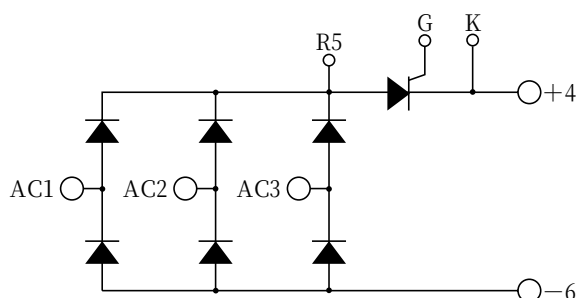


# THYRISTOR

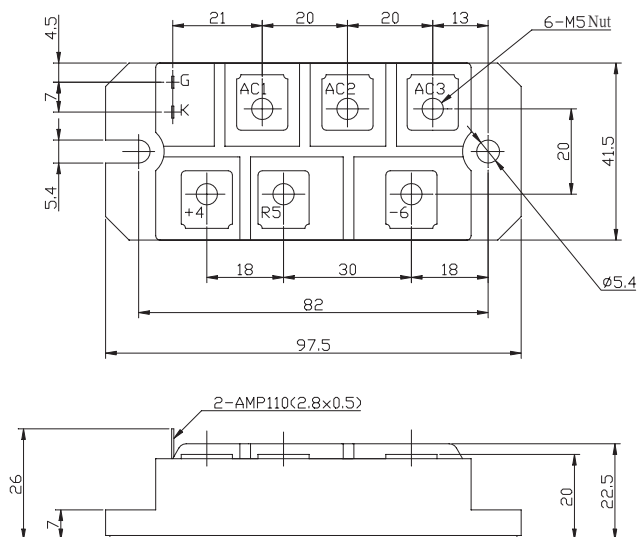
## 30A Avg 1600 Volts

### PGH3016AM

#### ■回路図 CIRCUIT



#### ■外形寸法図 OUTLINE DRAWING (単位 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       |                         | I <sub>0</sub> (AV) | 三相全波整流<br>3-Phase Full<br>Wave Rectified                                               | T <sub>c</sub> = 120°C(電圧印加なし)<br>Non-Bias | 30                      | A          |
|                                                  |                         |                     |                                                                                        | T <sub>c</sub> = 95°C(電圧印加あり)<br>Bias      | 30                      | A          |
| 動作接合温度範囲<br>Operating Junction Temperature Range |                         | T <sub>jw</sub>     | 125～150℃はサイリスタ部に順・逆電圧印加しない事<br>T <sub>j</sub> >125°C, Can not be Biased for Thyristor. |                                            | －40～＋150                | ℃          |
| 保存温度範囲<br>Storage Temperature Range              |                         | T <sub>stg</sub>    |                                                                                        |                                            | －40～＋125                | ℃          |
| 絶縁耐圧<br>Isolation Voltage                        |                         | V <sub>iso</sub>    | 端子ーベース間, AC 1 分間<br>Terminal to Base, AC 1 min.                                        |                                            | 2500                    | V          |
| 締付トルク<br>Mounting Torque                         | ベース部<br>Mounting        | F                   | サーマルコンパウンド塗布<br>Greased                                                                | M5                                         | 2.4～2.8                 | N・m        |
|                                                  | 主端子部<br>Terminal        |                     |                                                                                        | M5                                         | 2.4～2.8                 | N・m        |
|                                                  | ゲート端子部<br>Gate Terminal |                     |                                                                                        | —                                          | —                       | N・m        |

##### ■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 |
|-----------------------------|---------------|-------------------------------------------------------------|---------------------------|------------|
| 接触熱抵抗<br>Thermal Resistance | $R_{th(c-f)}$ | ケースーフィン間(トータル), サーマルコンパウンド塗布<br>Case to Fin, Total, Greased | 0.06                      | °C/W       |

質量 Approximate Weight...約105g

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

##### ■最大定格 Maximum Ratings

| 項目<br>Parameter                                       | 記号<br>Symbol | 耐圧クラス Grade | 単位<br>Unit |
|-------------------------------------------------------|--------------|-------------|------------|
|                                                       |              | PGH3016AM   |            |
| くり返しピーク逆電圧 *1<br>Repetitive Peak Reverse Voltage      | $V_{RRM}$    | 1600        | V          |
| 非くり返しピーク逆電圧 *1<br>Non Repetitive Peak Reverse Voltage | $V_{RSM}$    | 1700        | 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 | 400                     | A                |
| 電流二乗時間積<br>I Squared t                 | $I^2t$       | 2 ~ 10ms                                                          | 800                     | A <sup>2</sup> s |
| 許容周波数<br>Allowable Operating Frequency | f            |                                                                   | 400                     | Hz               |

