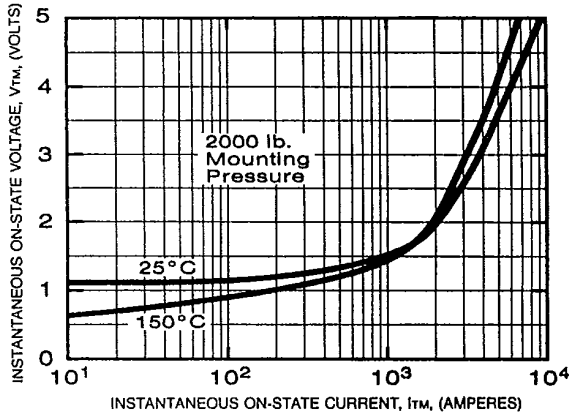
[Ⓞ] Consult recommended mounting procedures.



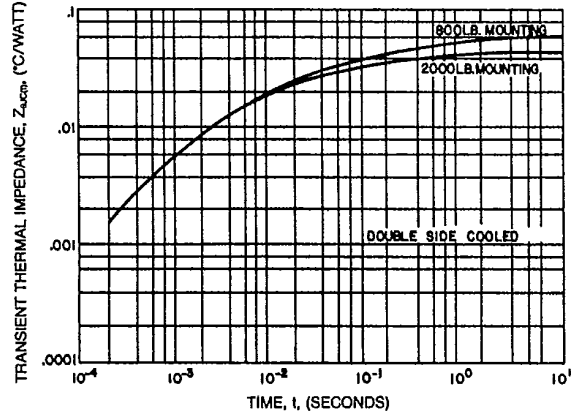
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C430_X555
 Phase Control SCR
 760 Amperes Avg/500-1300 Volts

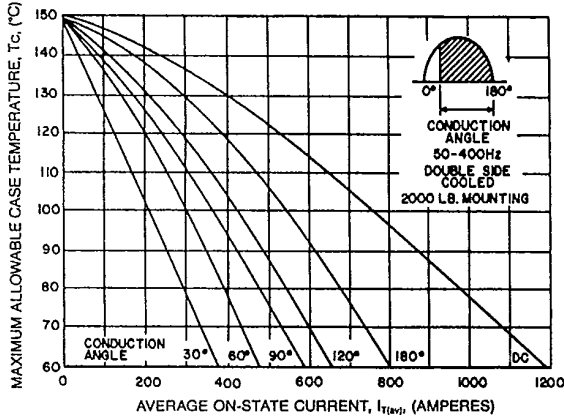
MAXIMUM ON-STATE CHARACTERISTICS



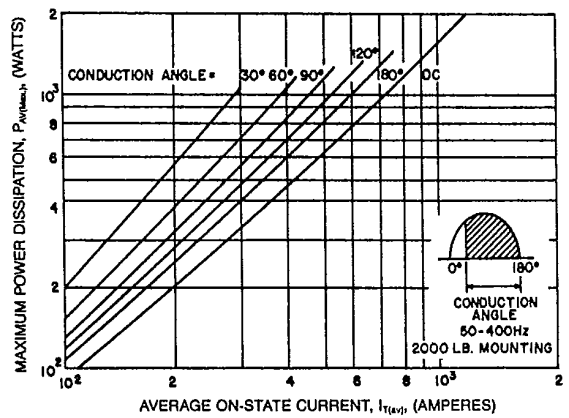
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



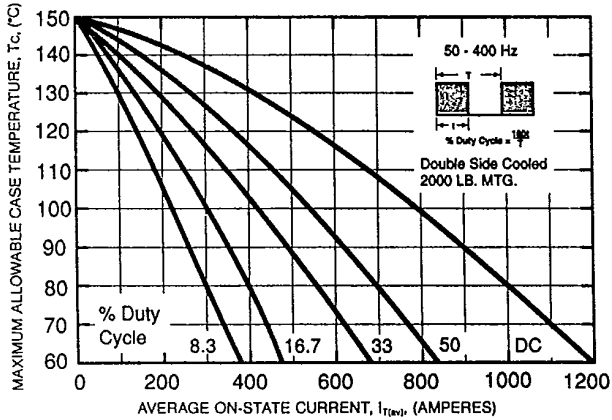
MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



