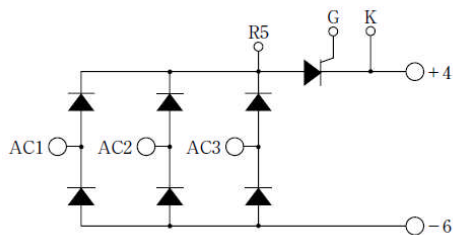


# THYRISTOR

## 75A Avg 800 Volts

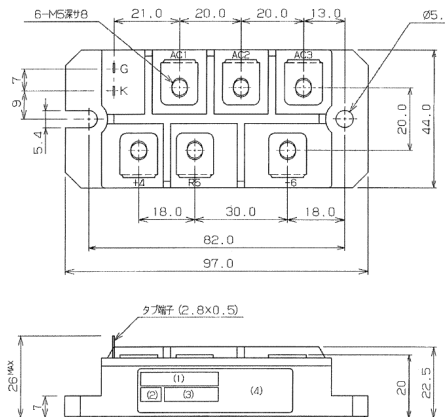
### PGH75N8

#### ■回路図 CIRCUIT



#### ■外形寸法図 OUTLINE DRAWING

Dimension: [mm]



#### 総合定格・特性 Part of Diode Bridge & Thyristor

##### ■最大定格 Maximum Ratings

| 項 目<br>Parameter                                 |                         | 記号<br>Symbol | 条件<br>Conditions                                                            |                                              | 定格値<br>Max. Rated Value | 単位<br>Unit |
|--------------------------------------------------|-------------------------|--------------|-----------------------------------------------------------------------------|----------------------------------------------|-------------------------|------------|
| 平均出力電流<br>Average Rectified Output Current       |                         | Io (AV)      | 三相全波整流<br>3-Phase Full<br>Wave Rectified                                    | Tc=121℃ (電圧印加なし)<br>Non-Biased for Thyristor | 75                      | A          |
|                                                  |                         |              |                                                                             | Tc= 96℃ (電圧印加あり)<br>Biased for Thyristor     | 75                      |            |
| 動作接合温度範囲<br>Operating Junction Temperature Range |                         | Tjw          | 125～150℃は封印外部に順・逆電圧を<br>印加しない事<br>Tj>125℃ , Can not be Biased for Thyristor |                                              | -40 ～ +150              | ℃          |
| 保存温度範囲<br>Storage Temperature Range              |                         | Tstg         |                                                                             |                                              | -40 ～ +125              | ℃          |
| 絶縁耐圧<br>Isolation Voltage                        |                         | Viso         | 端子ーベース間, AC 1 分間<br>Terminal to Base, AC 1min.                              |                                              | 2500                    | V          |
| 締付トルク<br>Mounting Torque                         | ベース部<br>Mounting        | F            | サマロンパウト塗布<br>Greased                                                        | M5                                           | 2.4 ～ 2.8               | N・m        |
|                                                  | 主端子部<br>Terminal        |              |                                                                             | M5                                           | 2.4 ～ 2.8               |            |
|                                                  | ゲート端子部<br>Gate Terminal |              |                                                                             | —                                            | —                       |            |

##### ■熱特性 Thermal Characteristics

| 項目<br>Parameter             | 記号<br>Symbol  | 条件<br>Conditions                                       | 特性値 (最大)<br>Maximum Value | 単位<br>Unit |
|-----------------------------|---------------|--------------------------------------------------------|---------------------------|------------|
| 接合熱抵抗<br>Thermal Resistance | $R_{th(c-f)}$ | ケースフィン間(トータル)、サマロンパウト塗布<br>Case to Fin, Total, Greased | 0.06                      | °CW        |

#### ダイオードブリッジ部(6素子) Part of Diode Bridge(6 Arm.)

##### ■最大定格 Maximum Rating

| 項目<br>Parameter                                       | 記号<br>Symbol | 定格値<br>Max. Rated Value | 単位<br>Unit |
|-------------------------------------------------------|--------------|-------------------------|------------|
| くり返しピーク逆電圧 *1<br>Repetitive Peak Reverse Voltage      | $V_{RRM}$    | 800                     | V          |
| 非くり返しピーク逆電圧 *1<br>Non-Repetitive Peak Reverse Voltage | $V_{RSM}$    | 900                     | V          |

| 項目<br>Parameter                        | 記号<br>Symbol | 条件<br>Conditions                                                  | 定格値<br>Max. Rated Value | 単位<br>Unit       |
|----------------------------------------|--------------|-------------------------------------------------------------------|-------------------------|------------------|
| サージ順電流 *1<br>Surge Forward Current     | $I_{FSM}$    | 50Hz 正弦半波, 1サイクル, 非くり返し<br>Half Sine Wave, 1Pulse, Non-Repetitive | 600                     | A                |
| 電流二乗時間積 *1<br>$I^2t$                   | $I^2t$       | 2~10ms                                                            | 1800                    | A <sup>2</sup> s |
| 許容周波数<br>Allowable Operating Frequency | $f$          |                                                                   | 400                     | Hz               |

\*1 : 1アーム当たりの値 Value Per 1 Arm.

