

**TOSHIBA**

**SG800EX25**

TENTATIVE

TOSHIBA GATE TURN-OFF THYRISTOR

# SG800EX25

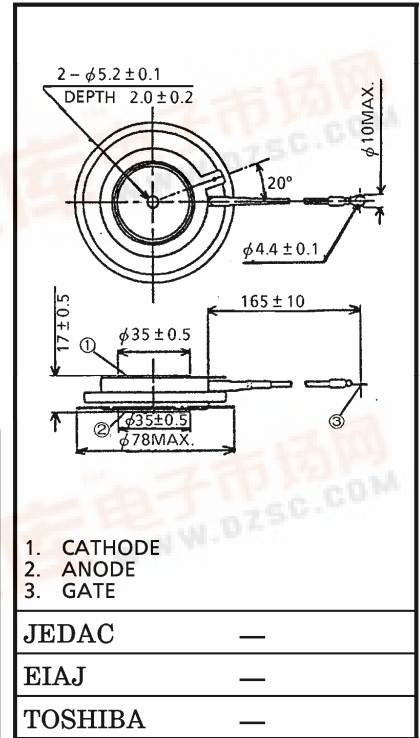
INVERTER APPLICATION

Unit in mm

- Repetitive Peak Off-State Voltage :  $V_{DRM}=2500V$  (Note 1)
- Repetitive Peak Reverse Voltage :  $V_{RRM}=1250V$
- R.M.S On-State Current :  $I_T(RMS)=400A$
- Peak Turn-Off Current :  $I_{TGQM}=800A$
- Critical Rate of Rise of On-State Current :  $di/dt=100A/\mu s$
- Critical Rate of Rise of Off-State Voltage :  $dv/dt=350V/\mu s$

MAXIMUM RATINGS

| CHARACTERISTIC  | SYMBOL       | RATING      | UNIT        |
|---|--------------|-------------|-------------|
| Repetitive Peak Off-State Voltage (Note 1)  | $V_{DRM}$    | 2500        | V           |
| Repetitive Peak Reverse Voltage   | $V_{RRM}$    | 1250        | V           |
| Peak Turn-Off Current (Note 2)  | $I_{TGQM}$   | 800         | A           |
| R.M.S On-State Current (Note 3)   | $I_T(RMS)$   | 400         | A           |
| Peak One Cycle Surge On-State Current (Non Repetitive, 10ms-Width Half Sine Waveform) | $I_{TSM}$    | 5000 (50Hz) | A           |
|   |              | 5500 (60Hz) |             |
| Critical Rate of Rise of On-State Current (Note 4)                                    | $di/dt$      | 100         | A / $\mu s$ |
| Peak Forward Gate Current   | $I_{FGM}$    | 10          | A           |
| Average Gate Forward Power Dissipation  | $P_{FG(AV)}$ | 4           | W           |
| R.M.S Gate Current (Note 5)   | $I_G(RMS)$   | 35          | A           |
| Peak Reverse Gate Voltage (At Static)   | $V_{RGM}$    | 15          | V           |
| Operation Junction Temperature Range  | $T_j$        | -40~115     | °C          |
| Storage Temperature Range   | $T_{stg}$    | -40~115     | °C          |
| Mounting Force  | —            | 11.8±1.2    | kN          |



Weight : 260g

(Note 1)  $R_{GK}=20\Omega$

(Note 2)  $V_D=1250V, V_{DM}\leq 2/3V_{DRM}, C_S\geq 2\mu F, di_{GQ}/dt\geq 30A/\mu s, V_{DSP}\leq 600V, L_S\leq 0.2\mu H$

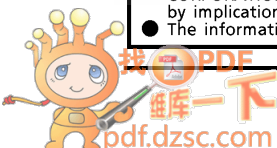
(Note 3) 50Hz Half Sine Waveform

(Note 4)  $V_D\leq 1250V, I_{TM}\leq 800A, I_G\geq 5A (t_r\leq 1\mu s), f\leq 50Hz, C_S\leq 2\mu F, R_S\geq 20\Omega, 25^\circ C\leq T_j\leq 115^\circ C$

(Note 5) Ambient Temperature of gate and cathode lead=90°C

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## ELECTRICAL CHARACTERISTICS

| CHARACTERISTICS                            | SYMBOL        | TEST CONDITION   | MIN.                | TYP. | MAX. | UNIT         |    |
|--|---------------|--|---------------------|------|------|--------------|----|
| Repetitive Peak Off-State Current          | $I_{DRM}$     | $V_{DRM} = 2500V$ , $V_{GK} = -2V$<br>$T_j = 115^\circ C$                          | —                   | —    | 50   | mA           |    |
| Repetitive Peak Reverse Current            | $I_{RRM}$     | $V_{RRM} = 1250V$<br>$T_j = 115^\circ C$   | —                   | —    | 50   | mA           |    |
| Repetitive Peak Reverse Gate Current       | $I_{RGM}$     | $V_{RGM} = 15V$<br>$T_j = 115^\circ C$   | —                   | —    | 10   | mA           |    |
| Peak On-State Voltage                      | $V_{TM}$      | $I_{TM} = 600A$ , $T_j = 25^\circ C$   | —                   | —    | 2.5  | V            |    |
| Gate Trigger Voltage                       | $V_{GT}$      | $V_D = 24V$<br>$R_L = 0.1\Omega$   | $T_j = -40^\circ C$ | —    | —    | —            | V  |
|  |               |  | $T_j = 25^\circ C$  | —    | 0.65 | 2.0          | V  |
| Gate Trigger Current                       | $I_{GT}$      |  | $T_j = -40^\circ C$ | —    | 400  | —            | mA |
|  |               |  | $T_j = 25^\circ C$  | —    | 120  | 350          | mA |
| Turn-On Delay Time                         | $t_d$         | $V_D = 1250V$ , $I_{TM} = 800A$<br>$di/dt = 100A/\mu s$                            | —                   | —    | 4.0  | $\mu s$      |    |
| Turn-On Time                               | $t_{gt}$      | $I_{GM} = 5A$ ( $t_r = 1\mu s$ )<br>$T_j = 25^\circ C$ , non-snubber               | —                   | —    | 10   | $\mu s$      |    |
| Critical Rate of Rise of Off-State Voltage | $dv/dt$       | $V_{DRM} = 2/3V_{DRM}$<br>$T_j = 115^\circ C$ , $V_{GK} = -4V$<br>Exponential Rise | 350                 | —    | —    | $V/\mu s$    |    |
| Storage Time                               | $t_s$         | $I_{TGQ} = 600A$   | —                   | —    | 15   | $\mu s$      |    |
| Gate Turn-Off Time                         | $t_{gq}$      | $V_{DM} = 2/3V_{DRM}$ , $T_j = 115^\circ C$<br>( $V_D = 1250V$ ), $C_S = 2\mu F$   | —                   | —    | 18   | $\mu s$      |    |
| Tail Time                                  | $t_{tail}$    | $di_{GQ}/dt = 30A/\mu s$   | —                   | 150  | —    | $\mu s$      |    |
| Gate Turn-Off Current                      | $I_{GQ}$      | Off squeeze current $\geq 300mA$   | —                   | 180  | —    | A            |    |
| Thermal Resistance                         | $R_{th(j-f)}$ | Junction to fin  | —                   | —    | 0.04 | $^\circ C/W$ |    |