

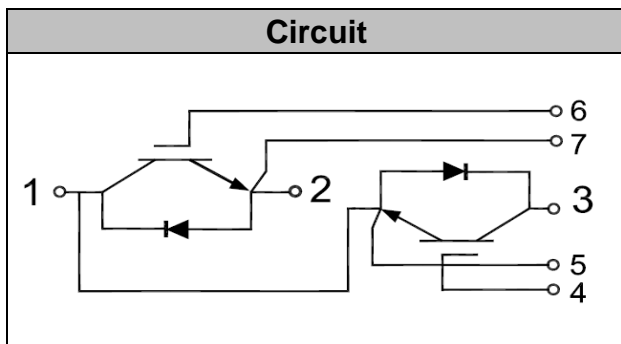
IGBT Modules



V_{CES} 1200V
I_c 50A

Applications

- High frequency drivers
- Solar inverters
- UPS (Uninterruptible Power Supplies)
- Electric welding machine



Features

- High speed IGBT in NPT technology
- Low switching losses
- High short circuit capability(10us)
- Including ultra fast & soft recovery anti-parallel FWD
- Low inductance

Absolute Maximum Ratings (T_C = 25°C unless otherwise specified)

| Symbol | Description | Values | Units |
|--------------------|---|---|--------|
| V _{CES} | Collector - Emitter Voltage | 1200 | V |
| V _{GES} | Gate-Emitter Voltage | ±20 | V |
| I _c | DC Collector Current | T _C =25°C | 80 A |
| | | T _C =80°C | 50 A |
| I _{CM(1)} | Peak Collector Current Repetitive | T _J = 125°C | 100 A |
| I _F | Diode Continuous Forward Current | T _J = 125 | 50 A |
| P _D | Maximum Power Dissipation (IGBT) | T _C = 25°C, T _{Jmax} =150°C | 400 W |
| T _J | Maximum Junction Temperature | 150 | |
| T _{JOP} | Operating Temperature | -40 ~ +150 | |
| T _{stg} | Storage Temperature | -40 ~ +125 | |
| Viso | Isolation Voltage (All Terminals Shorted) | f=50Hz, 1min | 3000 V |
| Weight | Weight Of Module | 150 | g |
| Mounting Torque | Power Terminals Screw:M5 | 2.5~5 | N*m |
| | Mounting Screw:M6 | 3~5 | N*m |

Notes :

(1) Repetitive Rating: Pulse width limited by max. junction temperature



Electrical Characteristics of IGBT ($T_J = 25^\circ\text{C}$ unless otherwise specified)

| Symbol | Item | Conditions | Values | | | Units |
|----------------------------|-------------------------------------|---|--------|------|------|---------|
| | | | Min. | Typ. | Max. | |
| OFF Characteristics | | | | | | |
| $V_{(BR)CES}$ | Collector-Emitter Breakdown Voltage | $V_{GE} = 0V, I_C = 1mA$ | 1200 | | | V |
| I_{CES} | Collector Leakage Current | $V_{CE}=V_{CES}, V_{GE}=0V,$ | | | 200 | μA |
| | | $V_{CE}=V_{CES}, V_{GE}=0V,$ $T_J=125^\circ\text{C}$ | | | 1 | mA |
| I_{GES} | Gate Leakage Current | $V_{CE}=0V, V_{GE}=\pm 20V$ | -400 | | 400 | nA |

ONg (enUS) dBTf 29f1 01 3.05TmG GF 29f1 01 2.305518eTmG 5) BDC 699.214 29f1 01 TmG GT) 058



Electrical Characteristics of FWD (T_c = 25°C unless otherwise specified)

| Symbol | Item | Conditions | Values | | | Units |
|------------------|-------------------------------|--|------------------------|------|------|-------|
| | | | Min. | Typ. | Max. | |
| V _{FM} | Forward Voltage | I _F 50A, V _{GE} = 0V | T _J = 25°C | 2.1 | | V |
| | | | T _J = 125°C | 2.3 | | |
| Q _{rr} | Reverse Recovery Charge | I _F 50A, di/dt = 950A/μs, V _{rr} = 600V, V _{GE} = -15V | T _J = 25°C | 2.54 | | μC |
| | | | T _J = 125°C | 4.96 | | |
| I _{rr} | Peak Reverse Recovery Current | | T _J = 25°C | 39 | | A |
| | | | T _J = 125°C | 48 | | |
| E _{rec} | Reverse Recovery Energy | | T _J = 25°C | 0.72 | | mJ |
| | | | T _J = 125°C | 1.51 | | |