\*1: 1 アーム当りの値 Value Per 1 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 <sub>RM</sub> | T <sub>j</sub> =125°C, V <sub>RM</sub> =V <sub>RRM</sub> | 10                        | mA         |
| ピーク順電圧<br>Peak Forward Voltage | *1<br>V <sub>FM</sub> | T <sub>j</sub> = 25°C, I <sub>FM</sub> =30A              | 1.20                      | V          |
| 熱抵抗<br>Thermal Resistance      | R <sub>th(j-c)</sub>  | 接合部ーケース間 (トータル)<br>Junction to Case, Total               | 0.40                      | °C/W       |

\*1: 1 アーム当りの値 Value Per 1 Arm.

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

### ■最大定格 Maximum Ratings

| 項目<br>Parameter                                       | 記号<br>Symbol     | 耐圧クラス Grade | 単位<br>Unit |
|-------------------------------------------------------|------------------|-------------|------------|
|                                                       |                  | PGH3016AM   |            |
| くり返しピークオフ電圧<br>Repetitive Peak Off-State Voltage      | V <sub>DRM</sub> | 1600        | V          |
| 非くり返しピークオフ電圧<br>Non Repetitive Peak Off-State Voltage | V <sub>DSM</sub> | 1700        | V          |
| くり返しピーク逆電圧<br>Repetitive Peak Reverse Voltage         | V <sub>RRM</sub> | 1600        | V          |
| 非くり返しピーク逆電圧<br>Non Repetitive Peak Reverse Voltage    | V <sub>RSM</sub> | 1700        | V          |

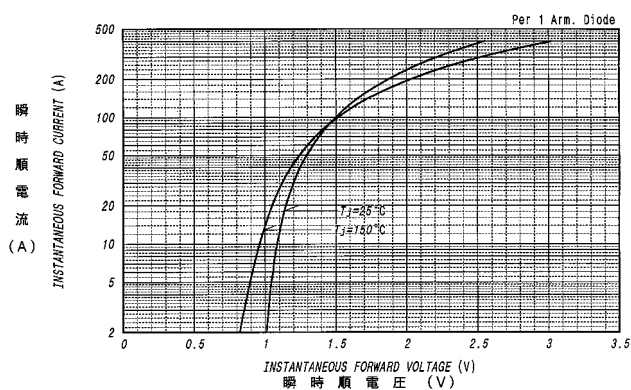
| 項目<br>Parameter                                         | 記号<br>Symbol       | 条件<br>Conditions                                                                                                                         | 定格値<br>Max. Rated Value | 単位<br>Unit       |
|---------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------|
| サージオン電流<br>Surge On-State Current                       | I <sub>TSM</sub>   | 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<br>I Squared t                                  | I <sup>2</sup> t   | 2 ~ 10ms                                                                                                                                 | 1800                    | A <sup>2</sup> s |
| 臨界オン電流上昇率<br>Critical Rate of Rise of Turned-On Current | di/dt              | V <sub>D</sub> =2/3V <sub>DRM</sub> , I <sub>TM</sub> =2・I <sub>O</sub> , T <sub>j</sub> =125°C<br>I <sub>G</sub> =200mA, dig/dt=0.2A/μs | 100                     | A/μs             |
| ピークゲート電力損失<br>Peak Gate Power                           | P <sub>GM</sub>    |                                                                                                                                          | 5                       | W                |
| 平均ゲート電力損失<br>Average Gate Power                         | P <sub>G(AV)</sub> |                                                                                                                                          | 1                       | W                |
| ピークゲート電流<br>Peak Gate Current                           | I <sub>GM</sub>    |                                                                                                                                          | 2                       | A                |
| ピークゲート電圧<br>Peak Gate Voltage                           | V <sub>GM</sub>    |                                                                                                                                          | 10                      | V                |
| ピークゲート逆電圧<br>Peak Gate Reverse Voltage                  | V <sub>RGM</sub>   |                                                                                                                                          | 5                       | V                |

