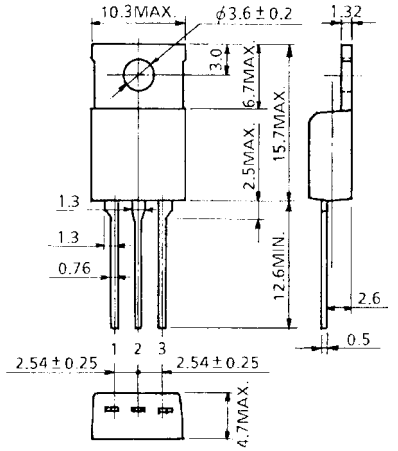
TOSHIBA THYRISITOR SILICON PLANAR TYPE

# SF5G42,SF5J42

Unit: mm

## MEDIUM POWER CONTROL APPLICATIONS

- Repetitive Peak Off−State Voltage : $V_{DRM}$ = 400, 600V
  Repetitive Peak Reverse Voltage : $V_{RRM}$ = 400, 600V
- Average On−State Current : $I_{T(AV)}$ = 5A
- JEDEC TO−220AB Package.



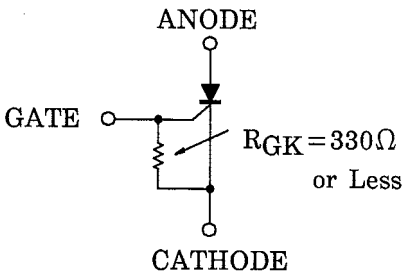

| | |
|---|---|
| JEDEC | TO−220AB |
| JEITA | — |
| TOSHIBA | 13−10G1B |

Weight: 2g

## MAXIMUM RATINGS

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|---|---|---|---|---|
| Repetitive Peak Off−State Voltage and Repetitive Peak Reverse Voltage (RGK = 330Ω) | SF5G42 | $V_{DRM}$ $V_{RRM}$ | 400 | V |
| | SF5J42 | | 600 | |
| Non−Repetitive Peak Reverse Voltage (Non−Repetitive<5ms, Tj = 0~125°C, RGK = 330Ω) | SF5G42 | $V_{RSM}$ | 500 | V |
| | SF5J42 | | 720 | |
| Average On−State Current (Half Sine Waveform Tc = 91°C) | | $I_{T\ (AV)}$ | 5 | A |
| R.M.S On−State Current | | $I_{T\ (RMS)}$ | 7.8 | A |
| Peak One Cycle Surge On−State Current (Non−Repetitive) | | $I_{TSM}$ | 80 (50Hz) | A |
| | | | 88 (60Hz) | |
| $I^2t$ Limit Value | | $I^2t$ | 32 | $A^2s$ |
| Peak Gate Power Dissipation | | $P_{GM}$ | 0.5 | W |
| Average Gate Power Dissipation | | $P_{G\ (AV)}$ | 0.05 | W |
| Peak Forward Gate Voltage | | $V_{FGM}$ | 5 | V |
| Peak Reverse Gate Voltage | | $V_{RGM}$ | −5 | V |
| Peak Forward Gate Current | | $I_{GM}$ | 200 | mA |
| Junction Temperature | | $T_j$ | −40~125 | °C |
| Storage Temperature Range | | $T_{stg}$ | −40~125 | °C |

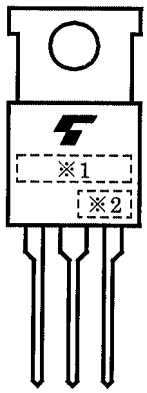
Note: Should be used with gate resistance as follows.



## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

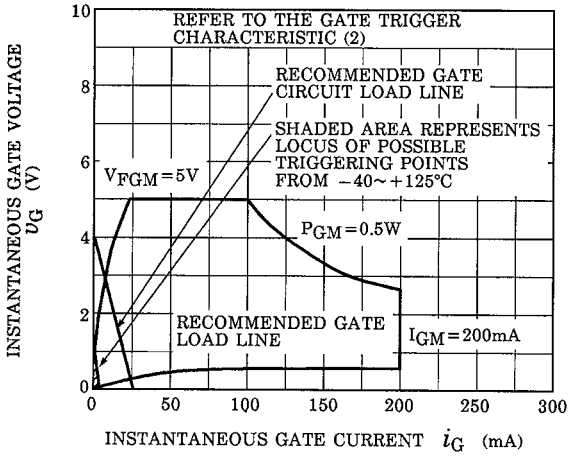
| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN | TYP. | MAX | UNIT |
|---|---|---|---|---|---|---|
| Repetitive Peak Off−State Current and Repetitive Peak Reverse Current | $I_{DRM}$ $I_{RRM}$ | $V_{DRM} = V_{RRM}$ = Rated $T_j$ = 125°C, $R_{GK}$ = 330Ω | — | — | 2 | mA |
| Peak On−State Voltage | $V_{TM}$ | $I_{TM}$ = 15A | — | — | 1.6 | V |
| Gate Trigger Voltage | $V_{GT}$ | $V_D$ = 6V, $R_L$ = 100Ω $R_{GK}$ = 330Ω | — | — | 0.8 | V |
| Gate Trigger Current | $I_{GT}$ | | — | — | 200 | μA |
| Gate Non−Trigger Voltage | $V_{GD}$ | $V_D$ = Rated × 2 / 3, Tc = 125°C | 0.2 | — | — | V |
| Critical Rate of Rise of Off−State Voltage | dv / dt | $V_{DRM}$ = Rated × 2 / 3, Tc = 75°C $R_{GK}$ = 330Ω, Exponential Rise | — | 50 | — | V / μs |
| Holding Current | $I_H$ | $R_L$ = 100Ω, $R_{GK}$ = 330Ω | — | 4 | — | mA |
| Thermal Resistance | $R_{th\ (j-c)}$ | Junction to Case | — | — | 3 | °C / W |

## MARKING

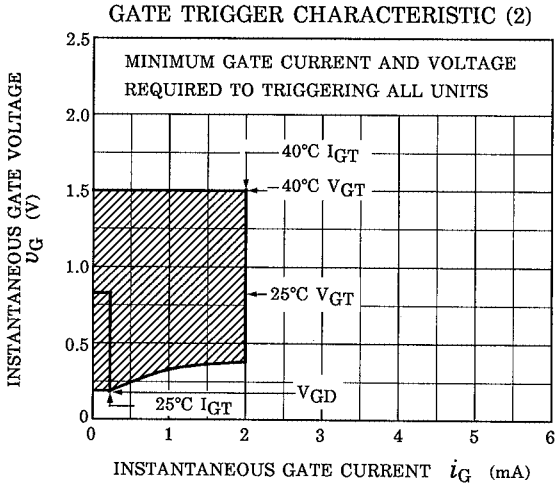



| NUMBER | SYMBOL | | MARK |
|---|---|---|---|
| *1 | TYPE | SF5G42 | SF5G42 |
| | | SF5J42 | SF5J42 |
| *2 | Lot Number<br>Month (Starting from Alphabet A)<br>Year (Last Decimal Digit of the Current Year) | | Example<br>8A : January 1998<br>8B : February 1998<br>8L : December 1998 |

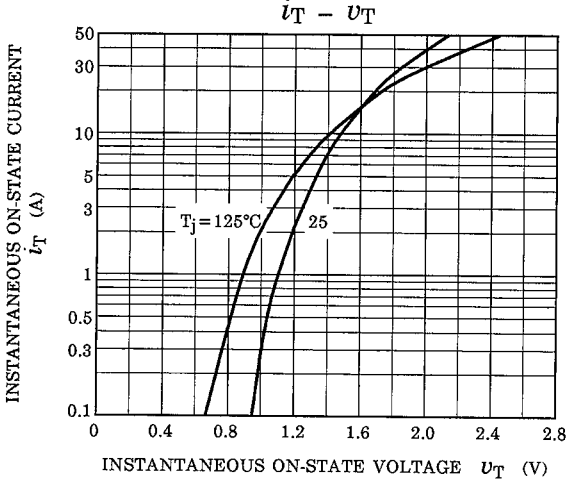
GATE TRIGGER CHARACTERISTIC (1)



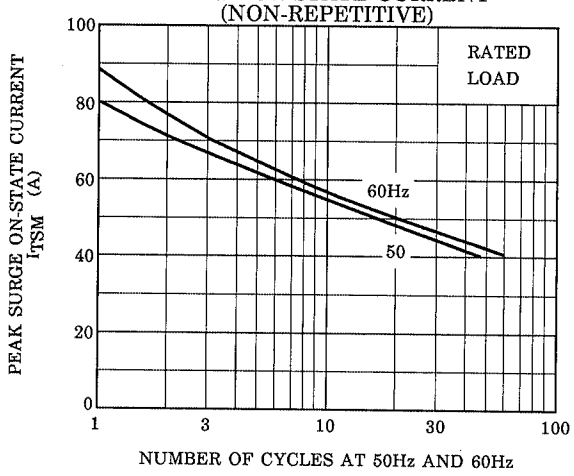

GATE TRIGGER CHARACTERISTIC (2)



