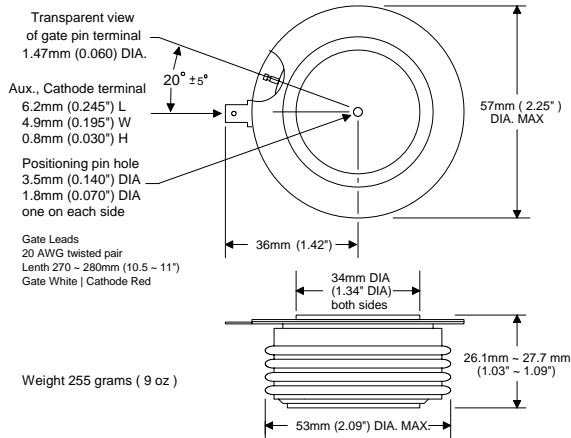


## G package



Part number scheme

**G T 11 F 18 STD**  
 1 2 3 4 5 6

- 1) Package designation
- 2) Thyristor designation (i.e. SCR)
- 3) Series number
- 4) Designates fast recovery time
- 5) Voltage Multiplier (example: 18 x 100 = 1800)
- 6) Proprietary suffix

### Features:

- ✓ All diffused silicone.
- ✓ Center amplifying gate.
- ✓ Fast recovery time for inverter applications.
- ✓ Disk press package (nick named, Hockey Puck)
- ✓ Metal and ceramic package construction.
- ✓ Double side cooling.

## Voltage

| Parameter   | Symbol   | Rating                                | Units     |
|---|--|---------------------------------------|-----------|
| Maximum Repetitive Off-State Voltage <small>Notes: 1, 3, 4, 5, 6, 7</small>   | $V_{DRM}$  | 1600 ~ 2000                           | Volts     |
| Maximum Repetitive Reverse Voltage <small>Notes: 1, 3, 4, 5, 6</small>  | $V_{RRM}$  | 1600 ~ 2000                           | Volts     |
| Maximum non repetitive Surge of Reverse Voltage <small>Notes: 2, 3, 4, 5, 6</small>   | $V_{RSM}$  | $V_{RRM} + 100$                       | Volts     |
| Critical rate of rising off-state Voltage, Linear to 80% of $V_{DRM}$ <small>Note: 2</small>  | $dv/dt$  | 400                                   | $V/\mu s$ |
| <small>Note 1: <math>T_J</math> 25°C. Note 2: <math>T_J</math> 125°C. Note 3: Measured at the peak of the sine wave, Note 4: Below 0°C derate <math>V_{DRM}</math> and <math>V_{RRM}</math> 10%. Note 5: <math>V_{DRM}</math> and <math>V_{RRM}</math> have <math>I_{DRM}</math>, <math>I_{RRM}</math> of up to 35mA. Note 6: <math>V_{DR}</math> and <math>V_{RR}</math> have typical <math>I_{DR}</math>, <math>I_{RR}</math> of 7~10mA. Note 7: For DC applications derate <math>V_{DRM}</math> 45%.</small> |  |                                       |           |
| Specifying voltage:   | 1800V, GT11F18<br>1600V, GT11F16<br>2000V, GT11F20 | Above 2000V inquire for availability. |           |

## Gate

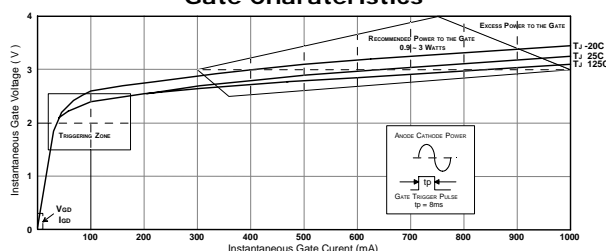
| Parameter  | Symbol       | Rating                 |                                     |      | Units   |
|--|--------------|------------------------|-------------------------------------|------|---------|
|  |              | Temp.                  | Typ.                                | Max. |         |
| Gate Trigger Voltage <small>Note 3</small>   | $V_{GT}$     | -20°C<br>25°C<br>125°C | 2.7 ~ 3.5<br>2.6 ~ 3.3<br>2.5 ~ 3.1 | 3.5  | Volts   |
| Maximum Gate Trigger Current <small>Notes 1,3</small>  | $I_{GT}$     |                        | 400                                 |      | mA      |
| Minimum Forward Current to Latch on-state <small>Notes 1,5</small>   | $I_L$        |                        | 800                                 |      | mA      |
| Maximum permissible Gate Voltage not to Trigger <small>Notes 1,3</small>   | $V_{GDM}$    |                        | 250                                 |      | mV      |
| Maximum permissible Gate Current not to Trigger <small>Notes 1,3</small>   | $I_{GDM}$    |                        | 10                                  |      | mA      |
| Maximum peak non repetitive Gate Voltage <small>Notes 2,3</small>  | $V_{GM}$     |                        | 8.4                                 |      | Volts   |
| Maximum Negative Gate Voltage <small>Notes 2,4</small>   | $-V_{GM}$    |                        | 5                                   |      | Volts   |
| Maximum non repetitive Gate Current <small>Notes 2,3</small>   | $I_{GM}$     |                        | 3.7                                 |      | Amperes |
| Maximum Repetitive Gate Current <small>Notes 2,3</small>   | $I_{GRM}$    |                        | 1                                   |      | Amperes |
| Average Gate Power (recommended) <small>Note 2,3</small>   | $P_{G(AVE)}$ |                        | 0.9 ~ 3                             |      | Watts   |
| <small>Note 1: <math>T_J</math> 25°C. Note 2: <math>T_J</math> 125°C. Note 3: Rectangular pulse, <math>t_p \leq 8.3</math> ms. Note 4: Rectangular <math>-V_{DC}</math> pulse, <math>t_p \leq 8.3</math> ms. Note 5: Test conditions: <math>I_{DC}</math> <math>R_L = 12\Omega</math>.</small> |              |                        |                                     |      |         |

