

TOSHIBA Thyristor Silicon Planar Type

# SF5G49,SF5J49,USF5G49,USF5J49

Medium Power Control Applications

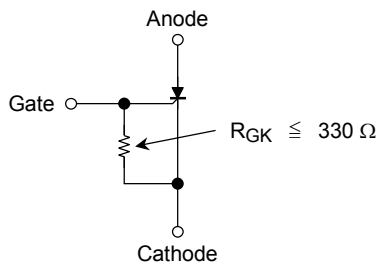
Unit: mm

- Repetitive peak off-state voltage:  $V_{DRM} = 400, 600$  V  
Repetitive peak reverse voltage:  $V_{RRM} = 400, 600$  V
- Average on-state current:  $I_T (AV) = 5$  A
- Gate trigger current:  $I_{GT} = 70 \mu\text{A}$  max

## Maximum Ratings

| Characteristics   | Symbol            | Rating     | Unit                 |
|---|-------------------|------------|----------------------|
| Repetitive peak off-state voltage and Repetitive peak reverse voltage ( $R_{GK} = 330 \Omega$ )                       | SF5G49<br>USF5G49 | 400        | V                    |
|   | SF5J49<br>USF5J49 | 600        |                      |
| Non-repetitive peak reverse voltage (non-repetitive < 5 ms, $T_j = 0\sim 125^\circ\text{C}$ , $R_{GK} = 330 \Omega$ ) | SF5G49<br>USF5G49 | 500        | V                    |
|   | SF5J49<br>USF5J49 | 720        |                      |
| Average on-state current  | $I_T (AV)$        | 5          | A                    |
| R.M.S on-state current  | $I_T (RMS)$       | 7.8        | A                    |
| Peak one cycle surge on-state current (non-repetitive)  | $I_{TSM}$         | 65 (50 Hz) | A                    |
| $I^2t$ limit value  | $I^2t$            | 20         | $\text{A}^2\text{s}$ |
| 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    | $^\circ\text{C}$     |
| Storage temperature range   | $T_{stg}$         | -40~125    | $^\circ\text{C}$     |

Note: Should be used with gate resistance as follows:



| SF5G49<br>SF5J49     |         |
|----------------------|---------|
|                      |         |
| 1. CATHODE           |         |
| 2. ANODE (HEAT SINK) |         |
| 3. GATE              |         |
| JEDEC                | —       |
| JEITA                | —       |
| TOSHIBA              | 13-7F1A |

Weight: 0.36 g (typ.)

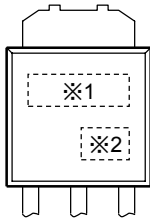
| USF5G49<br>USF5J49   |        |
|----------------------|--------|
|                      |        |
| 1. CATHODE           |        |
| 2. ANODE (BACK SIDE) |        |
| 3. GATE              |        |
| JEDEC                | —      |
| JEITA                | —      |
| TOSHIBA              | 13-F2A |

Weight: 0.28 g (typ.)

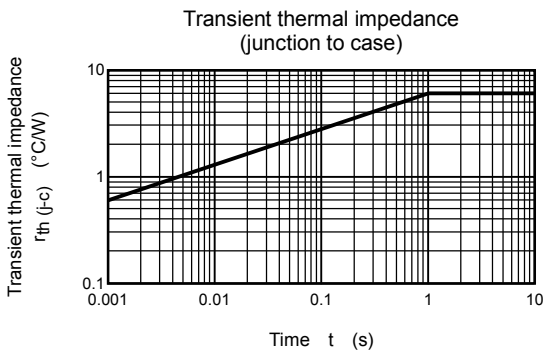
**Electrical Characteristics (Ta = 25°C)**

