



Dual SCR Power Modules are designed for use in power electronic circuits and equipment under normal operating conditions.

### KEY PARAMETERS

|                    |                 |
|--------------------|-----------------|
| $U_{DRM}, U_{RRM}$ | up to 1600 V    |
| $I_{T(AV)}$        | 300 A           |
| $I_{TSM}$          | 8000 A          |
| $du/dt^*$          | 1000 V/ $\mu$ s |
| $di/dt$            | 150 A/ $\mu$ s  |

\* maximum (non standard) value



### Outline

See package details for further information

### APPLICATION

- High Voltage Power Supplies
- Motor Control

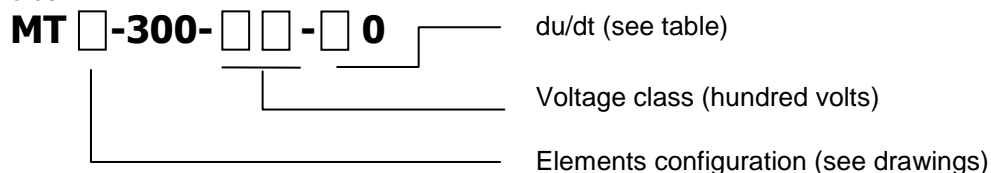
### FEATURES

- electrically isolated base
- high current capabilities
- high surge current capabilities
- high rates voltages
- low thermal impedance (Aluminium Nitride Insulators)
- tested according to IEC standards
- compact size and small weight

Designed for use in high power industrial and commercial power electronic circuits and equipment where high currents are encountered and high reliability is essential.

### ORDERING INFORMATION

When ordering please refer to device code builder presented below. Please use the complete part number when ordering, quote or in any future correspondence relating to your order.



# MT\_-300 Dual SCR Power Module



KKMTx300, August 2009 version

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## ELECTRICAL PARAMETERS

### Voltage ratings

| Voltage class | $U_{RRM}$ | $U_{RSM}$ | $I_{RRM}$ |
|---------------|-----------|-----------|-----------|
|               | V         | V         | mA        |
| 04            | 400       | 500       | 30        |
| 06            | 600       | 700       |           |
| 08            | 800       | 900       |           |
| 10            | 1000      | 1100      |           |
| 12            | 1200      | 1300      |           |
| 14            | 1400      | 1500      |           |
| 16            | 1600      | 1700      |           |

### du/dt group codes

| Group code | du/dt              |
|------------|--------------------|
|            | V/ $\mu$ s         |
| 0          | no specified value |
| 5          | 320                |
| 6          | 500                |
| 7          | 1000               |