## Dynamics

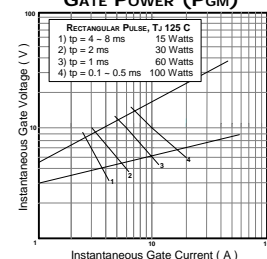
| Parameter   | Symbol   | Rating               | Units   |
|---|----------|----------------------|---------|
| Turn on delay time <small>Note: 2.</small>  | $t_d$    | Typ. 0.7<br>Max. 1.5 | $\mu s$ |
| Turn off time <small>Notes: 2, 3, 4, 5, 6, 7, 8.</small>  | $t_q$    | -<br>55              | $\mu s$ |
| Reverse recovery charge <small>Notes: 3, 4, 7.</small>  | $Q_{rr}$ | Note 1               | $\mu C$ |
| <small>Note 1: Contact factory to specify maximum. Note 2: <math>T_J = 125^\circ C</math> Note 3: <math>I_{TM} = 500 A</math> Note 4: <math>V_R \geq -50V</math> Note 5: Reapplied <math>dV/dt = 200V/\mu s</math> Note 6: <math>V/\mu s</math> linear to 80% of <math>V_{DRM}</math> Note 7: <math>di/dt = 25A/\mu s</math> Note 8: <math>V_G = 0</math></small> |          |                      |         |

These graphs depict a typical device, each device has unique characteristics

### Gate Characteristics



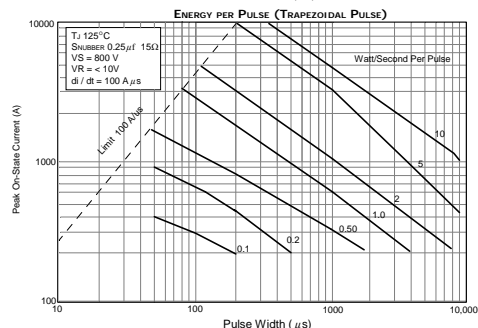
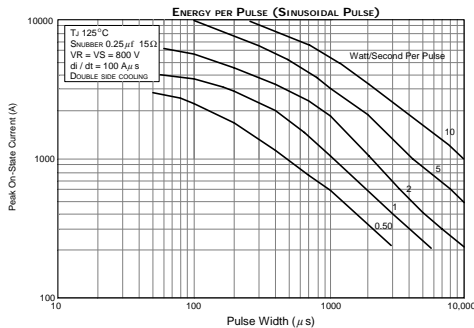
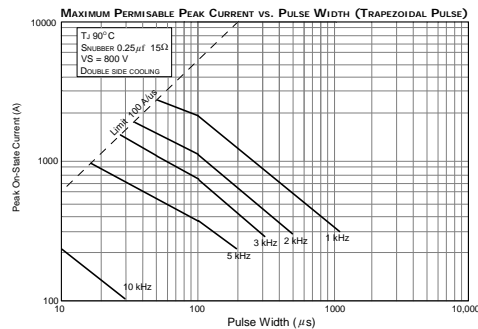
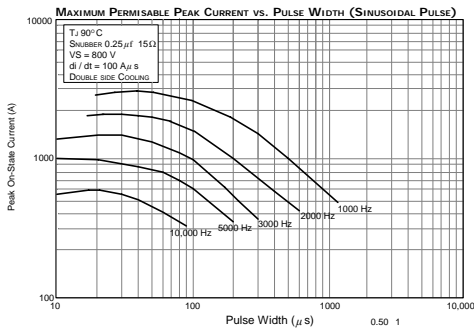
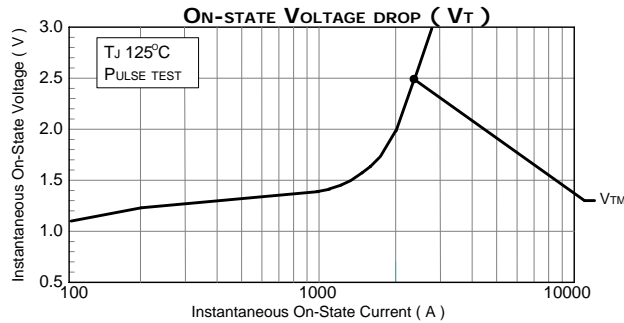
### Maximum non repetitive GATE POWER (P<sub>GM</sub>)



