

SPECIFICATION

Device Name : I G B T M o d u l e

Type Name : 6 M B I 7 5 S - 1 4 0

Spec. No. : M S 5 F 4 7 2 4

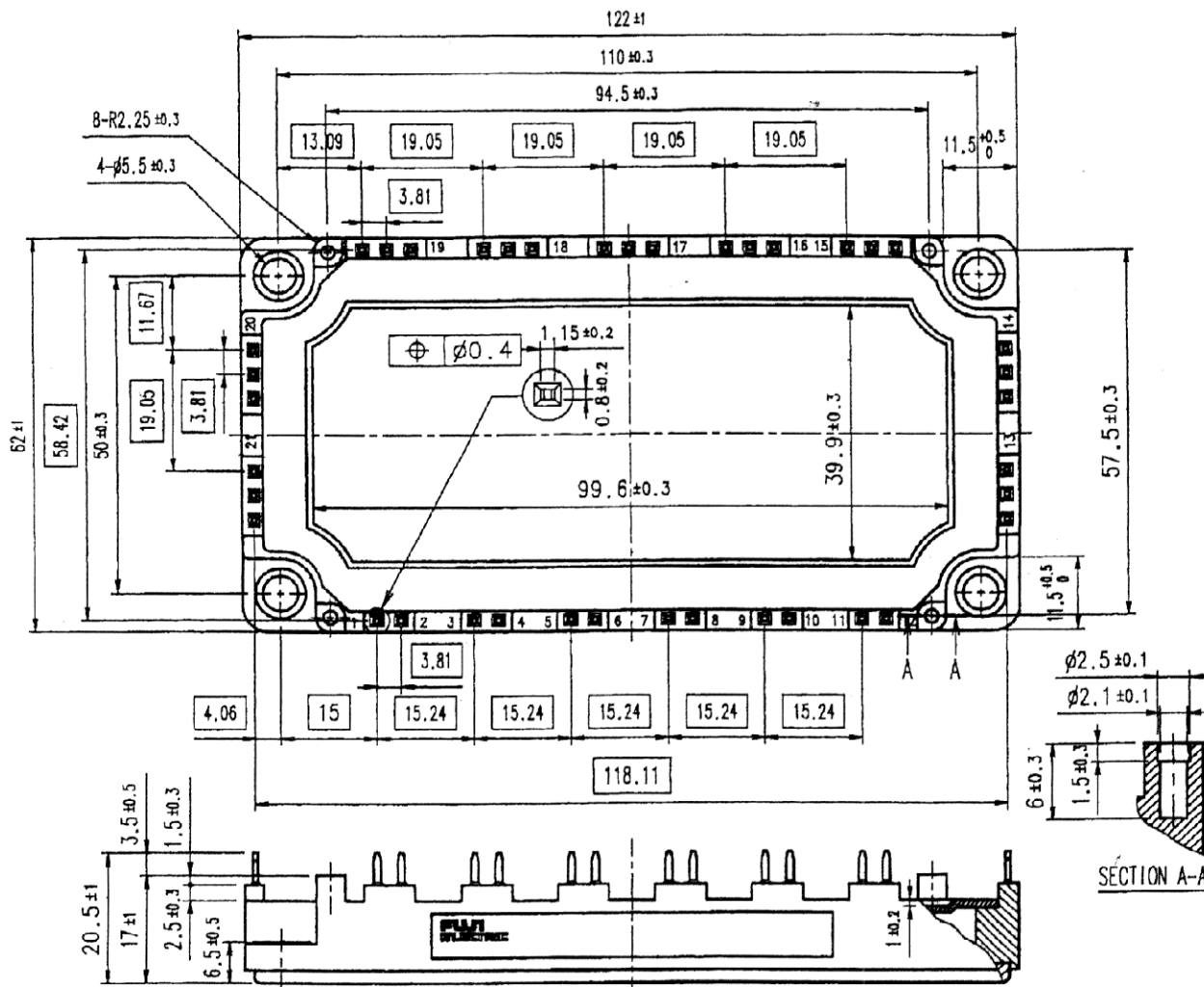
Fuji Electric Co., Ltd.
Matsumoto Factory

| | DATE | NAME | APPROVED | Fuji Electric Co., Ltd. | | |
|---------|---------------|--------------|---------------------|-------------------------|-----------------|-------|
| DRAWN | Nov. -10 -'99 | Y. Hologuchi | <i>T. Nishizaka</i> | DWG. NO. | M S 5 F 4 7 2 4 | 1 / 8 |
| CHECKED | Nov. -10 -'99 | S. Matsuura | | | | |