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## Electrical properties

| Parameter                                   |              | Unit                   | Test conditions   | Value      |
|---|--------------|------------------------|---|------------|
| Average on-state current                    | $I_{T(AV)}$  | A                      |   | 300        |
| Case temperature                            | $T_C$        | °C                     |   | 85         |
| RMS on-state current                        | $I_{T(RMS)}$ | A                      |   | 470        |
| Surge current                               | $I_{TSM}$    | A                      | $T_j=125^\circ\text{C}$ , $U_R=0,8U_{RRM}$ ,<br>$t_p=10\text{ms}$   | 8000       |
| $I^2t$ – value                              | $I^2t$       | $\text{kA}^2\text{s}$  |   | 320        |
| On-state voltage max.                       | $U_{TM}$     | V                      | $T_j=25^\circ\text{C}$ , $I_{TM}=1500\text{A}$  | 1,4        |
| Threshold voltage                           | $U_{T(TO)}$  | V                      |   | 0,70       |
| Slope resistance                            | $r_T$        | $\text{m}\Omega$       |   | 0,55       |
| Latching current                            | $I_L$        | $\text{mA}$            | $T_j=25^\circ\text{C}$ , $U_D=12\text{V}$   | 800        |
| Holding current                             | $I_H$        | $\text{mA}$            | $T_j=25^\circ\text{C}$ , $U_D=12\text{V}$   | 200        |
| Circuit commutated turn-off time (typical)  | $t_q$        | $\mu\text{s}$          | $T_j=125^\circ\text{C}$ , $I_{TM}=250\text{A}$ ,<br>$di_R/dt=25\text{A}/\mu\text{s}$ , $du/dt=20\text{V}/\mu\text{s}$ ,<br>$U_D=0,67U_{DRM}$ , $U_{RM}=100\text{V}$ | 150        |
| Turn-On time (typical)                      | $t_{gt}$     | $\mu\text{s}$          | $I_{TM}=100\text{A}$ , $U_{DM}=100\text{V}$   | 7          |
| Rate of rise of on-state current-repetitive | $di/dt$      | $\text{A}/\mu\text{s}$ | $T_j=125^\circ\text{C}$ , $I_{TM}=3I_{T(AV)}$ ,<br>$U_D=0,67U_{DRM}$ , $f=50\text{Hz}$ , $I_{GM}=1\text{A}$ ,<br>$di_G/dt=1\text{A}/\mu\text{s}$                    | 150        |
| Critical rate of raise of off-state voltage | $du/dt$      | $\text{V}/\mu\text{s}$ | $T_j=125^\circ\text{C}$ , $U_D=0,67U_{DRM}$ ,   | 320 - 1000 |
| Gate current to trigger                     | $I_{GT}$     | $\text{mA}$            | $T_j=25^\circ\text{C}$ , $U_D=12\text{V}$   | 150        |
| Gate voltage to trigger                     | $U_{GT}$     | V                      | $T_j=25^\circ\text{C}$ , $U_D=12\text{V}$   | 3          |
| RMS isolation voltage                       | $U_{isol}$   | V                      | 1s, circuit to base, all terminals shorted  | 2500       |

## Thermal properties

| Parameter   |                           | Unit | Test conditions | Value      |
|---|---------------------------|------|-----------------|------------|
| Thermal resistance, junction to case per thyristor/module | $R_{thJC}$                | °C/W | DC              | 0,11/0,055 |
| Thermal resistance, case to heatsink per thyristor/module | $R_{thCh}$                | °C/W |                 | 0,04/0,02  |
| Operating junction temperature                            | $T_{jmin} \dots T_{jmax}$ | °C   |                 | -40...+125 |
| Storage temperature                                       | $T_{stg}$                 | °C   |                 | -40...+125 |

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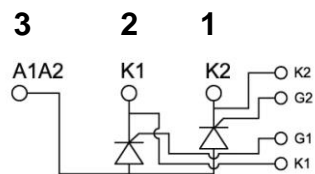
## Mechanical properties

| Parameter                       |    | Unit | Value      |
|---------------------------------|----|------|------------|
| Mounting torque (M6)            | M1 | Nm   | 5,00 ±15%  |
| Terminal connection torque (M8) | M2 | Nm   | 12,00 ±10% |
| Weight                          | M  | g    | 840        |

## Configurations

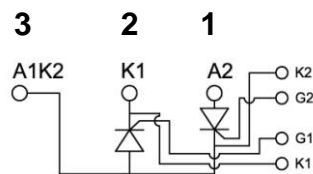
### MTA

Terminal number:



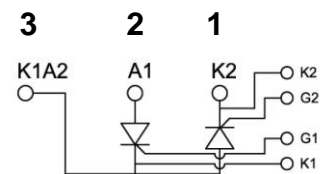
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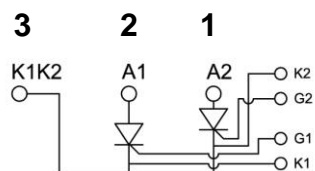
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Terminal number:



