

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS) (DARLINGTON)

# 2SD1508

PULSE MOTOR DRIVE, HAMMER DIVE APPLICATIONS

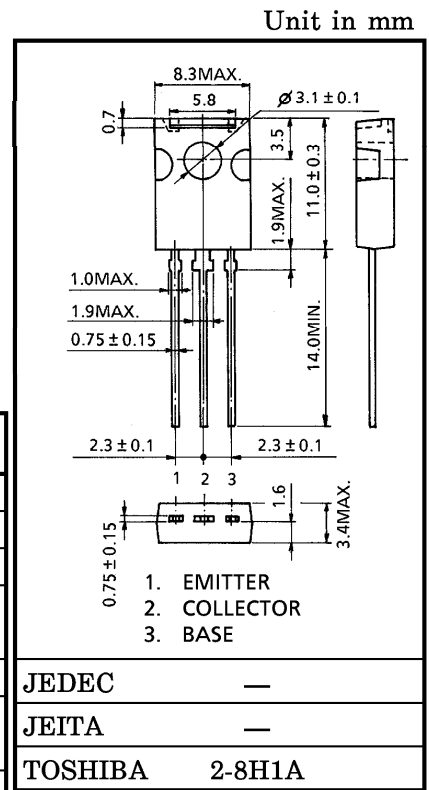
SWITCHING APPLICATIONS

POWER AMPLIFIER APPLICATIONS

- High DC Current Gain  
:  $h_{FE} = 4000$  (Min.)
- Low Saturation Voltage  
:  $V_{CE(sat)} = 1.5V$  (Max.)

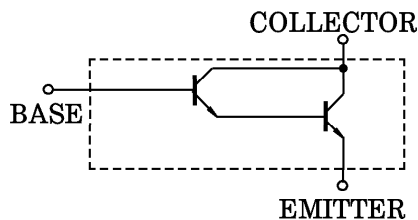
MAXIMUM RATINGS ( $T_c = 25^\circ C$ )

| CHARACTERISTIC              | SYMBOL    | RATING             | UNIT       |
|-----------------------------|-----------|--------------------|------------|
| Collector-Base Voltage      | $V_{CBO}$ | 30                 | V          |
| Collector-Emitter Voltage   | $V_{CEO}$ | 30                 | V          |
| Emitter-Base Voltage        | $V_{EBO}$ | 10                 | V          |
| Collector Current           | DC        | $I_C$              | A          |
|                             | Pulse     | $I_{CP}$           |            |
| Base Current                | $I_B$     | 50                 | mA         |
| Collector Power Dissipation | $P_C$     | $T_a = 25^\circ C$ | 1.2        |
|                             |           | $T_c = 25^\circ C$ | 10         |
| Junction Temperature        | $T_j$     | 150                | $^\circ C$ |
| Storage Temperature Range   | $T_{stg}$ | -55~150            | $^\circ C$ |