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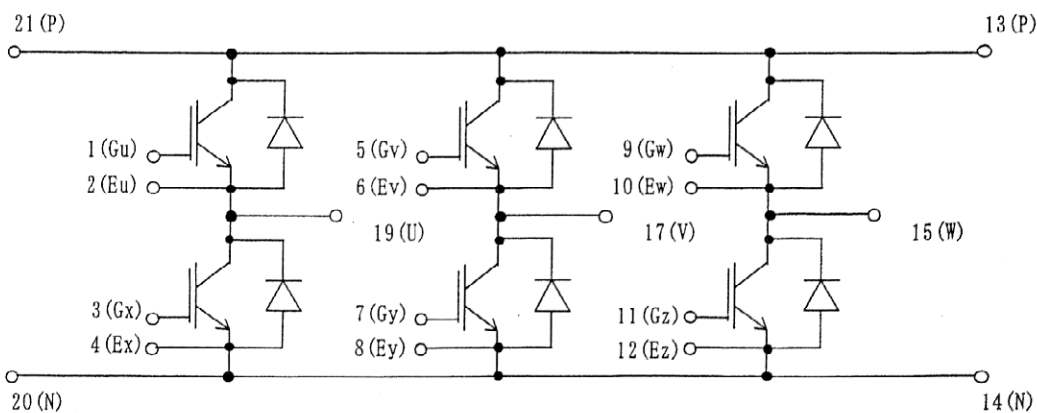
6 M B I 7 5 S - 1 4 0

1. Outline Drawing (Unit : mm)



□ shows theoretical dimension.

2. Equivalent circuit



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3. Absolute Maximum Ratings (at Tc= 25°C unless otherwise specified)

| Items | Symbols | Conditions | Maximum Ratings | | Units |
|--------------------------------------|----------------------|------------|-----------------|-----|-------|
| | | | | | |
| Collector-Emitter voltage | V _{CES} | | 1400 | | V |
| Gate-Emitter voltage | V _{GES} | | ±20 | | V |
| Collector current | I _c | Continuous | Tc=25°C | 100 | A |
| | | | Tc=75°C | 75 | |
| | I _c pulse | 1ms | Tc=25°C | 200 | |
| | | | Tc=75°C | 150 | |
| | -I _c | | | 75 | |
| -I _c pulse | 1ms | | 150 | | |
| Collector Power Dissipation | P _c | 1 device | 520 | | W |
| Junction temperature | T _j | | 150 | | °C |
| Storage temperature | T _{stg} | | -40~ +125 | | °C |
| Isolation voltage ^(*) | Viso | AC : 1min. | 2500 | | V |
| Mounting Screw Torque ^(*) | | | 3.5 | | N·m |

(*1) All terminals should be connected together when isolation test will be done.

(*2) Recommendable Value : 2.5~3.5 N·m (M5)

4. Electrical characteristics (at Tj= 25°C unless otherwise specified)

| Items | Symbols | Conditions | Characteristics | | | Units |
|--------------------------------------|-----------------------|--|-----------------|------|------|-------|
| | | | min. | typ. | Max. | |
| Zero gate voltage Collector current | ICES | V _{GE} = 0 V, V _{CES} = 1400 V | | | 1.0 | mA |
| Gate-Emitter leakage current | IGES | V _{CES} = 0 V, V _{GE} = ±20 V | | | 200 | nA |
| Gate-Emitter threshold voltage | V _{GE(th)} | V _{CES} = 20 V, I _c = 75 mA | 5.5 | 7.2 | 8.5 | V |
| Collector-Emitter saturation voltage | V _{CES(sat)} | V _{GE} = 15 V, T _j = 25 °C | | 2.4 | 2.7 | V |
| | | I _c = 75 A, T _j = 125 °C | | 3.0 | | |
| Input capacitance | C _{ies} | V _{GE} = 0 V | | 9000 | | pF |
| Output capacitance | C _{oes} | V _{CES} = 10 V | | 1875 | | |
| Reverse transfer capacitance | C _{res} | f = 1 MHz | | 1650 | | |
| Turn-on time | t _{on} | V _{CC} = 800 V | | 0.35 | 1.2 | μs |
| | t _r | I _c = 75 A | | 0.25 | 0.6 | |
| | t _{r(i)} | V _{GE} = ±15 V | | 0.1 | | |
| Turn-off time | t _{off} | R _G = 16 Ω | | 0.45 | 1.0 | μs |
| | t _f | | | 0.08 | 0.3 | |
| Forward on voltage | V _F | I _F = 75 A, T _j = 25 °C | | 2.6 | 3.4 | V |
| | | T _j = 125 °C | | 2.2 | | |
| Reverse recovery time | t _{rr} | I _F = 75 A | | | 0.35 | μs |

