
2SH31

Silicon N Channel IGBT
High Speed Power Switching

HITACHI

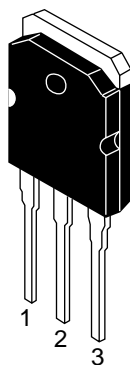
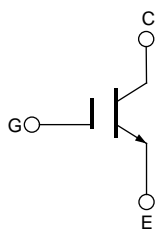
ADE-208-793(Z)
1st. Edition
May 1999

Features

- High speed switching
- Low on-voltage

Outline

TO-3P



1. Gate
2. Collector (Flange)
3. Emitter

Absolute Maximum Ratings (Ta = 25°C)

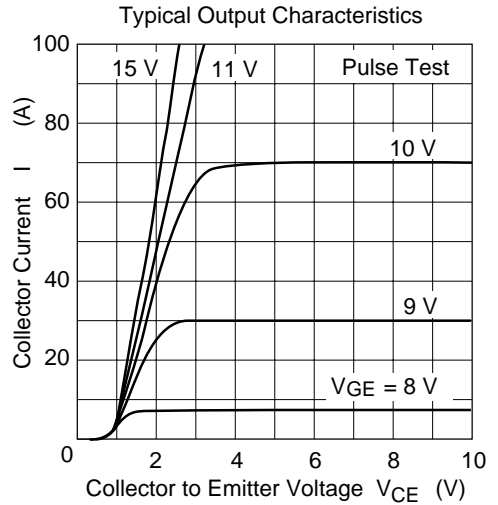
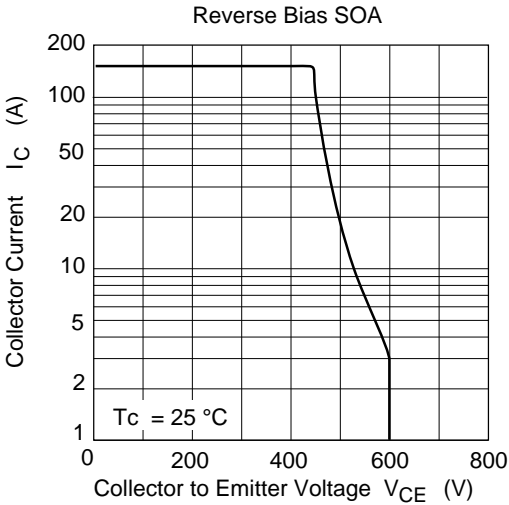
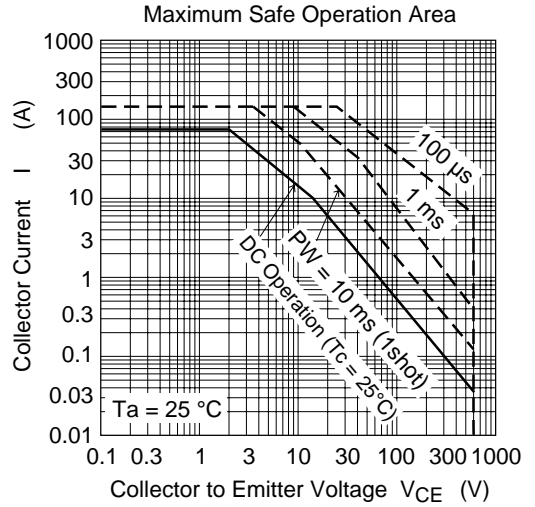
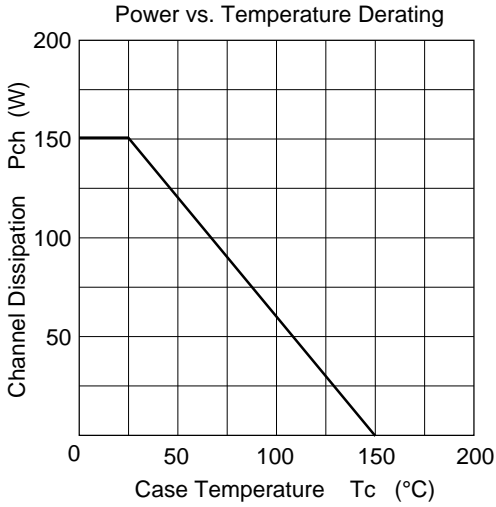
| Item | Symbol | Ratings | Unit |
|------------------------------|------------------------|-------------|------|
| Collector to Emitter voltage | V_{CES} | 600 | V |
| Gate to Emitter voltage | V_{GES} | ±20 | V |
| Collector current | I_C | 75 | A |
| Collector peak current | ic(peak) | 150 | A |
| Collector dissipation | P_C ^{Note1} | 150 | W |
| Channel temperature | Tj | 150 | °C |
| Storage temperature | Tstg | -55 to +150 | °C |

