

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE

# 2SC4439

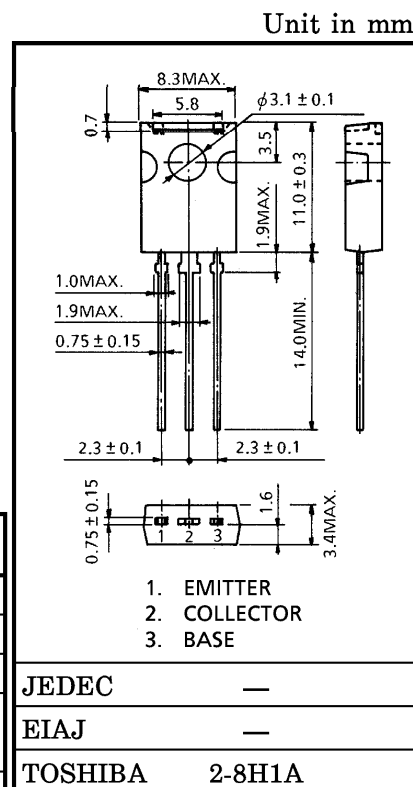
VIDEO OUTPUT STAGE IN HIGH RESOLUTION DISPLAY.

HIGH SPEED SWITCHING APPLICATIONS.

- High Transition Frequency.  
:  $f_T = 400\text{MHz}$  (Typ.) ( $V_{CE} = 10\text{V}$ ,  $I_C = 70\text{mA}$ )
- Low Collector Output Capacitance  
:  $C_{ob} < 5\text{pF}$  (Max.) ( $V_{CB} = 30\text{V}$ )
- High Voltage :  $V_{CEO} = 150\text{V}$
- High Collector Power Dissipation Capability :  $P_C = 8\text{W}$

MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

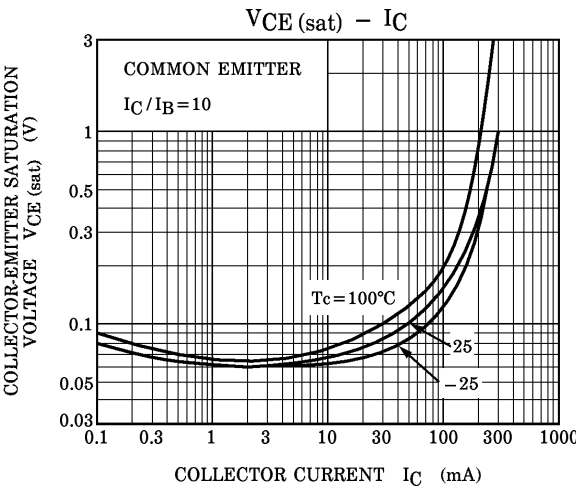
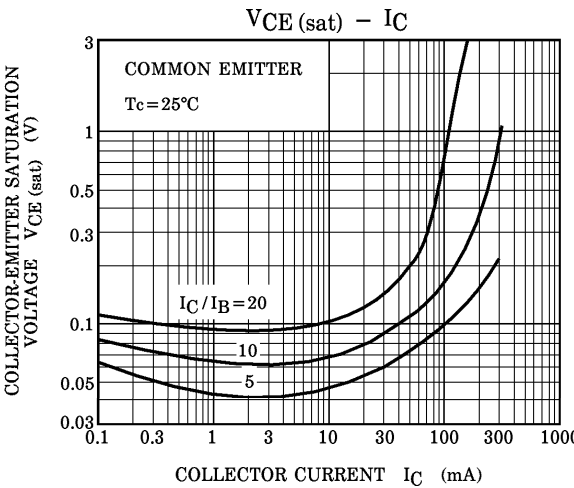
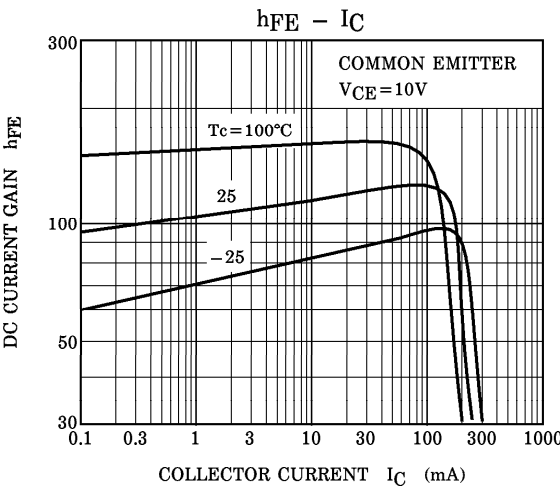
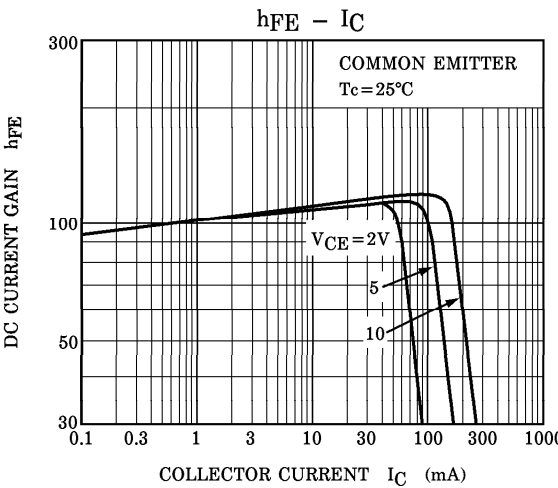
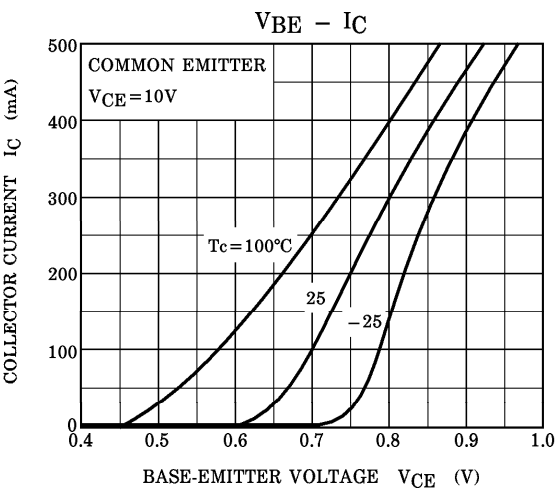
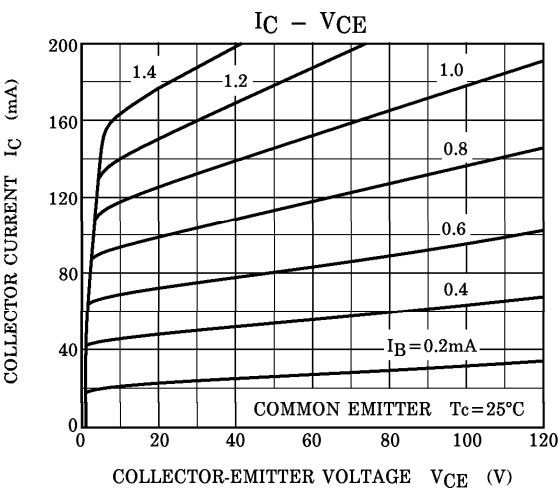
| CHARACTERISTIC              |                          | SYMBOL    | RATING         | UNIT             |
|-----------------------------|--------------------------|-----------|----------------|------------------|
| Collector-Base Voltage      |                          | $V_{CBO}$ | 180            | V                |
| Collector-Emitter Voltage   |                          | $V_{CEO}$ | 150            | V                |
| Emitter-Base Voltage        |                          | $V_{EBO}$ | 5              | V                |
| Collector Current           | DC                       | $I_C$     | 0.3            | A                |
|                             | Pulse                    | $I_{CP}$  | 0.5            |                  |
| Base Current                |                          | $I_B$     | 0.2            | A                |
| Collector Power Dissipation | $T_a = 25^\circ\text{C}$ | $P_C$     | 1.5            | W                |
|                             | $T_c = 25^\circ\text{C}$ |           | 8              |                  |
| Junction Temperature        |                          | $T_j$     | 150            | $^\circ\text{C}$ |
| Storage Temperature Range   |                          | $T_{stg}$ | $-55 \sim 150$ | $^\circ\text{C}$ |

