查询SG3000JX24供应商 捷多邦，专业PCB打样工厂，24小时加急出货



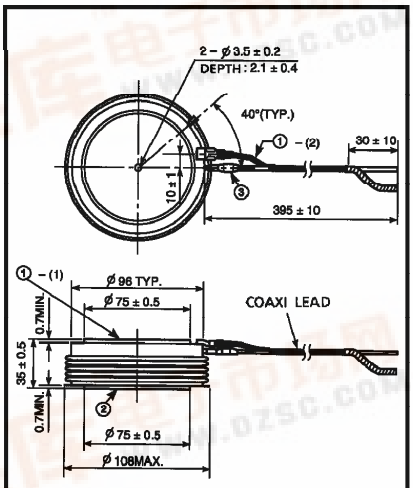
TOSHIBA GATE TURN-OFF THYRISTOR

# SG3000JX24

INVERTER APPLICATION

Unit in mm

- Repetitive Peak Off-State Voltage : $V_{DRM}$ = 6000V
- 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 = 1350V / $\mu$s




①-(1) CATHODE
①-(2) CATHODE (BLACK)
② ANODE
③ GATE (WHITE)

| | |
|---|---|
| JEDEC | — |
| EIAJ | — |
| TOSHIBA | 13-108E1A |

Weight : 1700g

MAXIMUM RATINGS

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Repetitive Peak Off-State Voltage (Note 1) | $V_{DRM}$ | 6000 | V |
| Repetitive Peak Reverse Voltage | $V_{RRM}$ | 16 | 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 / $\mu$s |
| 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) | $I_{G(RMS)}$ | 50 | A |
| Peak Reverse Gate Voltage (at Static) | $V_{RGM}$ | 16 | V |
| Operating Junction Temperature Range | $T_j$ | −40~125 | °C |
| Storage Temperature Range | $T_{stg}$ | −40~150 | °C |
| Mounting Force | — | 33.3±4.9 | kN |

Note 1. $V_{GK}$ = −2V
Note 2. $V_{DM}$ = 5000V, $C_S$ = 6$\mu$F, $R_S$ = 5Ω, $di_{GQ}/dt$ = 50A / $\mu$s, $V_{DSP} \leqq$ 850V, $L_S \leqq$ 0.3$\mu$H
Note 3. 50Hz Half Sine Waveform at $T_f$ = 76°C
Note 4. $V_D = 1/2V_{DRM}$, $I_{GM}$ = 25A
Note 5. Ambient Temperature of coaxial gate-cathode lead = 90°C