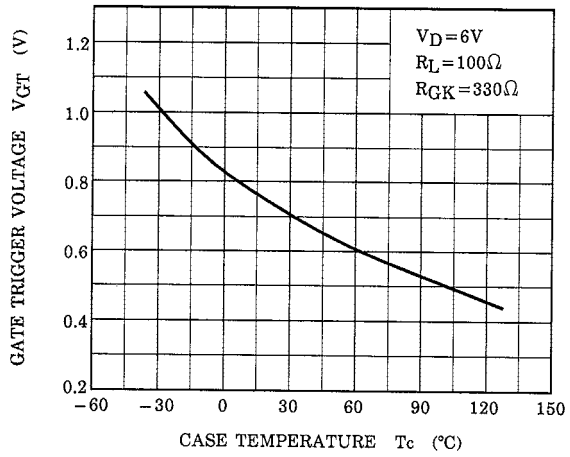

$i_T - v_T$



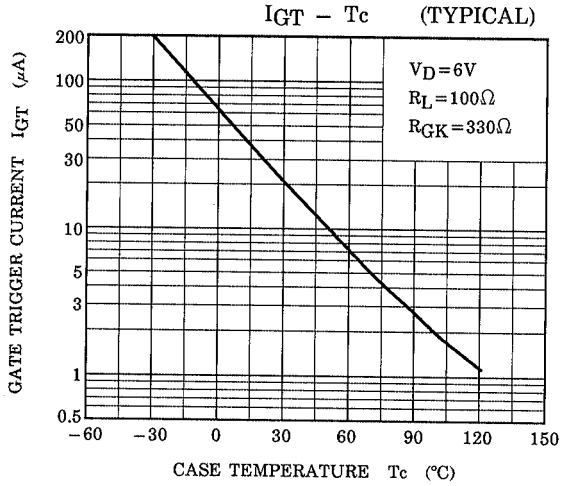

SURGE ON-STATE CURRENT (NON-REPETITIVE)



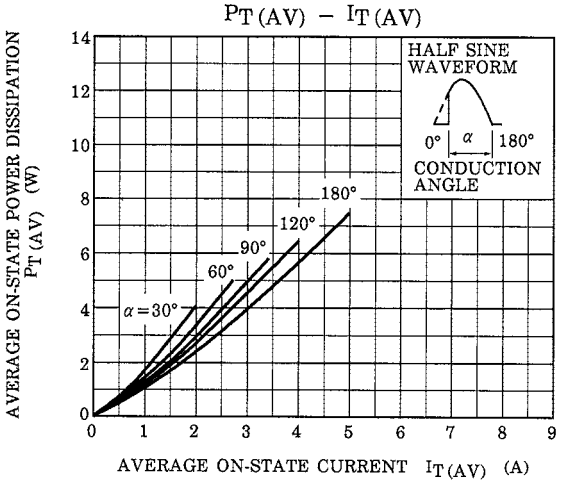

$V_{GT}$ – Tc (TYPICAL)



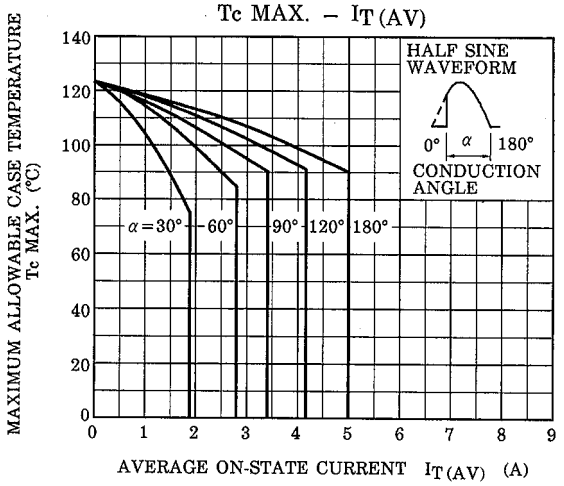

$I_{GT}$ – Tc (TYPICAL)



