

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

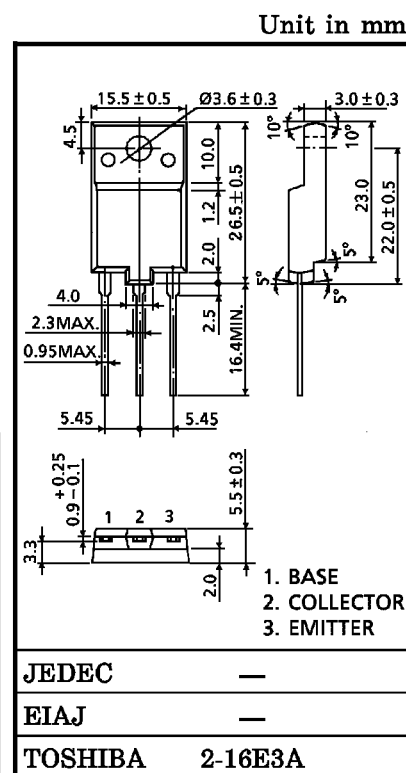
2SC5129HORIZONTAL DEFLECTION OUTPUT FOR HIGH RESOLUTION
DISPLAY, COLOR TV

HIGH SPEED SWITCHING APPLICATIONS

- High Speed : $t_f = 0.15 \mu\text{s}$ (Typ.)
- High Voltage : $V_{CBO} = 1500 \text{ V}$
- Low Saturation Voltage : $V_{CE}(\text{sat}) = 3 \text{ V}$ (Max.)
- 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_{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 ($T_c = 25^\circ\text{C}$)	P_C	50	W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~150	$^\circ\text{C}$



Weight : 5.5 g (Typ.)

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

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

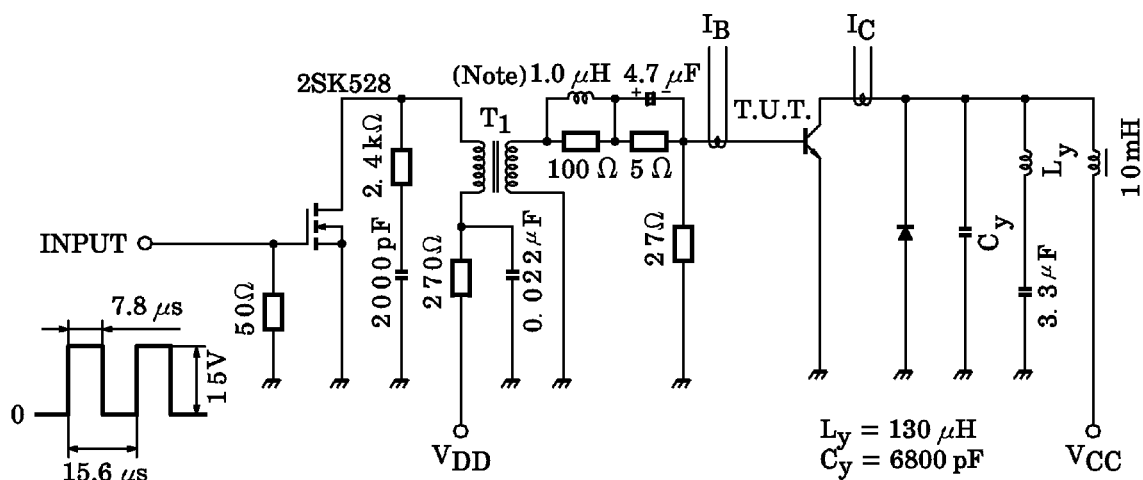
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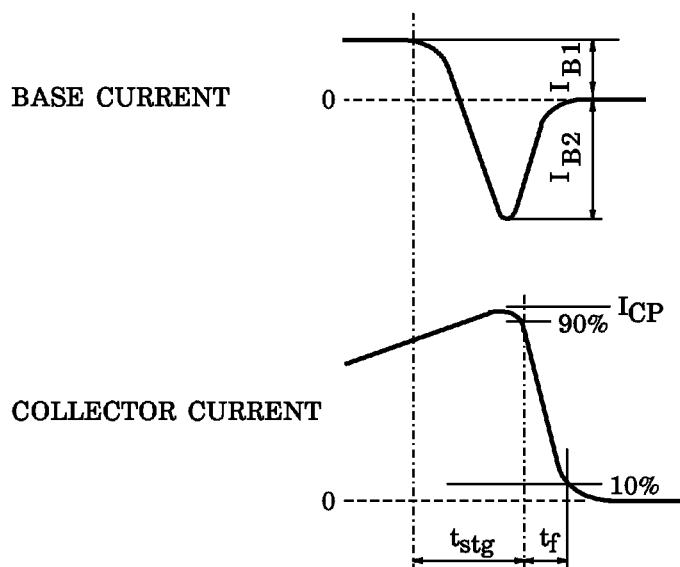
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Fig.1 SWITCHING TIME TEST CIRCUIT (Inductive Load)



(Note) : Leakage Inductance of secondary winding L_B is $1.2 \mu\text{H}$.



Base Current Gradient

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