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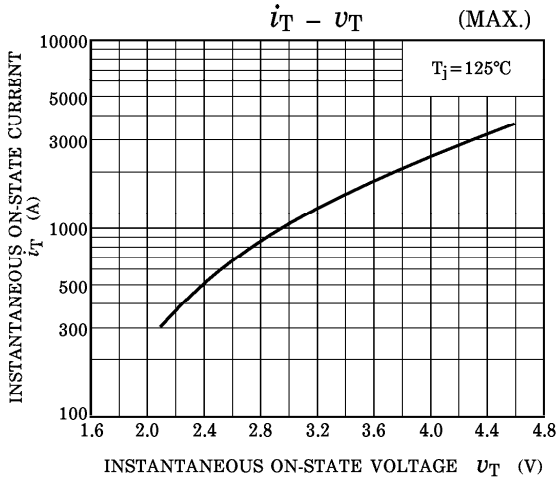
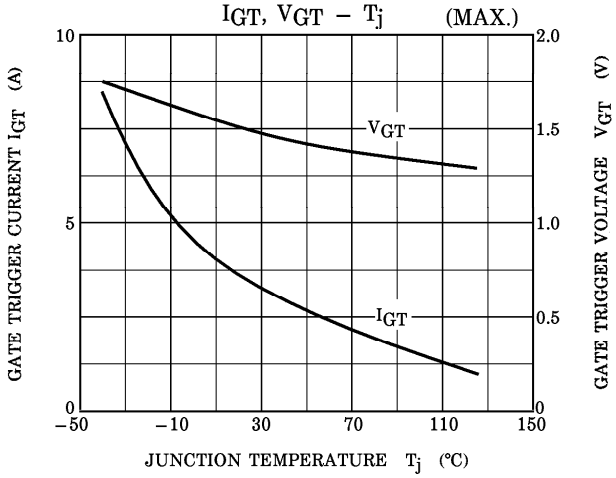
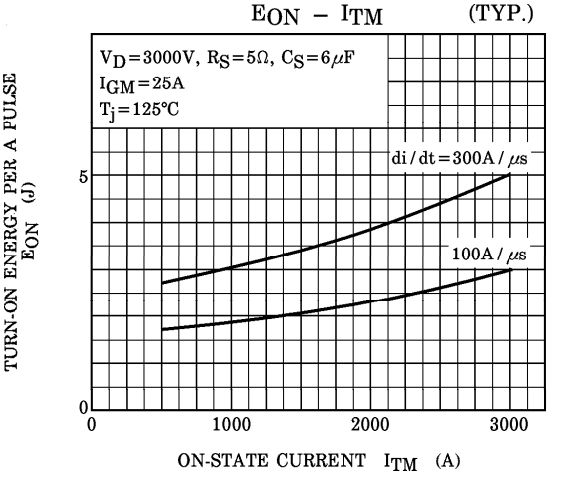
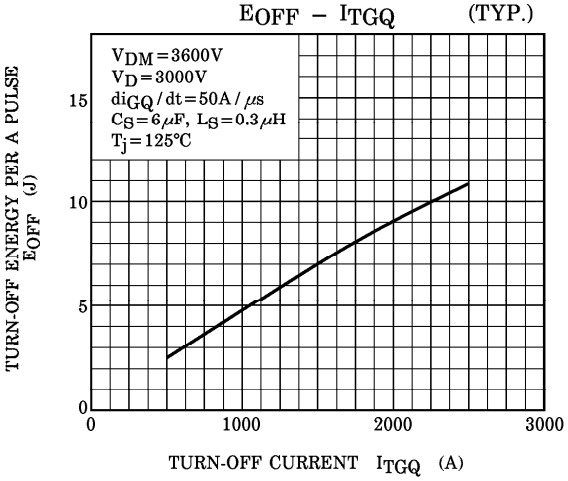
ELECTRICAL CHARACTERISTICS

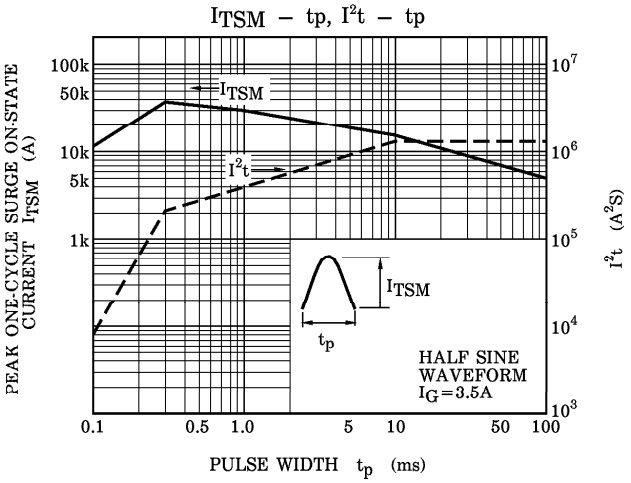
| CHARACTERISTIC | SYMBOL | TEST CONDITION | | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| Repetitive Peak Off-State Current | $I_{DRM}$ | $V_{DRM}$ = Rated, $V_{GK}$ = −2V, $T_j$ = 125°C | | — | — | 150 | mA |
| Repetitive Peak Reverse Current | $I_{RRM}$ | $V_{RRM}$ = Rated, $T_j$ = 125°C | | — | — | 10 | mA |
| Repetitive Peak Reverse Gate Current | $I_{RGM}$ | $V_{RGM}$ = 16V, $T_j$ = 125°C | | — | — | 10 | mA |
| Peak On-State Voltage | $V_{TM}$ | $I_{TM}$ = 3000A, $T_j$ = 125°C | | — | — | 4.3 | V |
| Gate Trigger Voltage | $V_{GT}$ | $V_D$ = 24V, $R_L$ = 0.1Ω | $T_j$ = −40°C | — | — | 1.7 | V |
| | | | $T_j$ = 25°C | — | — | 1.5 | |
| Gate Trigger Current | $I_{GT}$ | | $T_j$ = −40°C | — | — | 10 | A |
| | | | $T_j$ = 25°C | — | — | 3.5 | |
| Turn-On Delay Time | $t_d$ | $V_D$ = 1/2$V_{DRM}$, $I_{TM}$ = 3000A, di/dt = 400A/μs, $I_{GM}$ = 25A, $T_j$ = 25°C | | — | — | 3 | μs |
| Turn-On Time | $t_{gt}$ | | | — | — | 10 | μs |
| Critical Rate of Rise of Off-State Voltage | dv/dt | $V_{DRM}$ = 2/3RATED, $T_j$ = 125°C, $V_{GK}$ = −2V | | 1350 | — | — | V/μs |
| Storage Time | $t_s$ | $I_{TGQ}$ = 3000A, $V_{DM}$ = 5000V, $V_D$ = 1/2$V_{DRM}$, $di_{GQ}/dt$ = 50A/μs, $C_S$ = 6μF, $R_S$ = 5Ω, $T_j$ = 125°C, $L_S \leqq$ 0.3μF | | — | — | 28 | μs |
| Gate Turn-Off Time | $t_{gq}$ | | | — | — | 30 | μs |
| Tail Time | $t_{tail}$ | | | — | — | 115 | μs |
| Gate Turn-Off Current | $I_{GQ}$ | | | — | 800 | — | A |
| Thermal Resistance (Junction to Fin) | $R_{th\,(j\text{-}f)}$ | DC | | — | — | 0.017 | °C/W |