## ダイオードブリッジ部(6素子) Part of Diode Bridge(6 Arm.)

### ■電気的特性 Electrical Characteristics

| 項目<br>Parameter                | 記号<br>Symbol    | 条件<br>Conditions                                   | 特性値(最大)<br>Maximum Value | 単位<br>Unit                  |
|--------------------------------|-----------------|----------------------------------------------------|--------------------------|-----------------------------|
| ピーク逆電流<br>Peak Reverse Current | *1<br>$I_{RM}$  | $T_j = 125^{\circ}\text{C}$ , $V_{RM} = V_{RRM}$   | 3                        | mA                          |
| ピーク順電圧<br>Peak Forward Voltage | *1<br>$V_{FM}$  | $T_j = 25^{\circ}\text{C}$ , $I_{FM} = 75\text{A}$ | 1.20                     | V                           |
| 熱抵抗<br>Thermal Resistance      | $R_{\theta JA}$ | 接合部-ケース間(トータル)<br>Junction to Case, Total          | 0.10                     | $^{\circ}\text{C}/\text{W}$ |

\*1 : 1アーム当たりの値 Value Per 1 Arm.

## サイリスタ部(1素子) Part of Thyristor(1 Arm.)

### ■最大定格 Maximum Rating

| 項目<br>Parameter                                       | 記号<br>Symbol    | 定格値<br>Max. Rated Value | 単位<br>Unit |
|-------------------------------------------------------|-----------------|-------------------------|------------|
| くり返しピークオフ電圧<br>Repetitive Peak Off-State Voltage      | *2<br>$V_{DRM}$ | 800                     | V          |
| 非くり返しピークオフ電圧<br>Non-Repetitive Peak Off-State Voltage | *2<br>$V_{DSM}$ | 900                     | V          |

\*2 : 逆電圧を印加しないこと Can not be Biased for Thyristor

| 項目<br>Parameter                                         | 記号<br>Symbol | 条件<br>Conditions                                                                                                                         | 定格値<br>Max. Rated Value | 単位<br>Unit             |
|---------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------|
| サージオン電流<br>Surge On-State Current                       | $I_{TSM}$    | 50Hz 正弦半波, 1サージ, 非くり返し<br>Half Sine Wave, 1Pulse, Non-Repetitive                                                                         | 1200                    | A                      |
| 電流二乗時間積<br>I Squared t                                  | $I^2t$       | 2~10ms                                                                                                                                   | 7200                    | $\text{A}^2\text{s}$   |
| 臨界オン電流上昇率<br>Critical Rate of Rise of Turned-On Current | $di/dt$      | $V_D = 2/3 V_{DRM}$ , $I_{TM} = 2 \cdot I_o$ , $T_j = 125^{\circ}\text{C}$<br>$I_G = 200\text{mA}$ , $di_G/dt = 0.2\text{A}/\mu\text{s}$ | 100                     | $\text{A}/\mu\text{s}$ |
| ピークゲート電力損失<br>Peak Gate Power                           | $P_{GM}$     |                                                                                                                                          | 5                       | W                      |
| 平均ゲート電力損失<br>Average Gate Power                         | $P_{G(AV)}$  |                                                                                                                                          | 1                       | W                      |
| ピークゲート電流<br>Peak Gate Current                           | $I_{GM}$     |                                                                                                                                          | 2                       | A                      |
| ピークゲート電圧<br>Peak Gate Voltage                           | $V_{GM}$     |                                                                                                                                          | 10                      | V                      |
| ピークゲート逆電圧<br>Peak Gate Reverse Voltage                  | $V_{RGM}$    |                                                                                                                                          | 5                       | V                      |