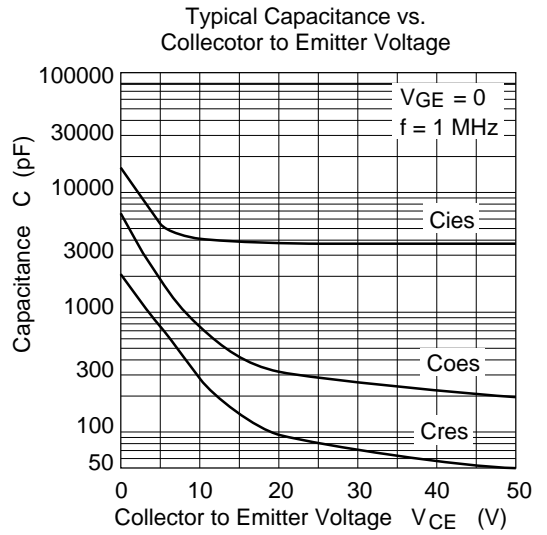
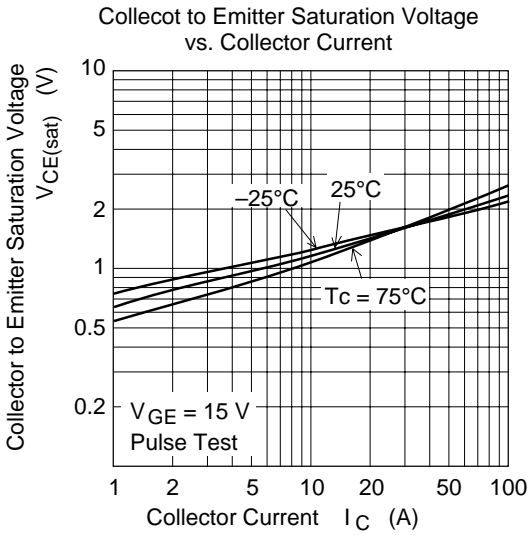
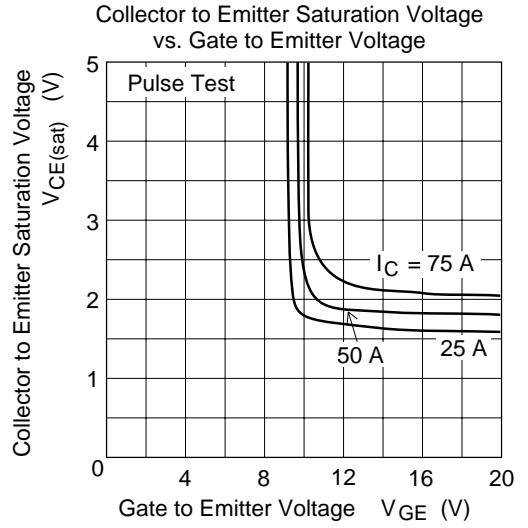
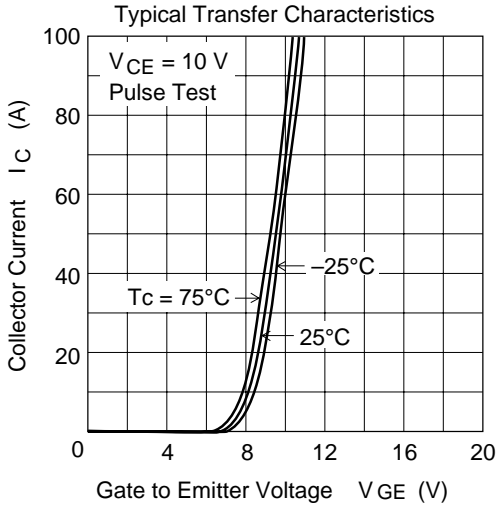
Note: 1. Value at Tc = 25°C