Thermal Resistance Characteristics

| Symbol | Description | Values | | | Units |
|------------------|--|--------|------|------|-------|
| | | Min. | Typ. | Max. | |
| R _{θJC} | Junction-To-Case (IGBT Part, Per Leg) | | | 0.31 | °C/W |
| R _{θJC} | Junction-To-Case (Diode Part, Per Leg) | | | 0.78 | °C/W |
| R _{θCS} | Case-To-Sink (Conductive Grease Applied) | | | 0.05 | °C/W |

Performance Curves

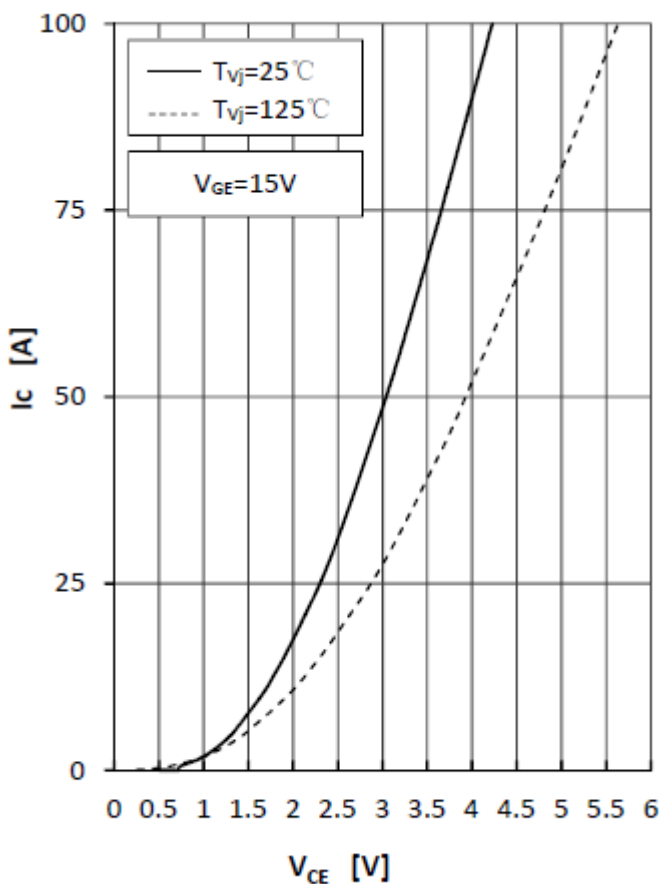


