

TOSHIBA Transistor Silicon NPN Triple Diffused Type (PCT process)

# 2SC3515

HIGH Voltage Control Applications  
 Plasma Display, Nixie Tube Driver Applications  
 Cathode Ray Tube Brightness Control Applications

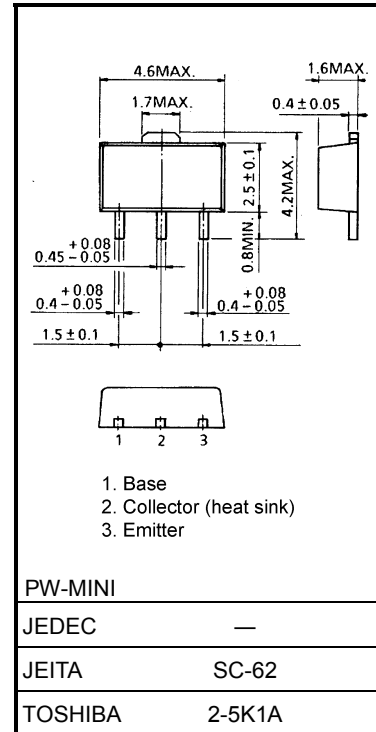
- High voltage:  $V_{CBO} = 300\text{ V}$ ,  $V_{CEO} = 300\text{ V}$
- Low saturation voltage:  $V_{CE(sat)} = 0.5\text{ V (max)}$
- Small collector output capacitance:  $C_{ob} = 3\text{ pF (typ.)}$
- Complementary to 2SA1384
- Small flat package
- $P_C = 1.0\text{ to }2.0\text{ W}$  (mounted on a ceramic substrate)

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

| Characteristics             | Symbol            | Rating     | Unit             |
|-----------------------------|-------------------|------------|------------------|
| Collector-base voltage      | $V_{CBO}$         | 300        | V                |
| Collector-emitter voltage   | $V_{CEO}$         | 300        | V                |
| Emitter-base voltage        | $V_{EBO}$         | 6          | V                |
| Collector current           | $I_C$             | 100        | mA               |
| Base current                | $I_B$             | 20         | mA               |
| Collector power dissipation | $P_C$             | 500        | mW               |
|                             | $P_C$<br>(Note 1) | 1000       |                  |
| Junction temperature        | $T_j$             | 150        | $^\circ\text{C}$ |
| Storage temperature range   | $T_{stg}$         | -55 to 150 | $^\circ\text{C}$ |

Note 1: Mounted on a ceramic substrate ( $250\text{ mm}^2 \times 0.8\text{ mm}$ )

Unit: mm



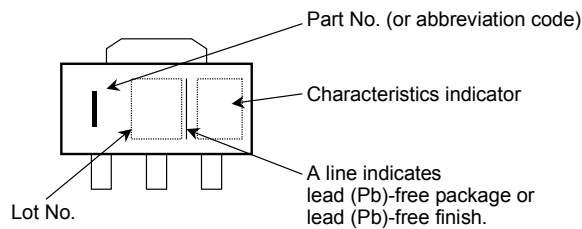
Weight: 0.05 g (typ.)