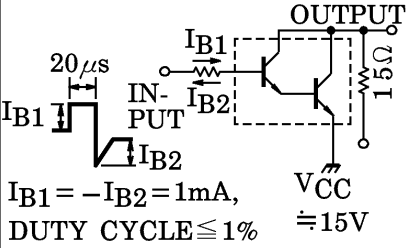


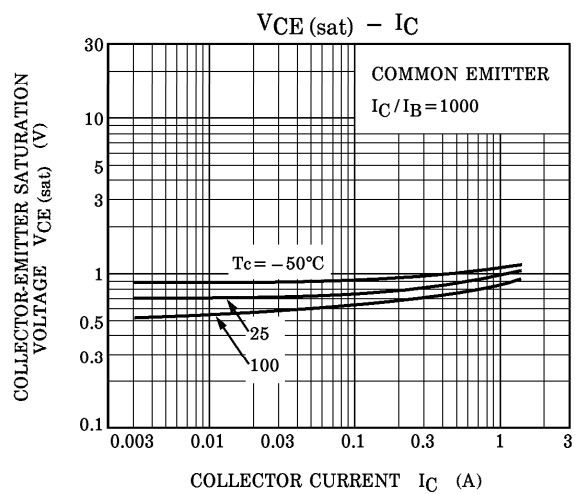
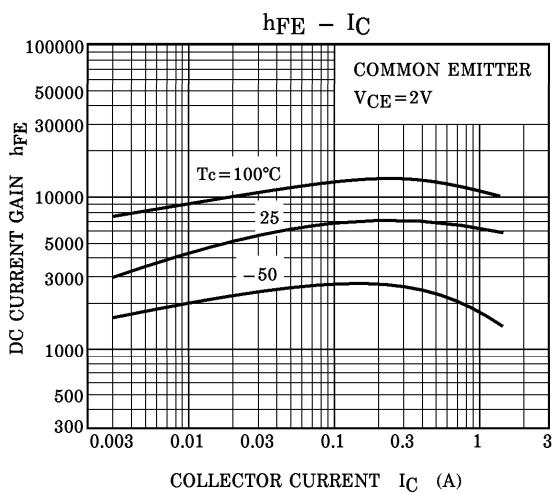
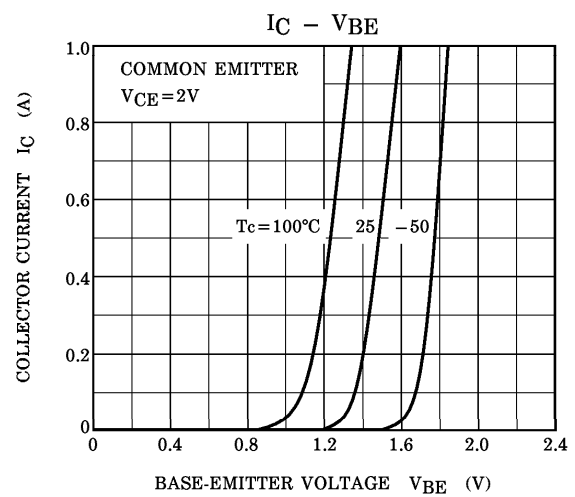
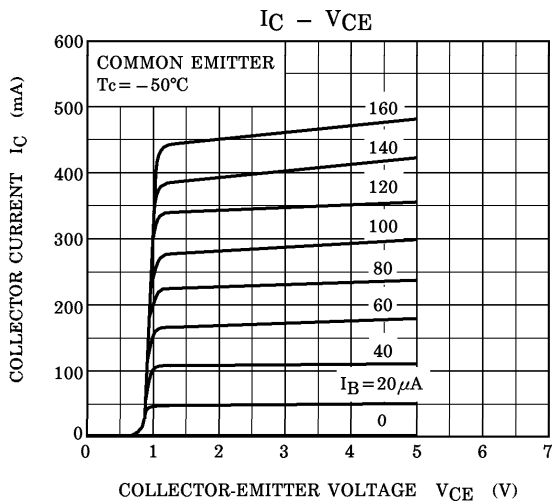
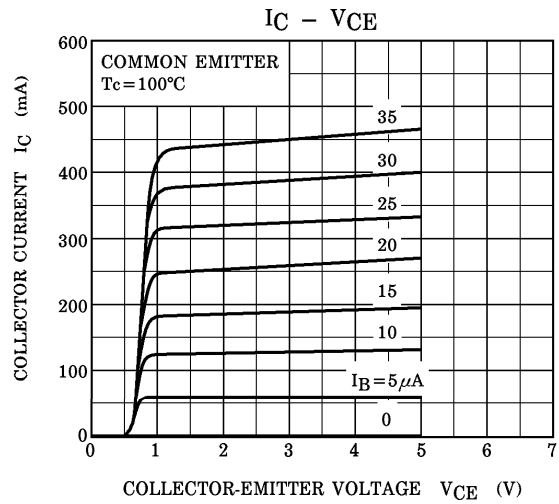
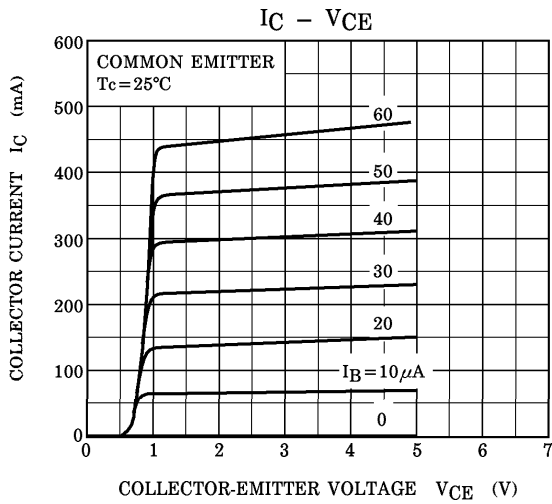
Weight : 0.72g (Typ.)

