

TOSHIBA FIELD EFFECT TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

# 2SC5143

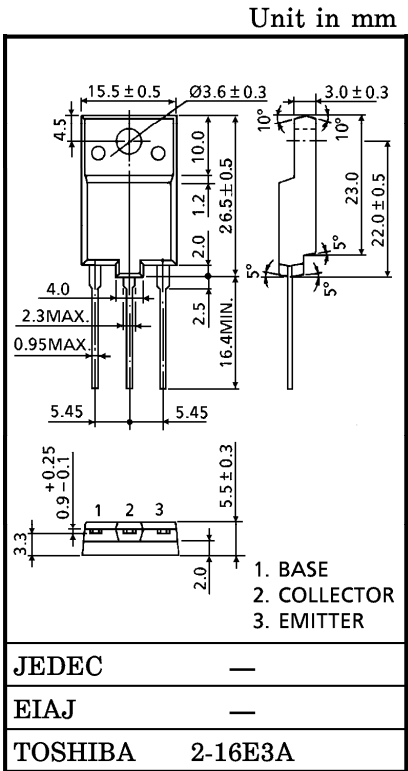
HORIZONTAL DEFLECTION OUTPUT FOR HIGH RESOLUTION  
DISPLAY, COLOR TV

HIGH SPEED SWITCHING APPLICATIONS

- High Voltage :  $V_{CB0} = 1700\text{ V}$
- Low Saturation Voltage :  $V_{CE(sat)} = 3\text{ V (Max.)}$
- High Speed :  $t_f = 0.2\text{ }\mu\text{s (Typ.)}$
- Built-in Damper Type
- Collector Metal (Fin) is Fully Covered with Mold Resin.

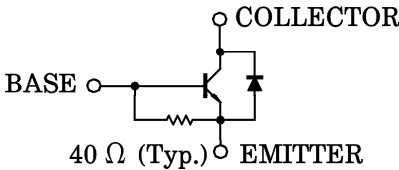
MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

| CHARACTERISTIC                                              | SYMBOL    | RATING         | UNIT             |
|-------------------------------------------------------------|-----------|----------------|------------------|
| Collector-Base Voltage                                      | $V_{CB0}$ | 1700           | V                |
| Collector-Emitter Voltage                                   | $V_{CEO}$ | 700            | V                |
| Emitter-Base Voltage                                        | $V_{EBO}$ | 5              | V                |
| Collector Current                                           | DC        | $I_C$          | A                |
|                                                             | Pulse     | $I_{CP}$       |                  |
| Base Current                                                | $I_B$     | 5              | A                |
| Collector Power Dissipation<br>( $T_c = 25^\circ\text{C}$ ) | $P_C$     | 50             | W                |
| Junction Temperature                                        | $T_j$     | 150            | $^\circ\text{C}$ |
| Storage Temperature Range                                   | $T_{stg}$ | $-55 \sim 150$ | $^\circ\text{C}$ |



Weight : 5.5 g (Typ.)

## EQUIVALENT CIRCUIT



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## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC                       |              | SYMBOL        | TEST CONDITION                                                                      | MIN. | TYP. | MAX. | UNIT          |
|--------------------------------------|--------------|---------------|-------------------------------------------------------------------------------------|------|------|------|---------------|
| Collector Cut-off Current            |              | $I_{CBO}$     | $V_{CB} = 1700\text{ V}, I_E = 0$                                                   | —    | —    | 1    | mA            |
| Emitter Cut-off Current              |              | $I_{EBO}$     | $V_{EB} = 5\text{ V}, I_C = 0$                                                      | 83   | —    | 250  | mA            |
| Emitter-Base Breakdown Voltage       |              | $V_{EBO}$     | $I_E = 400\text{ mA}, I_C = 0$                                                      | 5    | —    | —    | V             |
| DC Current Gain                      | $h_{FE}(1)$  |               | $V_{CE} = 5\text{ V}, I_C = 1\text{ A}$                                             | 8    | —    | 25   |               |
|                                      | $h_{FE}(2)$  |               | $V_{CE} = 5\text{ V}, I_C = 6\text{ A}$                                             | 4    | —    | 8.5  |               |
| Collector-Emitter Saturation Voltage |              | $V_{CE(sat)}$ | $I_C = 6\text{ A}, I_B = 1.5\text{ A}$                                              | —    | —    | 3    | V             |
| Base-Emitter Saturation Voltage      |              | $V_{BE(sat)}$ | $I_C = 6\text{ A}, I_B = 1.5\text{ A}$                                              | —    | 0.9  | 1.2  | V             |
| Forward Voltage (Damper Diode)       |              | $-V_F$        | $I_F = 6\text{ A}$                                                                  | —    | 1.45 | 1.8  | V             |
| Transition Frequency                 |              | $f_T$         | $V_{CE} = 10\text{ V}, I_E = 0.1\text{ A}$                                          | —    | 2    | —    | MHz           |
| Collector Output Capacitance         |              | $C_{ob}$      | $V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$                                   | —    | 185  | —    | pF            |
| Switching Time                       | Storage Time | $t_{stg}$     | $I_{CP} = 5\text{ A}, I_{B1}(\text{end}) = 1.0\text{ A}$<br>$f_H = 31.5\text{ kHz}$ | —    | 4    | 6    | $\mu\text{s}$ |
|                                      | Fall Time    | $t_f$         |                                                                                     | —    | 0.2  | 0.5  |               |