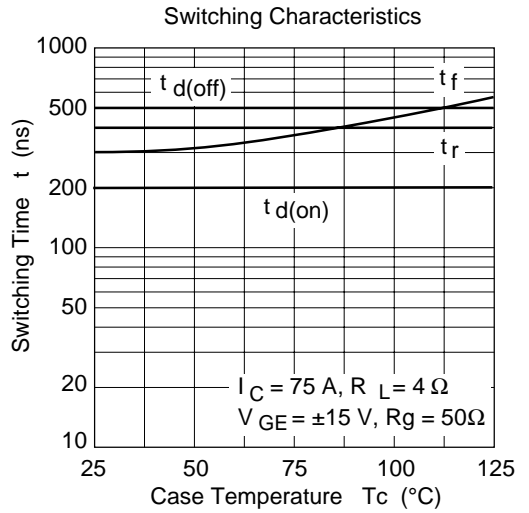
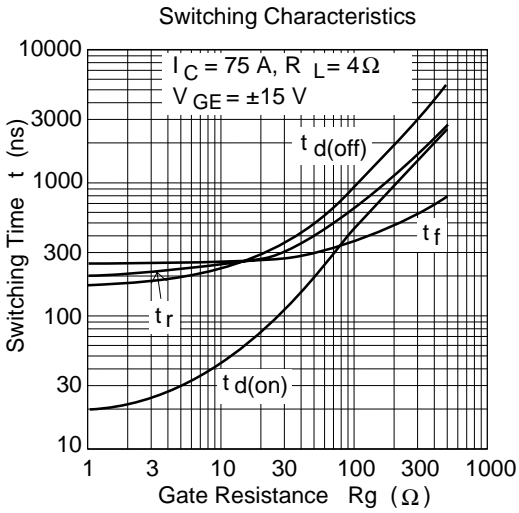
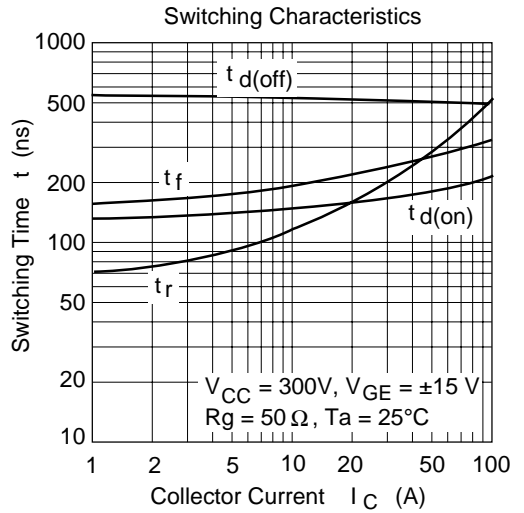
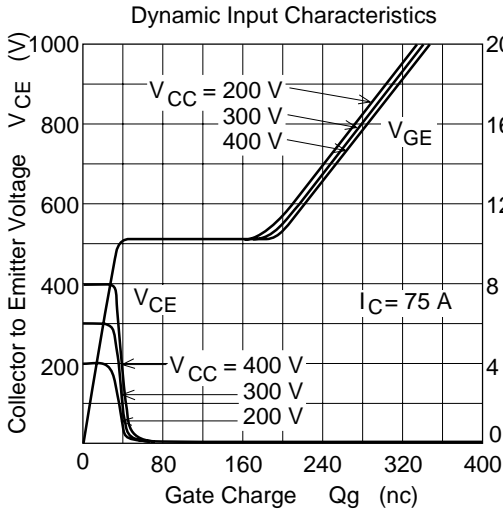
Electrical Characteristics (Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|---------------|-----|------|------|------|--|
| Zero gate voltage collector current | I_{CES} | — | — | 100 | μA | $V_{CE} = 600V, V_{GE} = 0$ |
| Gate to emitter leak current | I_{GES} | — | — | ±1 | μA | $V_{GE} = \pm 20 V, V_{CE} = 0$ |
| Gate to emitter cutoff voltage | $V_{GE(off)}$ | 6.0 | — | 8.0 | V | $I_C = 75mA, V_{CE} = 10V$ |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | — | 2.1 | 2.6 | V | $I_C = 75A, V_{GE} = 15V$ |
| Input capacitance | Cies | — | 4100 | — | pF | $V_{CE} = 10V, V_{GE} = 0$ $f = 1MHz$ |
| Switching time | t_r | — | 400 | — | ns | $I_C = 75A$ |
| | t_{on} | — | 600 | — | ns | $R_L = 4 \Omega$ |
| | t_f | — | 300 | 600 | ns | $V_{GS} = \pm 15V$ |
| | t_{off} | — | 800 | 1600 | ns | $R_g = 50 \Omega$ |

