

## Prospective Data

# Anode Shorted Gate Turn-Off Thyristor Types G2500HF250

### Absolute Maximum Ratings

|               | VOLTAGE RATINGS                                 | MAXIMUM LIMITS | UNITS |
|---------------|---|----------------|-------|
| $V_{DRM}$     | Repetitive peak off-state voltage, (note 1)     | 2500           | V     |
| $V_{RSM}$     | Non-repetitive peak off-state voltage, (note 1) | 2500           | V     |
| $V_{DC-link}$ | Maximum continuous DC-link voltage              | 1250           | V     |
| $V_{RRM}$     | Repetitive peak reverse voltage                 | 18             | V     |
| $V_{RSM}$     | Non-repetitive peak reverse voltage             | 18             | V     |

|              | RATINGS   | MAXIMUM LIMITS     | UNITS       |
|--------------|---|--------------------|-------------|
| $I_{TGQ}$    | Peak turn-off current, (note 2)                         | 2500               | A           |
| $L_s$        | Snubber loop inductance, $I_{TM}=I_{TGQ}$ , (note 2)    | 200                | nH          |
| $I_{T(AV)M}$ | Mean on-state current, $T_{sink}=55^{\circ}C$ (note 3)  | 1085               | A           |
| $I_{T(RMS)}$ | Nominal RMS on-state current, $25^{\circ}C$ (note 3)    | 2133               | A           |
| $I_{TSM}$    | Peak non-repetitive surge current $t_p=10ms$ , (Note 4) | 16                 | kA          |
| $I_{TSM2}$   | Peak non-repetitive surge current $t_p=2ms$ , (Note 4)  | 21                 | kA          |
| $I^2t$       | $I^2t$ capacity for fusing $t_p=10ms$                   | $1.28 \times 10^6$ | $A^2s$      |
| $di/dt_{cr}$ | Critical rate of rise of on-state current, (note 5)     | 500                | $A/\mu s$   |
| $P_{FGM}$    | Peak forward gate power                                 | 120                | W           |
| $P_{RGM}$    | Peak reverse gate power                                 | 12                 | kW          |
| $I_{FGM}$    | Peak forward gate current                               | 60                 | A           |
| $V_{RGM}$    | Peak reverse gate voltage (note 6).                     | 18                 | V           |
| $T_{j op}$   | Operating temperature range                             | -40 to +125        | $^{\circ}C$ |
| $T_{stg}$    | Storage temperature range                               | -40 to +125        | $^{\circ}C$ |

#### Notes:-

- 1)  $V_{GK}=-2Volts$ .
- 2)  $T_j=125^{\circ}C$ ,  $V_D=1250V$ ,  $V_{DM} \leq 2500V$   $di_{GQ}/dt=30A/\mu s$ ,  $I_{TGQ}=2500A$  and  $C_s=6\mu F$ .
- 3) Double-side cooled, single phase; 50Hz,  $180^{\circ}$  half-sinewave.
- 4)  $T_{j(initial)}=125^{\circ}C$ , single phase,  $180^{\circ}$  sinewave, re-applied voltage  $V_D=V_R \leq 10V$ .
- 5)  $I_T=3000A$  repetitive,  $I_{GM}=25A$ ,  $di_{GM}/dt=20A/\mu s$ . For  $di/dt > 500A/\mu s$  please consult the factory.
- 6) May exceed this value during turn-off avalanche period.