Fig1.IGBT Output Characteristics

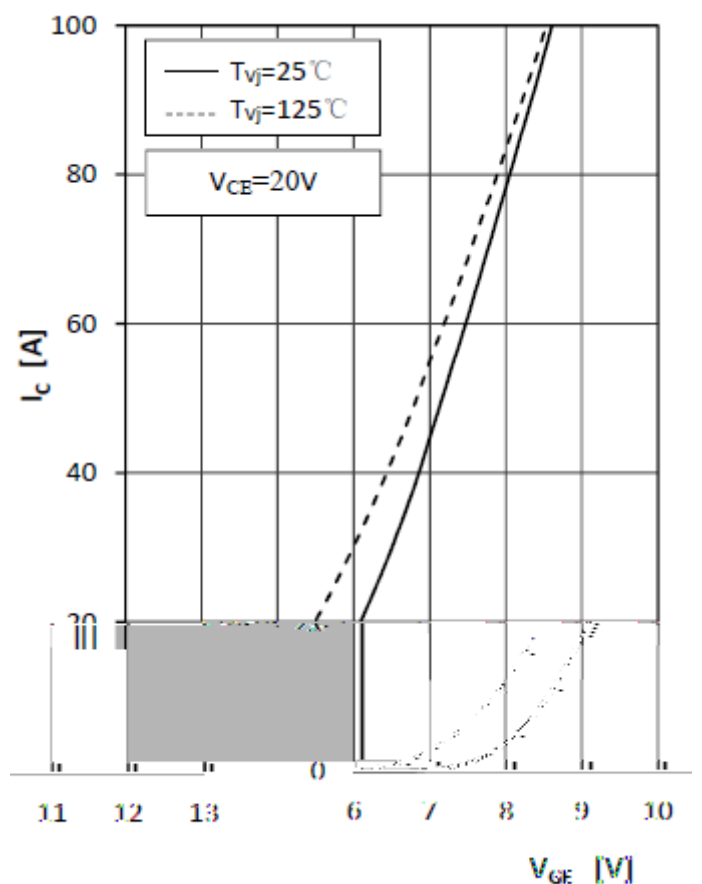
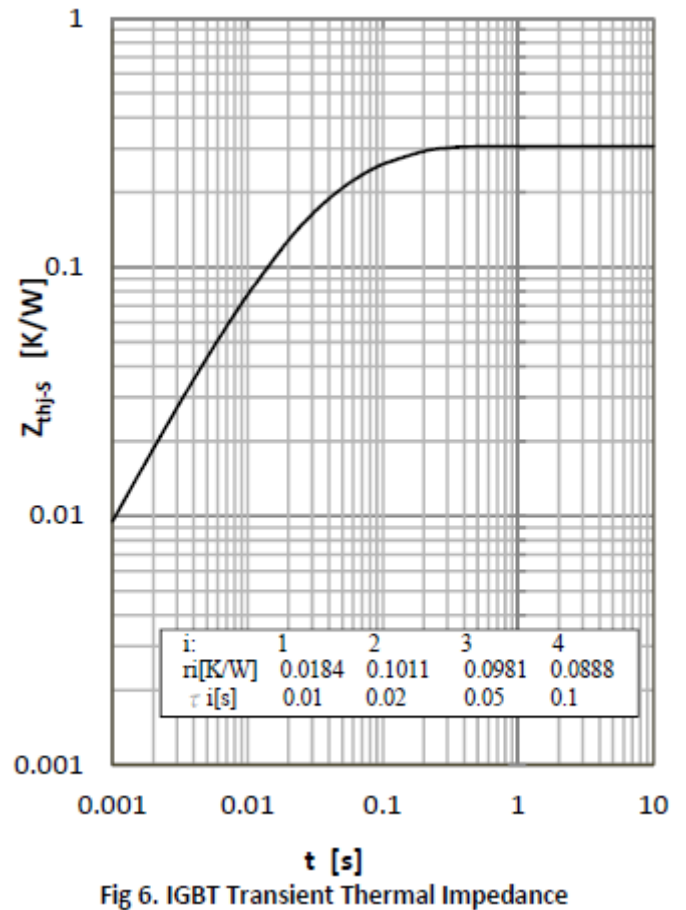
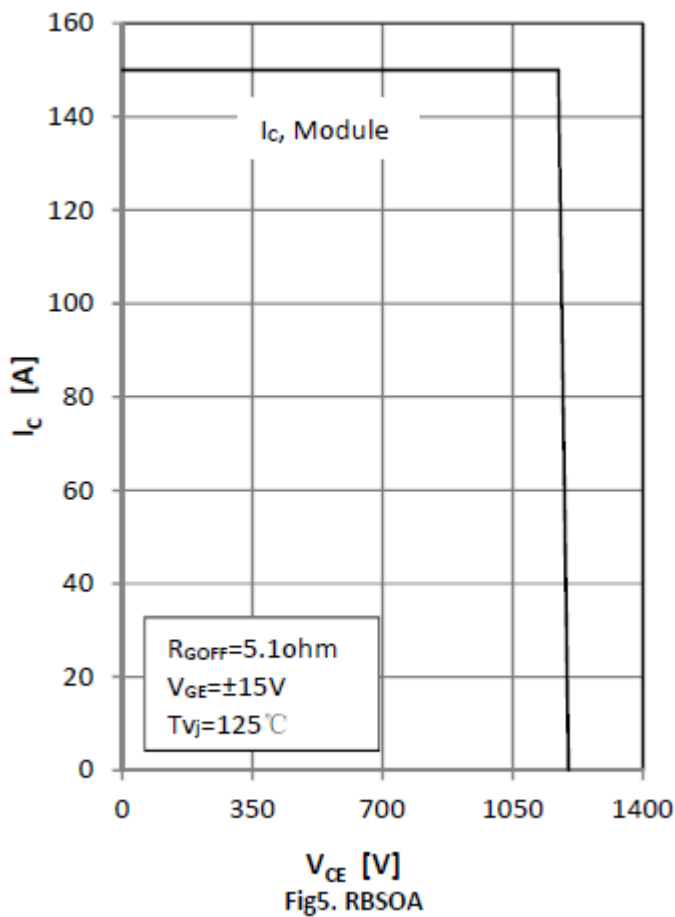
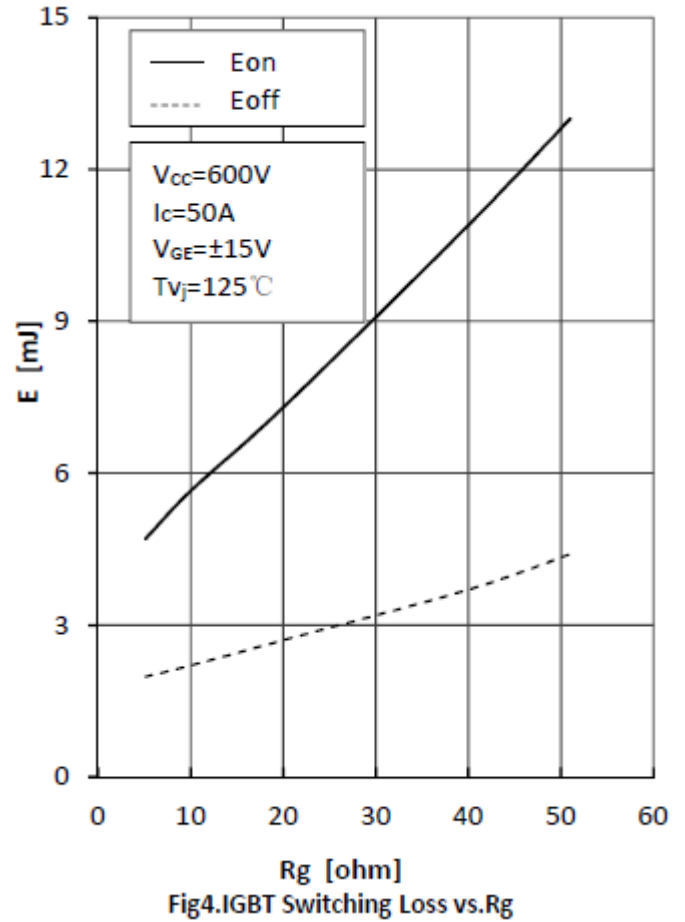
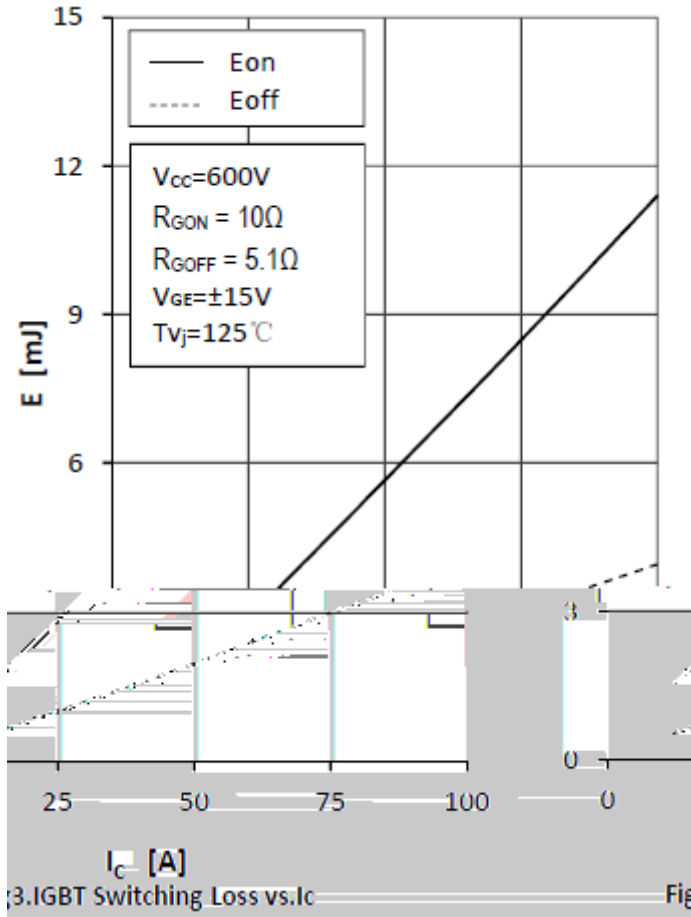