## ■電気的特性 Electrical Characteristics

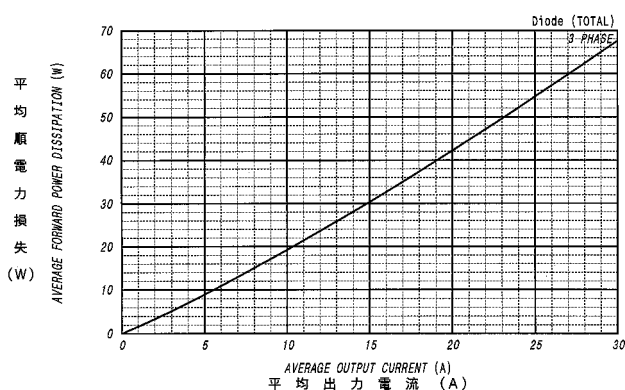
| 項目<br>Parameter                                         | 記号<br>Symbol         | 条 件<br>Conditions                                                                                                                                   |                        | 特性値 (最大)<br>Maximum Value |            |            | 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 <sub>DM</sub>      | T <sub>j</sub> =125°C, V <sub>DM</sub> =V <sub>DRM</sub>                                                                                            |                        |                           |            | 10         | mA         |
| ピーク逆電流<br>Peak Reverse Current                          | I <sub>RM</sub>      | T <sub>j</sub> =125°C, V <sub>RM</sub> =V <sub>RRM</sub>                                                                                            |                        |                           |            | 10         | mA         |
| ピークオン電圧<br>Peak On-State Voltage                        | V <sub>TM</sub>      | T <sub>j</sub> =25°C, I <sub>TM</sub> =30A                                                                                                          |                        |                           |            | 1.15       | V          |
| トリガゲート電流<br>Gate Current to Trigger                     | I <sub>GT</sub>      | V <sub>D</sub> =6V, I <sub>T</sub> =1A                                                                                                              | T <sub>j</sub> =-40°C  |                           |            | 200        | mA         |
|                                                         |                      |                                                                                                                                                     | T <sub>j</sub> = 25°C  |                           |            | 100        | mA         |
|                                                         |                      |                                                                                                                                                     | T <sub>j</sub> = 125°C |                           |            | 50         | mA         |
| トリガゲート電圧<br>Gate Voltage to Trigger                     | V <sub>GT</sub>      | V <sub>D</sub> =6V, I <sub>T</sub> =1A                                                                                                              | T <sub>j</sub> =-40°C  |                           |            | 4.0        | V          |
|                                                         |                      |                                                                                                                                                     | T <sub>j</sub> = 25°C  |                           |            | 2.5        | V          |
|                                                         |                      |                                                                                                                                                     | T <sub>j</sub> = 125°C |                           |            | 2.0        | V          |
| 非トリガゲート電圧<br>Gate Non-Trigger Voltage                   | V <sub>GD</sub>      | T <sub>j</sub> =125°C, V <sub>D</sub> =2/3V <sub>DRM</sub>                                                                                          |                        | 0.25                      |            |            | V          |
| 臨界オフ電圧上昇率<br>Critical Rate of Rise of Off-State Voltage | dv/dt                | T <sub>j</sub> =125°C, V <sub>D</sub> =2/3V <sub>DRM</sub>                                                                                          |                        | 500                       |            |            | V/μs       |
| ターンオフ時間<br>Turn-Off Time                                | t <sub>q</sub>       | T <sub>j</sub> =125°C, I <sub>TM</sub> =I <sub>O</sub> , V <sub>D</sub> =2/3V <sub>DRM</sub><br>dv/dt=20V/μs, V <sub>R</sub> =100V, -di/dt=20A/μs   |                        |                           | 100        |            | μs         |
| ターンオン時間<br>Turn-On Time                                 | t <sub>gt</sub>      | T <sub>j</sub> =25°C, V <sub>D</sub> =2/3V <sub>DRM</sub> , I <sub>TM</sub> =3・I <sub>O</sub><br>I <sub>G</sub> =200mA, di <sub>G</sub> /dt=0.2A/μs |                        |                           | 6          |            | μs         |
| 遅れ時間<br>Delay Time                                      | t <sub>d</sub>       |                                                                                                                                                     |                        |                           | 2          |            | μs         |
| 立上がり時間<br>Rise Time                                     | t <sub>r</sub>       |                                                                                                                                                     |                        |                           | 4          |            | μs         |
| ラッチング電流<br>Latching Current                             | I <sub>L</sub>       | T <sub>j</sub> =25°C                                                                                                                                |                        |                           | 100        |            | mA         |
| 保持電流<br>Holding Current                                 | I <sub>H</sub>       | T <sub>j</sub> =25°C                                                                                                                                |                        |                           | 50         |            | mA         |
| 熱抵抗<br>Thermal Resistance                               | R <sub>th(j-c)</sub> | 接合部ーケース間<br>Junction to Case                                                                                                                        |                        |                           |            | 0.9        | °C/W       |