### ■電気的特性 Electrical Characteristics

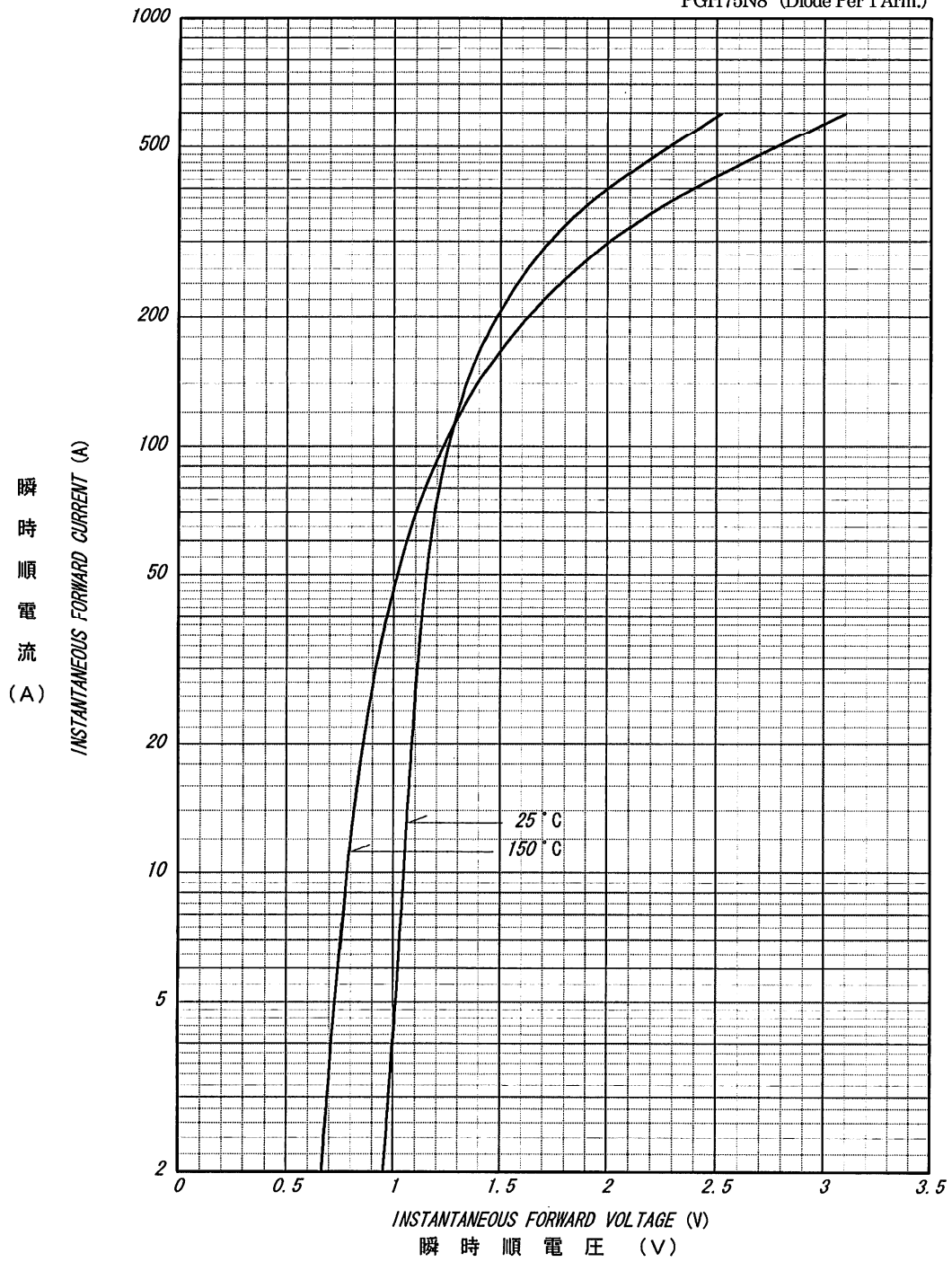
| 項目<br>Parameter                                         | 記号<br>Symbol | 条件<br>Conditions                                                                                                                                                 | 特性値(最大)<br>Maximum Value |           |           | 単位<br>Unit             |
|---------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------|-----------|------------------------|
|                                                         |              |                                                                                                                                                                  | 最小<br>Min                | 標準<br>Typ | 最大<br>Max |                        |
| ピークオフ電流<br>Peak Off-State Current                       | $I_{DM}$     | $T_j = 125^{\circ}\text{C}$ , $V_{DM} = V_{DRM}$                                                                                                                 |                          |           | 15        | mA                     |
| ピークオン電圧<br>Peak Off-State Voltage                       | $V_{TM}$     | $T_j = 25^{\circ}\text{C}$ , $I_{TM} = 75\text{A}$                                                                                                               |                          |           | 1.20      | V                      |
| トリガゲート電流<br>Gate Current to Trigger                     | $I_{GT}$     | $V_D = 6\text{V}$ , $I_T = 1\text{A}$                                                                                                                            |                          |           | 200       | mA                     |
|                                                         |              |                                                                                                                                                                  |                          |           | 100       |                        |
|                                                         |              |                                                                                                                                                                  |                          |           | 50        |                        |
| トリガゲート電圧<br>Gate Voltage to Trigger                     | $V_{GT}$     | $V_D = 6\text{V}$ , $I_T = 1\text{A}$                                                                                                                            |                          |           | 4.0       | V                      |
|                                                         |              |                                                                                                                                                                  |                          |           | 2.5       |                        |
|                                                         |              |                                                                                                                                                                  |                          |           | 2.0       |                        |
| 非トリガゲート電圧<br>Gate Non-Trigger Voltage                   | $V_{GD}$     | $T_j = 125^{\circ}\text{C}$ , $V_D = 2/3 V_{DRM}$                                                                                                                | 0.25                     |           |           | V                      |
| 臨界オフ電圧上昇率<br>Critical Rate of Rise of Off-State Voltage | $dv/dt$      | $T_j = 125^{\circ}\text{C}$ , $V_D = 2/3 V_{DRM}$                                                                                                                | 500                      |           |           | $\text{V}/\mu\text{s}$ |
| ターンオフ時間<br>Turn-Off Time                                | $t_q$        | $T_j = 125^{\circ}\text{C}$ , $I_{TM} = I_o$ , $V_D = 2/3 V_{DRM}$<br>$dv/dt = 20\text{V}/\mu\text{s}$ , $V_R = 100\text{V}$ , $-di/dt = 20\text{A}/\mu\text{s}$ |                          | 150       |           | $\mu\text{s}$          |

