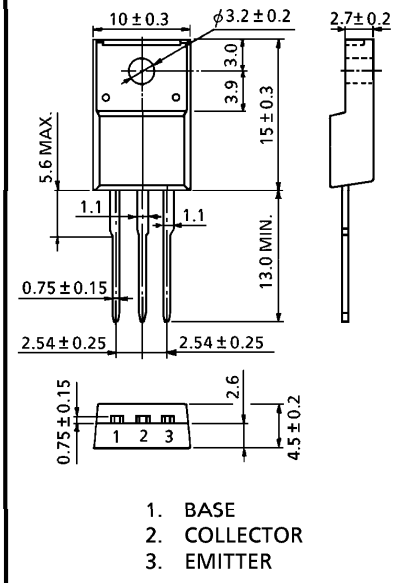
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE

# 2SD2241

SWITCHING APPLICATIONS

- High DC Current Gain : $h_{FE}$ = 2000 (Min.)
- Low Saturation Voltage : $V_{CE\ (sat)}$ = 1.5V (Max.)
- Complementary to 2SB1481

Unit in mm



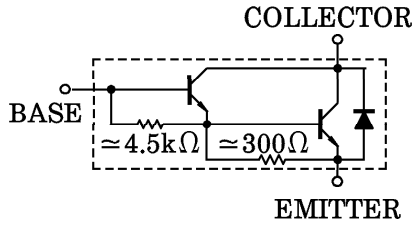

| | |
|---|---|
| JEDEC | — |
| EIAJ | SC-67 |
| TOSHIBA | 2-10R1A |

Weight : 1.7g (Typ.)

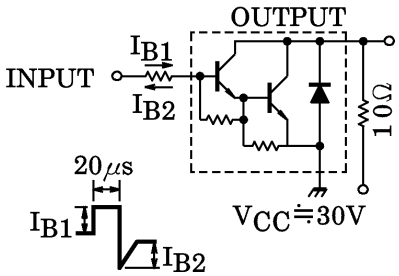
MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|---|---|---|---|---|
| Collector-Base Voltage | | $V_{CBO}$ | 100 | V |
| Collector-Emitter Voltage | | $V_{CEO}$ | 100 | V |
| Emitter-Base Voltage | | $V_{EBO}$ | 5 | V |
| Collector Current | DC | $I_C$ | ±4 | A |
| | Pulse | $I_{CP}$ | ±6 | |
| Base Current | | $I_B$ | 0.3 | A |
| Collector Power Dissipation | Ta = 25°C | $P_C$ | 2.0 | W |
| | Tc = 25°C | | 25 | |
| Junction Temperature | | $T_j$ | 150 | °C |
| Storage Temperature Range | | $T_{stg}$ | −55~150 | °C |

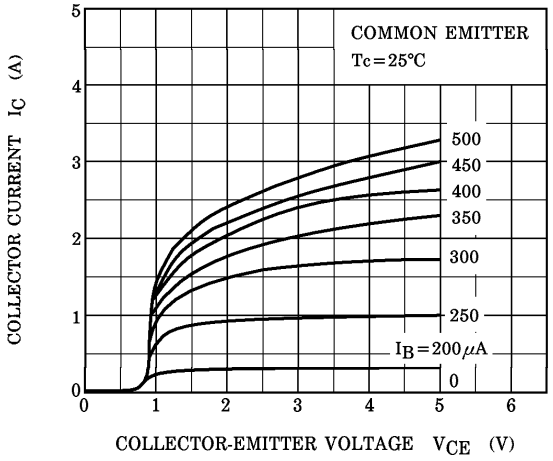
EQUIVALENT CIRCUIT



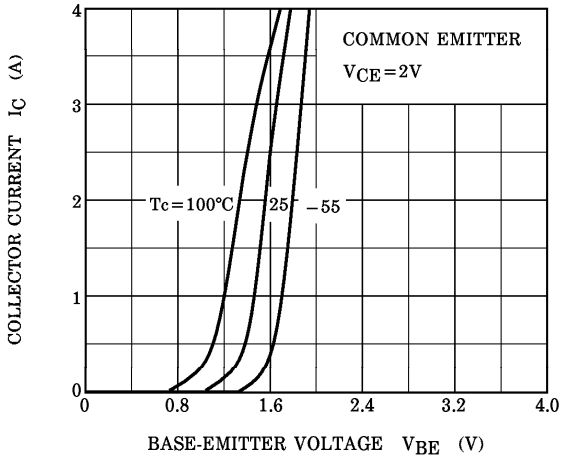
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| Collector Cut-off Current | | $I_{CBO}$ | $V_{CB}$ = 100V, $I_E$ = 0 | — | — | 20 | μA |
| Emitter Cut-off Current | | $I_{EBO}$ | $V_{EB}$ = 5V, $I_C$ = 0 | — | — | 2.5 | mA |
| Collector-Emitter Breakdown Voltage | | $V_{(BR)CEO}$ | $I_C$ = 10mA, $I_B$ = 0 | 100 | — | — | V |
| DC Current Gain | | $h_{FE(1)}$ | $V_{CE}$ = 2V, $I_C$ = 1.5A | 2000 | — | — | |
| | | $h_{FE(2)}$ | $V_{CE}$ = 2V, $I_C$ = 3A | 1000 | — | — | |
| Collector-Emitter Saturation Voltage | | $V_{CE(sat)}$ | $I_C$ = 3A, $I_B$ = 6mA | — | — | 1.5 | V |
| Base-Emitter Saturation Voltage | | $V_{BE(sat)}$ | $I_C$ = 3A, $I_B$ = 6mA | — | — | 2.0 | V |
| Emitter-Collector Forward Voltage | | $V_{ECF}$ | $I_E$ = 1A, $I_B$ = 0 | — | — | 2.0 | V |
| Switching Time | Turn-on Time | $t_{on}$ |  | — | 0.2 | — | μs |
| | Storage Time | $t_{stg}$ | | — | 1.5 | — | |
| | Fall Time | $t_f$ | $I_{B1} = -I_{B2}$ = 6mA, DUTY CYCLE ≦ 1% | — | 0.6 | — | |

