

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE (DARLINGTON)

2SD1415A

HIGH POWER SWITCHING APPLICATIONS

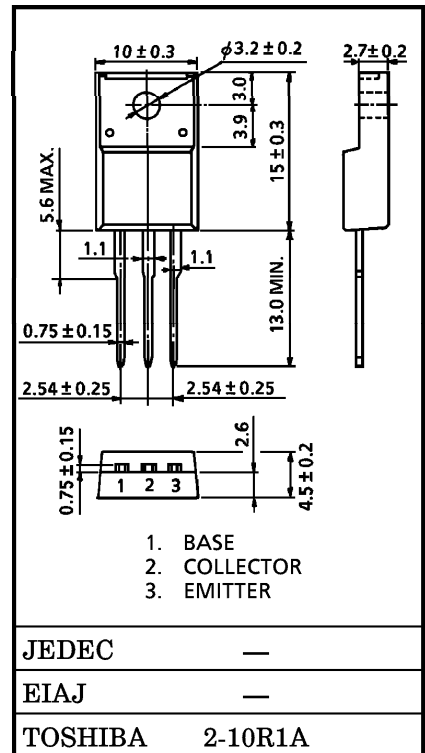
HAMMER DRIVE, PULSE MOTOR DRIVE APPLICATIONS

- High DC Current Gain
: $h_{FE} = 2000$ (Min.) ($V_{CE} = 3\text{ V}$, $I_C = 3\text{ A}$)
- Low Saturation Voltage : $V_{CE(sat)} = 1.5\text{ V}$ (Max.) ($I_C = 3\text{ A}$)

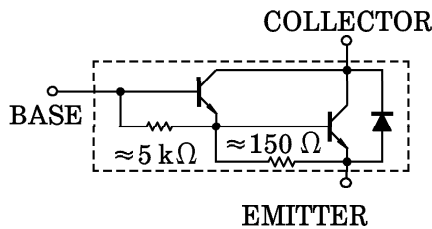
MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|-----------------------------|--------------------------|-----------|---------|------------------|
| Collector-Base Voltage | | V_{CBO} | 120 | V |
| Collector-Emitter Voltage | | V_{CEO} | 100 | V |
| Emitter-Base Voltage | | V_{EBO} | 6 | V |
| Collector Current | DC | I_C | 7 | A |
| | Pulse | I_{CP} | 10 | |
| Base Current | | I_B | 0.7 | A |
| Collector Power Dissipation | $T_a = 25^\circ\text{C}$ | P_C | 2.0 | W |
| | $T_c = 25^\circ\text{C}$ | | 25 | |
| Junction Temperature | | T_j | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | | T_{stg} | -55~150 | $^\circ\text{C}$ |