| 項 目<br>Parameter            | 記 号<br>Symbol       | 条 件<br>Conditions                                                                                                                                        | 特性値 (最大)<br>Maximum Value |           |           | 単位<br>Unit |
|-----------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------|-----------|------------|
|                             |                     |                                                                                                                                                          | 最小<br>Min                 | 標準<br>Typ | 最大<br>Max |            |
| ターンオン時間<br>Turn-On Time     | t <sub>gt</sub>     | T <sub>j</sub> =25℃, V <sub>D</sub> =2/3 V <sub>DRM</sub> , I <sub>T</sub> =3・I <sub>O</sub><br>I <sub>G</sub> =200mA, di <sub>G</sub> /dt=0.2A/ $\mu$ s |                           | 6         |           | $\mu$ s    |
| 遅れ時間<br>Delay Time          | t <sub>d</sub>      |                                                                                                                                                          |                           | 2         |           | $\mu$ s    |
| 立ち上がり時間<br>Rise Time        | t <sub>r</sub>      |                                                                                                                                                          |                           | 4         |           | $\mu$ s    |
| ラッチング電流<br>Latching Current | I <sub>L</sub>      | T <sub>j</sub> =25℃                                                                                                                                      |                           | 100       |           | mA         |
| 保持電流<br>Holding Current     | I <sub>H</sub>      | T <sub>j</sub> =25℃                                                                                                                                      |                           | 80        |           | mA         |
| 熱抵抗<br>Thermal Resistance   | R <sub>th(jc)</sub> | 接合部－ケース間<br>Junction to Case                                                                                                                             |                           |           | 0.35      | ℃/W        |

