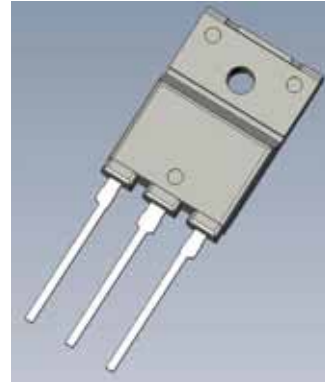


**Features**

- Low Saturation Voltage  $V_{CE(sat)}=1.5V$  typ. ( $I_C=30A$ )
- High Speed SW  $t_f=120ns$  typ. ( $I_C=30A$ )

**Package**

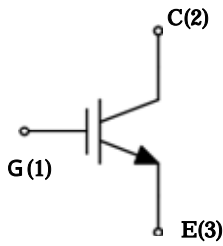
TO-3PF



**Applications**

- Current Resonance Inverter Switching

**Equivalent circuit**



**Absolute maximum ratings**

( $T_a=25^{\circ}C$ )

| Characteristic                  | Symbol                            | Rating                   | Unit        |
|---------------------------------|-----------------------------------|--------------------------|-------------|
| Collector to Emitter Voltage    | $V_{CES}$                         | 600                      | V           |
| Gate to Emitter Voltage         | $V_{GES}$                         | $\pm 30$                 | V           |
| Continuous Collector Current    | $I_C$                             | 30                       | A           |
| Pulsed Collector Current        | $I_C(\text{pulse})$ <sup>1)</sup> | 100                      | A           |
| Maximum Collector-emitter dv/dt | $dv/dt$ <sup>2)</sup>             | 5                        | V/ns        |
| Maximum Power Dissipation       | PC                                | 60 ( $T_c=25^{\circ}C$ ) | W           |
| Thermal Resistance IGBT         | j-c                               | 2.08                     | /W          |
| Junction Temperature            | $T_j$                             | 150                      | $^{\circ}C$ |
| Storage Temperature             | $T_{stg}$                         | - 55~150                 | $^{\circ}C$ |

1)  $PW$  100usec. , Duty cycle 1%

2)  $T_c$  125 , See Fig.1

**Electrical characteristics**

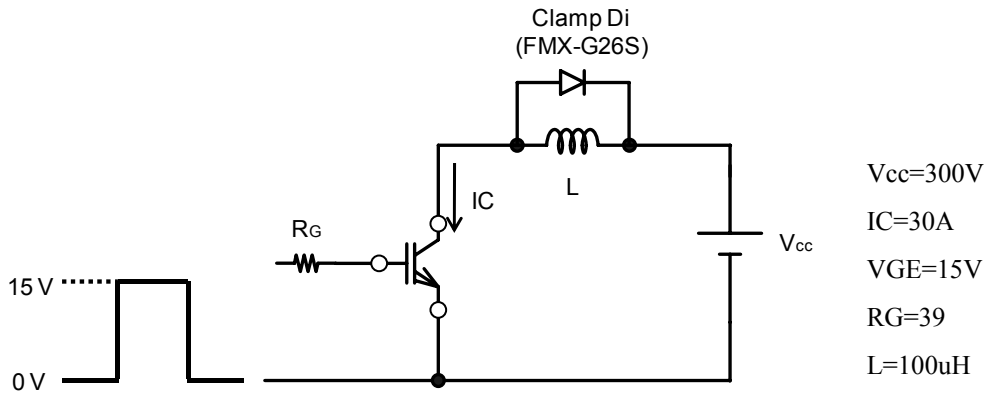
●IGBT

(Ta=25°C)