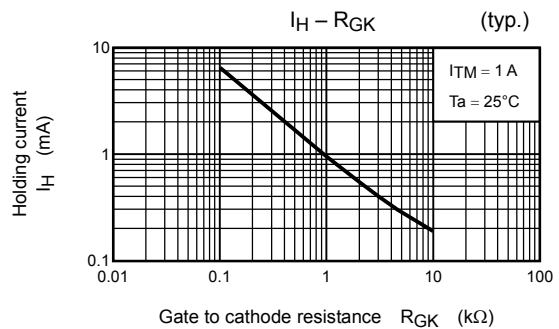
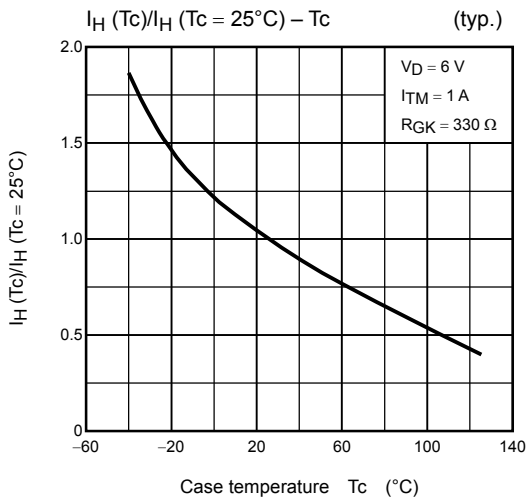
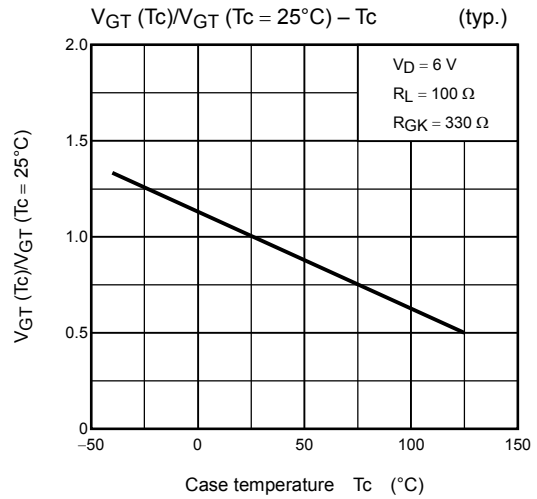
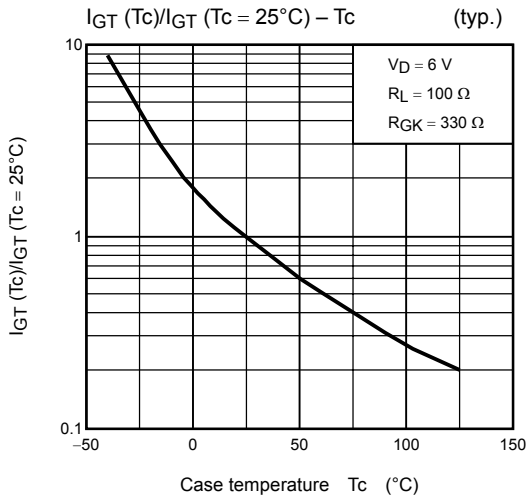
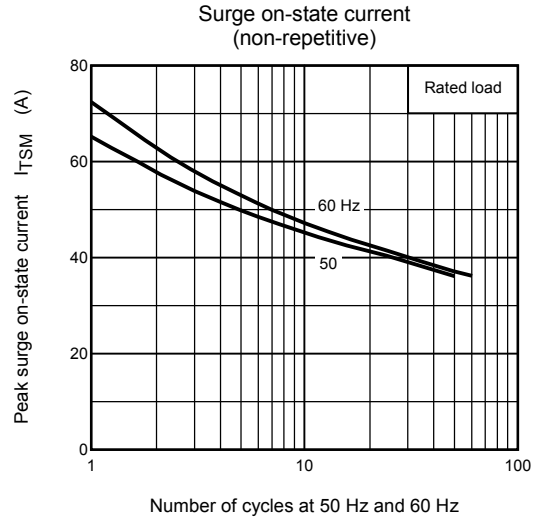
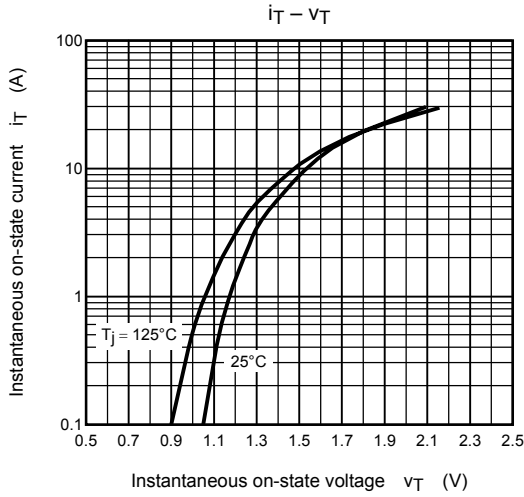
| Characteristics   | Symbol                 | Test Condition  | Min | Typ. | Max | Unit               |
|---|------------------------|---|-----|------|-----|--------------------|
| Repetitive peak off-state current and Repetitive peak reverse current | $I_{DRM}$<br>$I_{RRM}$ | $V_{DRM} = V_{RRM} = \text{Rated}$<br>$R_{GK} = 330 \Omega$   | —   | —    | 20  | $\mu\text{A}$      |
| Peak on-state voltage   | $V_{TM}$               | $I_{TM} = 12 \text{ A}$   | —   | —    | 1.6 | V                  |
| Gate trigger voltage  | $V_{GT}$               | $V_D = 6 \text{ V}, R_L = 100 \Omega$<br>$R_{GK} = 330 \Omega$  | —   | —    | 0.8 | V                  |
| Gate trigger current  | $I_{GT}$               |   | 3   | —    | 70  | $\mu\text{A}$      |
| Gate non-trigger voltage  | $V_{GD}$               | $V_D = \text{Rated} \times 2/3, T_c = 125^\circ\text{C}$  | 0.2 | —    | —   | V                  |
| Critical rate of rise of off-state voltage                            | dv/dt                  | $V_{DRM} = \text{Rated} \times 2/3, T_c = 75^\circ\text{C}$<br>$R_{GK} = 330 \Omega, \text{Exponential rise}$ | —   | 50   | —   | V/ $\mu\text{s}$   |
| Holding current   | $I_H$                  | $R_L = 100 \Omega, R_{GK} = 330 \Omega$   | —   | 2.5  | —   | mA                 |
| Thermal resistance (junction to case)                                 | $R_{th(j-c)}$          | DC  | —   | —    | 6.0 | $^\circ\text{C/W}$ |