質 量 --- 約 225 g  
Approximate Weight

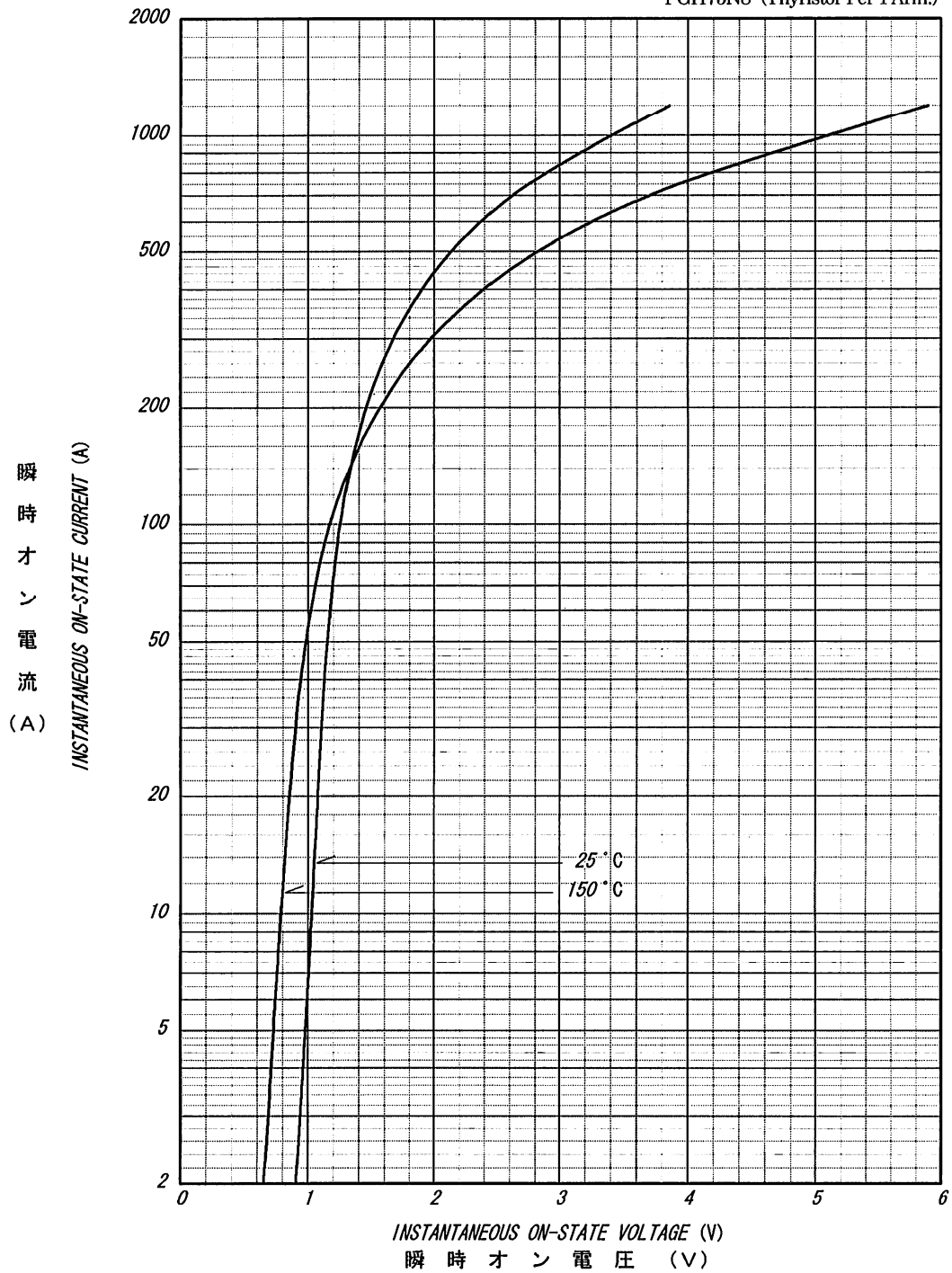
順電圧特性  
FORWARD CURRENT VS. VOLTAGE

PGH75N8 (Diode Per 1 Arm.)

