

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process) (darlington)

2SD1222

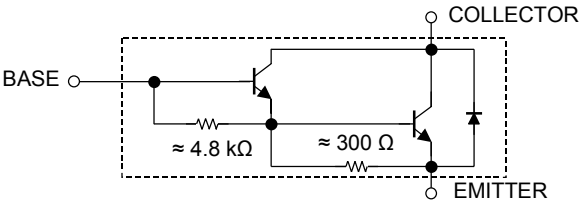
Switching Applications  
Hammer Drive, Pulse Motor Drive Applications  
Power Amplifier Applications

- High DC current gain:  $h_{FE} = 2000$  (min) ( $V_{CE} = 2\text{ V}$ ,  $I_C = 1\text{ A}$ )
- Low saturation voltage:  $V_{CE(sat)} = 1.5\text{ V}$  (max) ( $I_C = 2\text{ A}$ )
- Complementary to 2SB907.

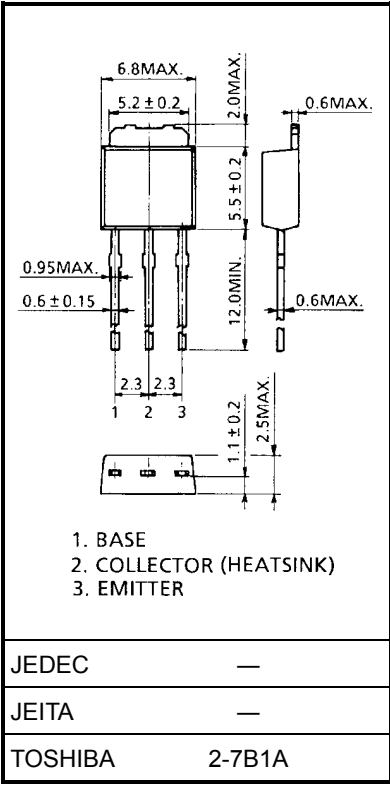
Maximum Ratings (Ta = 25°C)

| Characteristics             |           | Symbol    | Rating     | Unit |
|-----------------------------|-----------|-----------|------------|------|
| Collector-base voltage      |           | $V_{CBO}$ | 60         | V    |
| Collector-emitter voltage   |           | $V_{CEO}$ | 40         | V    |
| Emitter-base voltage        |           | $V_{EBO}$ | 5          | V    |
| Collector current           |           | $I_C$     | 3          | A    |
| Base current                |           | $I_B$     | 0.3        | A    |
| Collector power dissipation | Ta = 25°C | $P_C$     | 1.0        | W    |
|                             | Tc = 25°C |           | 15         |      |
| Junction temperature        |           | $T_j$     | 150        | °C   |
| Storage temperature range   |           | $T_{stg}$ | -55 to 150 | °C   |

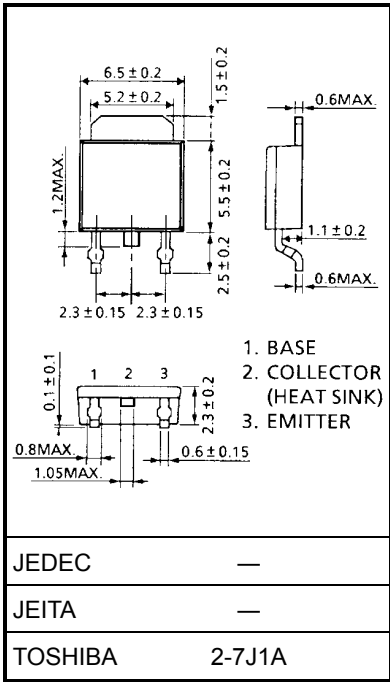
Equivalent Circuit



Unit: mm

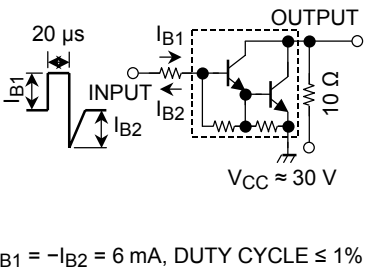


Weight: 0.36 g (typ.)

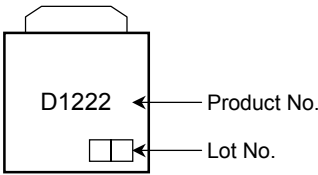


Weight: 0.36 g (typ.)