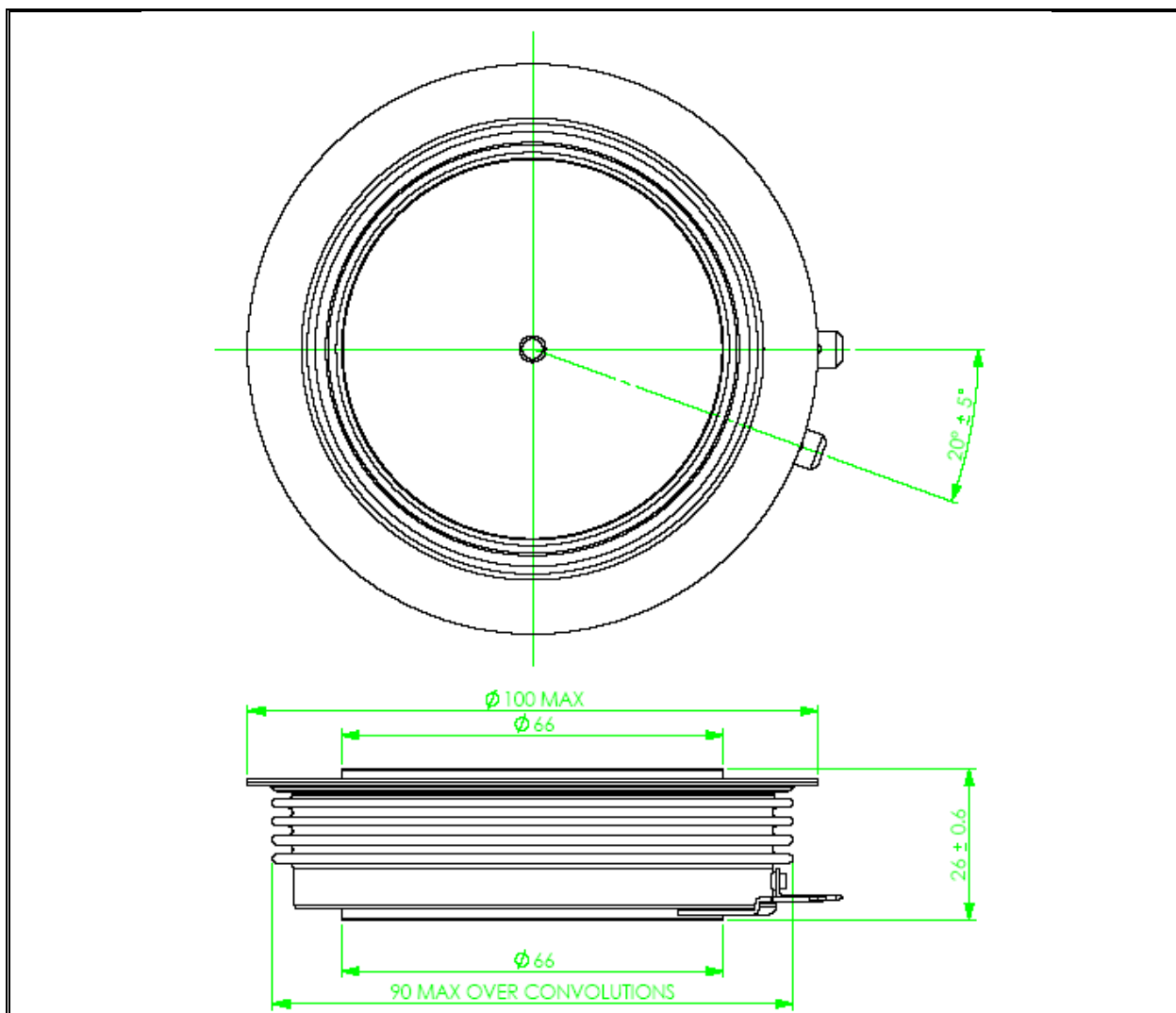
**Characteristics**

|              | Parameter                                  | MIN  | TYP | MAX | TEST CONDITIONS  | UNITS      |
|--------------|--|------|-----|-----|--|------------|
| $V_{TM}$     | Maximum peak on-state voltage              | -    | -   | 3.1 | $I_G=5A, I_T=2500A$  | V          |
| $I_L$        | Latching current                           | -    | 40  | -   | $T_j=25^\circ C$   | A          |
| $I_H$        | Holding current.                           | -    | 40  | -   | $T_j=25^\circ C$   | A          |
| $dv/dt_{cr}$ | Critical rate of rise of off-state voltage | 1000 | -   | -   | $V_D=3000V, V_{GR}=-2V$  | V/ $\mu s$ |
| $I_{DRM}$    | Peak off state current                     | -    | -   | 60  | Rated $V_{DRM}, V_{GR}=-2V$  | mA         |
| $I_{RRM}$    | Peak reverse current                       | -    | -   | 20  | $V_{RR}=18V$   | mA         |
| $I_{GKM}$    | Peak negative gate leakage current         | -    | -   | 20  | $V_{GR}=-18V$  | mA         |
| $V_{GT}$     | Gate trigger voltage                       | -    | 1.0 | -   | $T_j=-40^\circ C$  | V          |
|              |  | -    | 0.8 | 1.0 | $T_j=25^\circ C \quad V_D=25V, R_L=25m\Omega$  | V          |
|              |  | -    | 0.6 | -   | $T_j=125^\circ C$  | V          |
| $I_{GT}$     | Gate trigger current                       | -    | 8   | -   | $T_j=-40^\circ C$  | A          |
|              |  | -    | -   | 5   | $T_j=25^\circ C \quad V_D=25V, R_L=25m\Omega$  | A          |
|              |  | 50   | -   | 1   | $T_j=125^\circ C$  | mA         |
| $t_d$        | Delay time                                 | -    | 0.7 | 2   | $V_D=1250V, I_{TQG}=2500A, di_T/dt=200A/\mu s, I_{GM}=30A, di_G/dt=20A/\mu s, C_S=6\mu F, R_S=5\Omega$ | $\mu s$    |
| $t_{gt}$     | Turn-on time                               | -    | 3   | 5   |  | $\mu s$    |
| $E_{on}$     | Turn-on energy                             | -    | -   | 0.5 |  | J          |
| $t_f$        | Fall time                                  | -    | 2   | -   | $V_{DM}=2500V, I_{TQG}=2500A, di_{GQ}/dt=30A/\mu s, V_{GR}=-16V, C_S=6\mu F$                           | $\mu s$    |
| $t_s$        | Storage time                               | -    | -   | 26  |  | $\mu s$    |
| $t_{gq}$     | Turn-off time                              | -    | -   | 30  |  | $\mu s$    |
| $I_{GQM}$    | Peak turn-off gate current                 | -    | 680 | -   |  | A          |
| $Q_{GQ}$     | Turn-off gate charge                       | -    | 9   | -   |  | mC         |
| $t_{tail}$   | Tail time                                  | -    | 10  | -   |  | $\mu s$    |
| $E_{off}$    | Turn-off energy                            | -    | -   | 3.2 |  | J          |
| $R_{thJK}$   | Thermal resistance junction to sink        | -    | 20  | -   | Double side cooled   | K/kW       |
|              |  | -    | 44  | -   | Cathode side cooled  | K/kW       |
|              |  | -    | 37  | -   | Anode side cooled  | K/kW       |
| F            | Mounting force                             | 21   | -   | 26  | (see note 2)   | kN         |
| $W_t$        | Weight                                     | -    | 0.8 | -   |  | kg         |

Notes:-

- 1) Unless otherwise indicated  $T_j=125^\circ C$ .
- 2) For other clamping forces, consult factory.

**Outline Drawing & Ordering Information**



**ORDERING INFORMATION**

(Please quote 10 digit code as below)

|                 |              |                            |            |
|-----------------|--------------|----------------------------|------------|
| <b>G2500</b>    | <b>HF</b>    | <b>25</b>                  | <b>0</b>   |
| Fixed Type code | Outline code | Voltage code $V_{DRM}/100$ | Fixed code |

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