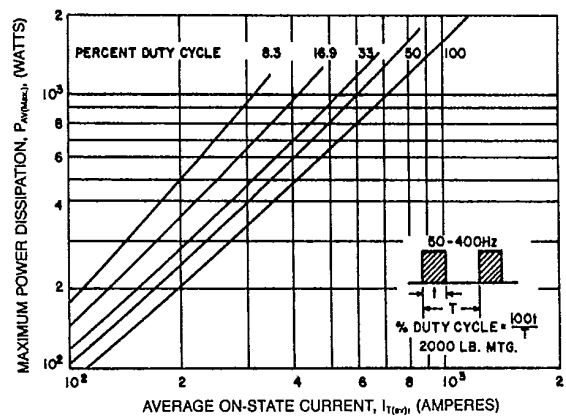
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)





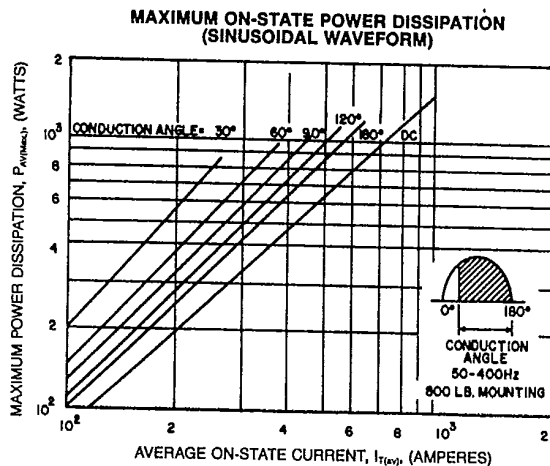
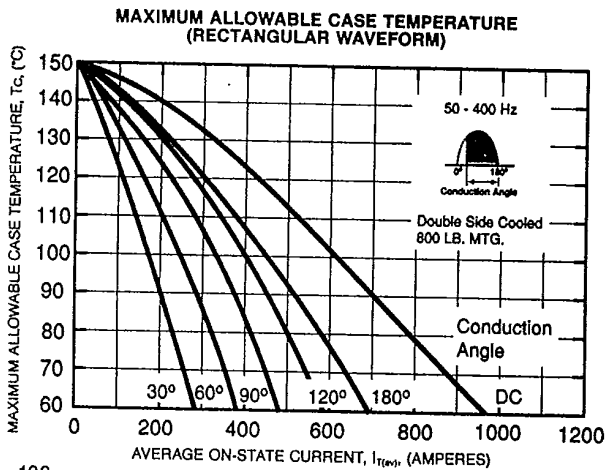
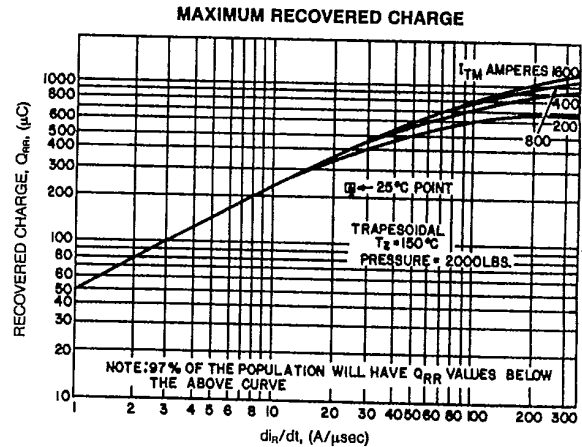
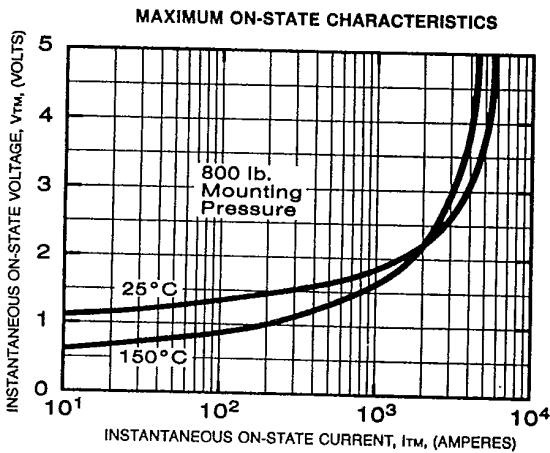
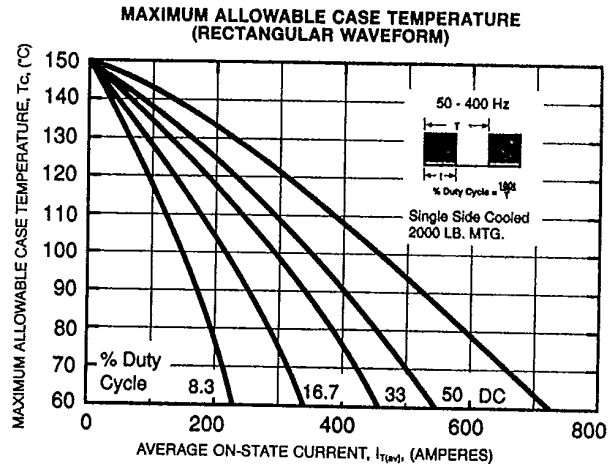
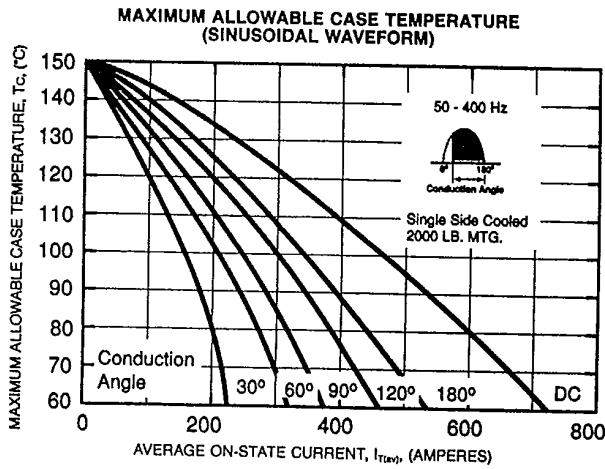
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C430_X555

