TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

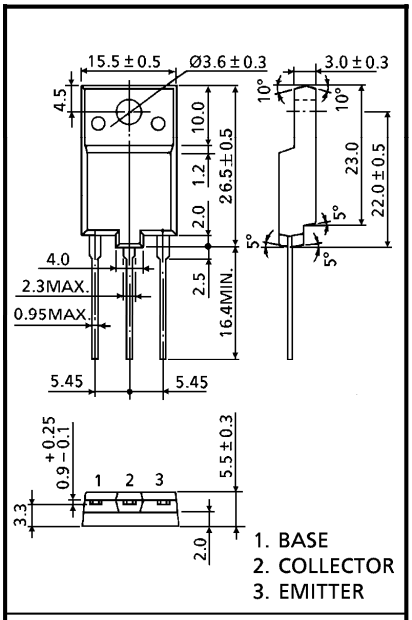
2SC5150

HORIZONTAL DEFLECTION OUTPUT FOR HIGH RESOLUTION DISPLAY, COLOR TV

HIGH SPEED SWITCHING APPLICATIONS

- High Voltage : V_{CBO} = 1700 V
- Low Saturation Voltage : $V_{CE\ (sat)}$ = 3 V (Max.)
- High Speed : t_f = 0.15 μs (Typ.)
- Collector Metal (Fin) is Fully Covered with Mold Resin.

Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	2-16E3A

Weight : 5.5 g (Typ.)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	1700	V
Collector-Emitter Voltage		V_{CEO}	700	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current	DC	I_C	10	A
	Pulse	I_{CP}	20	
Base Current		I_B	5	A
Collector Power Dissipation (Tc = 25°C)		P_C	50	W
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	V_{CB} = 1700 V, I_E = 0	—	—	1	mA
Emitter Cut-off Current		I_{EBO}	V_{EB} = 5 V, I_C = 0	—	—	10	μA
Collector-Emitter Breakdown Voltage		$V_{(BR)\ CEO}$	I_C = 10 mA, I_B = 0	700	—	—	V
DC Current Gain		h_{FE} (1)	V_{CE} = 5 V, I_C = 1 A	10	—	28	—
		h_{FE} (2)	V_{CE} = 5 V, I_C = 6 A	4	—	8.5	
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	—	0.9	1.2	V
Transition Frequency		f_T	V_{CE} = 10 V, I_E = 0.1 A	—	2	—	MHz
Collector Output Capacitance		Cob	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	185	—	pF
Switching Time (Fig.1)	Storage Time	t_{stg}	I_{CP} = 5 A, I_{B1} (end) = 1.0 A	—	2.5	4.0	μs
	Fall Time	t_f	f_H = 64 kHz	—	0.15	0.3	

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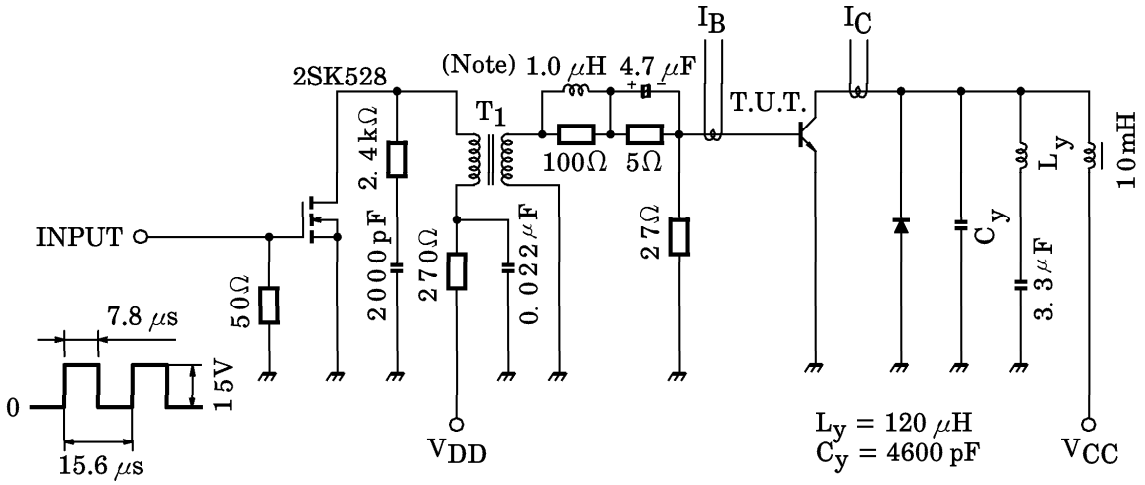
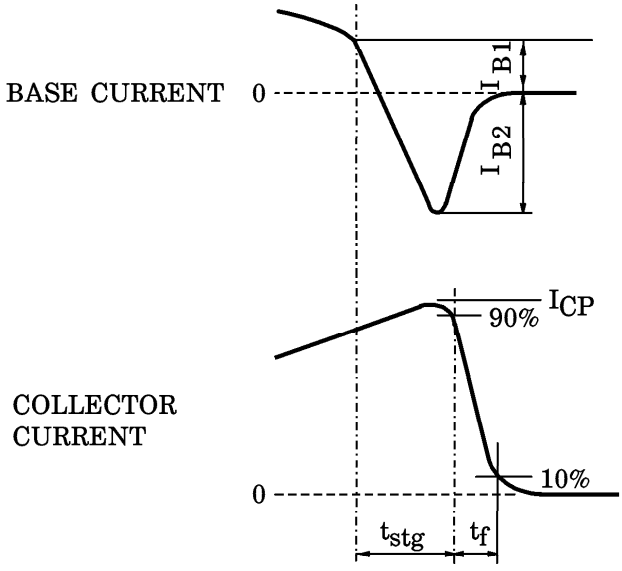
Fig.1 SWITCHING TIME TEST CIRCUIT