Unit in mm

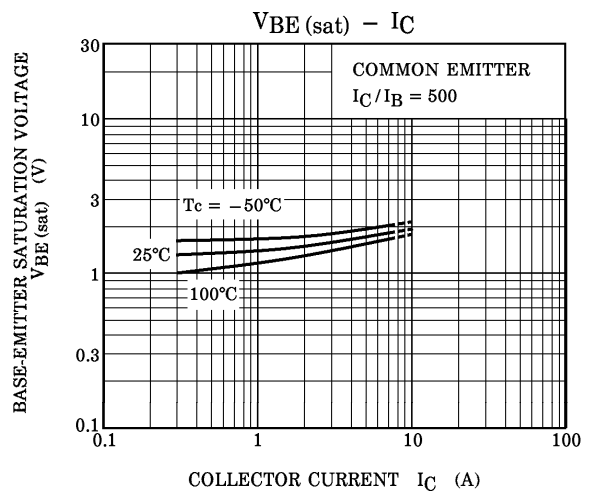
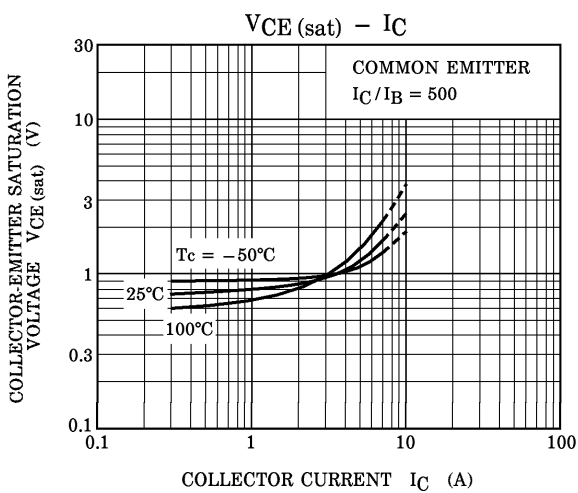
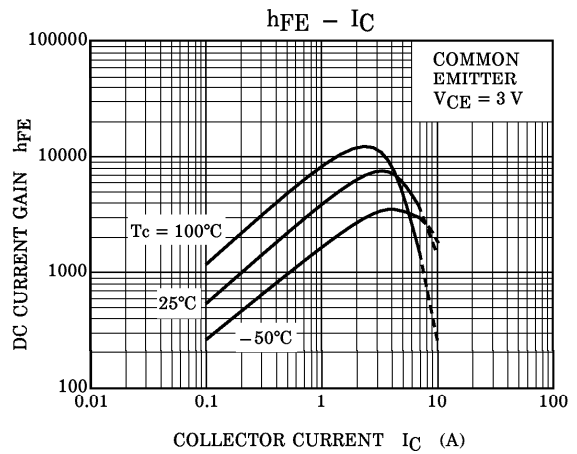
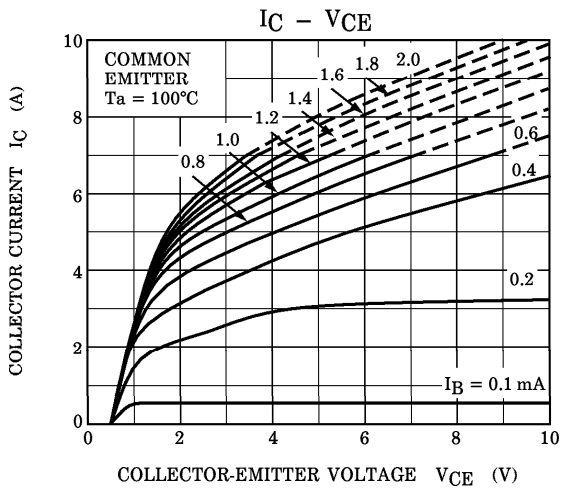
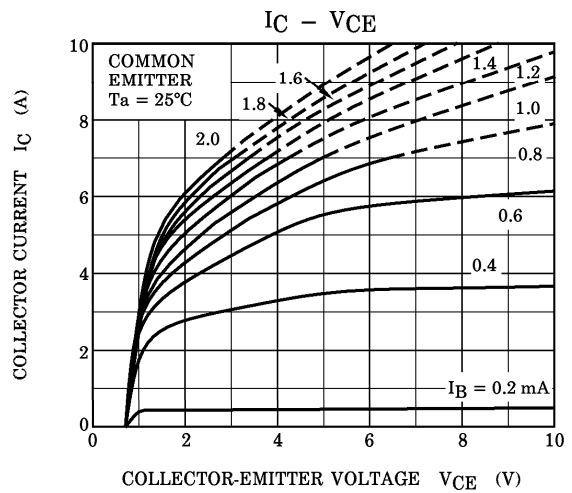
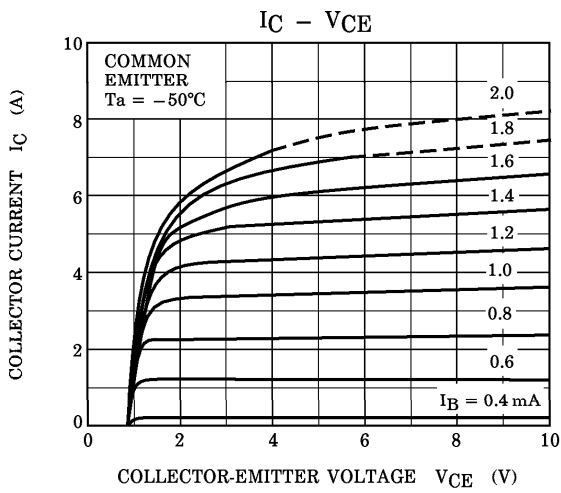