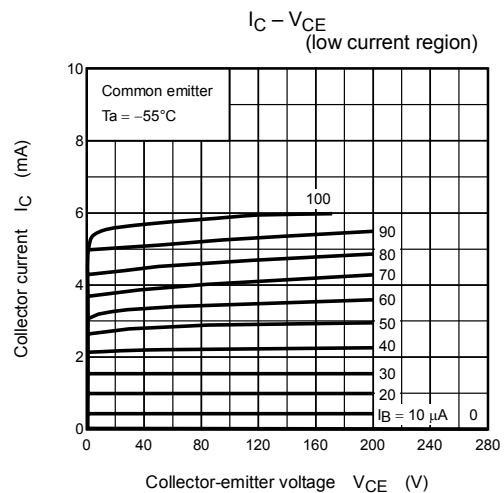
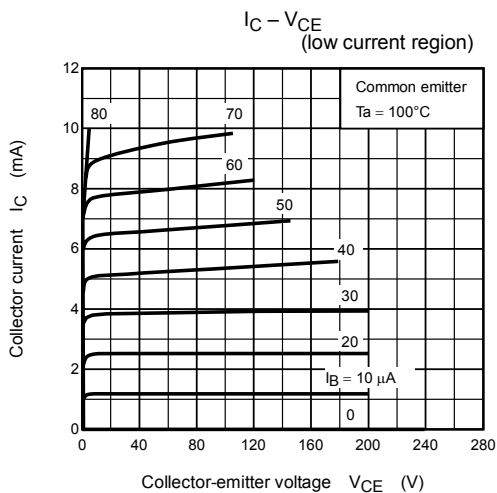
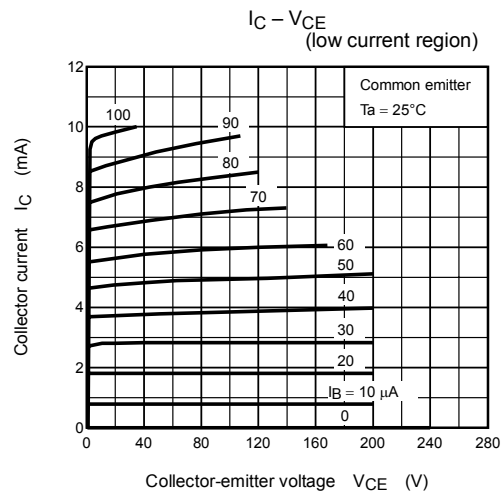
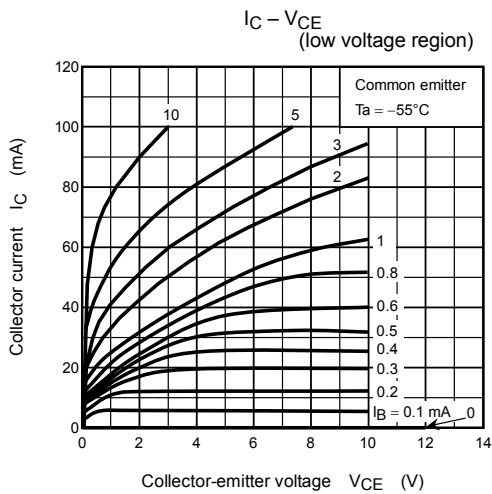
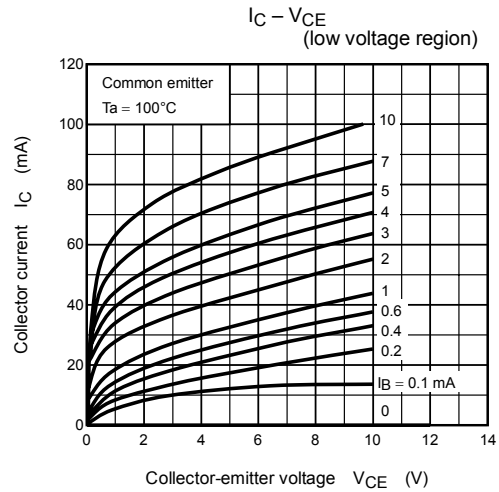
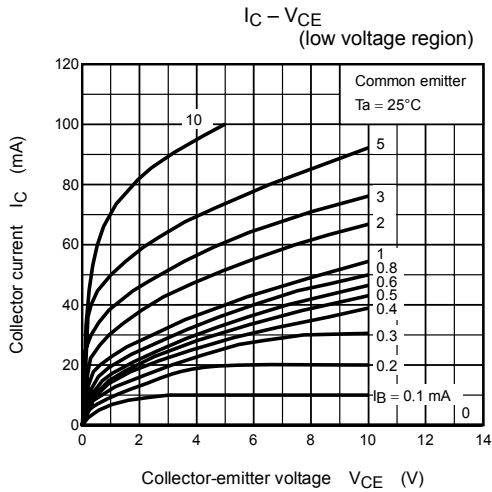
## Electrical Characteristics (Ta = 25°C)