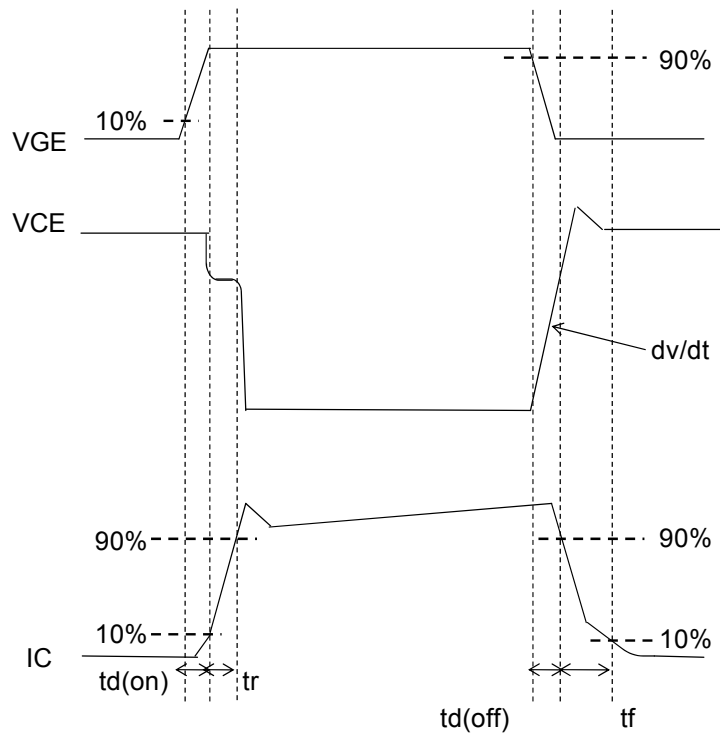
| Characteristic                          | Symbol   | Test Conditions  | Limits |      |      | Unit |
|---|----------|--|--------|------|------|------|
|   |          |  | MIN.   | TYP. | MAX. |      |
| Collector to Emitter Breakdown Voltage  | V(BR)CES | IC=100μA, VGE=0V   | 600    |      |      | V    |
| Gate to Emitter Leakage Current         | IGES     | VGE=±30V   |        |      | ±500 | nA   |
| Collector to Emitter Leakage Current    | ICES     | VCE=600V, VGE=0V   |        |      | 100  | μA   |
| Gate Threshold Voltage                  | VGE(th)  | VCE=10V, IC=1mA  | 3      |      | 6    | V    |
| Collector to Emitter Saturation Voltage | VCE(sat) | VGE=15V, IC=30A  |        | 1.5  | 1.7  | V    |
| Collector to Emitter Saturation Voltage | VCE(sat) | VGE=15V, IC=50A  |        | 1.8  |      | V    |
| Input Capacitance                       | Cies     | VCE=20V<br>VGE=0V<br>f=1MHz  |        | 2500 |      | pF   |
| Output Capacitance                      | Coes     |  |        | 150  |      |      |
| Reverse Transfer Capacitance            | Cres     |  |        | 80   |      |      |
| Gate charge                             | Qgate    | VCE=300V<br>IC=30A<br>VGE=15V                                      |        | 65   |      | nC   |
| Gate to Collector Charge                | Qgc      |  |        | 20   |      |      |
| Gate to Emitter Charge                  | Qge      |  |        | 20   |      |      |
| Turn-On Delay Time                      | td(on)   | VCE=300V, IC=30A<br>VGE=15V, RG=39<br>L=100μH, Tc=25<br>See Fig.1  |        | 100  |      | ns   |
| Rise Time                               | tr       |  |        | 80   |      |      |
| Turn-Off Delay Time                     | td(off)  |  |        | 300  |      |      |
| Fall Time                               | tf       |  |        | 120  |      |      |
| Turn-On Delay Time                      | td(on)   | VCE=300V, IC=30A<br>VGE=15V, RG=39<br>L=100μH, Tc=125<br>See Fig.1 |        | 100  |      | ns   |
| Rise Time                               | tr       |  |        | 100  |      |      |
| Turn-Off Delay Time                     | td(off)  |  |        | 300  |      |      |
| Fall Time                               | tf       |  |        | 200  |      |      |

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Fig.1 Switching Time Test Method