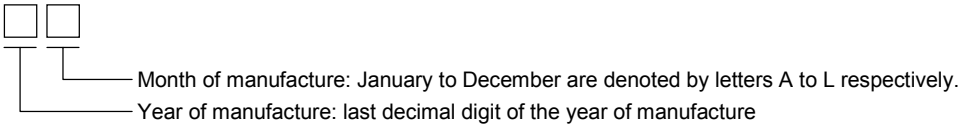
Electrical Characteristics (Ta = 25°C)

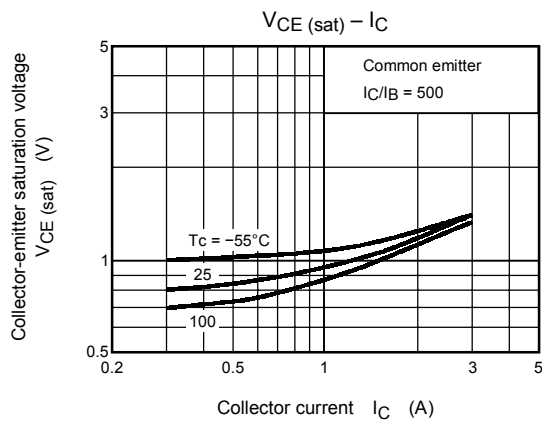
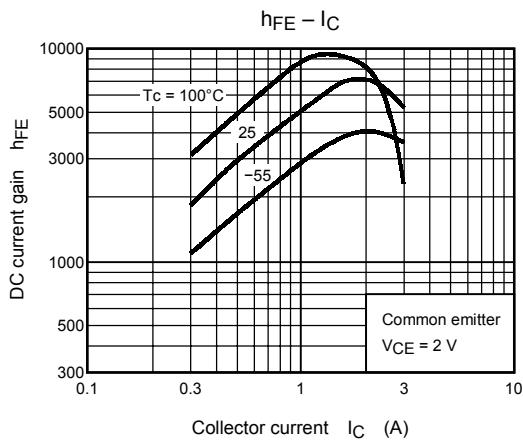
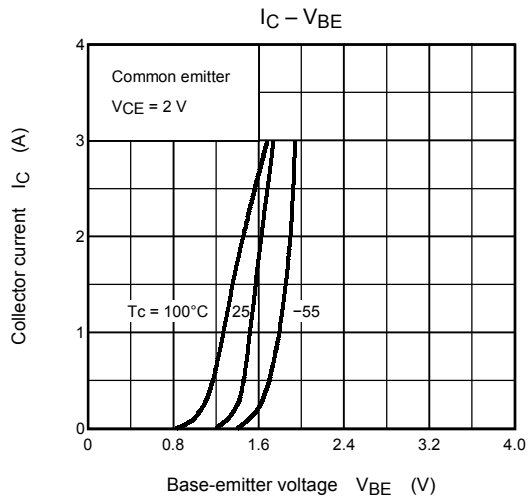
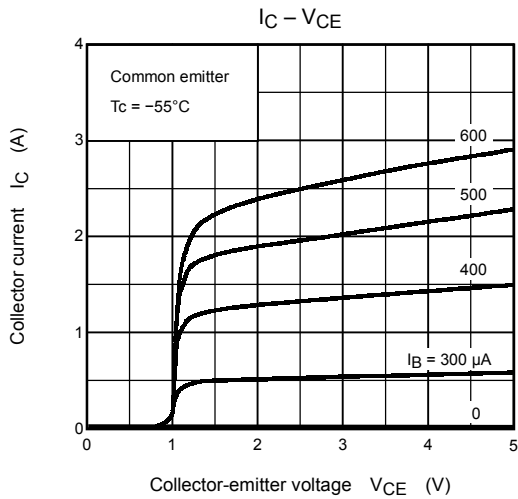
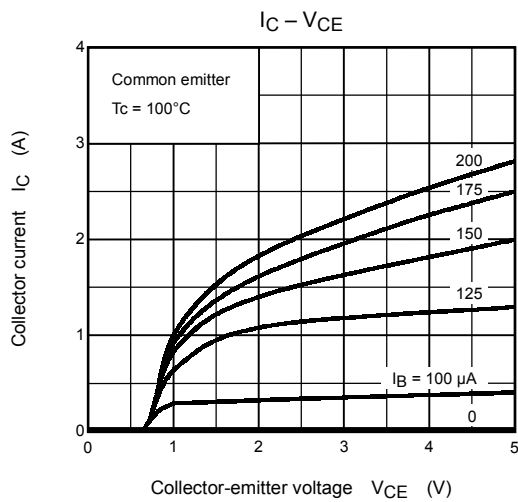
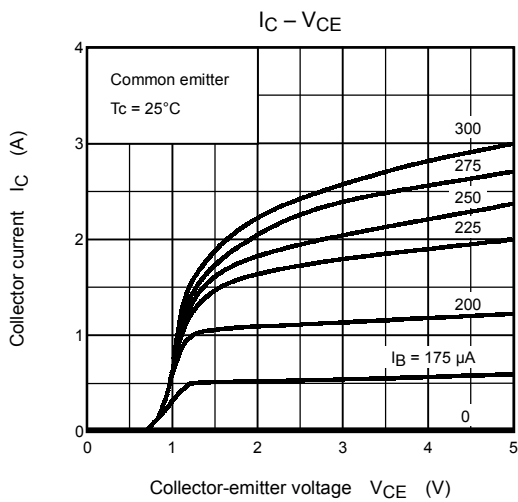
| Characteristics                      |              | Symbol        | Test Condition                                                                                                                                     | Min  | Typ. | Max | Unit          |
|--------------------------------------|--------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------|------|-----|---------------|
| Collector cut-off current            |              | $I_{CBO}$     | $V_{CB} = 60\text{ V}, I_E = 0$                                                                                                                    | —    | —    | 20  | $\mu\text{A}$ |
| Emitter cut-off current              |              | $I_{EBO}$     | $V_{EB} = 5\text{ V}, I_C = 0$                                                                                                                     | —    | —    | 2.5 | $\text{mA}$   |
| Collector-emitter breakdown voltage  |              | $V_{(BR)CEO}$ | $I_C = 25\text{ mA}, I_B = 0$                                                                                                                      | 40   | —    | —   | $\text{V}$    |
| DC current gain                      |              | $h_{FE(1)}$   | $V_{CE} = 2\text{ V}, I_C = 1\text{ A}$                                                                                                            | 2000 | —    | —   |               |
|                                      |              | $h_{FE(2)}$   | $V_{CE} = 2\text{ V}, I_C = 3\text{ A}$                                                                                                            | 1000 | —    | —   |               |
| Collector-emitter saturation voltage |              | $V_{CE(sat)}$ | $I_C = 2\text{ A}, I_B = 4\text{ mA}$                                                                                                              | —    | —    | 1.5 | $\text{V}$    |
| Base-emitter saturation voltage      |              | $V_{BE(sat)}$ | $I_C = 2\text{ A}, I_B = 4\text{ mA}$                                                                                                              | —    | —    | 2.0 | $\text{V}$    |
| Switching time                       | Turn-on time | $t_{on}$      | <br>$I_{B1} = -I_{B2} = 6\text{ mA}, \text{DUTY CYCLE} \leq 1\%$ | —    | 0.1  | —   | $\mu\text{s}$ |
|                                      | Storage time | $t_{stg}$     |                                                                                                                                                    | —    | 1.0  | —   |               |
|                                      | Fall time    | $t_f$         |                                                                                                                                                    | —    | 0.2  | —   |               |

