

TOSHIBA Transistor Silicon NPN Triple Diffused Type

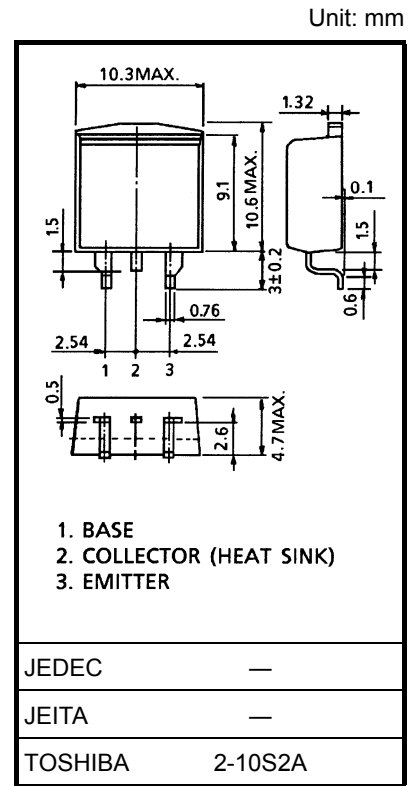
2SD2414(SM)

High Current Switching Applications
Power Amplifier Applications

- Low collector saturation voltage: $V_{CE(sat)} = 0.5\text{ V (max)}$ (at $I_C = 4\text{ A}$)

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

| Characteristics | Symbol | Rating | Unit | |
|-----------------------------|-----------|--------------------------|------------------|---|
| Collector-base voltage | V_{CBO} | 100 | V | |
| Collector-emitter voltage | V_{CEO} | 80 | V | |
| Emitter-base voltage | V_{EBO} | 5 | V | |
| Collector current | I_C | 7 | A | |
| Base current | I_B | 1 | A | |
| Collector power dissipation | P_C | $T_a = 25^\circ\text{C}$ | 1.5 | W |
| | | $T_c = 25^\circ\text{C}$ | 40 | |
| Junction temperature | T_j | 150 | $^\circ\text{C}$ | |
| Storage temperature range | T_{stg} | -55 to 150 | $^\circ\text{C}$ | |



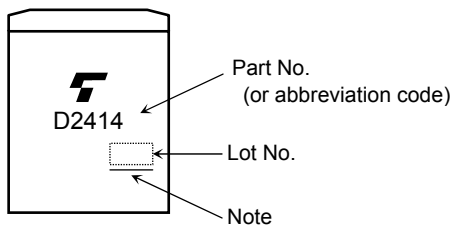
Weight: 1.4 g (typ.)

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/“Derating Concept and Methods”) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Electrical Characteristics (Ta = 25°C)

| Characteristics | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|--------------|---------------|---|-----|------|-----|---------------|
| Collector cut-off current | | I_{CBO} | $V_{CB} = 100\text{ V}, I_E = 0\text{ A}$ | — | — | 5 | μA |
| Emitter cut-off current | | I_{EBO} | $V_{EB} = 5\text{ V}, I_C = 0\text{ A}$ | — | — | 5 | μA |
| Collector-emitter breakdown voltage | | $V_{(BR)CEO}$ | $I_C = 50\text{ mA}, I_B = 0\text{ A}$ | 80 | — | — | V |
| DC current gain | | $h_{FE(1)}$ | $V_{CE} = 1\text{ V}, I_C = 1\text{ A}$ | 100 | — | 320 | |
| | | $h_{FE(2)}$ | $V_{CE} = 1\text{ V}, I_C = 4\text{ A}$ | 30 | — | — | |
| Collector-emitter saturation voltage | | $V_{CE(sat)}$ | $I_C = 4\text{ A}, I_B = 0.4\text{ A}$ | — | 0.25 | 0.5 | V |
| Base-emitter saturation voltage | | $V_{BE(sat)}$ | $I_C = 4\text{ A}, I_B = 0.4\text{ A}$ | — | 0.9 | 1.4 | V |
| Transition frequency | | f_T | $V_{CE} = 4\text{ V}, I_C = 1\text{ A}$ | — | 10 | — | MHz |
| Collector output capacitance | | C_{ob} | $V_{CB} = 10\text{ V}, I_E = 0\text{ A}, f = 1\text{ MHz}$ | — | 200 | — | pF |
| Switching time | Turn-on time | t_{on} | <p>$I_{B1} = -I_{B2} = 0.3\text{ A}, \text{duty cycle} \leq 1\%$</p> | — | 0.4 | — | μs |
| | Storage time | t_{stg} | | — | 2.5 | — | |
| | Fall time | t_f | | — | 0.5 | — | |