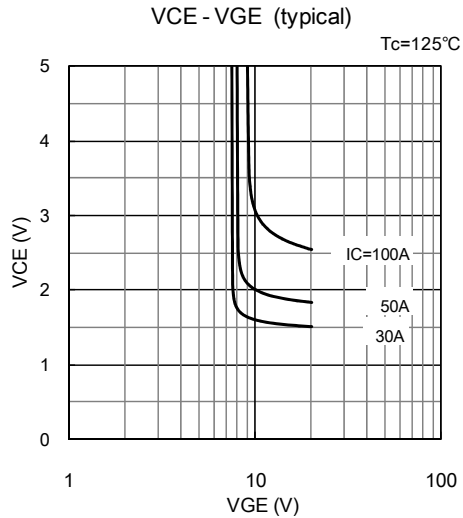
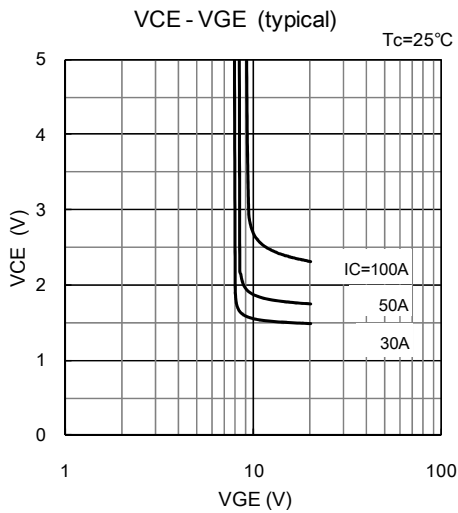
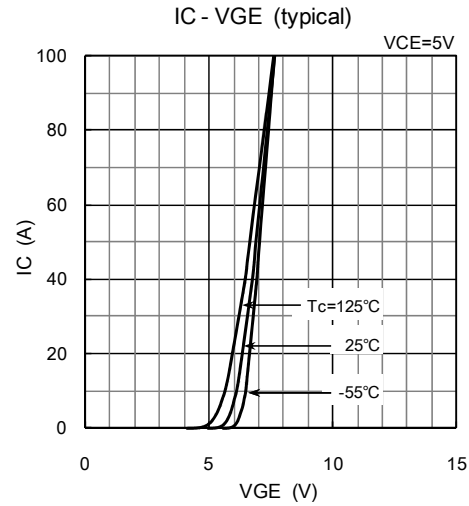
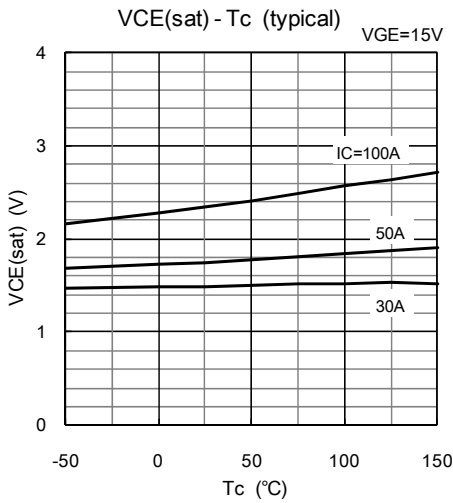
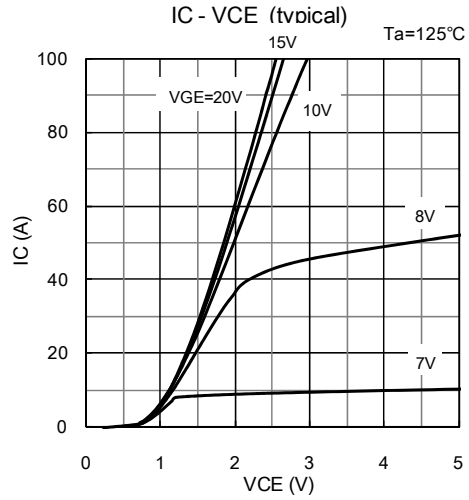
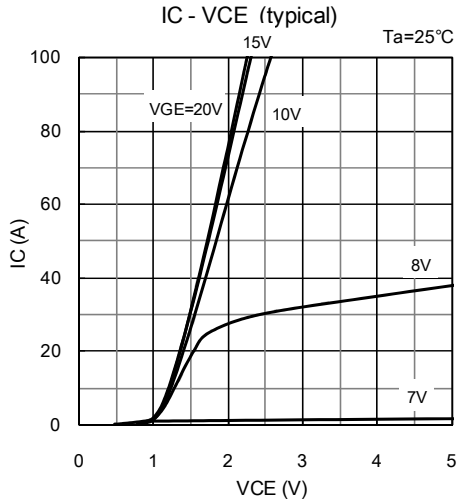
(a) Test Circuit



