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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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SILICON TRANSISTOR 2SC3840

NPN SILICON TRIPLE DIFFUSED TRANSISTOR HIGH SPEED HIGH VOLTAGE SWITCHING

DESCRIPTION

The 2SC3840 is designed for use in high speed and high voltage switching.
It is suitable for switching regulators, DC-DC converters and ultrasonic appliance applications.

FEATURES

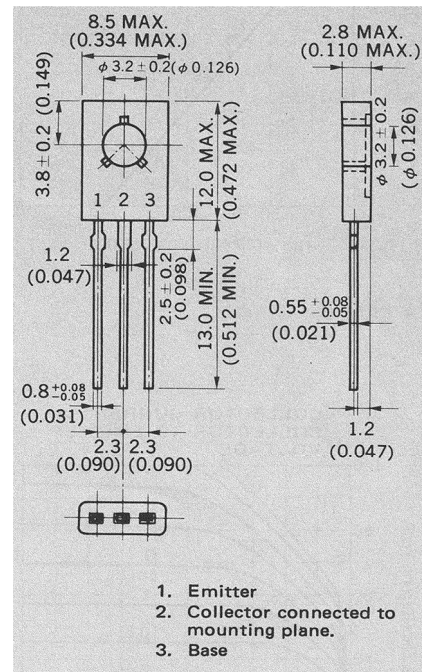
- High speed switching
- High voltage

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

| | | | |
|---|-----------------------|-------------|----|
| Collector to Base Voltage | V _{CBO} | 600 | V |
| Collector to Emitter Voltage | V _{CEO} | 600 | V |
| Emitter to Base Voltage | V _{EBO} | 7.0 | V |
| Collector Current (DC) | I _{C(DC)} | 1.0 | A |
| Collector Current (pulse) ^{Note} | I _{C(pulse)} | 2.0 | A |
| Total Power Dissipation (T _c = 25°C) | P _T | 15 | W |
| Junction Temperature | T _j | 150 | °C |
| Storage Temperature | T _{stg} | -55 to +150 | °C |

Note PW ≤ 300 μs, Duty Cycle ≤ 10%

PACKAGE DRAWING (Unit: mm)



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ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

| SYMBOL | CHARACTERISTIC | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS |
|-------------------------|------------------------------|------|------|------|------|---|
| t _{on} | Turn-On Time | | 0.1 | 0.5 | μs | I _C = 0.5 A, I _{B1} = -I _{B2} = 0.1 A R _L = 500 Ω, V _{CC} = 250 V |
| t _{stg} | Storage Time | | 4.0 | 5.0 | μs | |
| t _f | Fall Time | | 0.2 | 0.5 | μs | |
| h _{FE1} ** | DC Current Gain | 30 | | 120 | — | V _{CE} = 5.0 V, I _C = 0.1 A |
| h _{FE2} ** | DC Current Gain | 5 | | | — | V _{CE} = 5.0 V, I _C = 0.5 A |
| V _{CE(sat)} ** | Collector Saturation Voltage | | | 1.0 | V | I _C = 0.4 A, I _B = 0.08 A |
| V _{BE(sat)} ** | Base Saturation Voltage | | | 1.2 | V | I _C = 0.4 A, I _B = 0.08 A |
| I _{CBO} | Collector Cutoff Current | | | 10 | μA | V _{CB} = 600 V, I _E = 0 |
| I _{EBO} | Emitter Cutoff Current | | | 10 | μA | V _{EB} = 7.0 V, I _C = 0 |