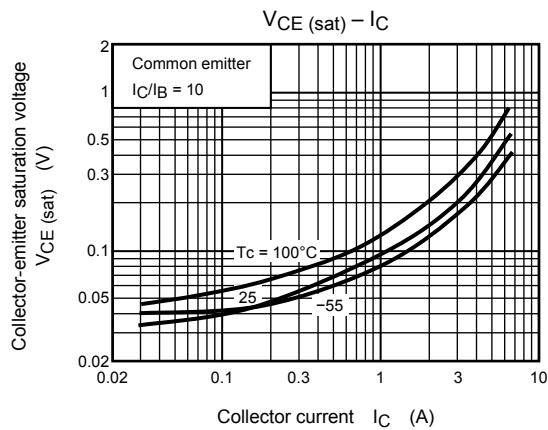
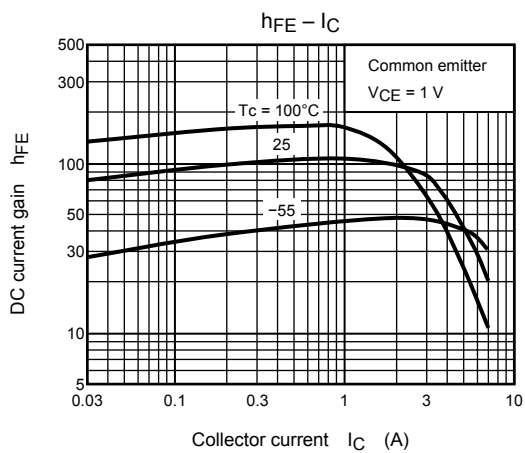
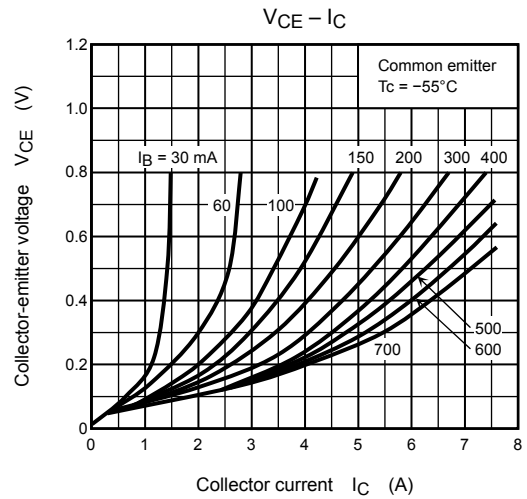
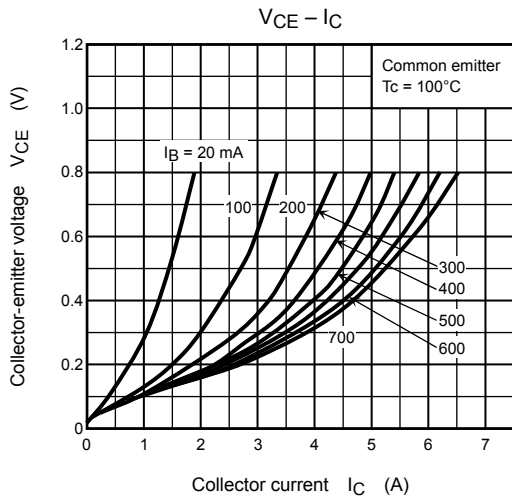
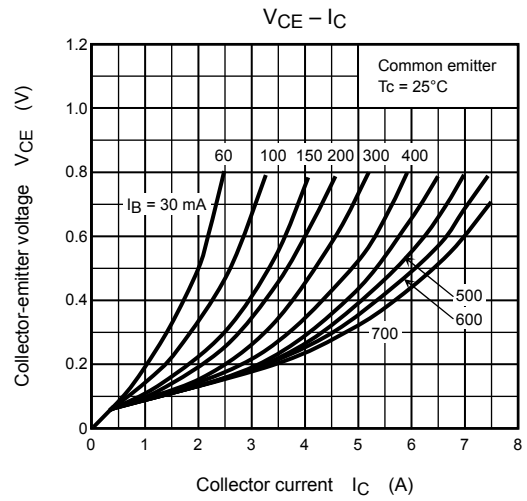
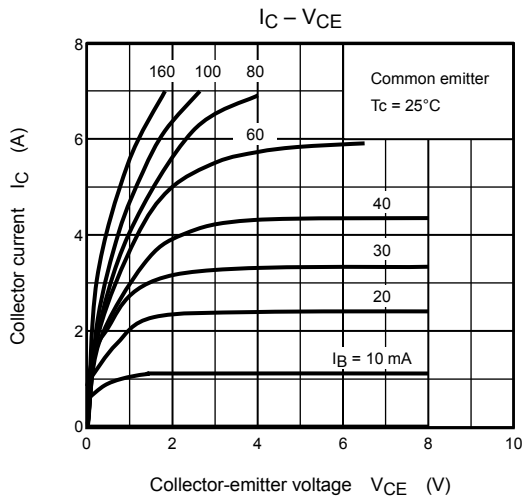
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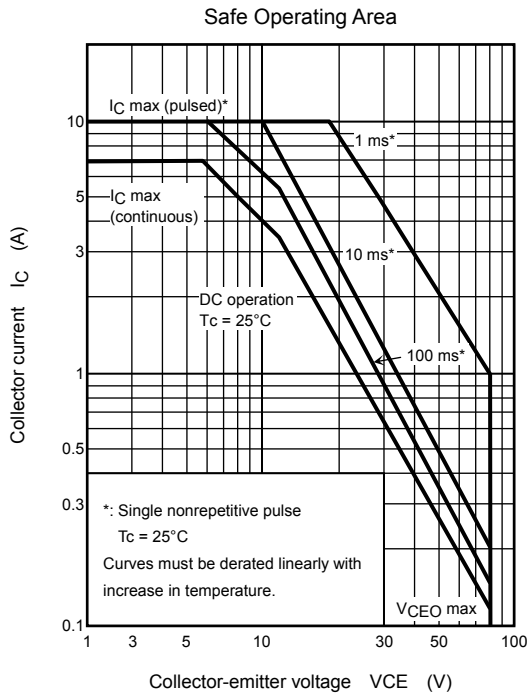