(b) Waveforms

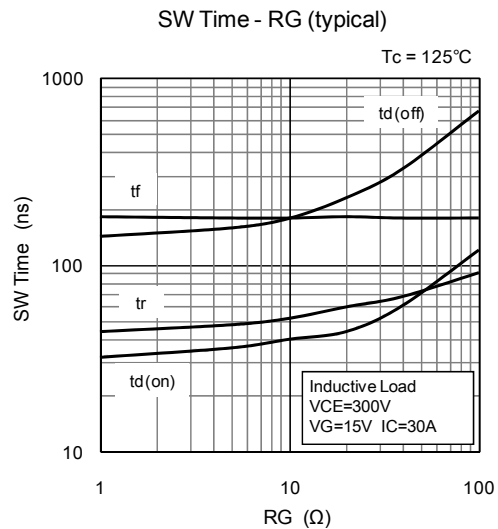
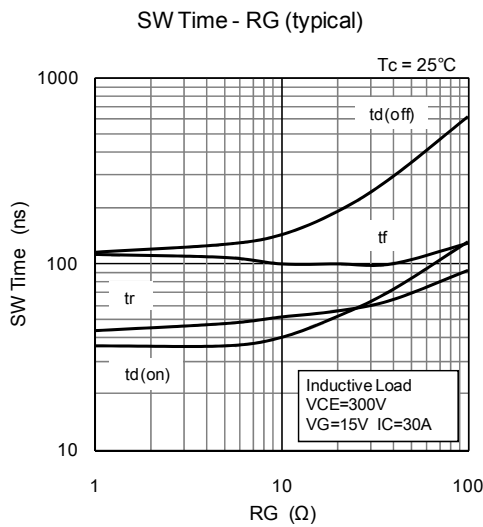
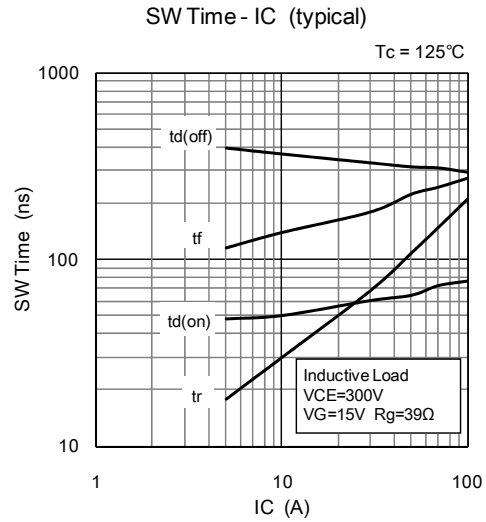
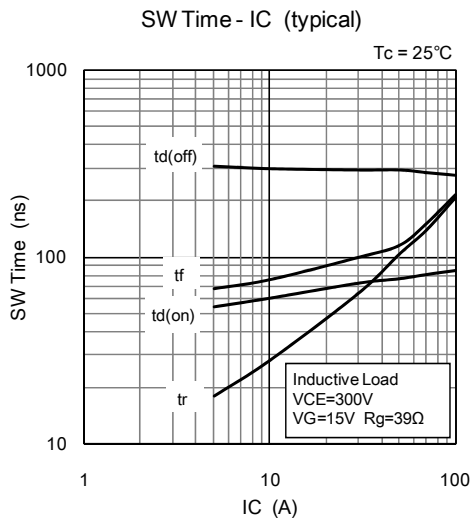
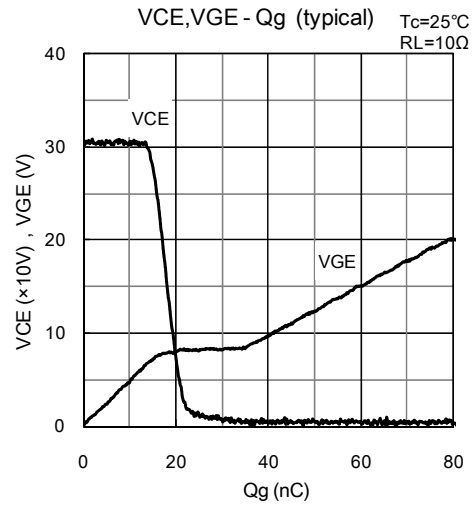
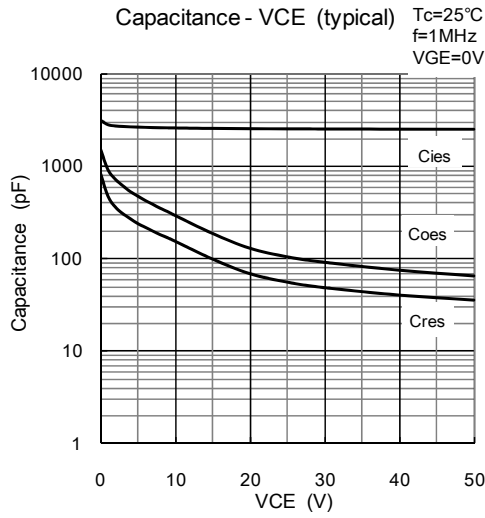
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**Characteristic Curves**