Fig2.IGBT Transfer Characteristics



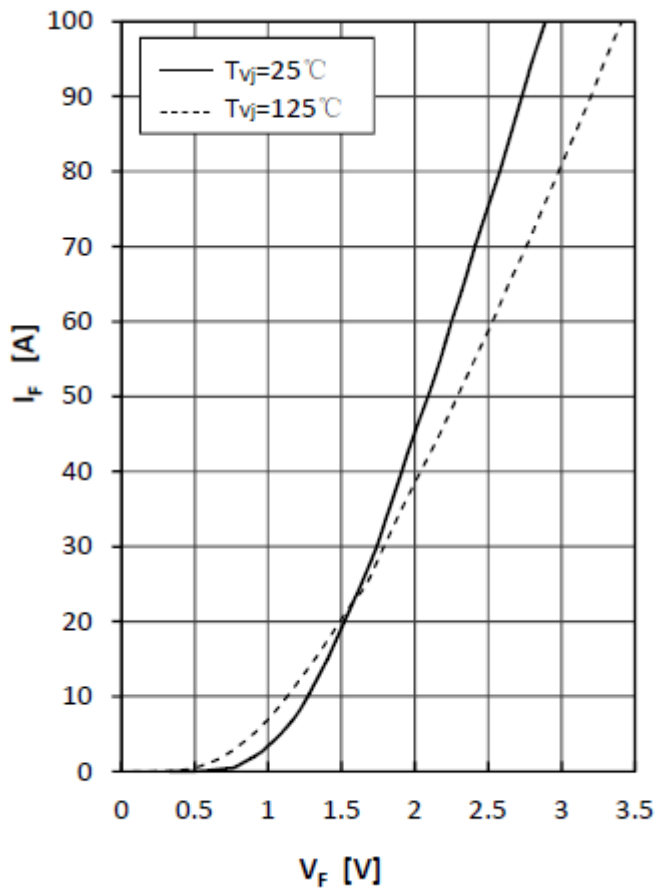


Fig7. Diode Forward Characteristics

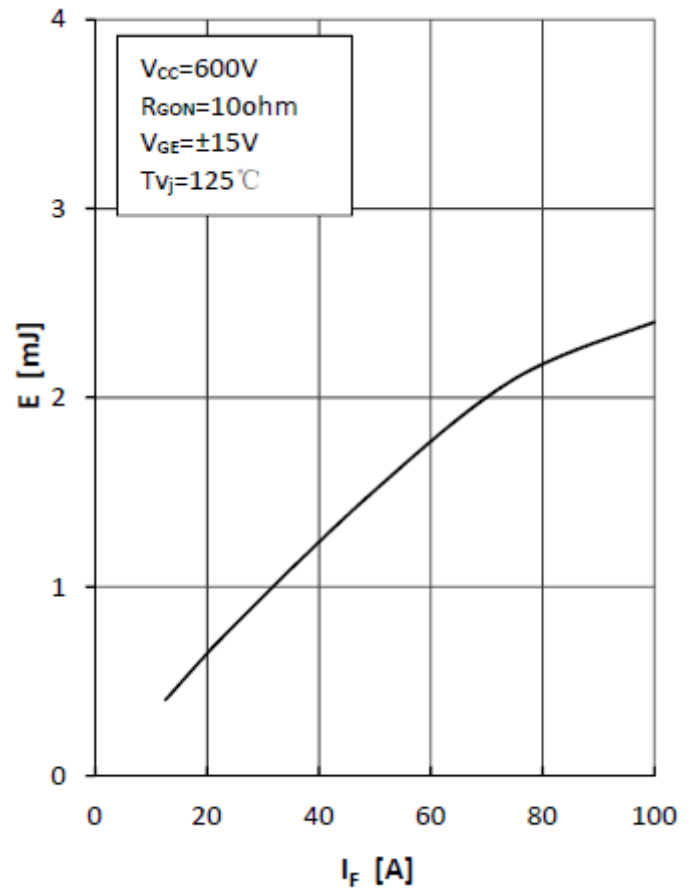