### MTK

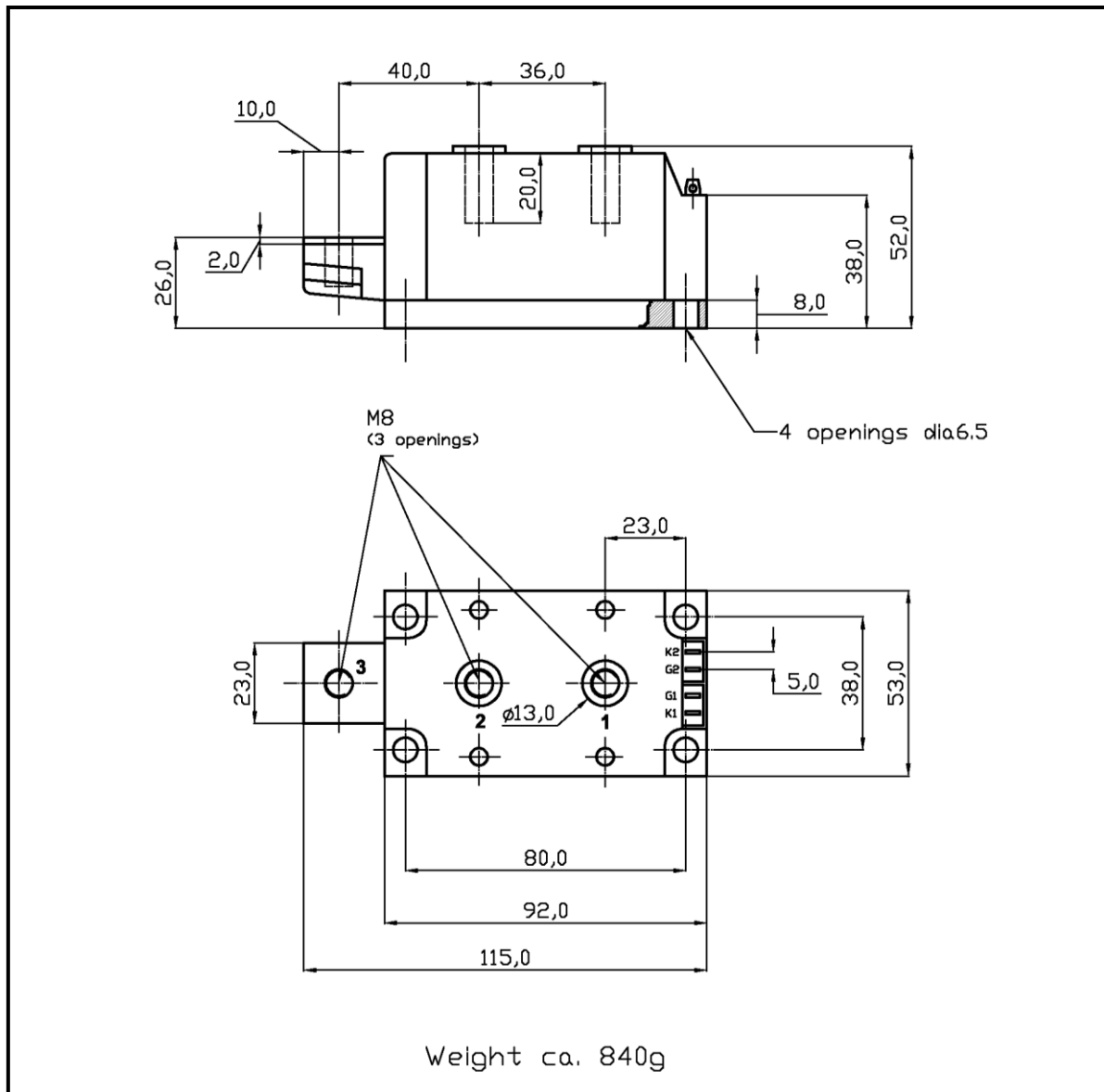
Terminal number:



# MT\_-300 Dual SCR Power Module

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## Package details

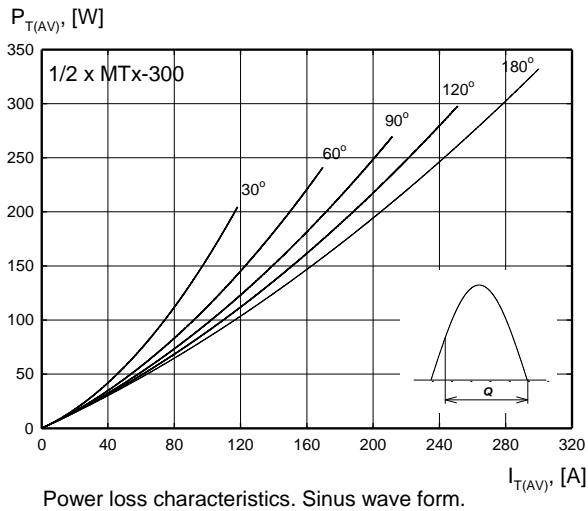


For further package information, please contact Sales & Marketing Department. All dimensions in mm, unless stated otherwise.  
Do not scale.

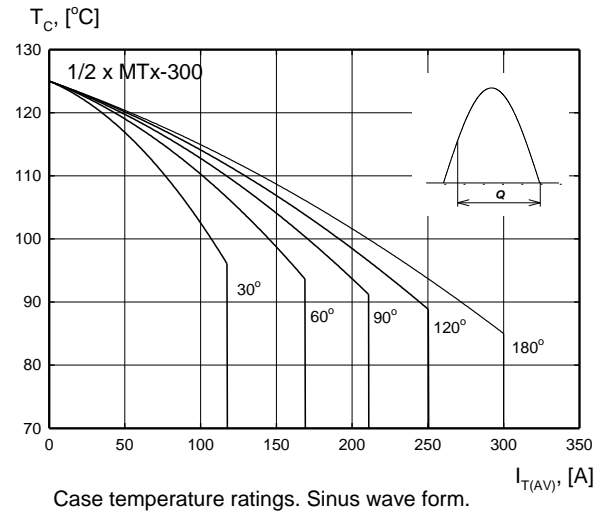
# MT\_-300 Dual SCR Power Module

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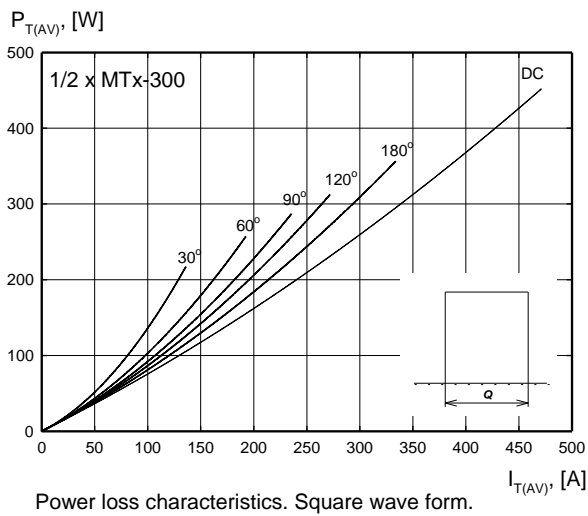
## CHARACTERISTICS



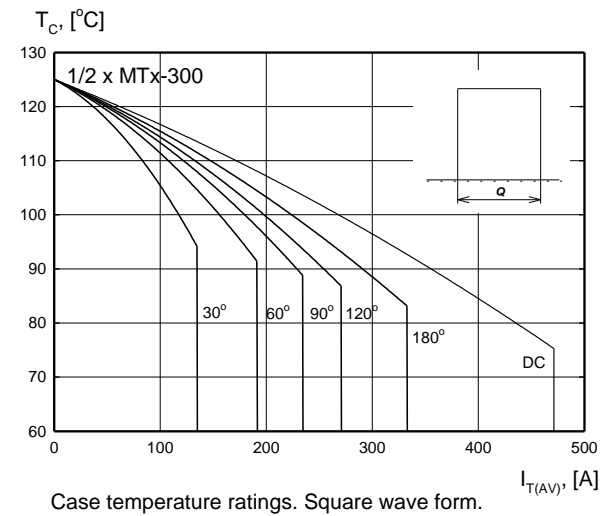
Power loss characteristics. Sinus wave form.



Case temperature ratings. Sinus wave form.



Power loss characteristics. Square wave form.

