

TOSHIBA TRANSISTOR SILICON PNP TRIPLE DIFFUSED TYPE

2SB1411

SWITCHING APPLICATIONS

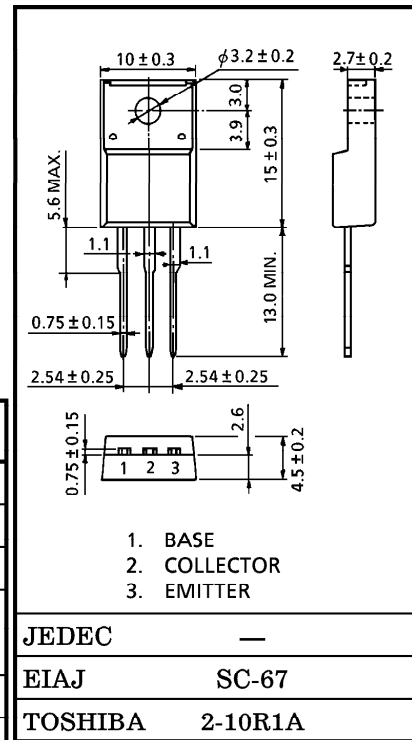
HAMMER DRIVE, PULSE MOTOR DRIVE APPLICATIONS

- High DC Current Gain : $h_{FE} = 1500$ (Min.)
($V_{CE} = -3V, I_C = -1A$)
- Low Saturation Voltage: $V_{CE(sat)} = -1.5V$ (Max.) ($I_C = -1A$)

MAXIMUM RATINGS ($T_a = 25^\circ C$)

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|-----------------------------|--------------------|-----------|---------|------------|
| Collector-Base Voltage | | V_{CBO} | -100 | V |
| Collector-Emitter Voltage | | V_{CEO} | -100 | V |
| Emitter-Base Voltage | | V_{EBO} | -7 | V |
| Collector Current | DC | I_C | -2 | A |
| | Peak | I_{CP} | -3 | |
| Base Current | | I_B | -0.5 | A |
| Collector Power Dissipation | $T_a = 25^\circ C$ | P_C | 2.0 | W |
| | $T_c = 25^\circ C$ | | 20 | |
| Junction Temperature | | T_j | 150 | $^\circ C$ |
| Storage Temperature Range | | T_{stg} | -55~150 | $^\circ C$ |

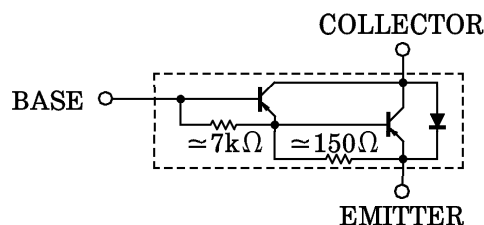
Unit in mm



| | |
|---------|---------|
| JEDEC | — |
| EIAJ | SC-67 |
| TOSHIBA | 2-10R1A |

Weight : 1.7g

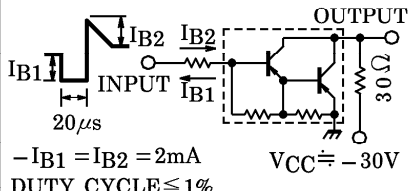
EQUIVALENT CIRCUIT



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--------------------------------------|--------------|--------------------|---|------|------|-------|---------|
| Collector Cut-off Current | | I_{CBO} | $V_{CB} = -100V, I_E = 0$ | — | — | -100 | μA |
| Emitter Cut-off Current | | I_{EBO} | $V_{EB} = -6V, I_C = 0$ | — | — | -2.5 | mA |
| Collector-Emitter Breakdown Voltage | | $V_{(BR) CEO}$ | $I_C = -30mA, I_B = 0$ | -100 | — | — | V |
| DC Current Gain | | $h_{FE} (1)$ | $V_{CE} = -3V, I_C = -1A$ | 1500 | — | 15000 | |
| | | $h_{FE} (2)$ | $V_{CE} = -3V, I_C = -2A$ | 1000 | — | — | |
| Collector-Emitter Saturation Voltage | | $V_{CE} (sat) (1)$ | $I_C = -1A, I_B = -2mA$ | — | — | -1.5 | V |
| | | $V_{CE} (sat) (2)$ | $I_C = -2A, I_B = -8mA$ | — | — | -2.5 | |
| Base-Emitter Saturation Voltage | | $V_{BE} (sat)$ | $I_C = -1A, I_B = -2mA$ | — | — | -2.2 | V |
| Switching Time | Turn-on Time | t_{on} |  <p> $-I_{B1} = I_{B2} = 2mA$ DUTY CYCLE $\leq 1\%$ $V_{CC} = -30V$ </p> | — | 1.0 | — | μs |
| | Storage Time | t_{stg} | | — | 3.0 | — | |
| | Fall Time | t_f | | — | 2.0 | — | |

