

2SH17

Silicon N-Channel IGBT

HITACHI

1st. Edition
Feb. 1995

Application

High speed power switching

Features

- High speed switching
- Low on saturation voltage

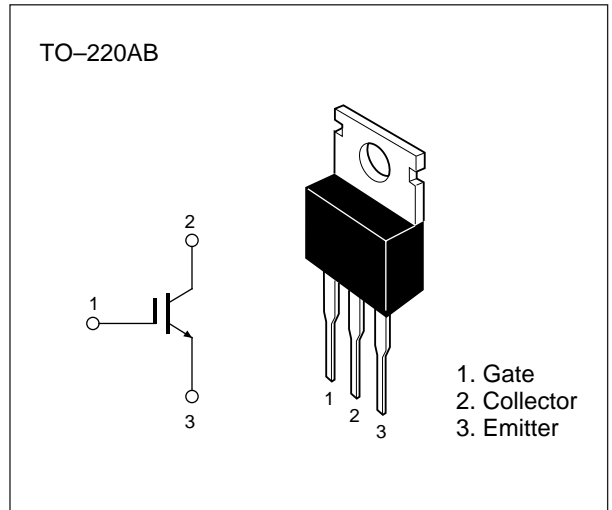


Table 1 Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

| Item | Symbol | Ratings | Unit |
|------------------------------|----------------------|-------------|------------------|
| Collector to emitter voltage | V_{CES} | 600 | V |
| Gate to emitter voltage | V_{GES} | ± 20 | V |
| Collector current | I_C | 12 | A |
| Collector peak current | $i_{c(\text{peak})}$ | 20 | A |
| Collector dissipation | P_C^* | 50 | W |
| Channel temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

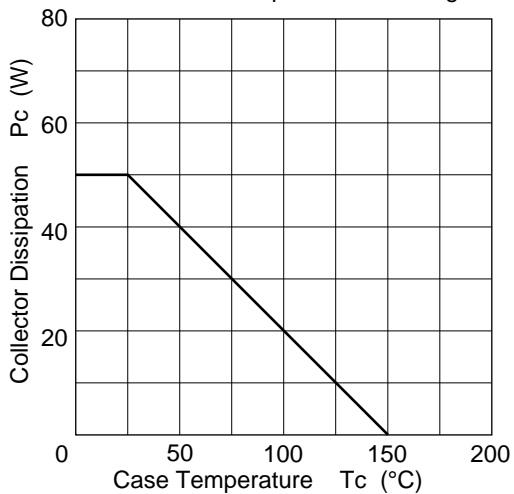
* Value at $T_c = 25^\circ\text{C}$

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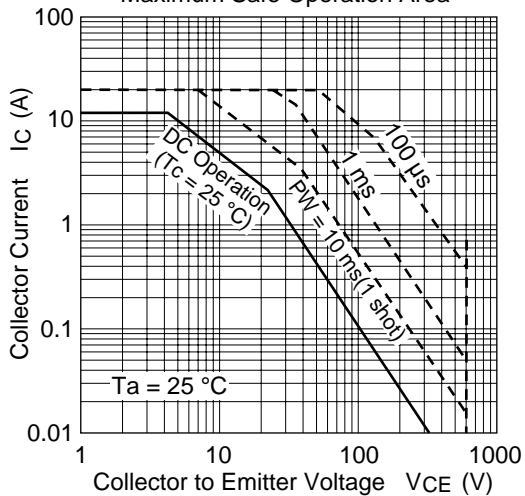
Table 2 Electrical Characteristics ($T_a = 25^\circ\text{C}$)

| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|---|----------------|-----|------|---------|---------------|---|
| Collector to emitter breakdown voltage | $V_{(BR)CES}$ | 600 | — | — | V | $I_C = 100\ \mu\text{A}, V_{GE} = 0$ |
| Zero gate voltage collector current | I_{CES} | — | — | 0.5 | mA | $V_{CE} = 600\ \text{V}, V_{GE} = 0$ |
| Gate to emitter leak current | I_{GES} | — | — | ± 1 | μA | $V_{GE} = \pm 20\ \text{V}, V_{CE} = 0$ |
| Gate to emitter cutoff current | $V_{GE(off)}$ | 3.0 | — | 6.0 | V | $I_C = 1\ \text{mA}, V_{CE} = 10\ \text{V}$ |
| Collector to emitter saturation voltage | $V_{CE(sat)1}$ | — | 1.5 | — | V | $I_C = 5\ \text{A}, V_{GE} = 15\ \text{V}$ |
| Collector to emitter saturation voltage | $V_{CE(sat)2}$ | — | 2.0 | 2.6 | V | $I_C = 10\ \text{A}, V_{GE} = 15\ \text{V}$ |
| Input capacitance | C_{ies} | — | 1000 | — | pF | $V_{CE} = 10\ \text{V}, V_{GE} = 0,$ $f = 1\ \text{MHz}$ |
| Switching time | t_r | — | 75 | — | ns | $I_C = 10\ \text{A},$ $R_L = 30\ \Omega,$ $V_{GE} = \pm 15\ \text{V}$ $R_g = 50\ \Omega$ |
| | t_{on} | — | 150 | — | | |
| | t_f | — | 2000 | — | | |
| | t_{off} | — | 2300 | — | | |