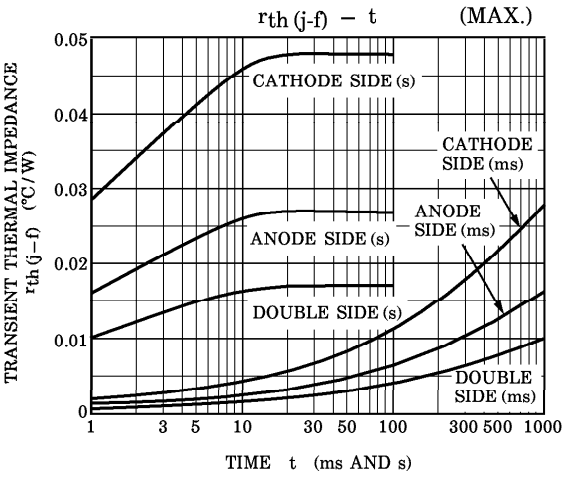

$i_T$ – $v_T$ (MAX.)
$T_j$=125°C
INSTANTANEOUS ON-STATE CURRENT $i_T$ (A)
INSTANTANEOUS ON-STATE VOLTAGE $v_T$ (V)


$I_{GT}$, $V_{GT}$ – $T_j$ (MAX.)
$V_{GT}$
$I_{GT}$
GATE TRIGGER CURRENT $I_{GT}$ (A)
GATE TRIGGER VOLTAGE $V_{GT}$ (V)
JUNCTION TEMPERATURE $T_j$ (°C)


$E_{ON}$ – $I_{TM}$ (TYP.)
$V_D$=3000V, $R_S$=5Ω, $C_S$=6μF
$I_{GM}$=25A
$T_j$=125°C
di/dt=300A/μs
100A/μs
TURN-ON ENERGY PER A PULSE $E_{ON}$ (J)
ON-STATE CURRENT $I_{TM}$ (A)


$E_{OFF}$ – $I_{TGQ}$ (TYP.)
$V_{DM}$=3600V
$V_D$=3000V
$di_{GQ}/dt$=50A/μs
$C_S$=6μF, $L_S$=0.3μH
$T_j$=125°C
TURN-OFF ENERGY PER A PULSE $E_{OFF}$ (J)
TURN-OFF CURRENT $I_{TGQ}$ (A)


$I_{TSM}$ – tp, $I^2t$ – tp
$I_{TSM}$
$I^2t$
$t_p$
HALF SINE WAVEFORM
$I_G$=3.5A
PEAK ONE-CYCLE SURGE ON-STATE CURRENT $I_{TSM}$ (A)
$I^2t$ ($A^2S$)
PULSE WIDTH $t_p$ (ms)


$r_{th}$ (j-f) – t (MAX.)
CATHODE SIDE (s)
CATHODE SIDE (ms)
ANODE SIDE (s)
ANODE SIDE (ms)
DOUBLE SIDE (s)
DOUBLE SIDE (ms)
TRANSIENT THERMAL IMPEDANCE $r_{th}$ (j–f) (°C/W)
TIME t (ms AND s)