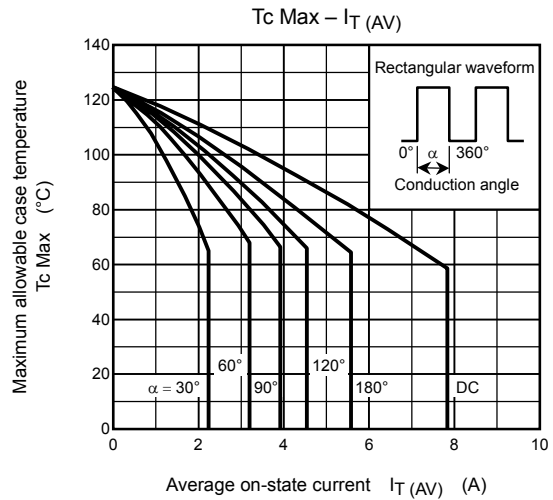
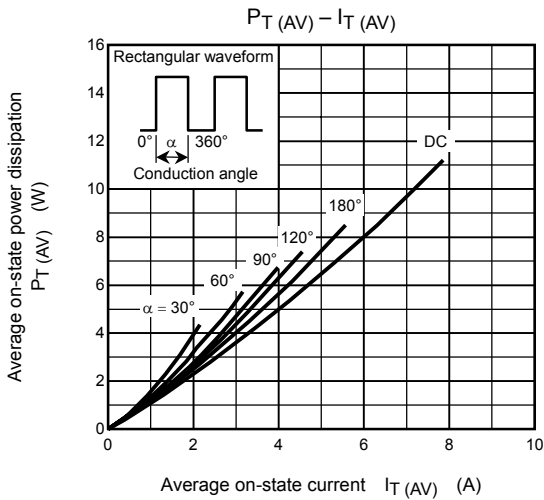
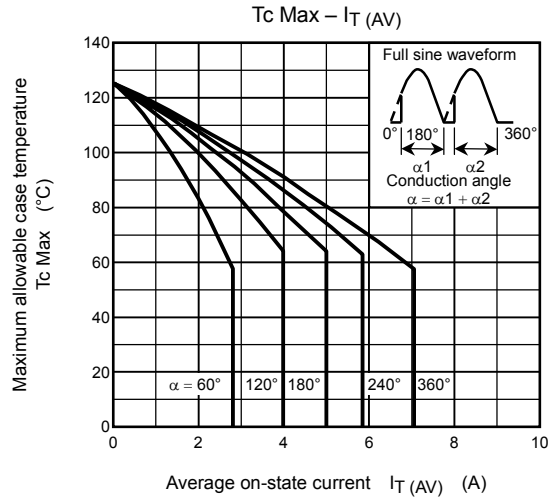
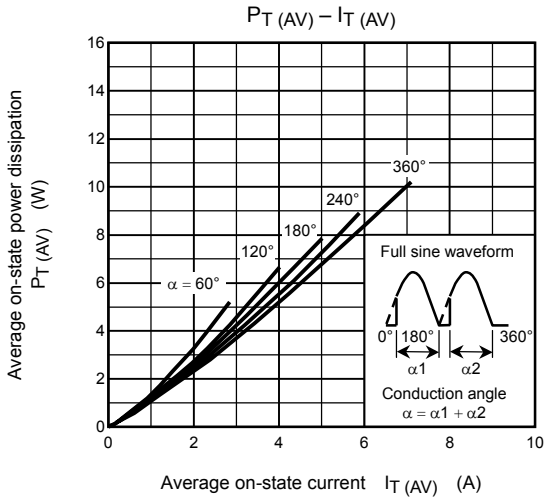
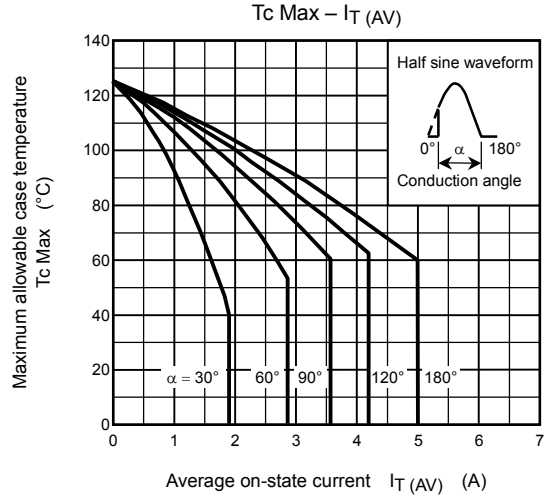
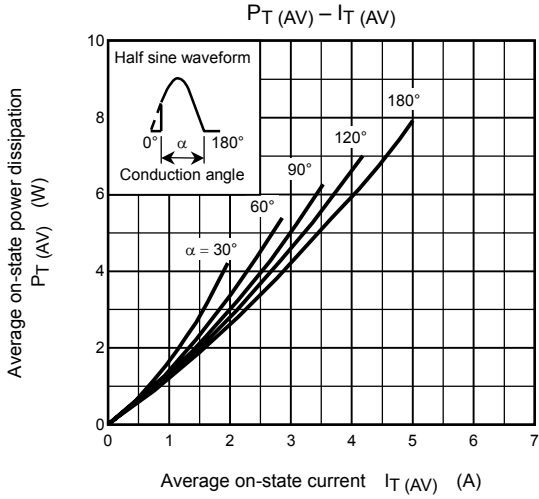
**Marking**