5. Thermal resistance characteristics

| Items | Symbols | Conditions | Characteristics | | | Units |
|----------------------------------|----------------------|--------------------------------------|-----------------|------|------|-------|
| | | | min. | typ. | Max. | |
| Thermal resistance (1 device) | R _{th(j-c)} | IGBT | | | 0.24 | °C/W |
| | | FWD | | | 0.50 | |
| Contact Thermal resistance | R _{th(c-f)} | with Thermal Compound ^(*) | | 0.05 | | |

* This is the value which is defined mounting on the additional cooling fin with thermal compound.

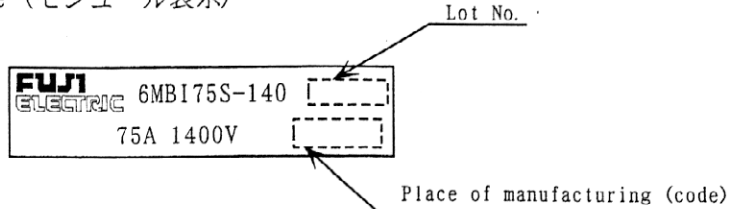
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6. Indication on module (モジュール表示)



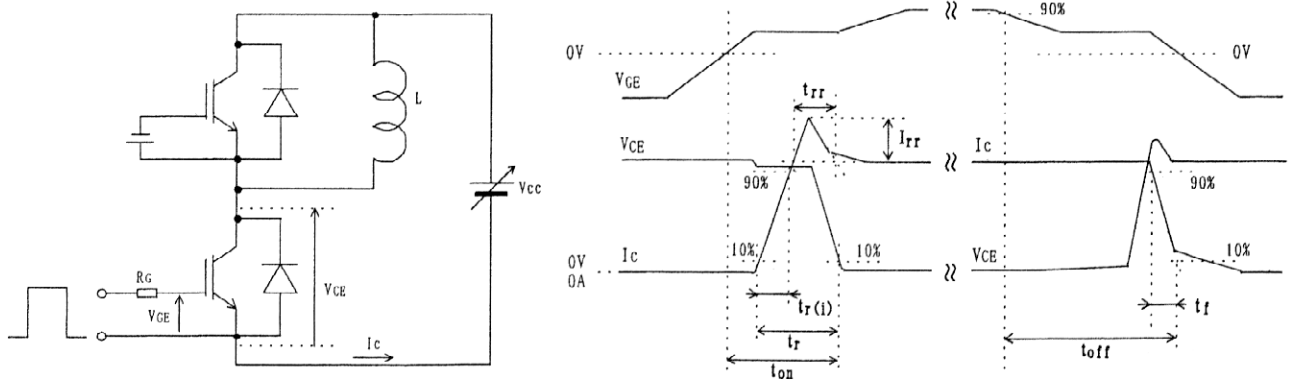
7. Applicable category (適用範囲)

This specification is applied to IGBT Module named 6MBI75S-140 .
 本納入仕様書は IGBTモジュール 6MBI75S-140 に適用する。

