

TOSHIBA GATE TURN-OFF THYRISTOR

SG800R24, SG800U24, SG800W24, SG800EX24

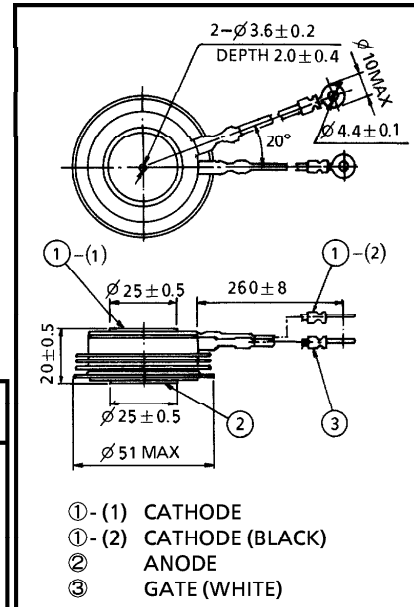
CHOPPER, INVERTER APPLICATION

Unit in mm

- Repetitive Peak Off-State Voltage : $V_{DRM}=1300, 1600, 1800, 2500V$
- R.M.S On-State Current : $I_T(RMS)=360A$
- Peak Turn-Off Current : $I_{TGQM}=800A$
- Critical Rate of Rise of On-State Current : $di/dt=200A/\mu s$
- Critical Rate of Rise of Off-State Voltage : $dv/dt=1000V/\mu s$

MAXIMUM RATINGS

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|---|-----------|--------------|----------|-------------|
| Repetitive Peak Off-State Voltage (Note 1) | SG800R24 | V_{DRM} | 1300 | V |
| | SG800U24 | | 1600 | |
| | SG800W24 | | 1800 | |
| | SG800EX24 | | 2500 | |
| Repetitive Peak Reverse Voltage | | V_{RRM} | 15 | V |
| Peak Turn-Off Current (Note 2) | | I_{TGQM} | 800 | A |
| R.M.S On-State Current (Note 3) | | $I_T(RMS)$ | 360 | A |
| Peak One Cycle Surge On-State Current (Non-Repetitive, 10ms-Width Half Sine Waveform) | | I_{TSM} | 4000 | A |
| Critical Rate of Rise of On-State Current (Note 4) | | di/dt | 200 | A / μs |
| Peak Forward Gate Current | | I_{FGM} | 30 | A |
| Average Forward Gate Power Dissipation | | $P_{FG(AV)}$ | 6 | W |
| Average Reverse Gate Power Dissipation | | $P_{RG(AV)}$ | 20 | W |
| R.M.S Gate Current | | $I_G(RMS)$ | 35 | A |
| Peak Reverse Gate Voltage (at Static) | | V_{RGM} | 15 | V |
| Operating Junction Temperature Range | | T_j | -40~125 | °C |
| Storage Temperature Range | | T_{stg} | -40~150 | °C |
| Mounting Force | | — | 6.9±0.69 | kN |



| | |
|---------|----------|
| JEDEC | — |
| EIAJ | — |
| TOSHIBA | 13-51B2A |

Weight : 160g

Note 1. $R_{GK}=20\Omega$

Note 2. $V_{DM}=2/3$ Rated, $C_S=2\mu F$, $R_S=20\Omega$, $di_{GQ}/dt=20A/\mu s$, $V_{DSP}\leq 450V$,
 $L_S\leq 0.3\mu H$

Note 3. Half Sine Waveform, $T_f=80^\circ C$

Note 4. $V_D=1/2$ Rated, $I_G=12A$

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ELECTRICAL CHARACTERISTICS

| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT | |
|--|--------------------------|---|---------------------------|------|------|---------------------------|---|
| Repetitive Peak Off-State Current | I_{DRM} | $V_{DRM} = \text{Rated}$, $R_{GK} = 20\Omega$, $T_j = 125^\circ\text{C}$ | — | — | 10 | mA | |
| Repetitive Peak Reverse Current | I_{RRM} | $V_{RRM} = \text{Rated}$, $T_j = 125^\circ\text{C}$ | — | — | 5 | mA | |
| Repetitive Peak Reverse Gate Current | I_{RGM} | $V_{RGM} = \text{Rated}$, $T_j = 125^\circ\text{C}$ | — | — | 5 | mA | |
| Peak On-State Voltage | V_{TM} | $I_{TM} = 800\text{A}$, $T_j = 125^\circ\text{C}$ | — | — | 2.8 | V | |
| Gate Trigger Voltage | V_{GT} | $V_D = 12\text{V}$, $R_L = 0.5\Omega$ | $T_j = -40^\circ\text{C}$ | — | — | 1.5 | V |
| | $T_j = 25^\circ\text{C}$ | | — | 0.75 | 1.0 | | |
| Gate Trigger Current | I_{GT} | | $T_j = -40^\circ\text{C}$ | — | — | 2.0 | A |
| | $T_j = 25^\circ\text{C}$ | | — | — | 0.7 | | |
| Turn-On Delay Time | t_d | $V_D = 1/2 \text{ Rated}$, $di/dt = 200\text{A}/\mu\text{s}$, $I_{TM} = 800\text{A}$, $I_G = 12\text{A}$, $t_r = 1\mu\text{s}$, $T_j = 25^\circ\text{C}$ | — | — | 2.0 | μs | |
| Turn-On Time | t_{gt} | | — | — | 6.0 | μs | |
| Critical Rate of Rise of Off-State Voltage | dv/dt | $V_{DRM} = 2/3 \text{ Rated}$, $T_j = 125^\circ\text{C}$, $V_{GK} = -2\text{V}$, Exponential Rise | 1000 | — | — | $\text{V}/\mu\text{s}$ | |
| Storage Time | t_s | $I_T = 800\text{A}$, $V_D = 1/2 \text{ Rated}$, $V_{DM} = 2/3 \text{ Rated}$, $C_S = 2\mu\text{F}$, $R_S = 20\Omega$, $R = 20\Omega$, $diGQ/dt = 20\text{A}/\mu\text{s}$, $T_j = 125^\circ\text{C}$ | — | — | 14 | μs | |
| Gate Turn-Off Time | t_{gq} | | — | — | 16 | μs | |
| Tail Time | t_{tail} | | — | — | 76 | μs | |
| Gate Turn-Off Current | I_{GQ} | | — | 180 | — | A | |
| Thermal Resistance (Junction to Fin) | $R_{th(j-f)}$ | DC | — | — | 0.07 | $^\circ\text{C}/\text{W}$ | |