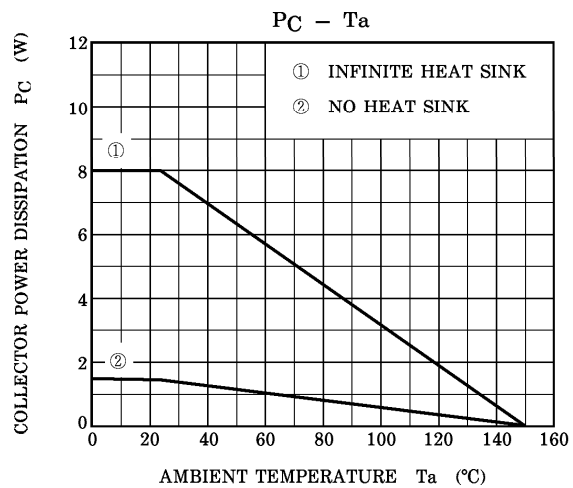
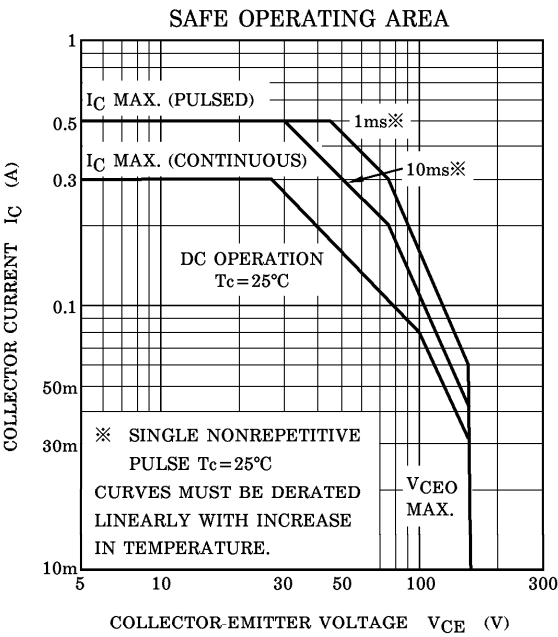
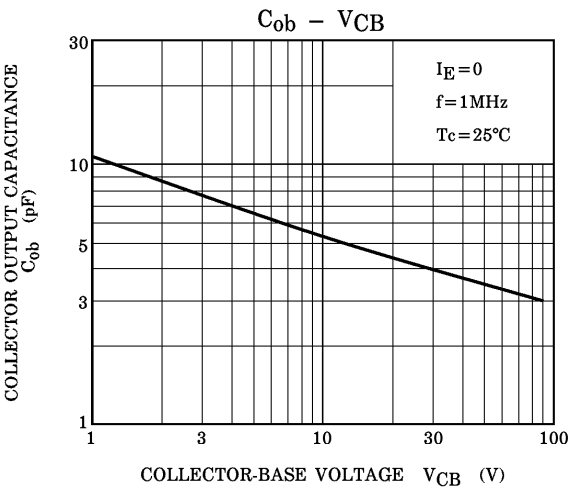
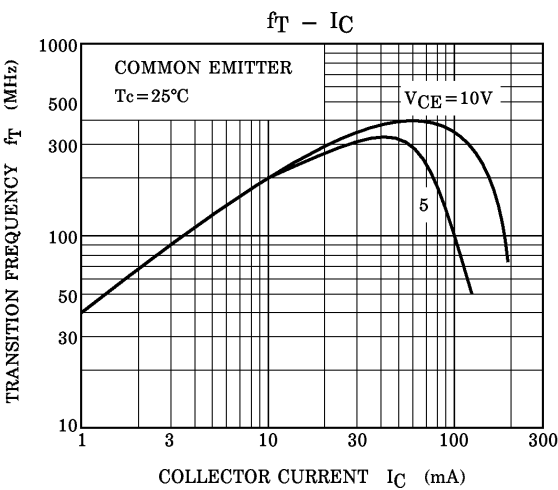
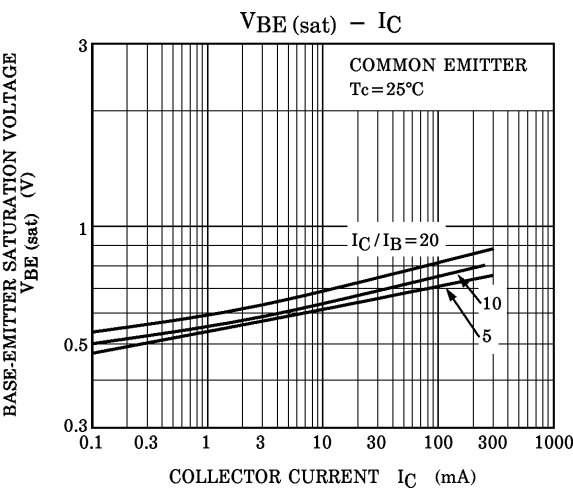


Weight : 0.82g

ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

| CHARACTERISTIC                       | SYMBOL        | TEST CONDITION                                        | MIN. | TYP. | MAX. | UNIT          |
|--------------------------------------|---------------|-------------------------------------------------------|------|------|------|---------------|
| Collector Cut-off Current            | $I_{CBO}$     | $V_{CB} = 150\text{V}$ , $I_E = 0$                    | —    | —    | 10   | $\mu\text{A}$ |
| Emitter Cut-off Current              | $I_{EBO}$     | $V_{EB} = 5\text{V}$ , $I_C = 0$                      | —    | —    | 10   | $\mu\text{A}$ |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C = 1\text{mA}$ , $I_B = 0$                        | 150  | —    | —    | V             |
| DC Current Gain                      | $h_{FE(1)}$   | $V_{CE} = 10\text{V}$ , $I_C = 50\text{mA}$           | 40   | —    | 240  |               |
|                                      | $h_{FE(2)}$   | $V_{CE} = 10\text{V}$ , $I_C = 200\text{mA}$          | 20   | —    | —    |               |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 200\text{mA}$ , $I_B = 20\text{mA}$            | —    | 1.5  | 2.0  | V             |
| Base-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C = 200\text{mA}$ , $I_B = 20\text{mA}$            | —    | 1.5  | 2.0  | V             |
| Transition Frequency                 | $f_T$         | $V_{CE} = 10\text{V}$ , $I_C = 70\text{mA}$           | 300  | 400  | —    | MHz           |
| Collector Output Capacitance         | $C_{ob}$      | $V_{CB} = 30\text{V}$ , $f = 1\text{MHz}$ , $I_E = 0$ | —    | 4.0  | 5.0  | pF            |





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