8. Storage and transportation notes (保管・運搬上の注意事項)

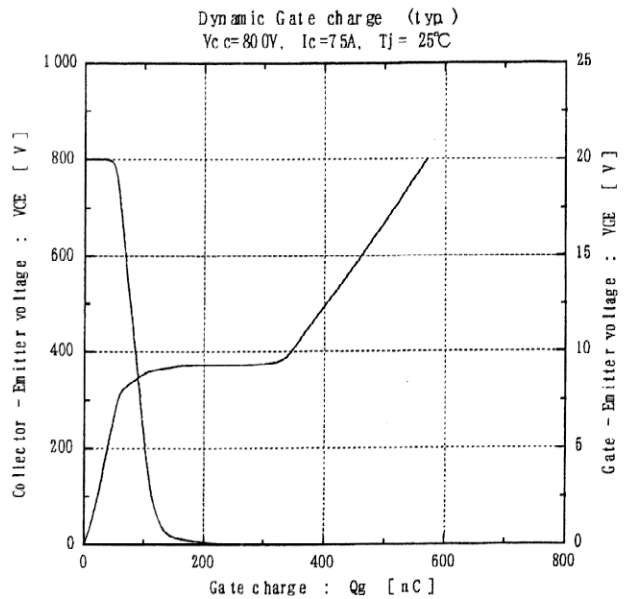
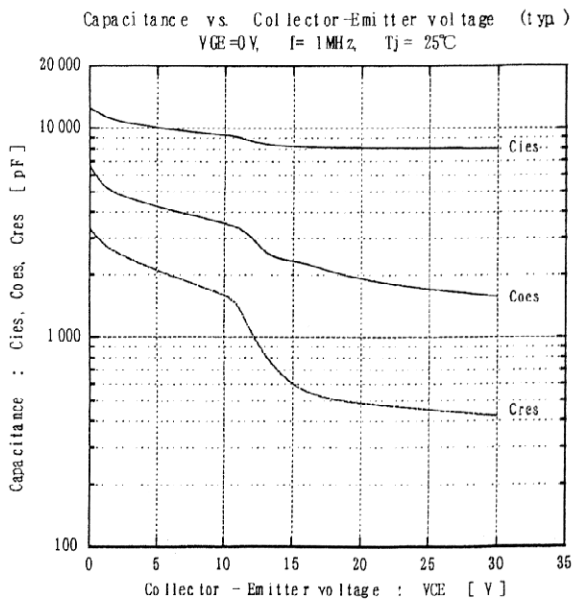
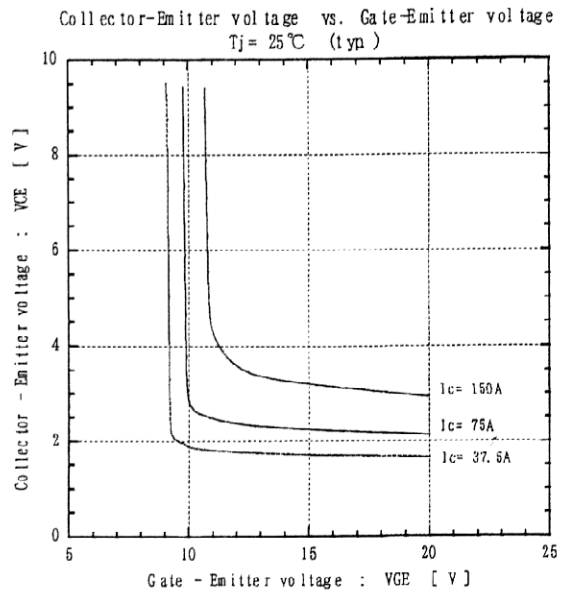
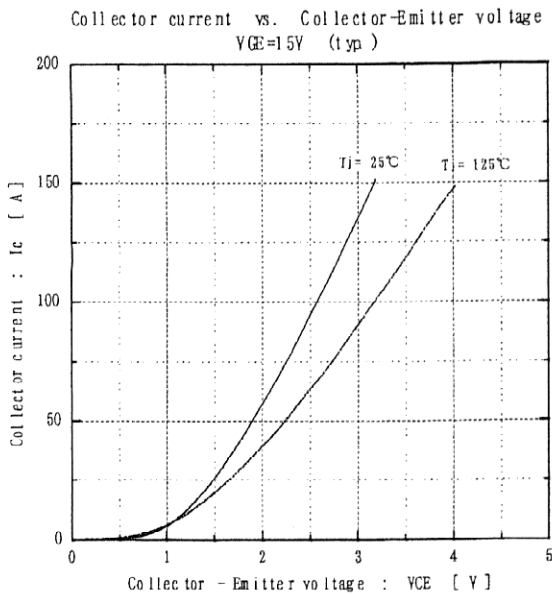
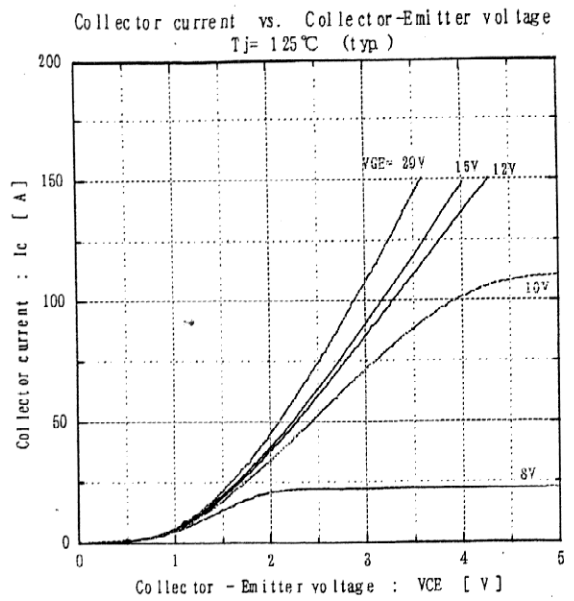
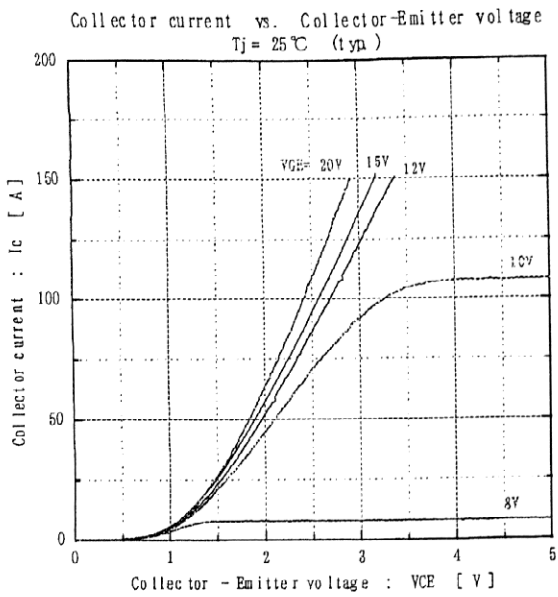
- The module should be stored at a standard temperature of 5 to 35°C and humidity of 45 to 75% .
 常温・常湿保存が望ましい。(5~35°C, 45~75%)
- Store modules in a place with few temperature changes in order to avoid condensation on the module surface.
 急激な温度変化のなきこと。(モジュール表面が結露しないこと)
- Avoid exposure to corrosive gases and dust.
 腐蝕性ガスの発生場所, 塵埃の多い場所は避けること。
- Avoid excessive external force on the module.
 製品に荷重がかからないように 十分注意すること。
- Store modules with unprocessed terminals.
 モジュールの端子は未加工の状態 で保管すること。
- Do not drop or otherwise shock the modules when transporting.
 製品の運搬時に衝撃を与えたり, 落下させたりしないこと。