Fig8. Diode Switching Loss(Erec) vs. I_F

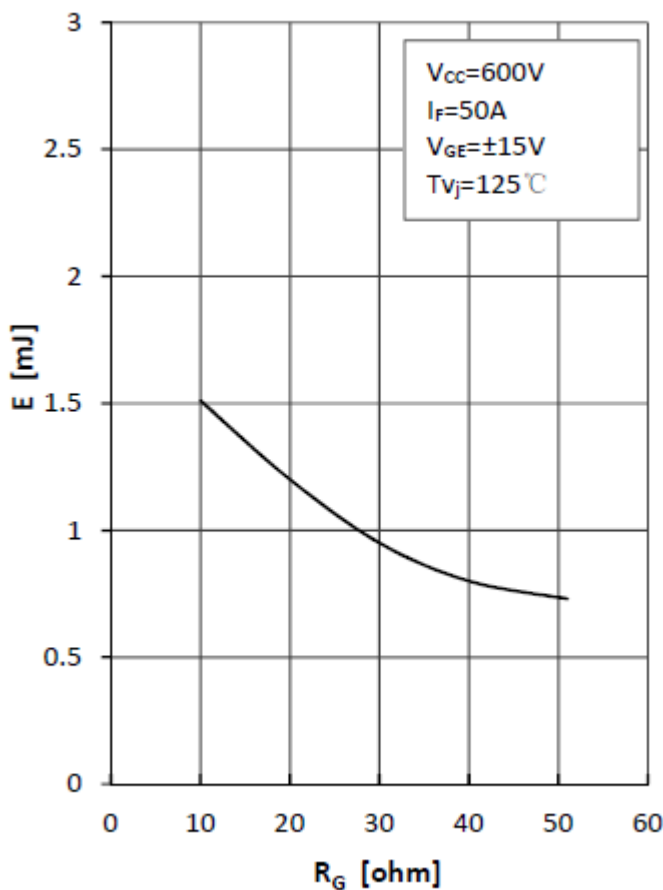


Fig9. Diode Switching Loss(Erec) vs. R_G

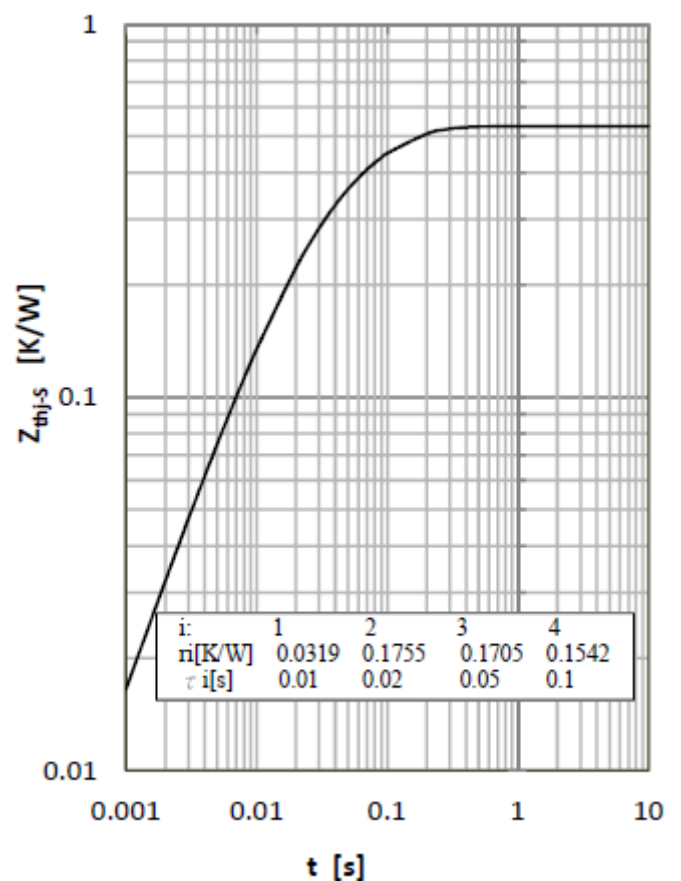