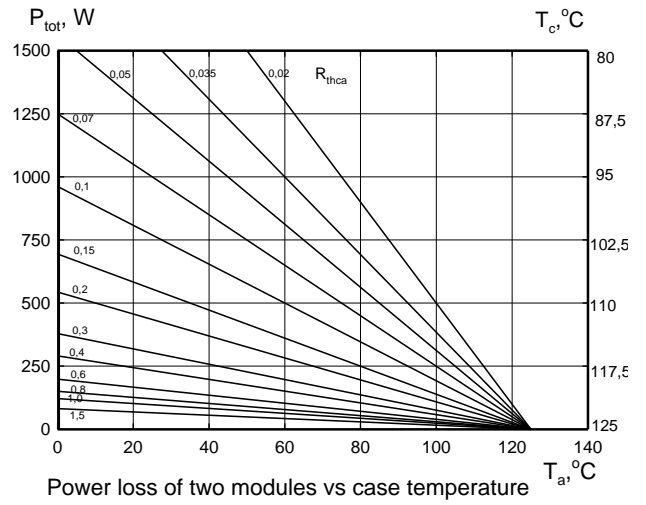
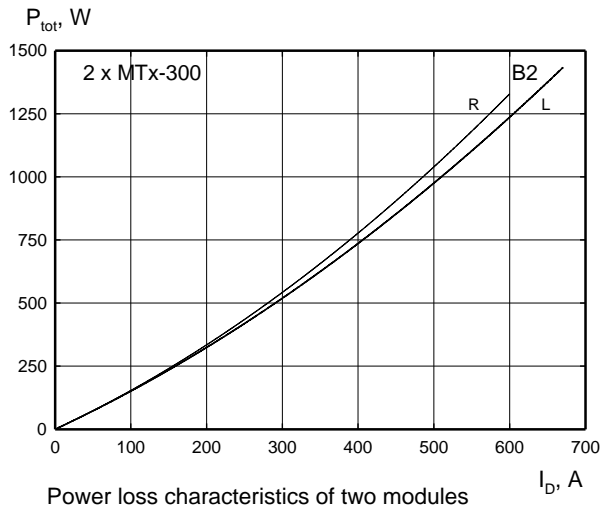
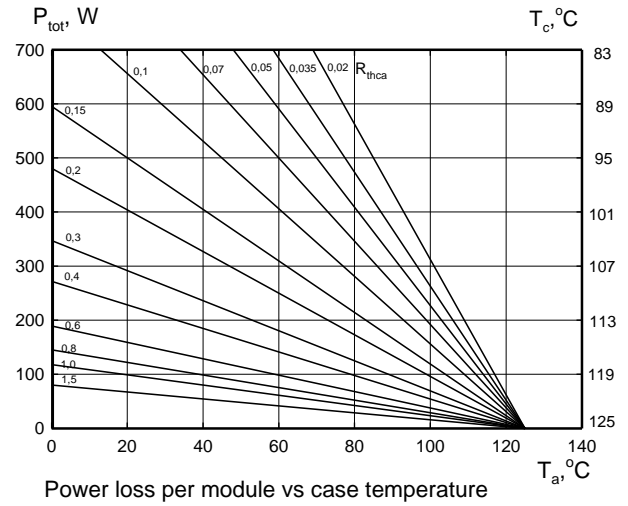
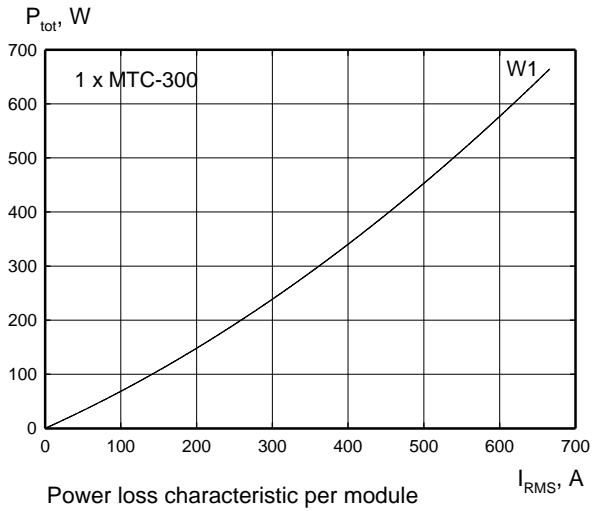


Case temperature ratings. Square wave form.