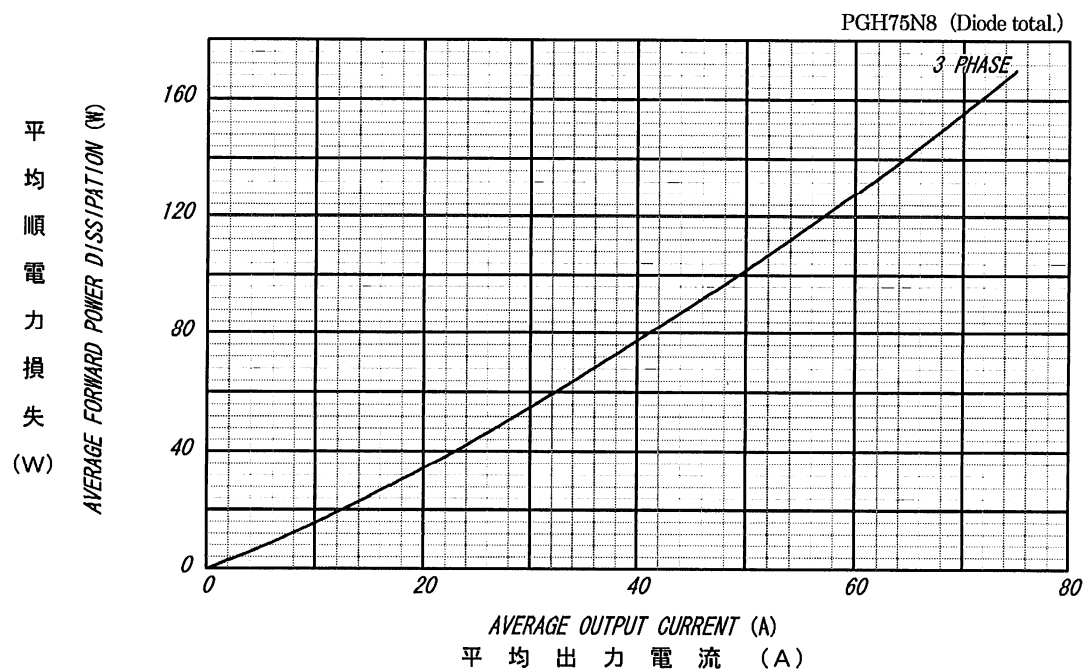


オン電圧特性  
ON-STATE CURRENT VS. VOLTAGE

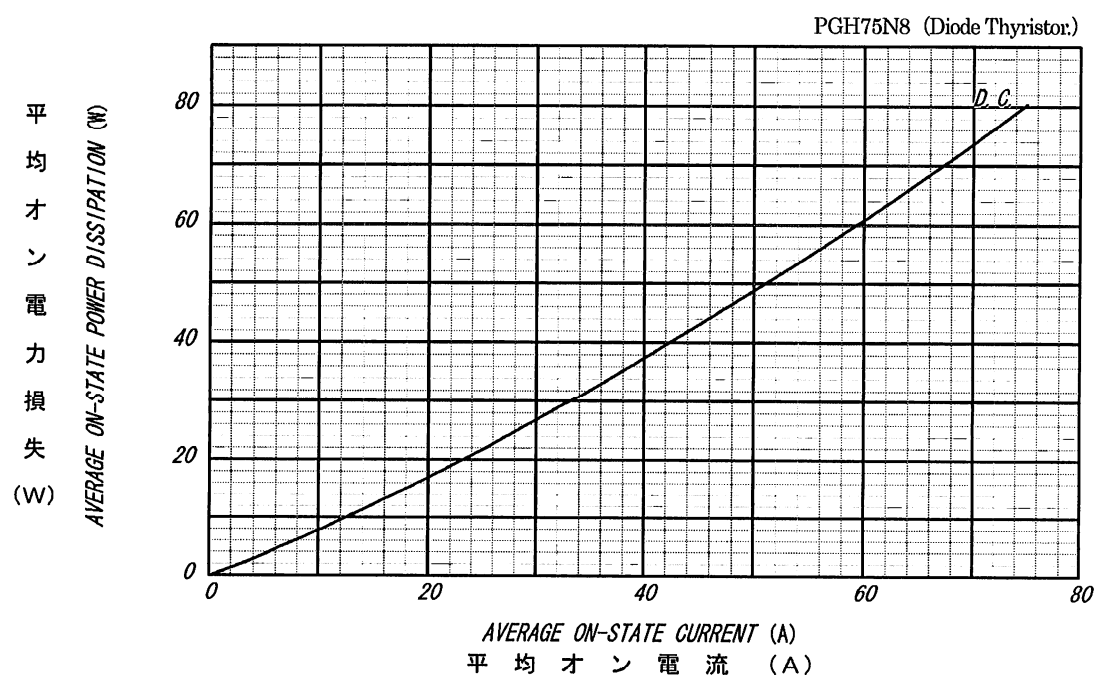
PGH75N8 (Thyristor Per 1 Arm.)



平均順電力損失特性  
AVERAGE FORWARD POWER DISSIPATION



平均オン電力損失特性  
AVERAGE ON-STATE POWER DISSIPATION



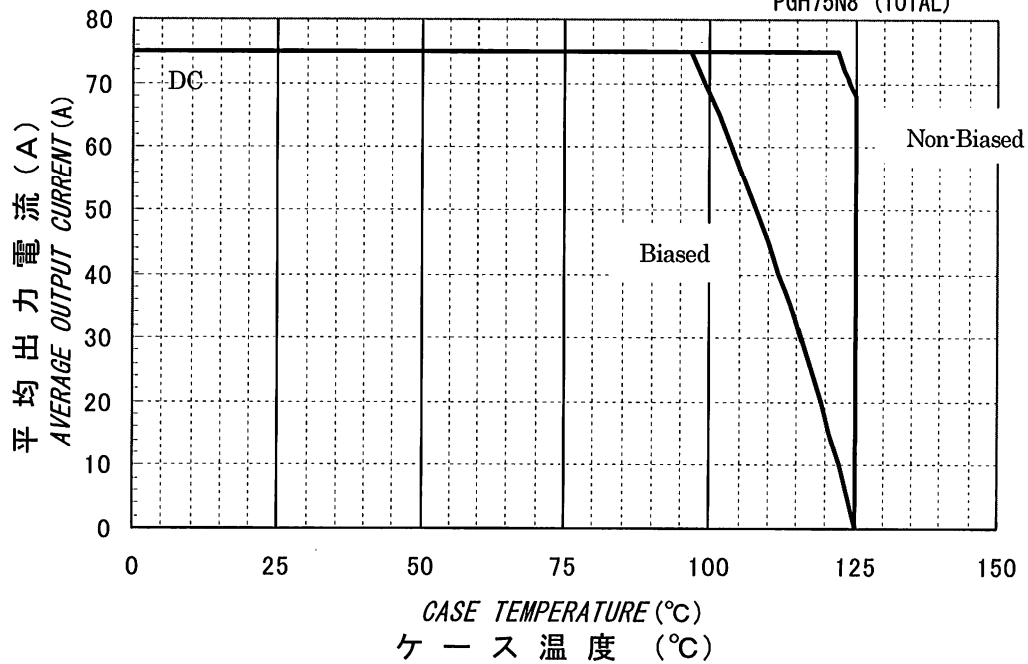


# 平均出力電流－ケース温度定格

## AVERAGE OUTPUT CURRENT VS. CASE TEMPERATURE

3-Phase Full Wave, Resistive or Inductive Load

PGH75N8 (TOTAL)

