

TOSHIBA GATE TURN-OFF THYRISTOR

SG3000GXH29

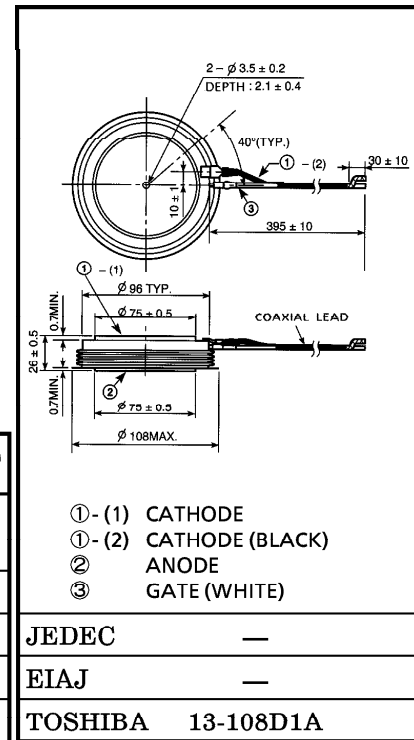
INVERTER APPLICATION

Unit in mm

- Repetitive Peak Off-State Voltage : $V_{DRM}=4500V$
- R.M.S On-State Current : $I_T(RMS)=1200A$
- Peak Turn-Off Current : $I_{TGQM}=3000A$
- Critical Rate of Rise of On-State Current : $di/dt=400A/\mu s$
- Critical Rate of Rise of Off-State Voltage : $dv/dt=1000V/\mu s$
- Suitable for 3000V DC Off-State Voltage Application

MAXIMUM RATINGS

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|--------------|-----------|-------------|
| Repetitive Peak Off-State Voltage (Note 1) | V_{DRM} | 4500 | V |
| Repetitive Peak Reverse Voltage | V_{RRM} | 17 | V |
| Peak Turn-Off Current (Note 2) | I_{TGQM} | 3000 | A |
| R.M.S On-State Current (Note 3) | $I_T(RMS)$ | 1200 | A |
| Peak One Cycle Surge On-State Current (Non Repetitive, 10ms-Width Half Sine Waveform) | I_{TSM} | 16000 | A |
| Critical Rate of Rise of On-State Current (Note 4) | di/dt | 400 | A / μs |
| Peak Forward Gate Current | I_{FGM} | 100 | A |
| Average Forward Gate Power Dissipation | $P_{FG}(AV)$ | 50 | W |
| Average Reverse Gate Power Dissipation | $P_{RG}(AV)$ | 150 | W |
| R.M.S Gate Current (Note 5) | $I_G(RMS)$ | 42 | A |
| Peak Reverse Gate Voltage (at Static) | V_{RGM} | 17 | V |
| Operating Junction Temperature Range | T_j | -40~125 | °C |
| Storage Temperature Range | T_{stg} | -40~150 | °C |
| Mounting Force | — | 28.5~44.0 | kN |



Weight : 1290g

Note 1 : $V_{GK} = -2V$

Note 2 : $V_{DM}=4500V$, $C_S=6\mu F$, $R_S=5\Omega$, $di_G/dt=50A/\mu s$, $V_{DSP} \leq 850V$,
 $L_S=200nH$ (Stray inductance of snubber [GTO-C_S-D_S] loop)

Note 3 : 50Hz Half Sine Waveform at $T_f=76^\circ C$ Note 4 : $V_D=3000V$, $I_{GM} \geq 25A$

Note 5 : Ambient Temperature of coaxial gate-cathode lead=90°C

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ELECTRICAL CHARACTERISTICS

| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--|---------------|---|--------------------|------|-------|---------------|
| Repetitive Peak Off-State Current | I_{DRM} | $V_{DRM}=4500V$, $V_{GK}=-2V$, $T_j=125^{\circ}C$ | — | — | 100 | mA |
| Repetitive Peak Reverse Current | I_{RRM} | $V_{RRM}=17V$, $T_j=125^{\circ}C$ | — | — | 10 | mA |
| Repetitive Peak Reverse Gate Current | I_{RGM} | $V_{RGM}=17V$, $T_j=125^{\circ}C$ | — | — | 10 | mA |
| Peak On-State Voltage | V_{TM} | $I_{TM}=3000A$, $T_j=125^{\circ}C$ | — | — | 4.0 | V |
| Gate Trigger Voltage | V_{GT} | $V_D=24V$, $R_L=0.1\Omega$ | $T_j=-40^{\circ}C$ | — | — | V |
| | | | $T_j=25^{\circ}C$ | — | 1.5 | |
| Gate Trigger Current | I_{GT} | | $T_j=-40^{\circ}C$ | — | — | A |
| | | | $T_j=25^{\circ}C$ | — | 3.5 | |
| Turn-On Delay Time | t_d | $V_D=2800V$, $di/dt=400A/\mu s$, $I_{TM}=3000A$, $I_{GM}=25A$, $T_j=25^{\circ}C$ | — | — | 3 | μs |
| Turn-On Time | t_{gt} | | — | — | 10 | μs |
| Critical Rate of Rise of Off-State Voltage | dv/dt | $V_D=3000V$, $V_{GK}=-2V$, Exponential Rise, $T_j=125^{\circ}C$ | 1000 | — | — | $V/\mu s$ |
| Storage Time | t_s | $I_{TGQ}=3000A$, $V_{DM}=4500V$, $C_S=6\mu F$, $V_D=3000V$, $R_S=5\Omega$, $di_{GQ}/dt=50A/\mu s$, $T_j=125^{\circ}C$, $V_{DSP}\leq 850V$ | — | — | 30 | μs |
| Gate Turn-Off Time | t_{gq} | | — | — | 33 | μs |
| Tail Time | t_{tail} | | — | — | 115 | μs |
| Gate Turn-Off Current | I_{GQ} | | — | 770 | — | A |
| Thermal Resistance (Junction to Fin) | $R_{th(j-f)}$ | DC | — | — | 0.014 | $^{\circ}C/W$ |