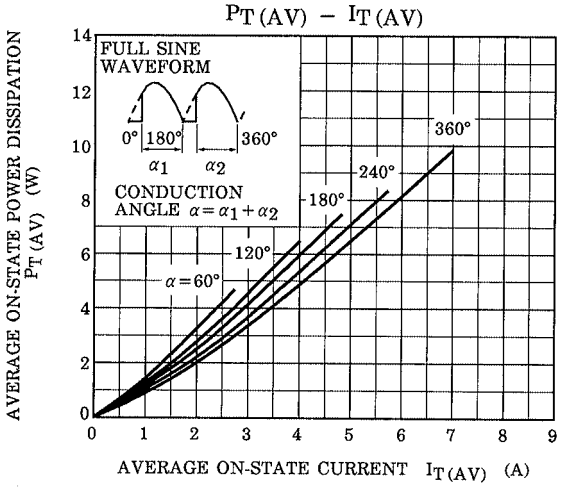
$P_{T(AV)}$ – $I_{T(AV)}$




Tc MAX. – $I_{T(AV)}$




$P_{T(AV)}$ – $I_{T(AV)}$

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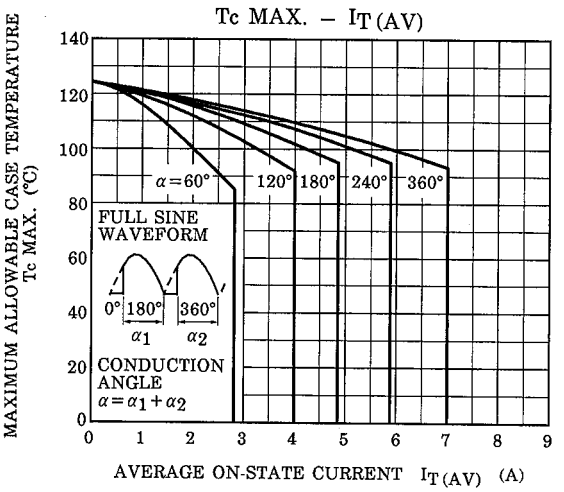
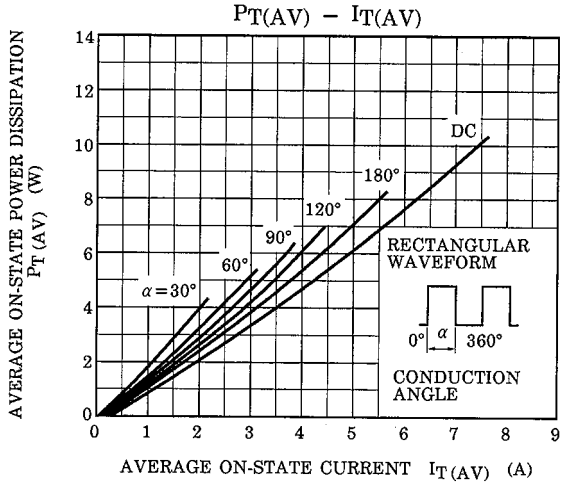



$P_{T(AV)}$ – $I_{T(AV)}$

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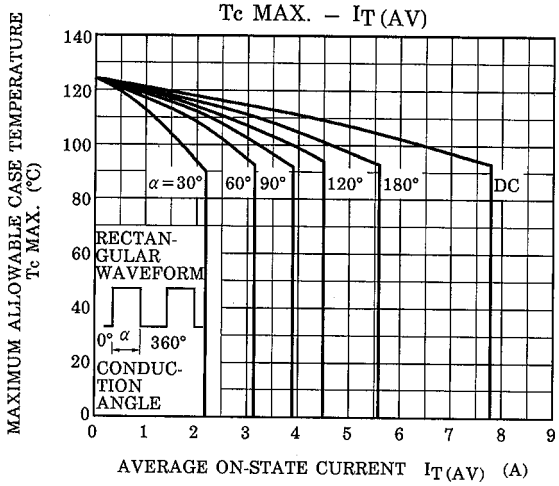
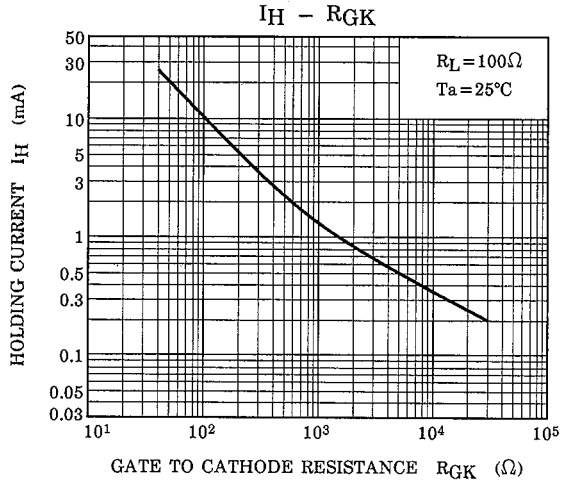
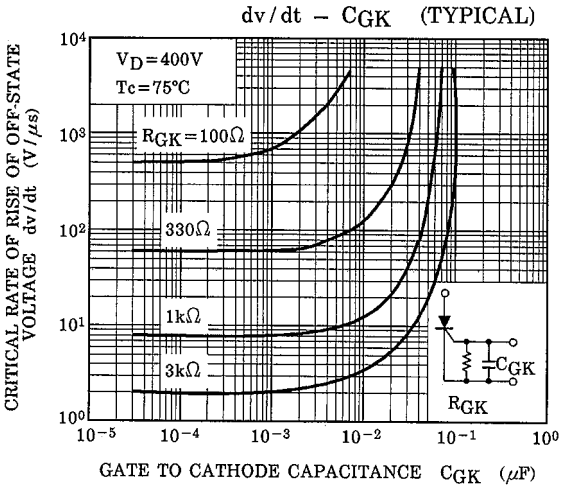