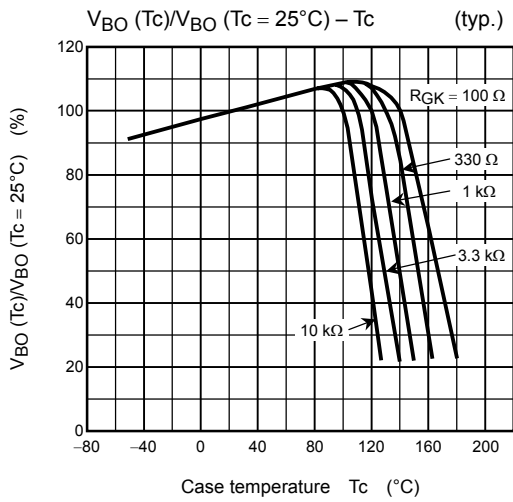
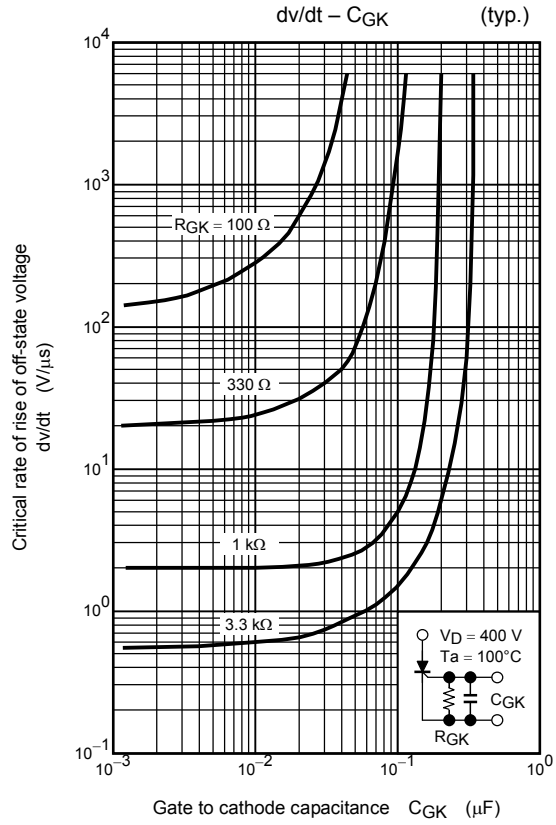
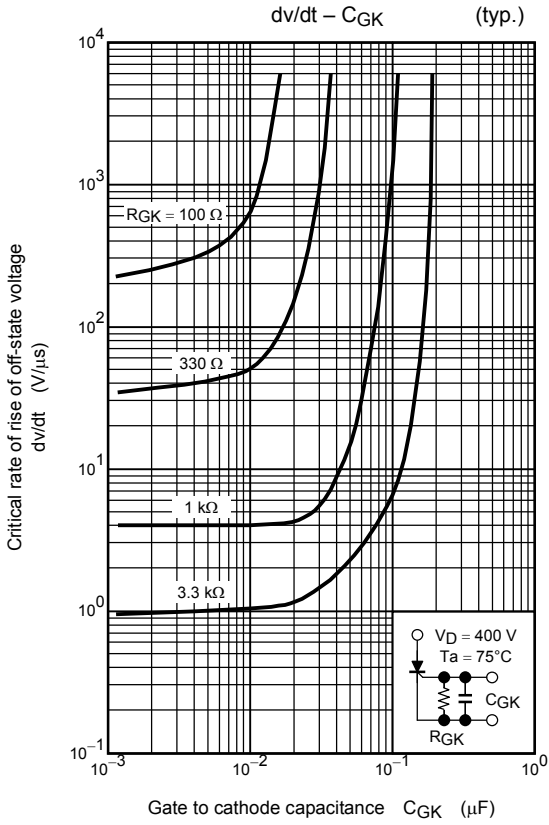


|    |                |       |           |                 |
|----|----------------|-------|-----------|-----------------|
| ※1 | Mark           | F5G49 | Type Name | SF5G49, USF5G49 |
|    |                | F5J49 |           | SF5J49, USF5J49 |
| ※2 | Lot Number<br> |       |           |                 |









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