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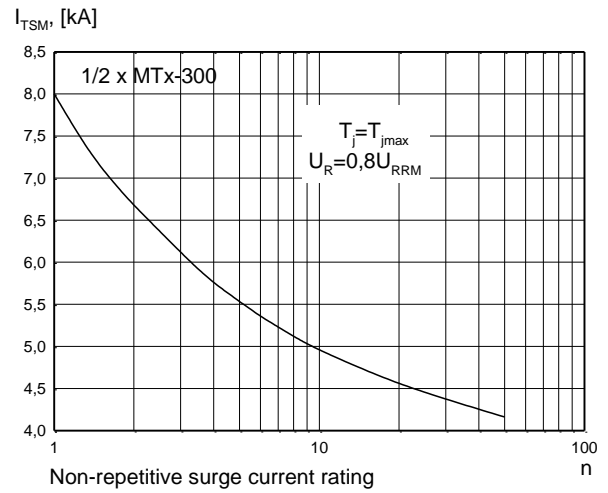
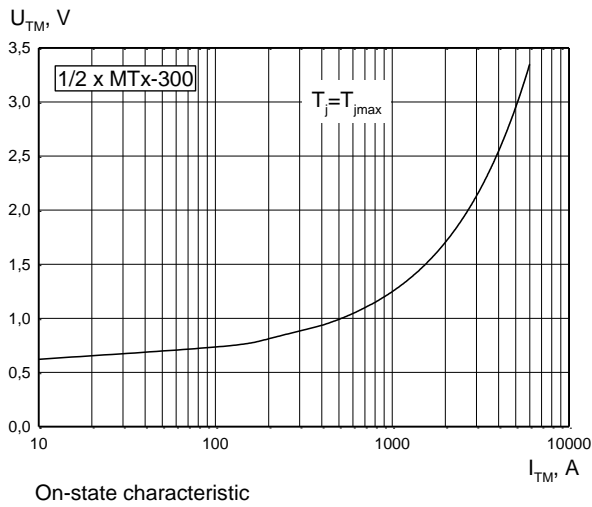
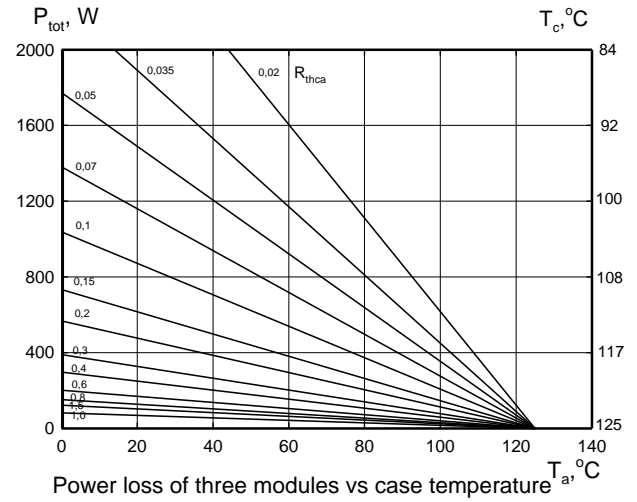
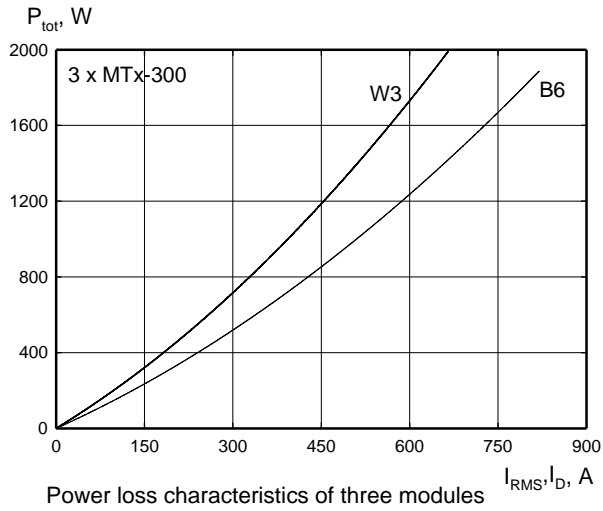