**Current**

| Parameter  | Symbol                     | Rating          | Units      |
|--|----------------------------|-----------------|------------|
| Maximum, Average, On state, Current <small>Notes: 3, 4</small>   | $I_{T(AVE)}$               | 810             | Amperes    |
| Maximum, RMS, On state, Current <small>Notes: 3, 5</small>   | $I_{T(RMS)}$               | 1150            | Amperes    |
| Maximum non repetitive, Surge, On state, Current, with no reverse voltage reapplied. <small>Notes: 2, 4</small>  | $I_{TSM} 0\%V_{RRM}$       | 9               | kA         |
| Maximum non repetitive, Surge, On state, Current, with maximum reverse voltage reapplied. <small>Notes: 2, 4</small>   | $I_{TSM} 100\%V_{RRM}$     | 7.6             | kA         |
| Critical rate of rising On-state Current, non repetitive <small>Note: 6, 7</small>   | di/dt                      | 800             | A/ $\mu$ s |
| Critical rate of rising On-state Current, repetitive <small>Note: 6, 7</small>   | di/dt                      | 400             | A/ $\mu$ s |
| Holding Current <small>Notes: 1, 5</small>   | $I_H$                      | 500             | mA         |
| $I_{DR}$ = Repetitive, Off-State, leakage Current (typical) <small>Note: 1</small>   | $I_{DR}$ & $I_{RR}$        | 7~ 10           | mA         |
| $I_{RR}$ = Repetitive, Reverse, leakage Current. (typical) <small>Note: 1</small>  |                            |                 |            |
| $I_{DRM}$ = Maximum (threshold), Repetitive, Off-State, Current. <small>Note: 1</small>  | $I_{DRM}$ & $I_{RRM}$      | 35              | mA         |
| $I_{RRM}$ = Maximum (threshold), Repetitive, Reverse, Current. <small>Note: 1</small>  |                            |                 |            |
| Fuse's absolute maximum $I^2 t$ with no reverse voltage reapplied <small>Note: 2, 4</small>  | $I^2 t, 0\% V_{RR}$        | 336             | kA         |
| Fuse's absolute maximum $I^2 t$ with up to 80% of $V_{RRM}$ reapplied <small>Note: 2, 4</small>  | $I^2 t, \leq 80\% V_{RRM}$ | 420             | kA         |
| Reverse Recovery Charge ( $C_s$ = Stored Charge)   | $Q_{RR}$                   | Consult factory | $\mu C_s$  |
| <small>Note 1: <math>T_J</math> 25°C. Note 2: <math>T_J</math> 125°C. Note 3: <math>T_{Case}</math> 55°C, double side air cooled. Note 4: 180° conduction, 60Hz sine wave. Note 5: Test conditions: <math>I_{DC}</math> <math>R_L</math> = 12<math>\Omega</math>. Note 6: Switching from <math>V_{DRM} \leq 1000V</math> Note 7: In addition to 0.25<math>\mu F</math> and 15<math>\Omega</math> snubber circuit</small> |                            |                 |            |

These graphs depict a typical device, each device has unique characteristics



**Thermal & Mechanical**

| Parameter   | Symbol        | Rating                     | Units     |
|---|---------------|----------------------------|-----------|
| Operating Temperature Range   | $T_J$         | -40° ~ 125°                | °Celsius  |
| Maximum Thermal resistance, Junction to Case <small>Notes:1, 3, 5</small>   | $R_{th-J-C}$  | 0.04                       | °C/W      |
| Maximum Thermal resistance, Case to Heat Sink <small>Notes: 1, 2, 3, 4, 5</small>   | $R_{th-C-hs}$ | 0.01                       | °C/W      |
| Mounting Pressure   |               | 1350 ~ 1600<br>3000 ~ 3500 | kg<br>lb. |
| <small>Note 1: Recommended mounting pressure applied Note 2: Mounting surfaces flat and greased Note 3: Double side cooled Note 4: Case Temperature measured at aux., cathode Note 5: 180° on-state</small> |               |                            |           |