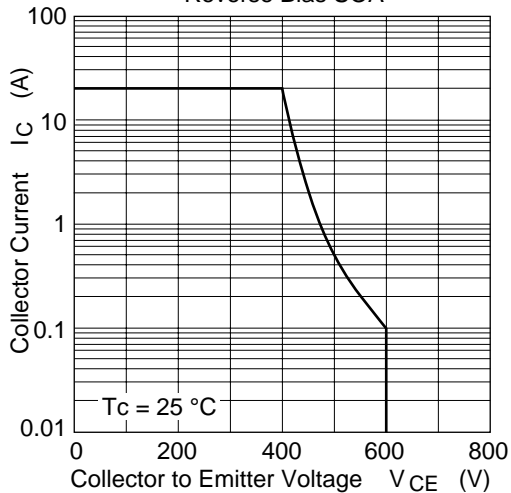
Power vs. Temperature Derating



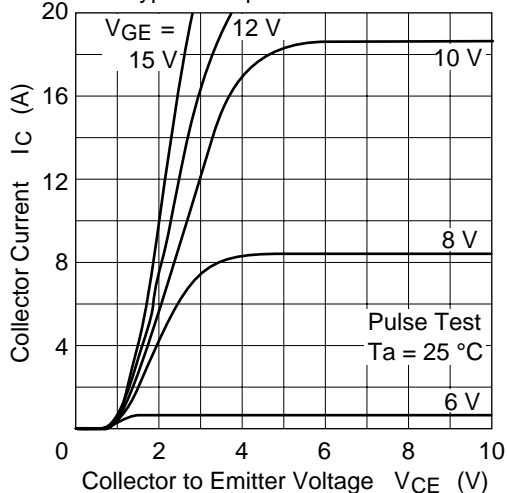
Maximum Safe Operation Area

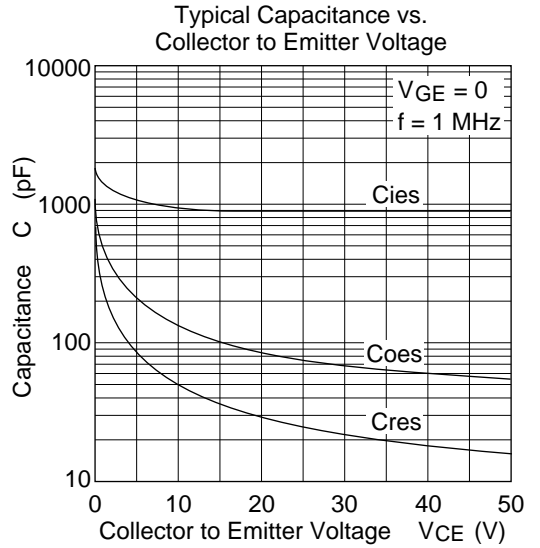
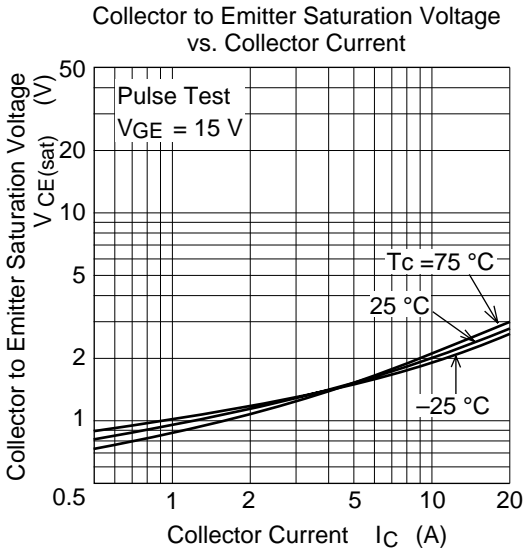
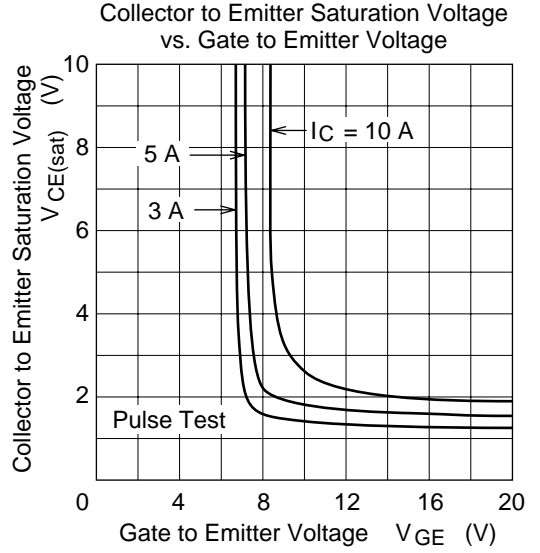
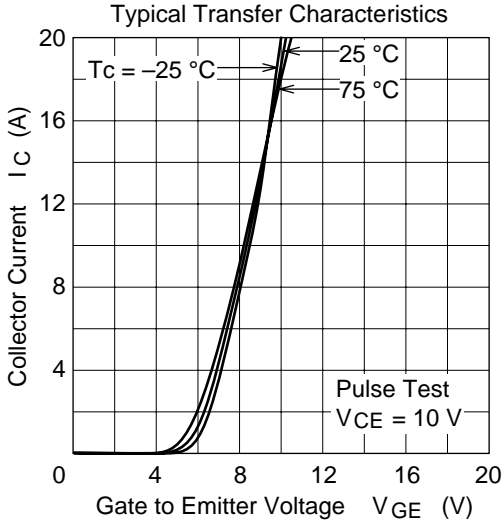


