

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

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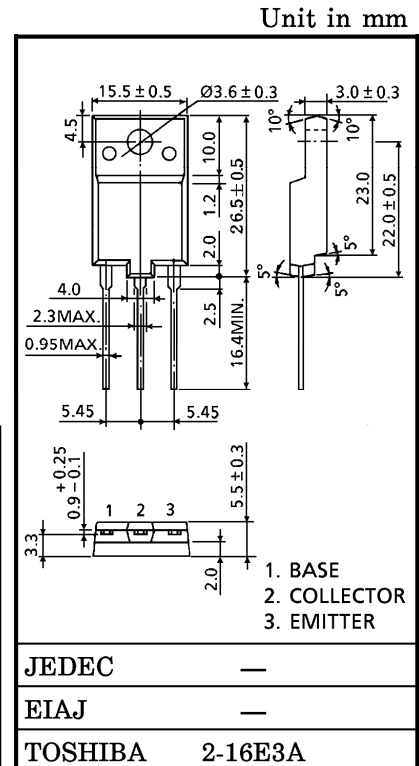
HORIZONTAL DEFLECTION OUTPUT FOR HIGH RESOLUTION DISPLAY, COLOR TV

HIGH SPEED SWITCHING APPLICATIONS

- High Speed : $t_f = 0.15 \mu s$ (Typ.)
- High Voltage : $V_{CBO} = 1500 V$
- Low Saturation Voltage : $V_{CE(sat)} = 3 V$ (Max.)
- Collector Metal (Fin) is Fully Covered with Mold Resin

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

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|--|-----------|----------|------------|
| Collector-Base Voltage | V_{CBO} | 1500 | V |
| Collector-Emitter Voltage | V_{CEO} | 600 | V |
| Emitter-Base Voltage | V_{EBO} | 5 | V |
| Collector Current | DC | I_C | 10 |
| | Pulse | I_{CP} | 20 |
| Base Current | I_B | 5 | A |
| Collector Power Dissipation ($T_c = 25^\circ C$) | P_C | 50 | W |
| Junction Temperature | T_j | 150 | $^\circ C$ |
| Storage Temperature Range | T_{stg} | -55~150 | $^\circ C$ |



Weight : 5.5 g (Typ.)

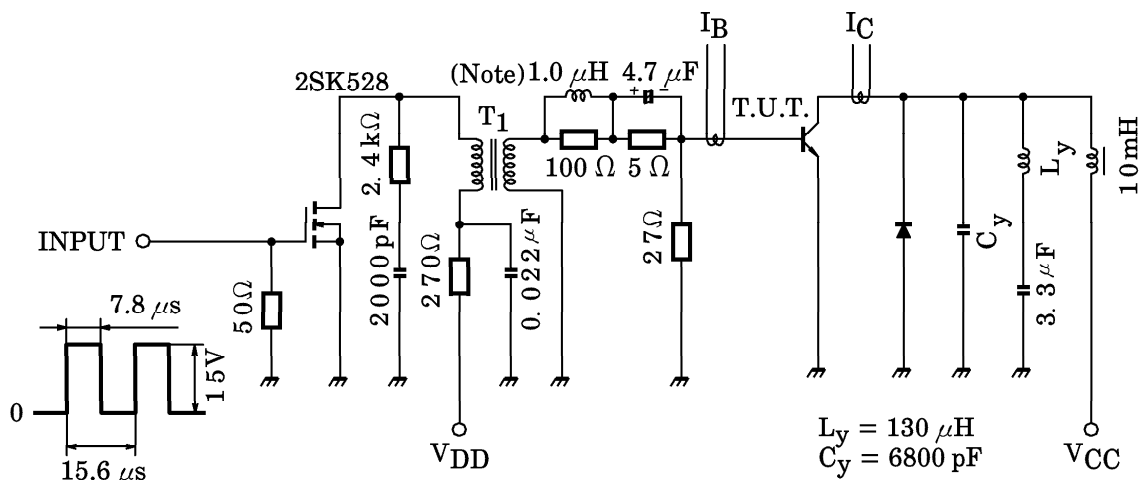
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ C$)

| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--------------------------------------|---------------|---|------|------|------|---------|
| Collector Cut-off Current | I_{CBO} | $V_{CB} = 1500 V, I_E = 0$ | — | — | 1 | mA |
| Emitter Cut-off Current | I_{EBO} | $V_{EB} = 5 V, I_C = 0$ | — | — | 10 | μA |
| Emitter-Base Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = 10 mA, I_B = 0$ | 600 | — | — | V |
| DC Current Gain | $h_{FE(1)}$ | $V_{CE} = 5 V, I_C = 1 A$ | 10 | — | 30 | — |
| | $h_{FE(2)}$ | $V_{CE} = 5 V, I_C = 6 A$ | 4 | — | 8 | |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 6 A, I_B = 1.5 A$ | — | — | 3 | V |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C = 6 A, I_B = 1.5 A$ | — | 1.0 | 1.4 | V |
| Transition Frequency | f_T | $V_{CE} = 10 V, I_C = 0.1 A$ | — | 1.7 | — | MHz |
| Collector Output Capacitance | C_{ob} | $V_{CB} = 10 V, I_E = 0, f = 1 MHz$ | — | 135 | — | pF |
| Switching Time (Fig.1) | Storage Time | $I_{CP} = 5 A, I_{B1}(end) = 1 A$ $f_H = 64 kHz$ | — | 2.5 | 4.0 | μs |
| | Fall Time | | — | 0.15 | 0.3 | |

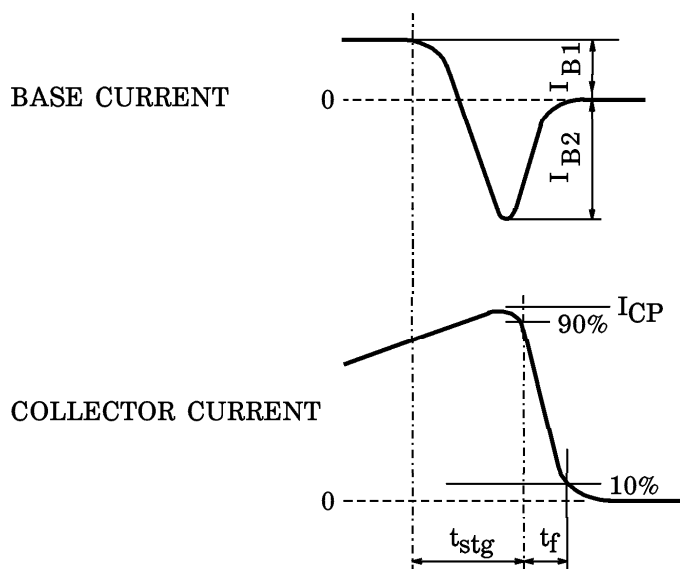
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Fig.1 SWITCHING TIME TEST CIRCUIT (Inductive Load)



(Note) : Leakage Inductance of secondary winding LB is 1.2 μH.



Base Current Gradient

$$dI_B / dt = \frac{I_{B1} + I_{B2}}{t_{stg}} \text{ (A / } \mu\text{s)}$$