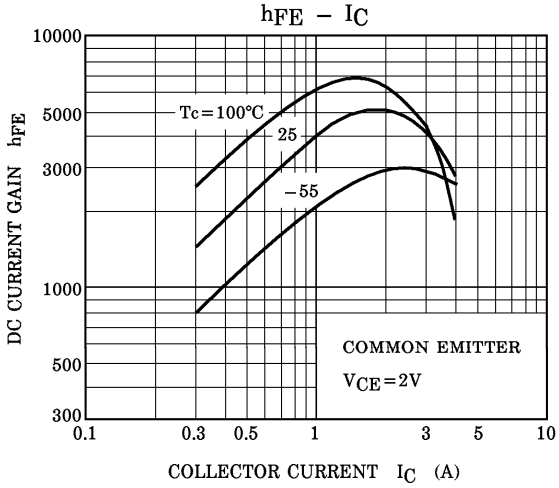
$I_C$ – $V_{CE}$



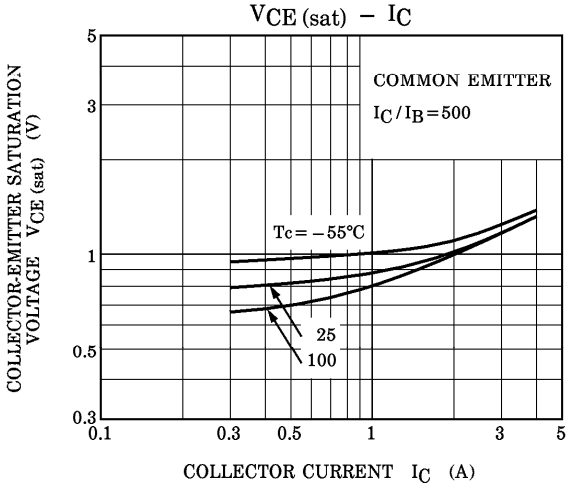

$I_C$ – $V_{BE}$



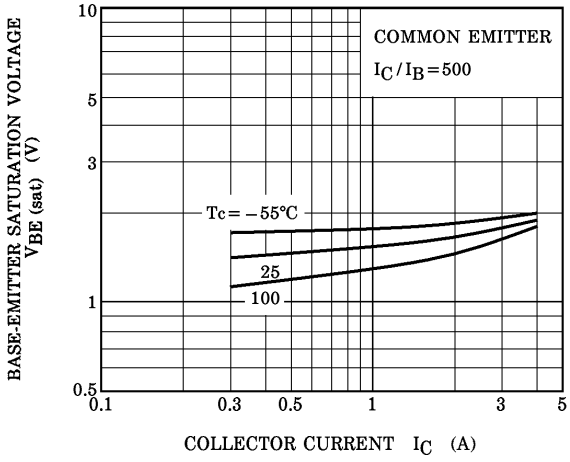

$h_{FE}$ – $I_C$



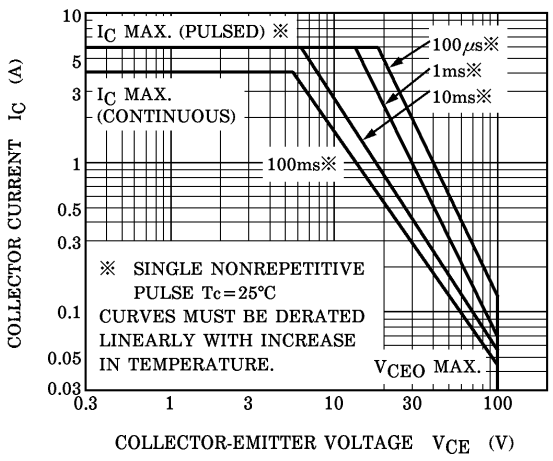

$V_{CE\,(sat)}$ – $I_C$




$V_{BE\,(sat)}$ – $I_C$




SAFE OPERATING AREA



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