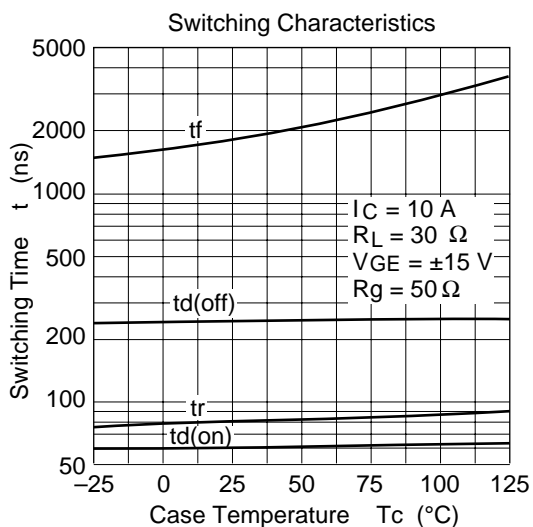
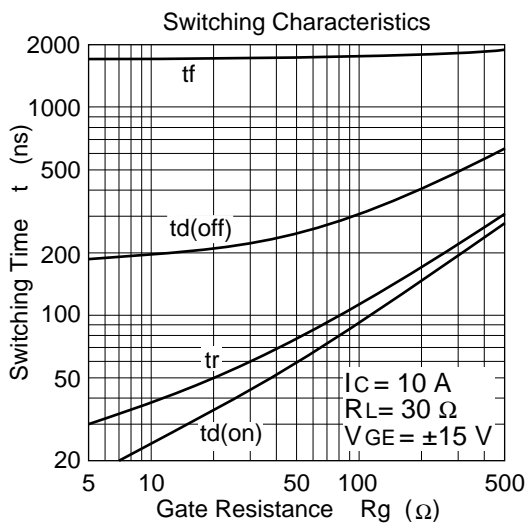
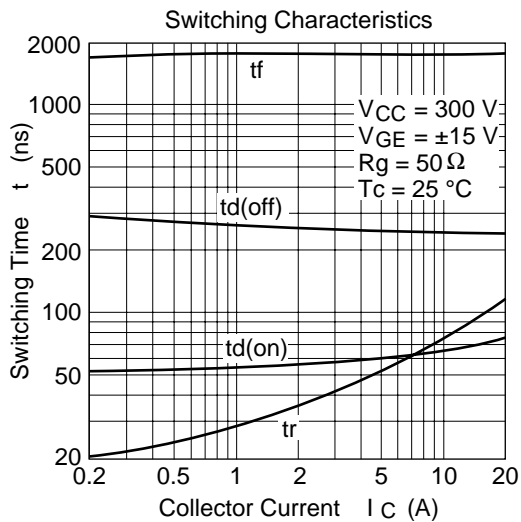
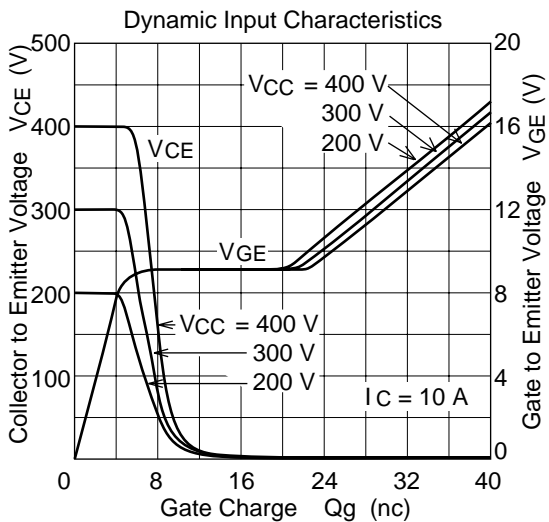
Reverse Bias SOA