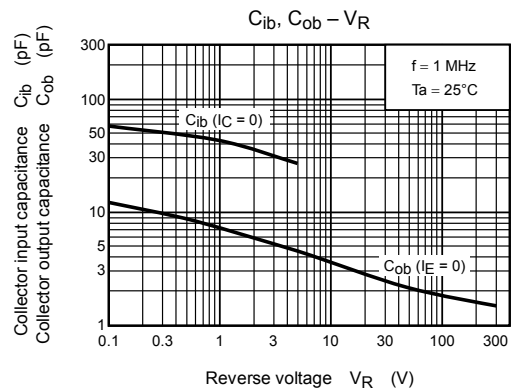
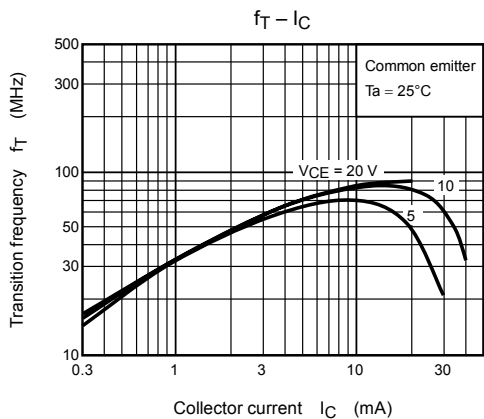
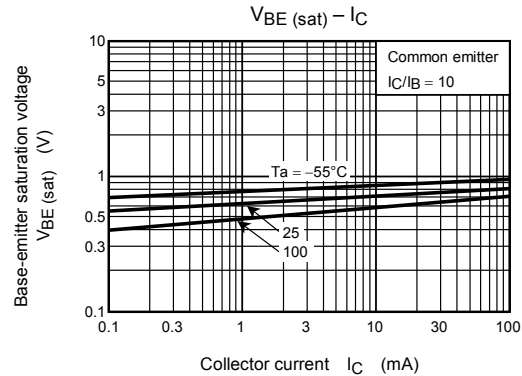
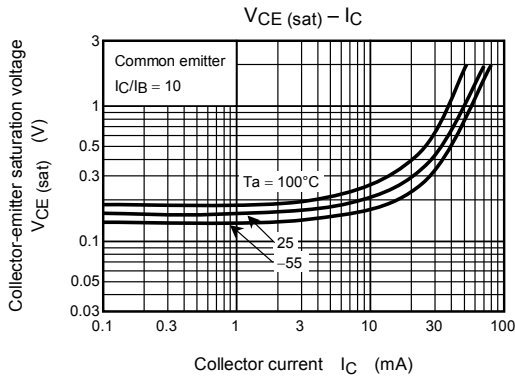
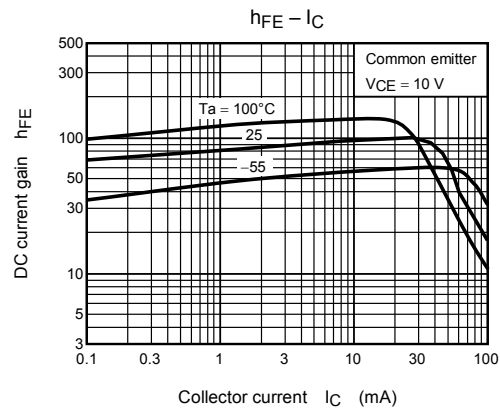
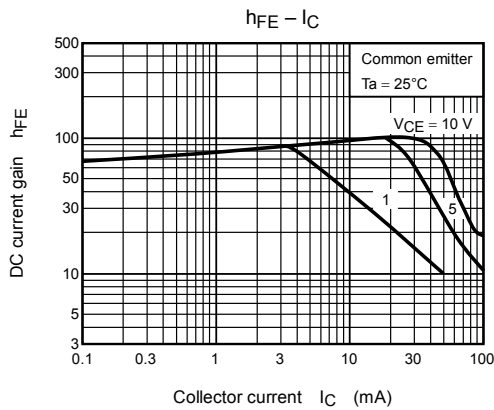
| Characteristics                      | Symbol                  | Test Condition                                    | Min | Typ. | Max | Unit          |
|--------------------------------------|-------------------------|---|-----|------|-----|---------------|
| Collector cut-off current            | $I_{CBO}$               | $V_{CB} = 300\text{ V}, I_E = 0$                  | —   | —    | 0.1 | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$               | $V_{EB} = 6\text{ V}, I_C = 0$                    | —   | —    | 0.1 | $\mu\text{A}$ |
| Collector-base breakdown voltage     | $V_{(BR)CBO}$           | $I_C = 0.1\text{ mA}, I_E = 0$                    | 300 | —    | —   | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$           | $I_C = 1\text{ mA}, I_B = 0$                      | 300 | —    | —   | V             |
| DC current gain                      | $h_{FE(1)}$<br>(Note 2) | $V_{CE} = 10\text{ V}, I_C = 20\text{ mA}$        | 30  | —    | 150 | —             |
|                                      | $h_{FE(2)}$             | $V_{CE} = 10\text{ V}, I_C = 20\text{ mA}$        | 20  | —    | —   |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$           | $I_C = 20\text{ mA}, I_B = 2\text{ mA}$           | —   | —    | 0.5 | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}$           | $I_C = 20\text{ mA}, I_B = 2\text{ mA}$           | —   | —    | 1.0 | V             |
| Transition frequency                 | $f_T$                   | $V_{CE} = 10\text{ V}, I_C = 20\text{ mA}$        | 50  | 80   | —   | MHz           |
| Collector output capacitance         | $C_{ob}$                | $V_{CB} = 20\text{ V}, I_E = 0, f = 1\text{ MHz}$ | —   | 3    | 4   | pF            |