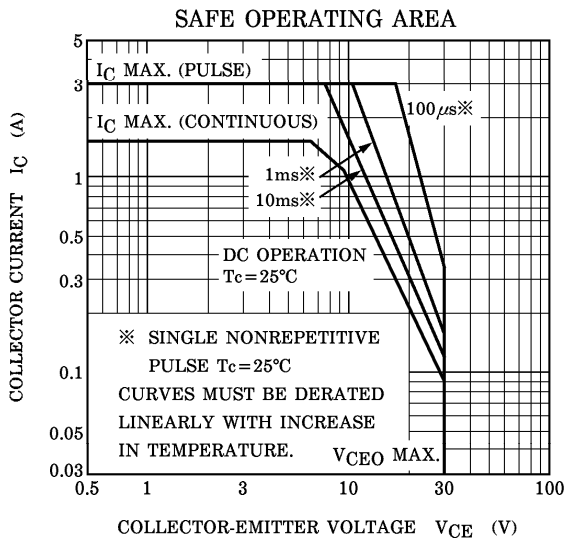
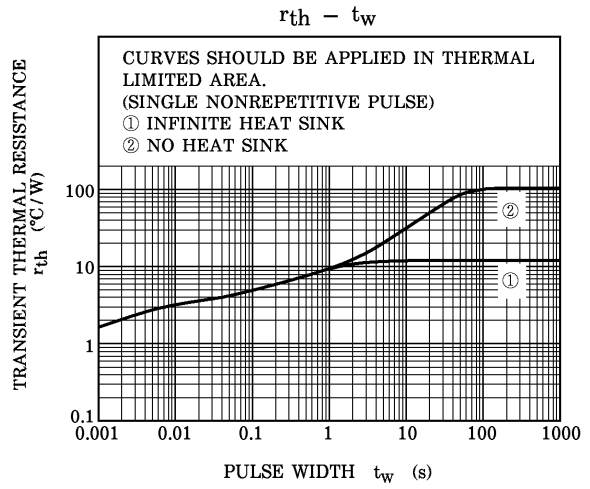
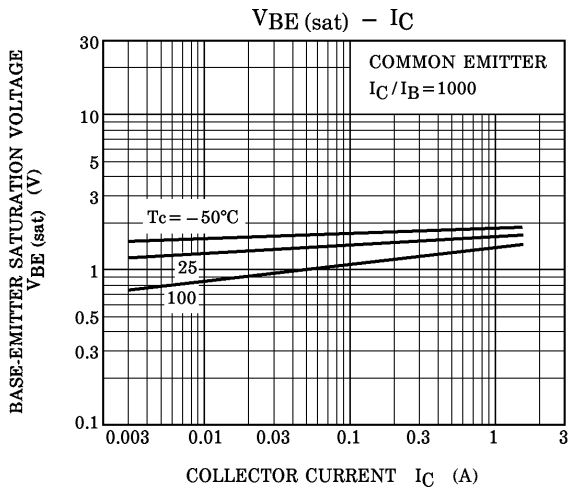
EQUIVALENT CIRCUIT



ELECTRICAL CHARACTERISTICS (Tc = 25°C)

| CHARACTERISTIC                       |              | SYMBOL        | TEST CONDITION                                                                                                                                                                                        | MIN. | TYP. | MAX. | UNIT    |
|--------------------------------------|--------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|---------|
| Collector Cut-off Current            |              | $I_{CBO}$     | $V_{CB} = 30V, I_E = 0$                                                                                                                                                                               | —    | —    | 10   | $\mu A$ |
| Emitter Cut-off Current              |              | $I_{EBO}$     | $V_{EB} = 10V, I_C = 0$                                                                                                                                                                               | —    | —    | 10   | $\mu A$ |
| Collector-Emitter Breakdown Voltage  |              | $V_{(BR)CEO}$ | $I_C = 10mA, I_B = 0$                                                                                                                                                                                 | 30   | —    | —    | V       |
| DC Current Gain                      |              | $h_{FE}$      | $V_{CE} = 2V, I_C = 150mA$                                                                                                                                                                            | 4000 | —    | —    |         |
| Collector-Emitter Saturation Voltage |              | $V_{CE(sat)}$ | $I_C = 1A, I_B = 1mA$                                                                                                                                                                                 | —    | —    | 1.5  | V       |
| Base-Emitter Saturation Voltage      |              | $V_{BE(sat)}$ | $I_C = 1A, I_B = 1mA$                                                                                                                                                                                 | —    | —    | 2.2  | V       |
| Switching Time                       | Turn-on Time | $t_{on}$      |  <p><math>I_{B1} = -I_{B2} = 1mA,</math><br/>DUTY CYCLE <math>\leq 1\%</math><br/><math>V_{CC} \cong 15V</math></p> | —    | 0.18 | —    | $\mu s$ |
|                                      | Storage Time | $t_{stg}$     |                                                                                                                                                                                                       | —    | 0.6  | —    |         |
|                                      | Fall Time    | $t_f$         |                                                                                                                                                                                                       | —    | 0.3  | —    |         |





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