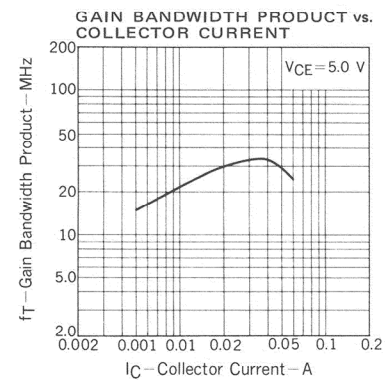
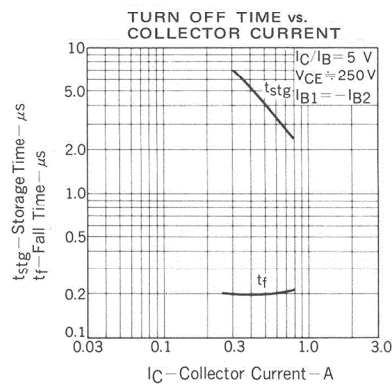
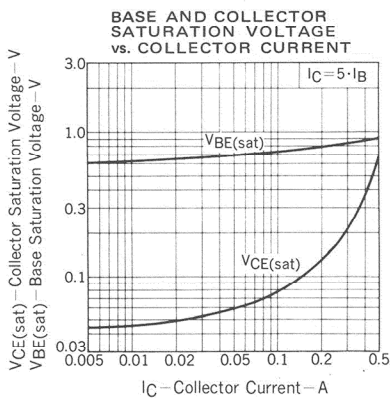
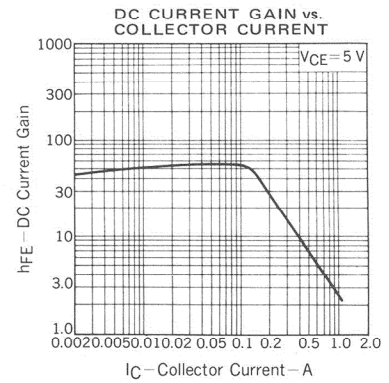
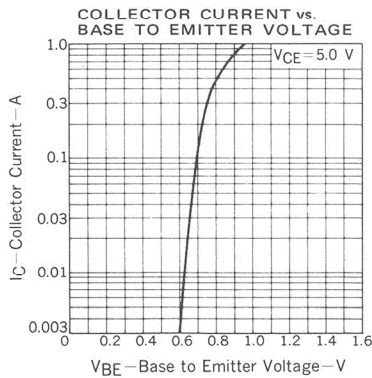
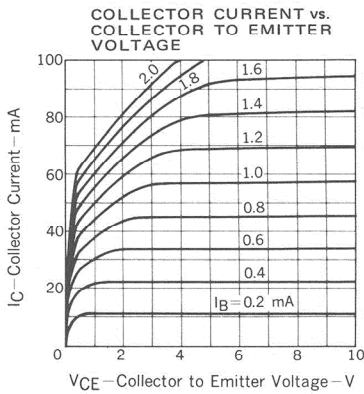
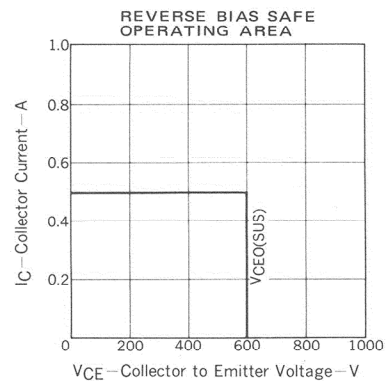
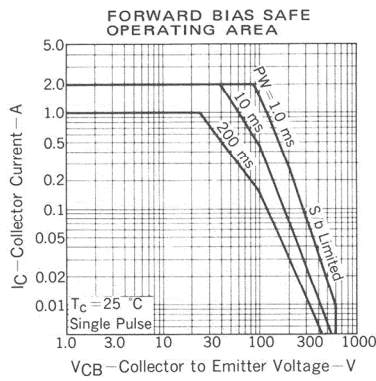
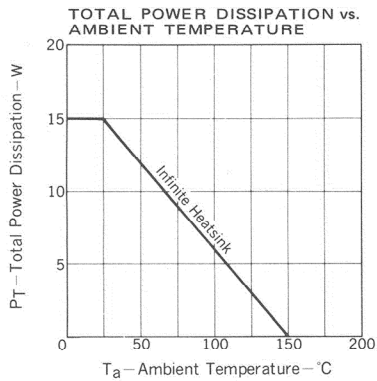
**Pulsed: PW ≤ 350 μs, Duty Cycle ≤ 2 %

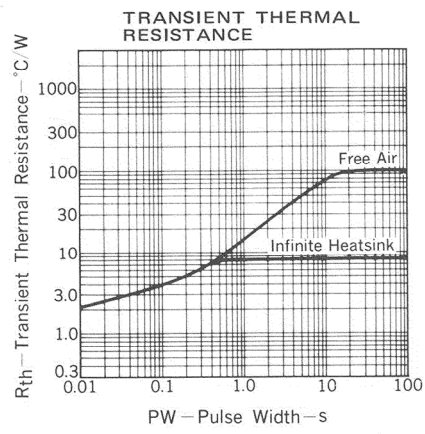
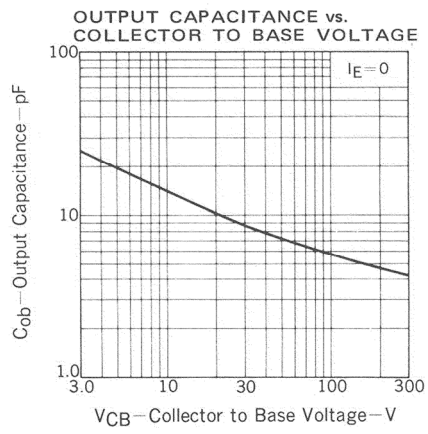
Classification of h_{FE1}

| Rank | M | L | K |
|-------|----------|----------|-----------|
| Range | 30 to 60 | 40 to 80 | 60 to 120 |

Test Conditions: V_{CE} = 5.0 V, I_C = 0.1 A

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





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