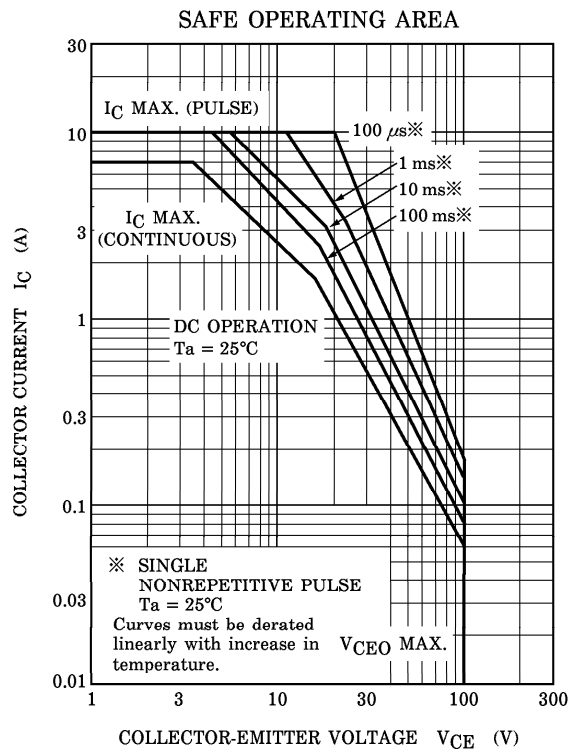
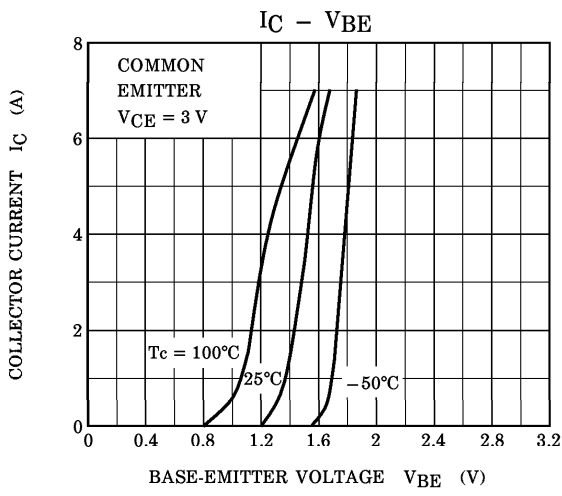
EQUIVALENT CIRCUIT



ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--------------------------------------|--------------|---------------|--|------|------|-------|---------------|
| Collector Cut-off Current | | I_{CBO} | $V_{CB} = 100\text{ V}, I_E = 0$ | — | — | 100 | μA |
| Emitter Cut-off Current | | I_{EBO} | $V_{EB} = 6\text{ V}, I_C = 0$ | 0.75 | — | 3.0 | mA |
| Collector-Emitter Breakdown Voltage | | $V_{(BR)CEO}$ | $I_C = 50\text{ mA}, I_B = 0$ | 100 | — | — | V |
| DC Current Gain | | $h_{FE(1)}$ | $V_{CE} = 3\text{ V}, I_C = 3\text{ A}$ | 2000 | — | 15000 | |
| | | $h_{FE(2)}$ | $V_{CE} = 3\text{ V}, I_C = 6\text{ A}$ | 1000 | — | — | |
| Collector-Emitter Saturation Voltage | | $V_{CE(sat)}$ | $I_C = 3\text{ A}, I_B = 6\text{ mA}$ | — | 0.9 | 1.5 | V |
| Base-Emitter Saturation Voltage | | $V_{BE(sat)}$ | $I_C = 3\text{ A}, I_B = 6\text{ mA}$ | — | 1.5 | 2.0 | V |
| Switching Time | Turn-on Time | t_{on} | <p> $I_{B1} = -I_{B2} = 6\text{ mA}, V_{CC} = 45\text{ V}$ DUTY CYCLE $\leq 1\%$ </p> | — | 0.3 | — | μs |
| | Storage Time | t_{stg} | | — | 5.1 | — | |
| | Fall Time | t_f | | — | 0.6 | — | |





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