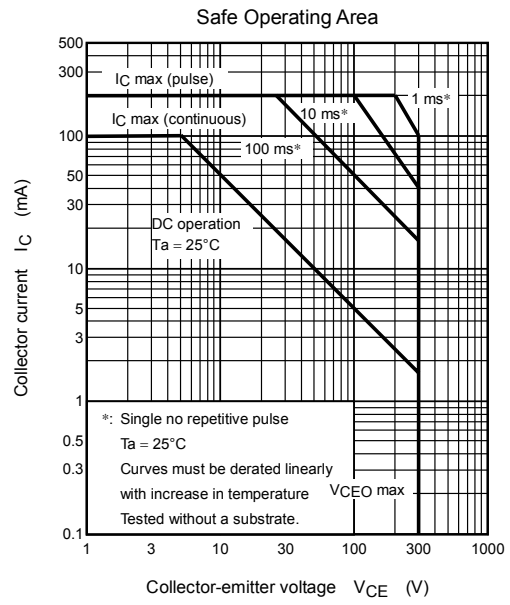
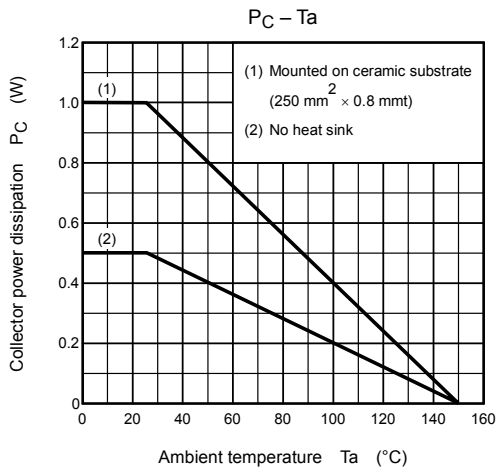
Note 2:  $h_{FE(1)}$  classification R: 30 to 90, O: 50 to 150

## Marking









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