9. Definitions of switching time (スイッチング時間の定義)

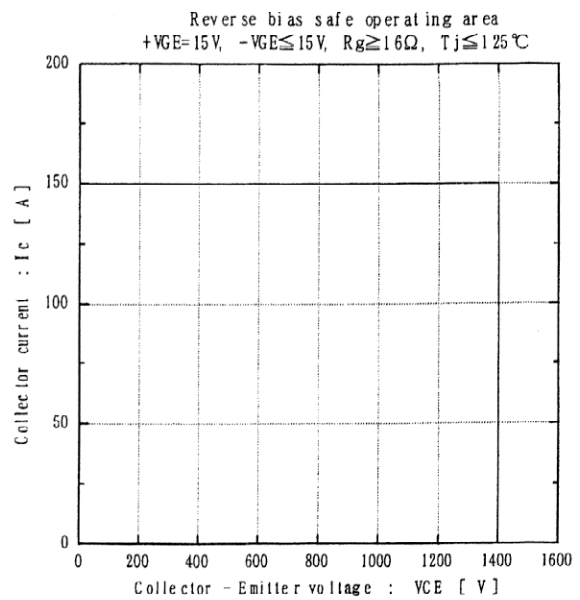
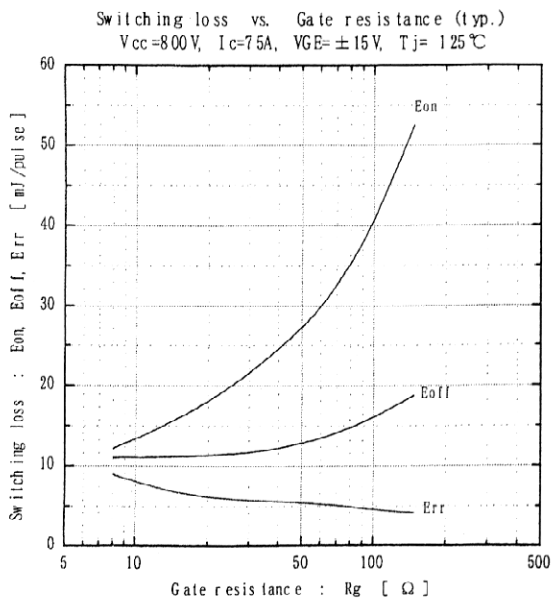
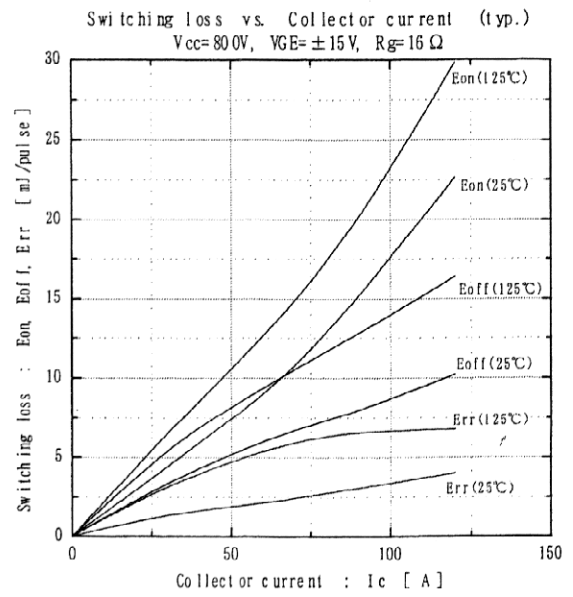
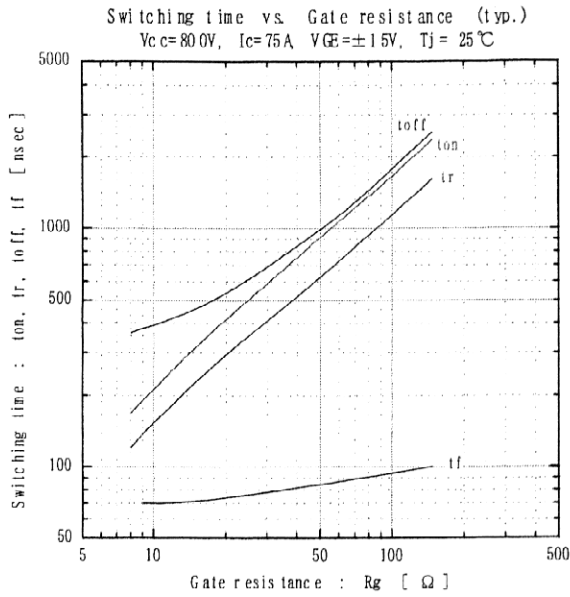
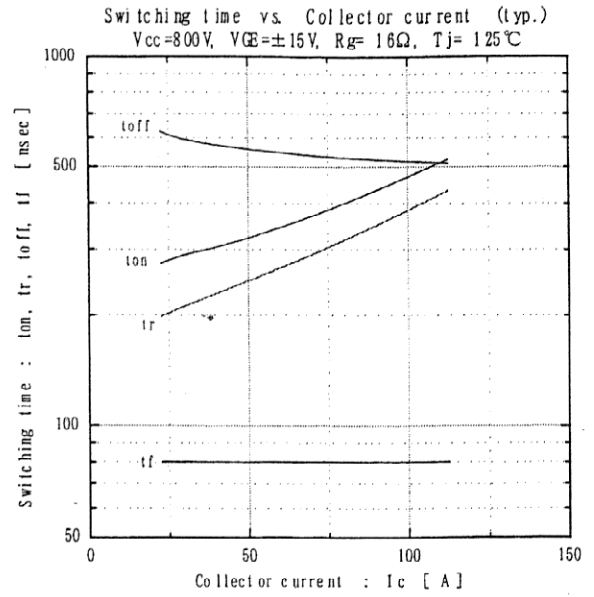
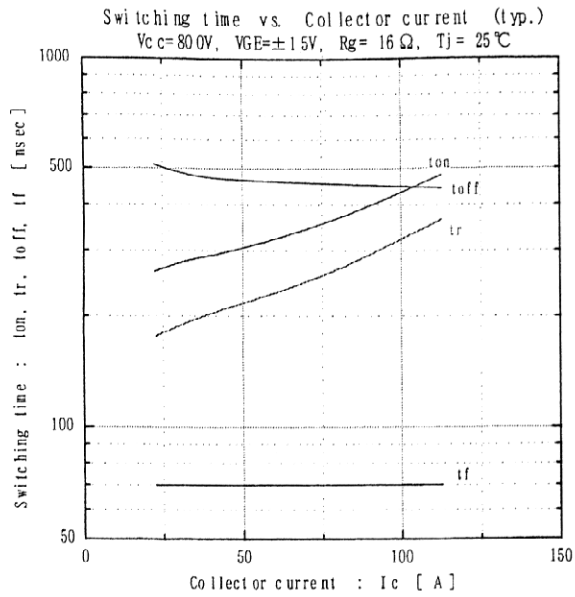