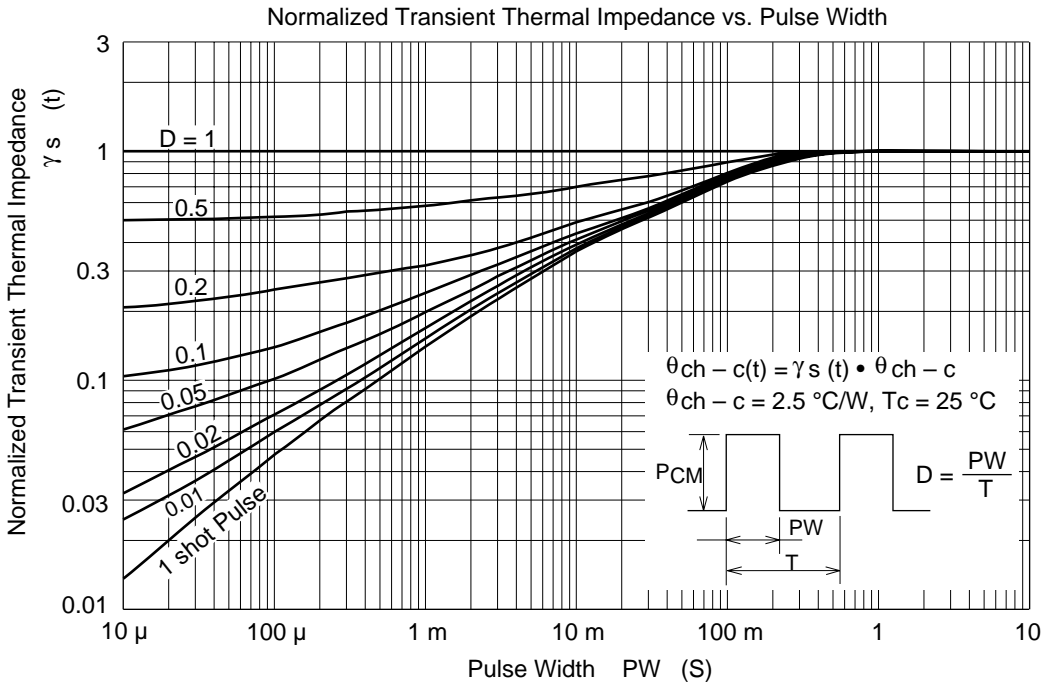


Typical Output Characteristics





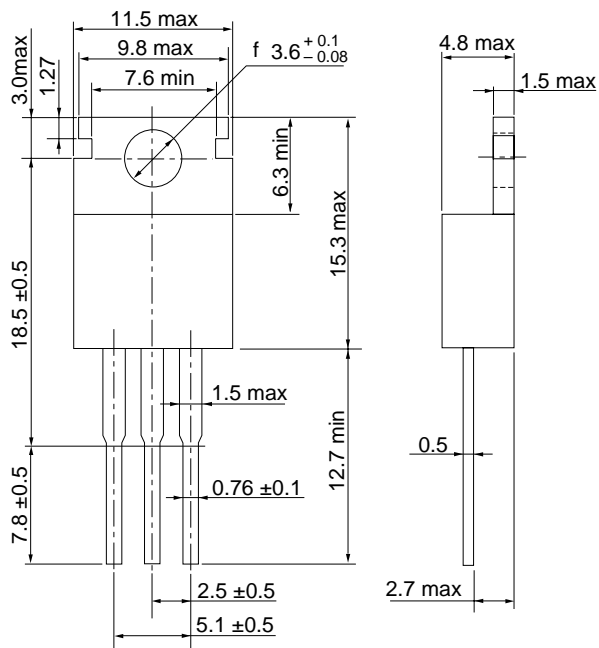




Package Dimensions

Unit : mm

• TO-220AB



| | |
|--------------|----------|
| Hitachi Code | TO-220AB |
| EIAJ | SC-46 |
| JEDEC | — |

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