■ 定格・特性曲線

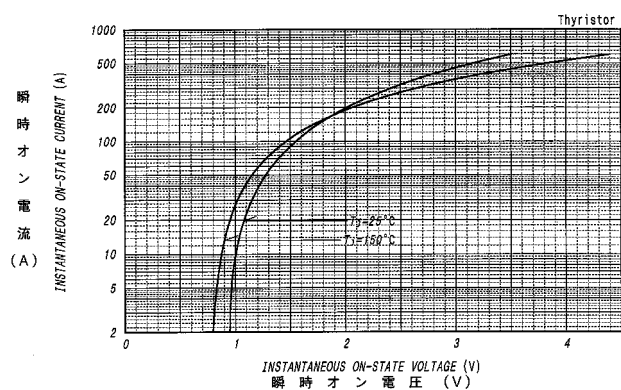
順電圧特性  
FORWARD CURRENT VS. VOLTAGE



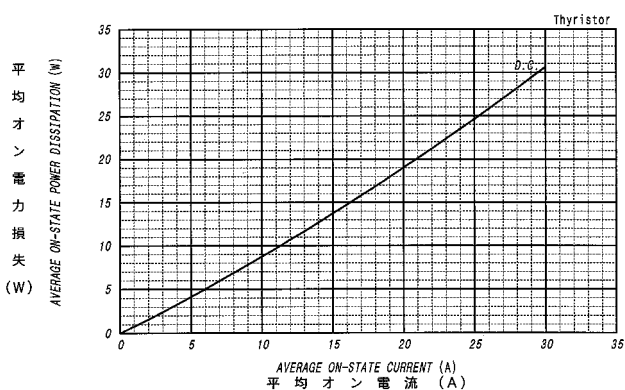
平均順電力損失特性  
AVERAGE FORWARD POWER DISSIPATION



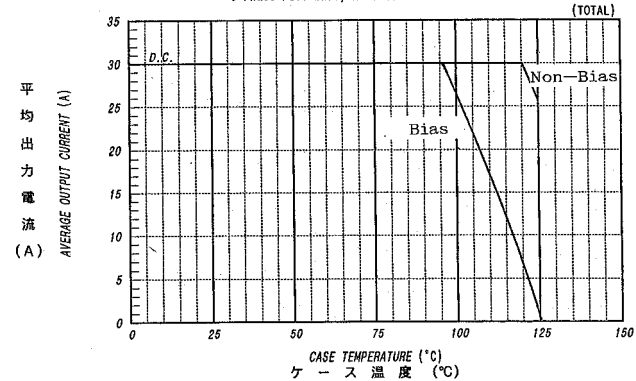
オン電圧特性  
ON-STATE CURRENT VS. VOLTAGE



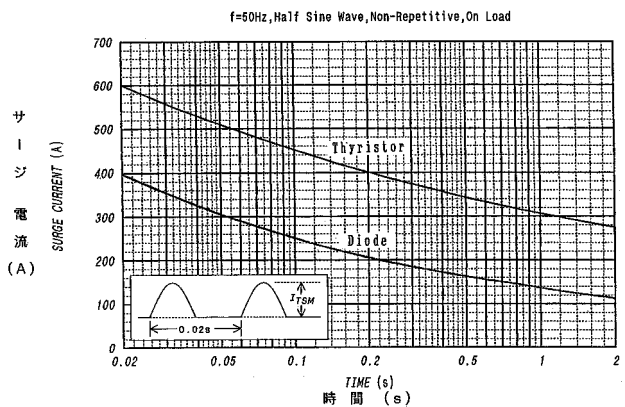
平均オン電力損失特性  
AVERAGE ON-STATE POWER DISSIPATION



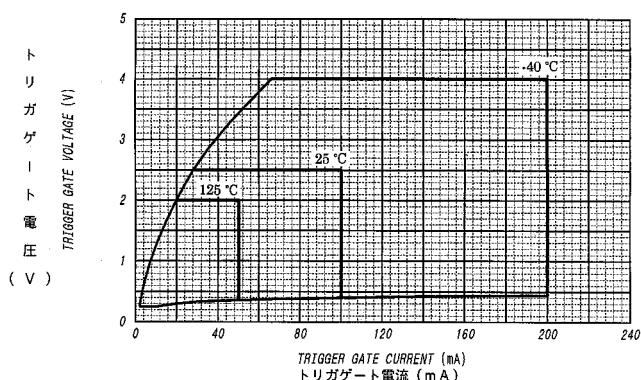
平均出力電流 - ケース温度定格  
AVERAGE OUTPUT CURRENT VS. CASE TEMPERATURE  
3-Phase Full Wave, Resistive or Inductive Load



サージ電流定格  
SURGE CURRENT RATINGS



ゲート特性  
GATE CHARACTERISTICS



ゲート定格  
GATE RATINGS