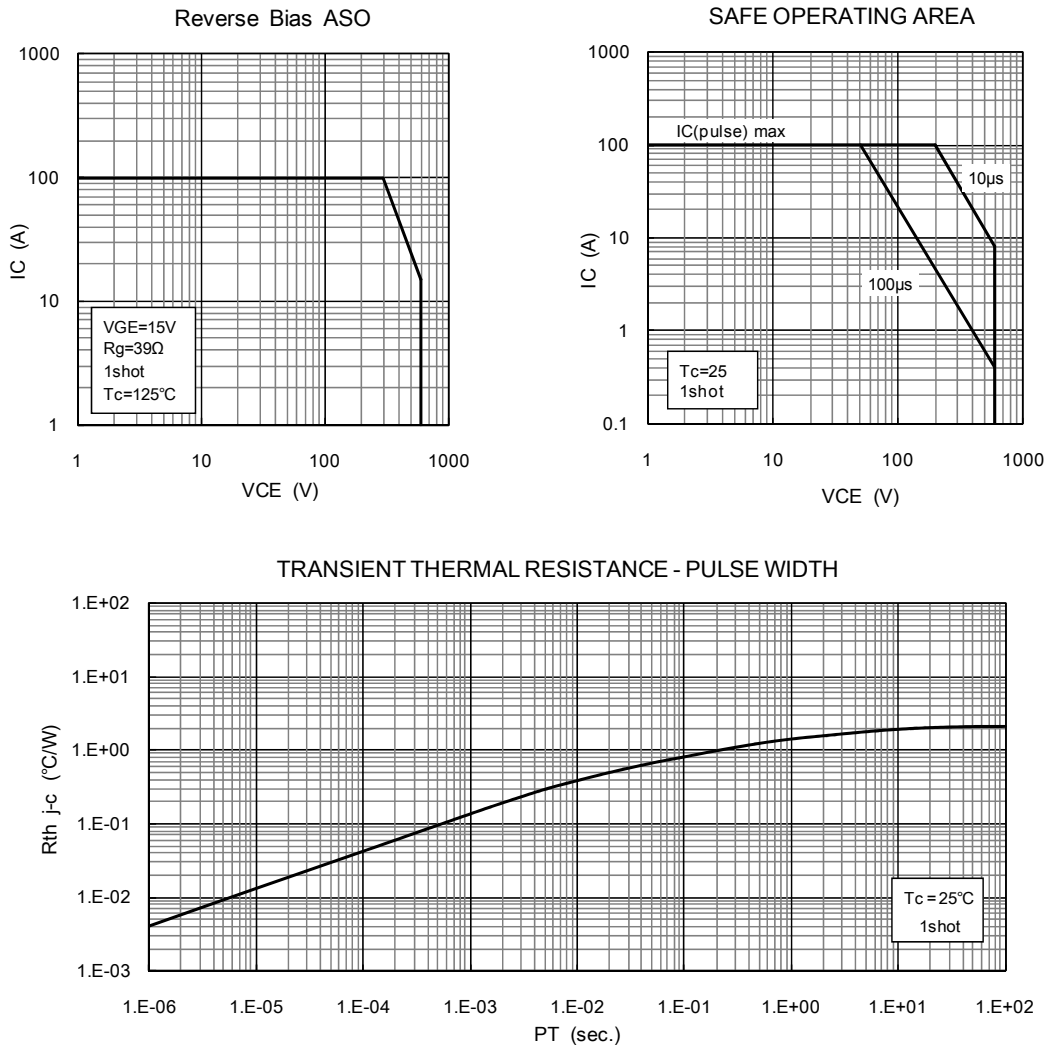
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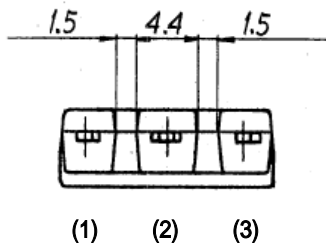
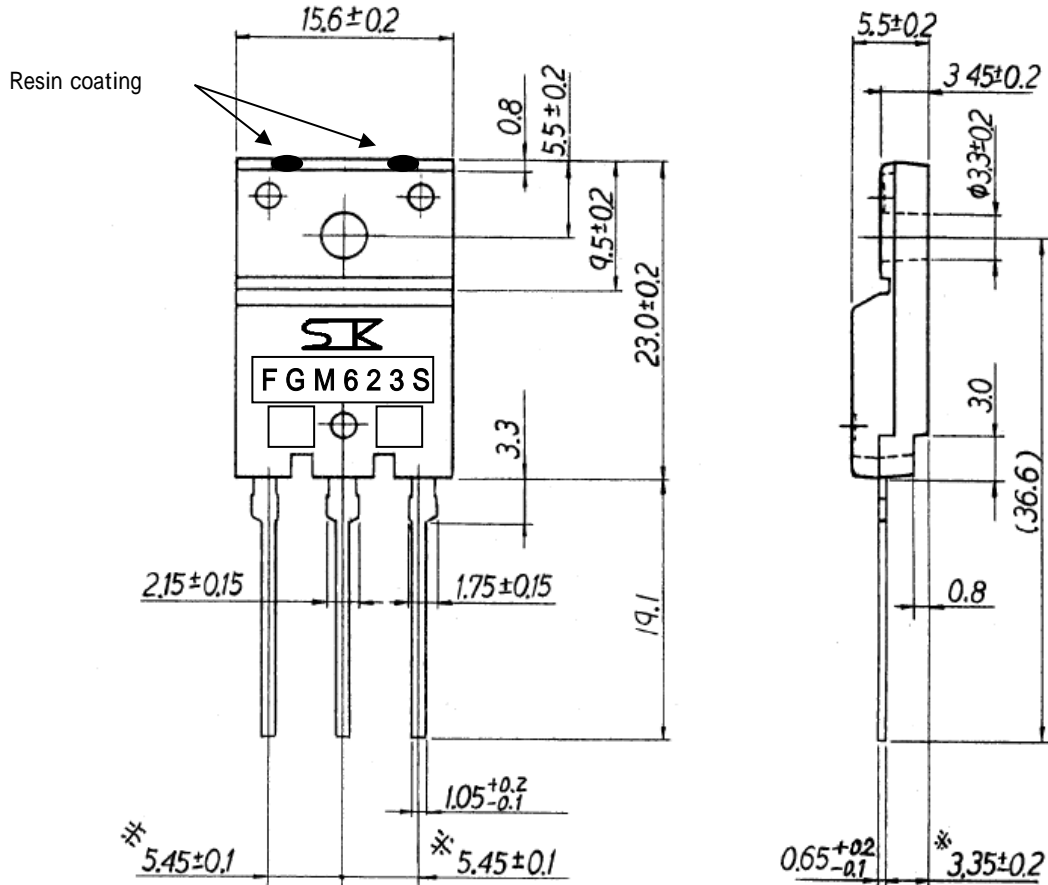
**Characteristic Curves**



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**Outline**

TO-3PF



- (1) Gate
- (2) Collector
- (3) Emitter

Wight Approx : 6.5g

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