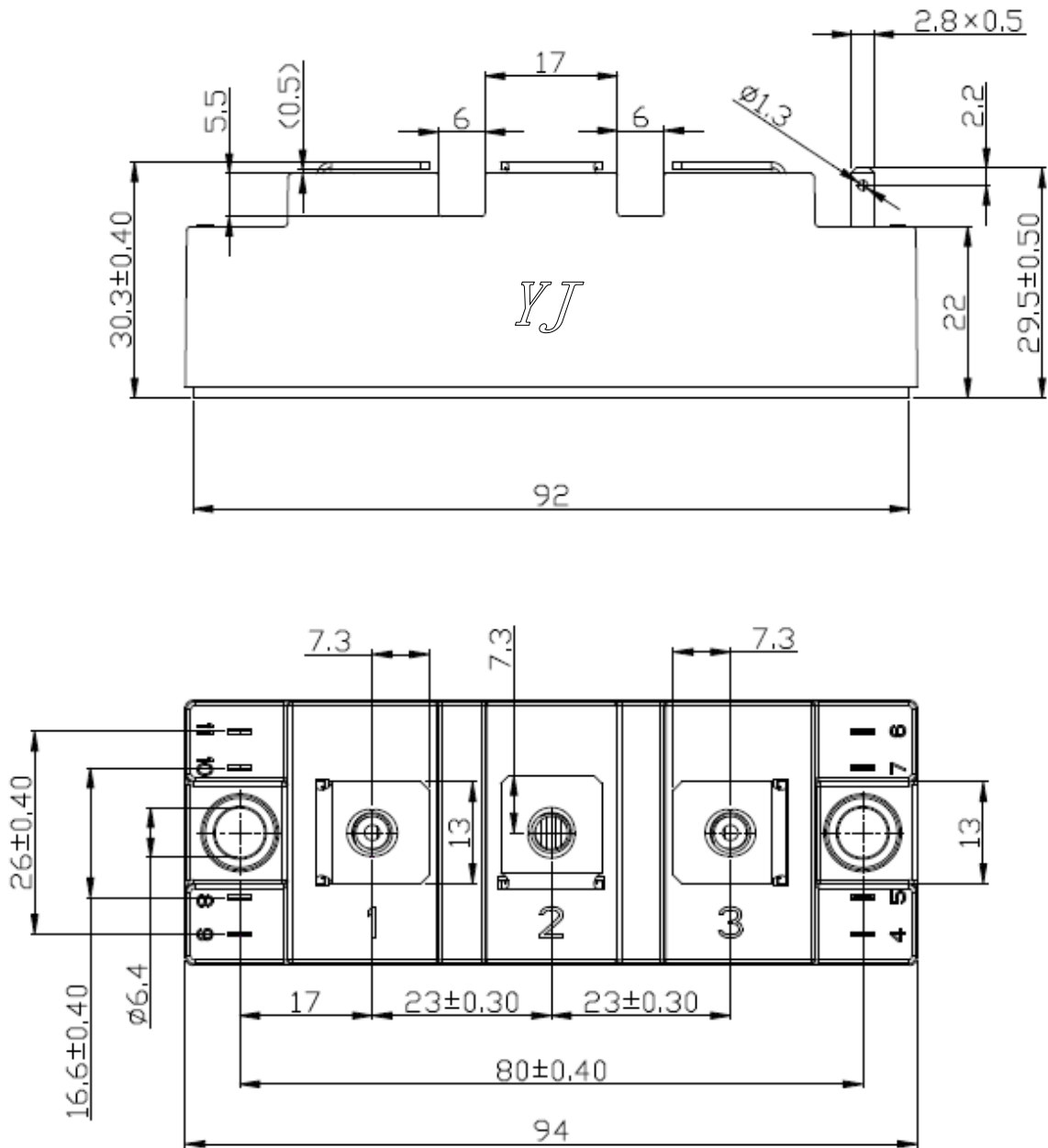


Fig10. Diode Transient Thermal Impedance

Package Outline Information

CASE: C1



Dimensions in mm