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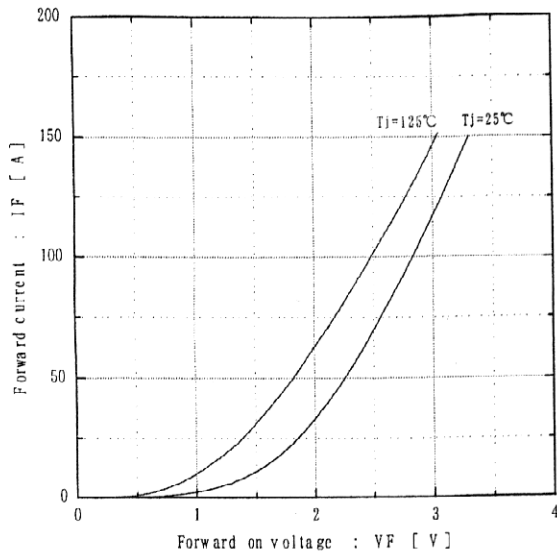
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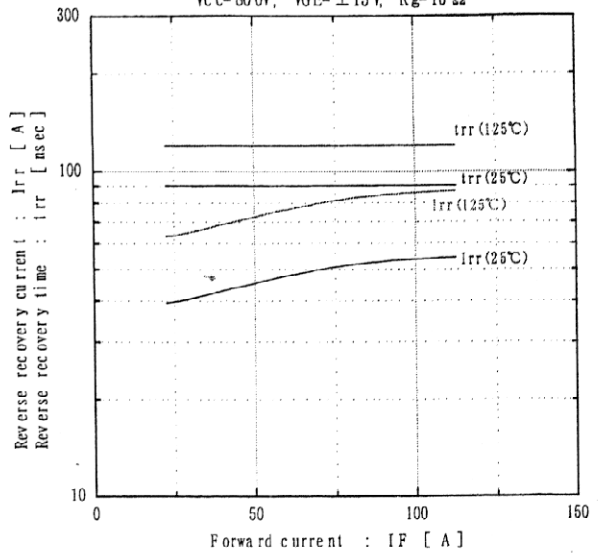
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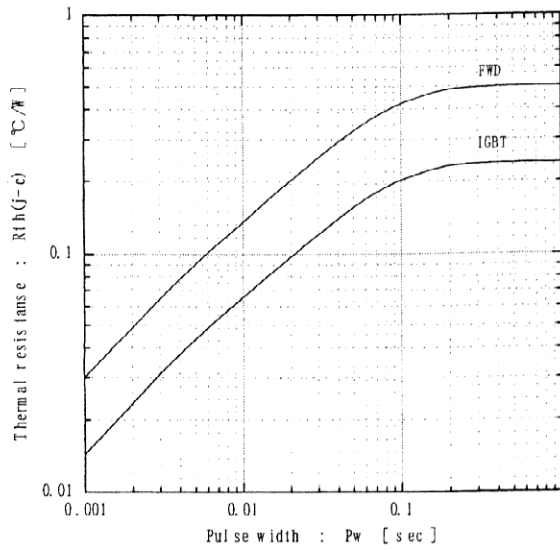
Forward current vs. Forward on voltage (typ.)



Reverse recovery characteristics (typ.)
Vc=80.0V, VGE=±15V, Rg=16Ω



Transient thermal resistance



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