Phase Control SCR

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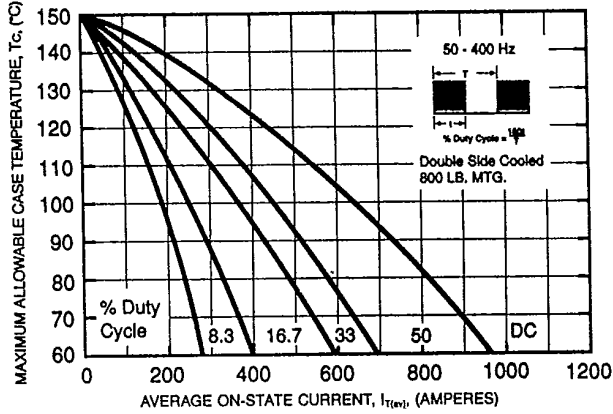




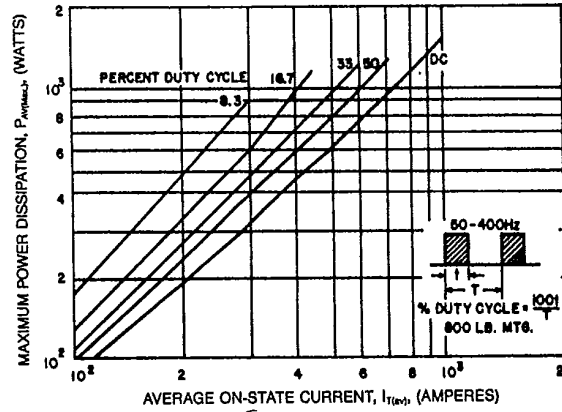
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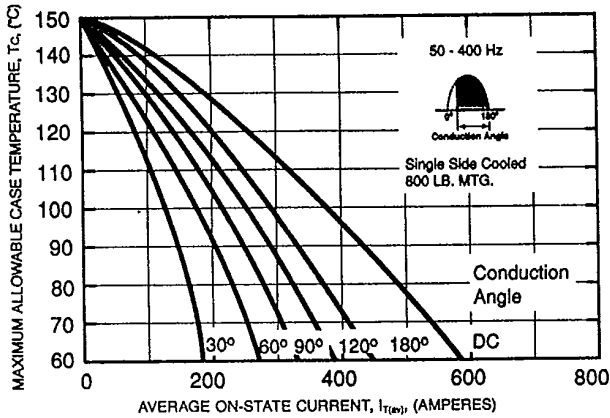
MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