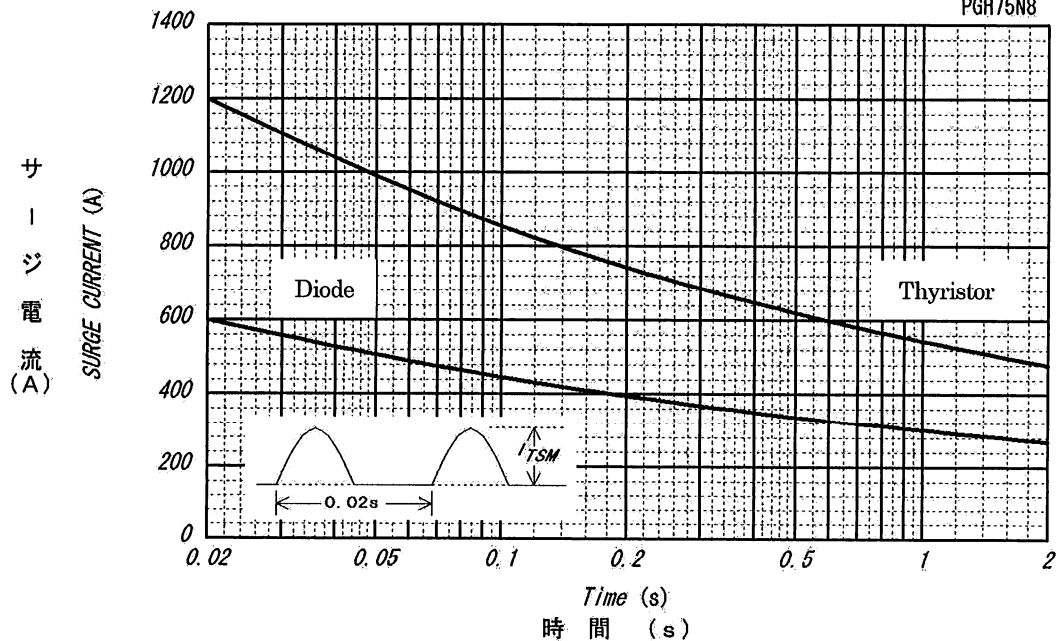


# サージ電流定格

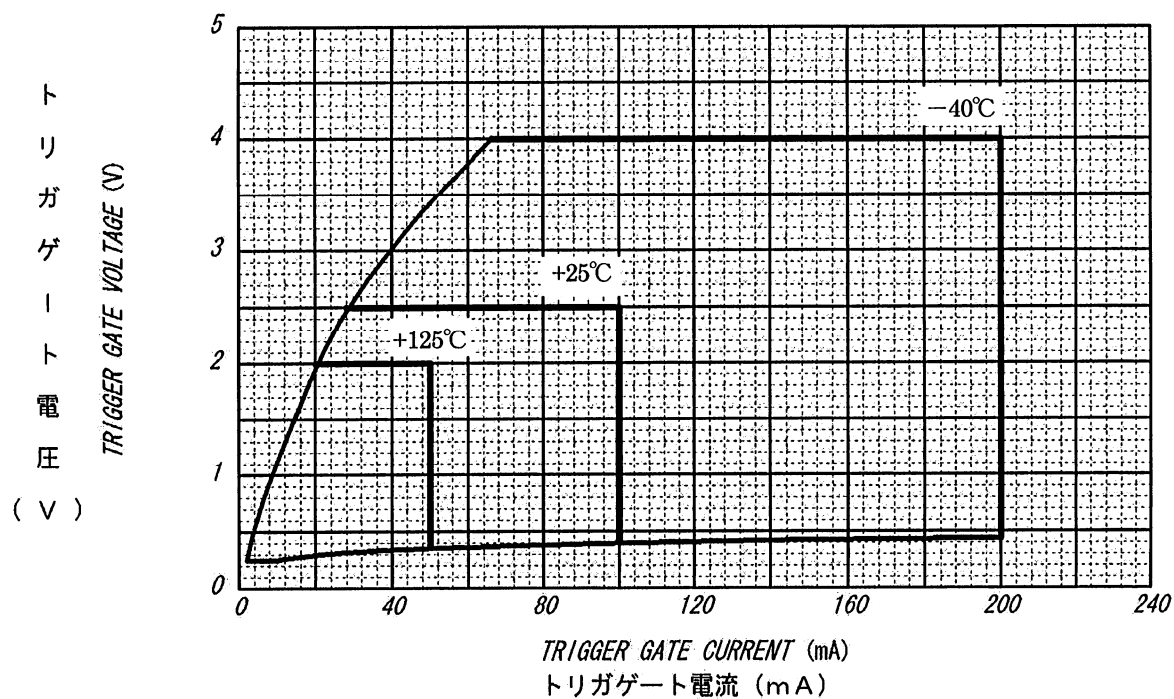
## SURGE CURRENT RATINGS

f=50Hz, Half Sine Wave, Non-Repetitive, Tj=150°C

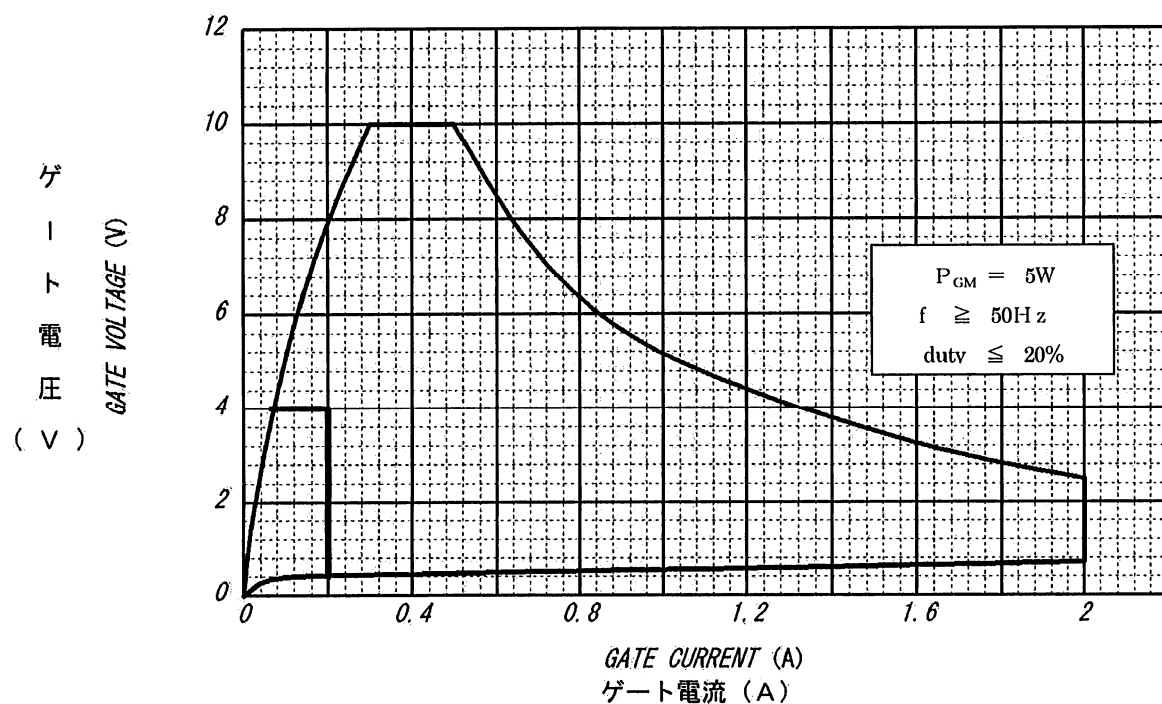