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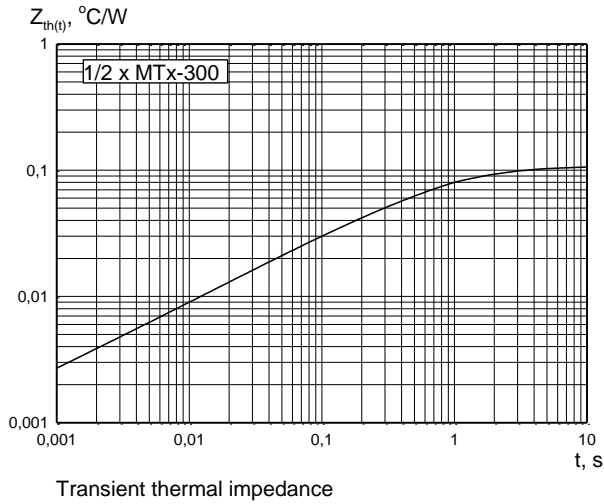
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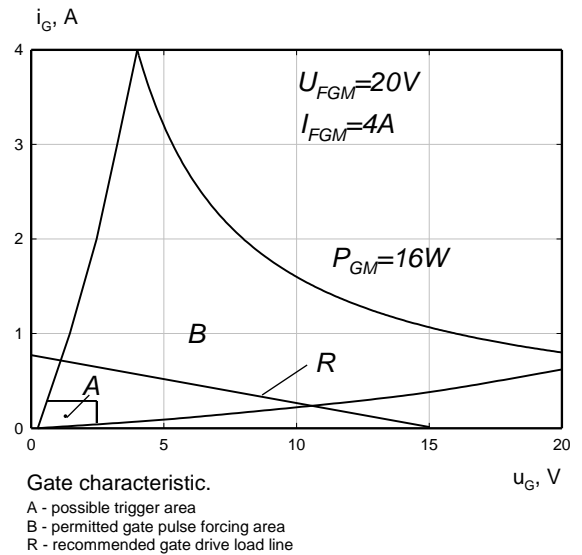
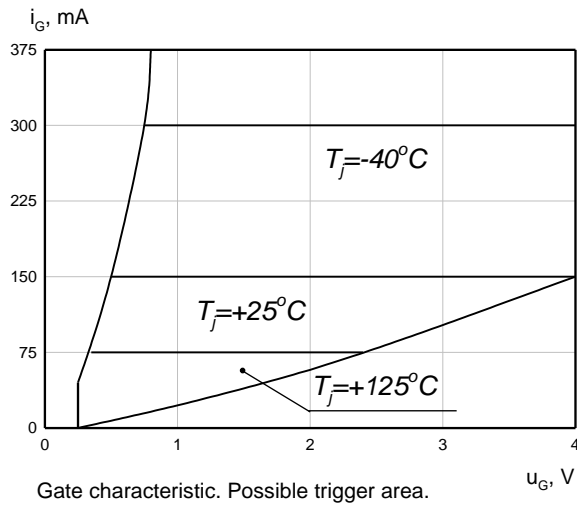


# MT\_-300 Dual SCR Power Module

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## GATE CHARACTERISTICS



# MT\_-300 Dual SCR Power Module



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## HEATSINKS

ZE LAMINA S.A. has its own proprietary range of extruded aluminium heatsinks designed to optimise the performance of our semiconductors with natural and forced air flow.

## POWER ASSEMBLY CAPABILITY

ZE LAMINA S.A. provides a support for those customers requiring more than a basic semiconductor and offers precisely assembled Power Blocks according to factory or customer standards.

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