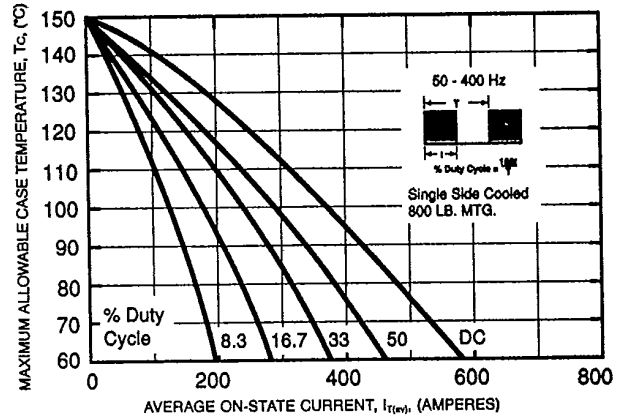
MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)

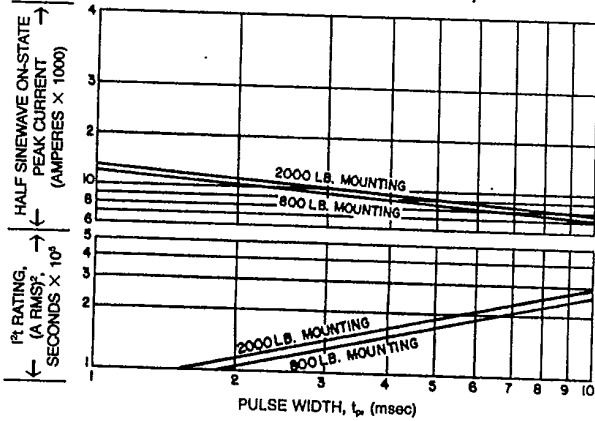




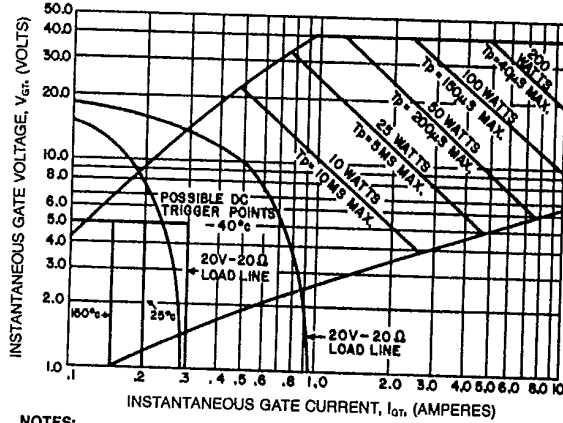
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C430-X555
 Phase Control SCR
 760 Amperes Avg/500-1300 Volts

SUB-CYCLE SURGE AND I^2t RATINGS
 (RATED LOAD CONDITIONS)



GATE CHARACTERISTICS



NOTES:

1. Maximum allowable average gate dissipation = 5 watts.
 2. The locus of possible dc trigger points lie outside the boundaries shown at various case temperatures.
 3. T_p = Rectangular gate current pulse width (5 μs min. duration; 1.0 μs max. rise time for 20V, 65 Ω source).
 4. 20V - 20 Ω is the minimum gate source load line when rate of circuit current rise > 100 Amp/ μs or anode rate of current rise > 200 Amps/ μs (T_p = 5 μs min., 0.5 μs max. rise time).
- Maximum long-term repetitive anode di/dt = 500 Amps/ μs with 20V - 20 Ω gate source.



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