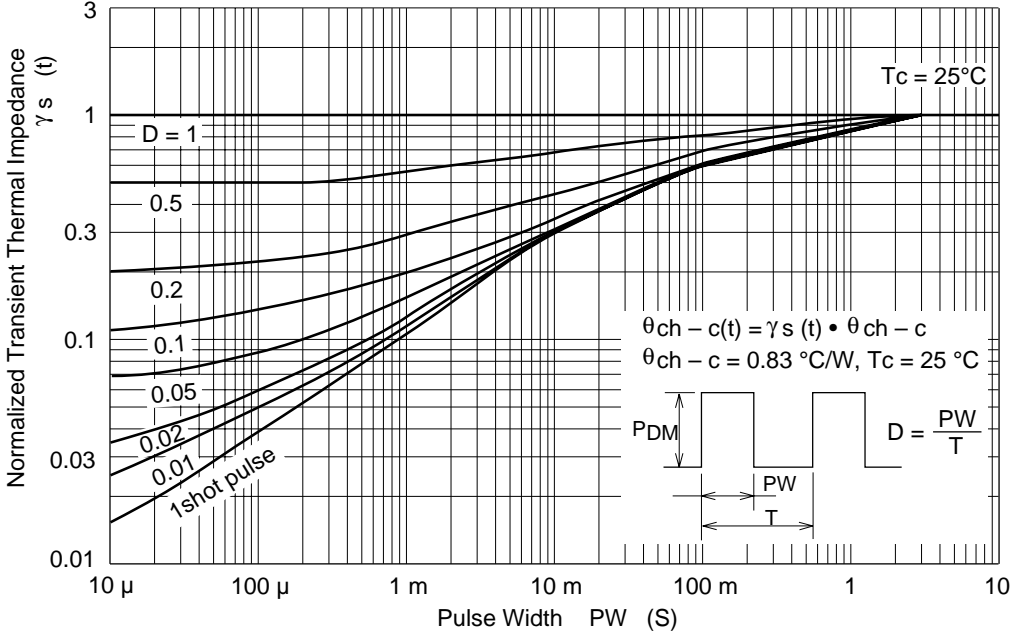
Main Characteristics



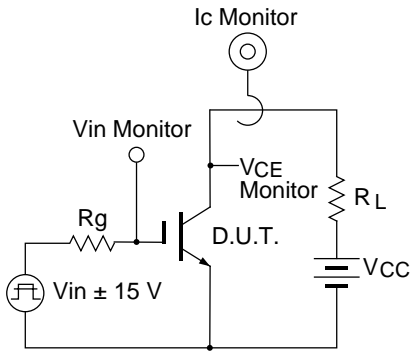




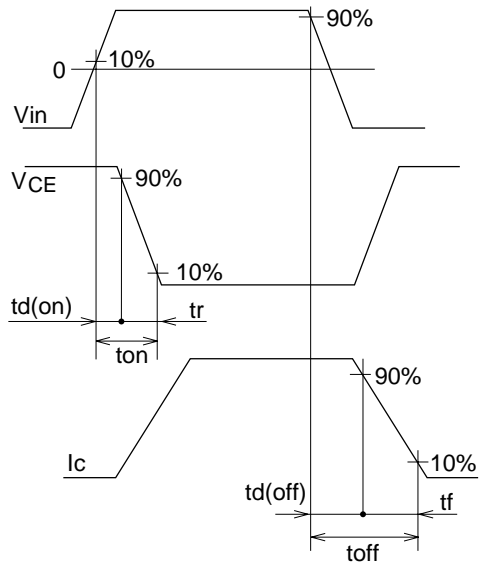
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit

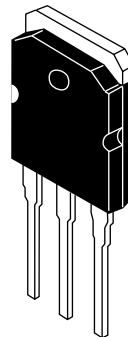
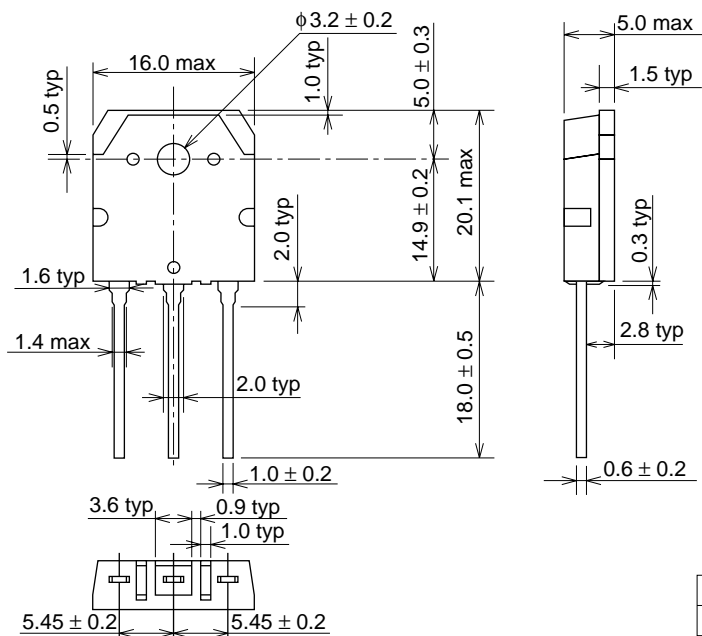


Waveform



Package Dimensions

Unit: mm



| | |
|--------------|-------|
| Hitachi Code | TO-3P |
| EIAJ | SC-65 |
| JEDEC | — |

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