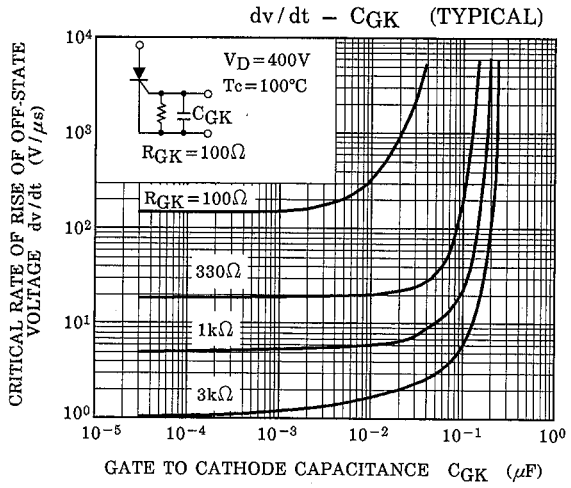
$I_H$ – $R_{GK}$



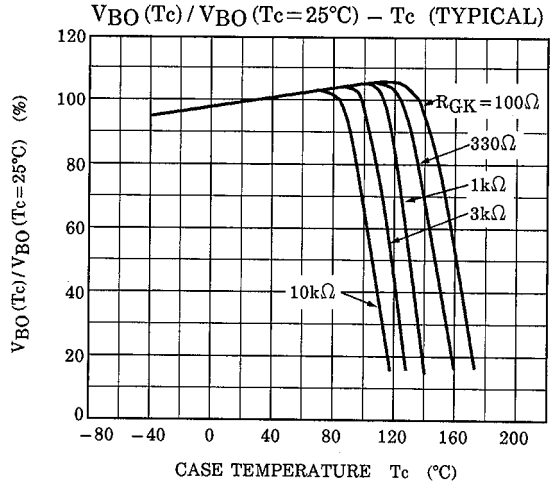

dv/dt – $C_{GK}$ (TYPICAL)



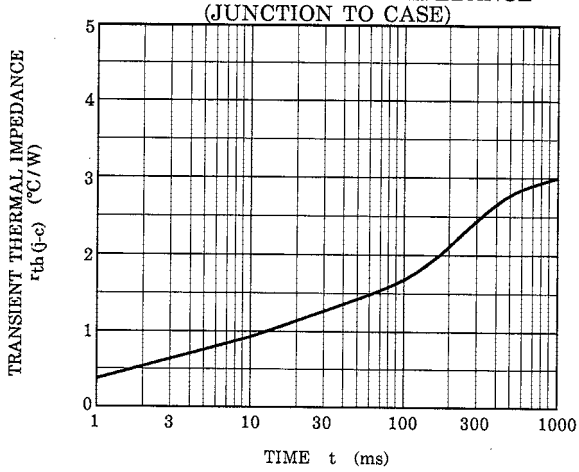

dv/dt – $C_{GK}$ (TYPICAL)




$V_{BO}$ (Tc) / $V_{BO}$ (Tc = 25°C) – Tc (TYPICAL)




TRANSIENT THERMAL IMPEDANCE (JUNCTION TO CASE)



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