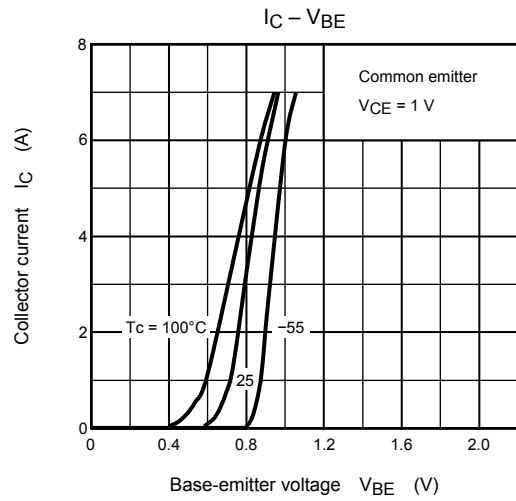
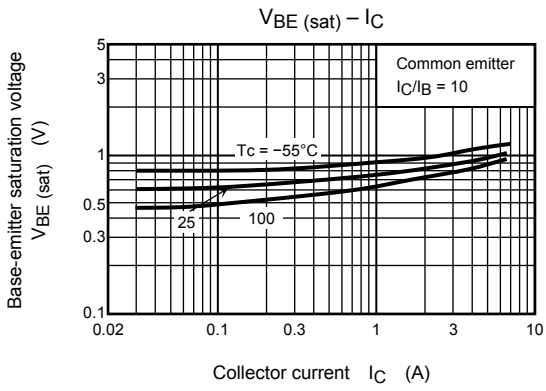


Note: A line under a Lot No. identifies the indication of product Labels
[[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product.

The RoHS is Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.





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