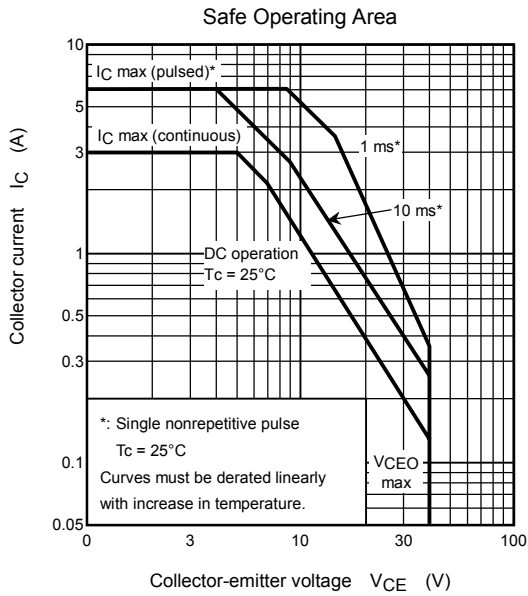
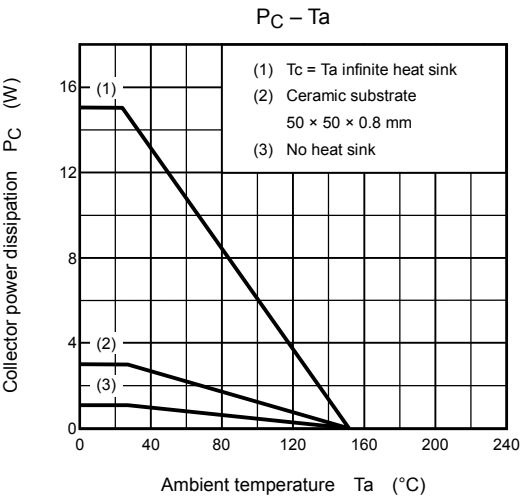
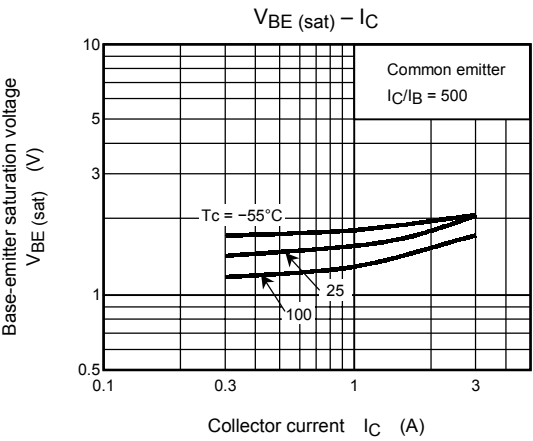
Marking



Explanation of Lot No.







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