PGH75N8



# ゲート特性 GATE CHARACTERISTICS

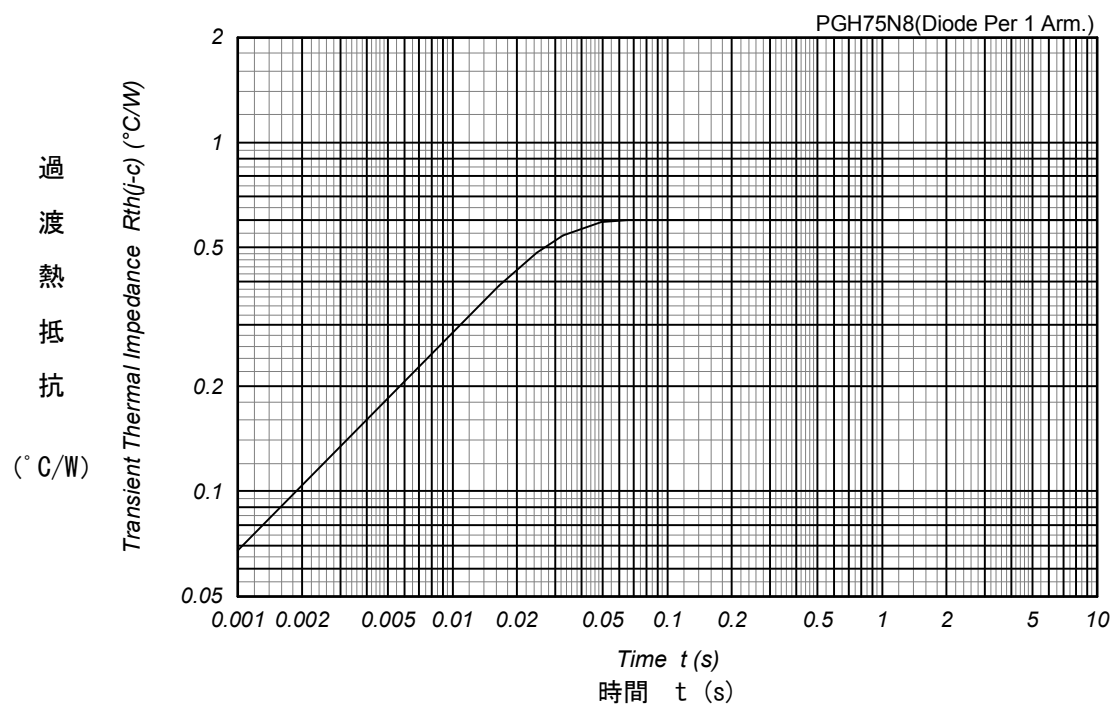


# ゲート定格 GATE RATINGS





過 渡 熱 抵 抗 特 性  
Transient Thermal Impedance



過 渡 熱 抵 抗 特 性  
Transient Thermal Impedance

