

# SF5G49, SF5J49, USF5G49, USF5J49

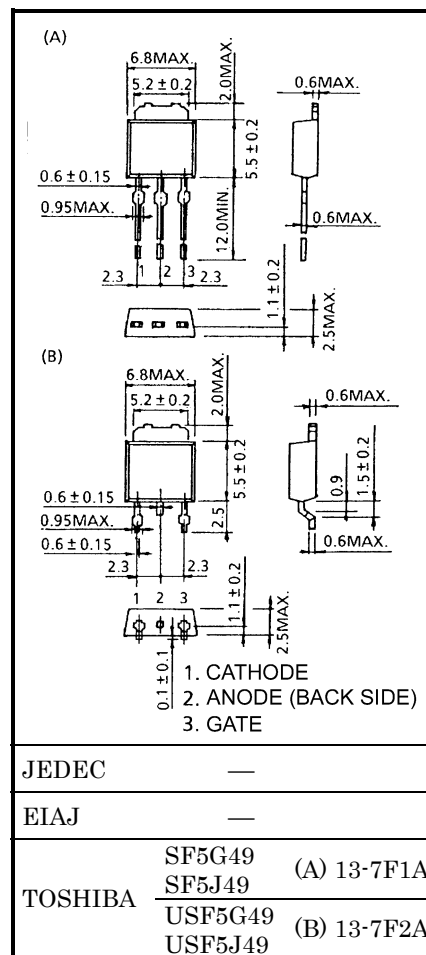
Medium Power Control Applications

Unit in mm

- Repetitive peak off-state voltage:  $V_{DRM} = 400, 600 \text{ V}$   
Repetitive peak reverse voltage:  $V_{RRM} = 400, 600 \text{ V}$
- Average on-state current:  $I_T (AV) = 5 \text{ A}$
- 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 | $V_{DRM}$  | V                    |
|                                                                                                                        | SF5J49<br>USF5J49 | $V_{RRM}$  |                      |
| Non-repetitive peak reverse voltage (non-repetitive < 5 ms, $T_j = 0 \sim 125^\circ\text{C}$ , $R_{GK} = 330 \Omega$ ) | SF5G49<br>USF5G49 | $V_{RSM}$  | V                    |
|                                                                                                                        | SF5J49<br>USF5J49 | $V_{RSM}$  |                      |
| 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                    |
| $I^2 t$ limit value                                                                                                    | $I^2 t$           | 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    | $^\circ\text{C}$     |



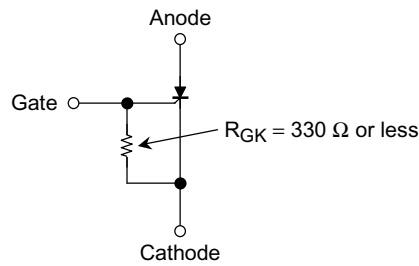
Weight: (A) 0.36 g (typ.)

(B) 0.28 g (typ.)

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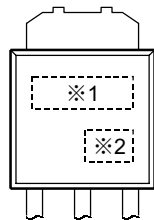
Note: Should be used with gate resistance as follows



Electrical Characteristics (Ta = 25°C)

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

Marking



|    |                                                                                                                                                                       |       |           |                 |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|-----------------|
| ※1 | Mark                                                                                                                                                                  | F5G49 | Type Name | SF5G49, USF5G49 |
|    |                                                                                                                                                                       | F5J49 |           | SF5J49, USF5J49 |
| ※2 | <div>Lot Number</div> <div><div><div></div><div></div></div><div>Month (starting from alphabet A)</div><div>Year (last decimal digit of the current year)</div></div> |       |           |                 |