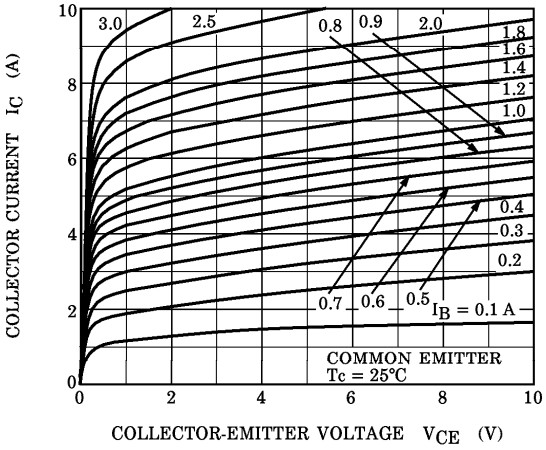


Base Current Gradient

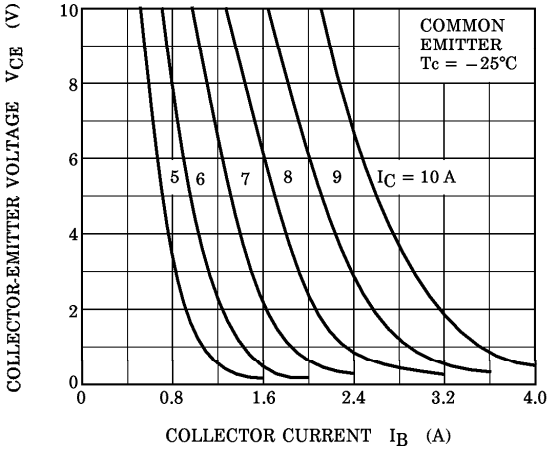
$$dI_B / dt = \frac{I_{B1} + I_{B2}}{t_{stg}} \ (A / \mu s)$$

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

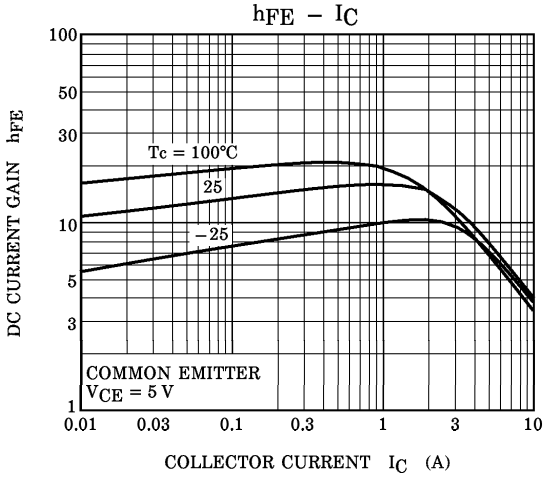
$I_C - V_{CE}$



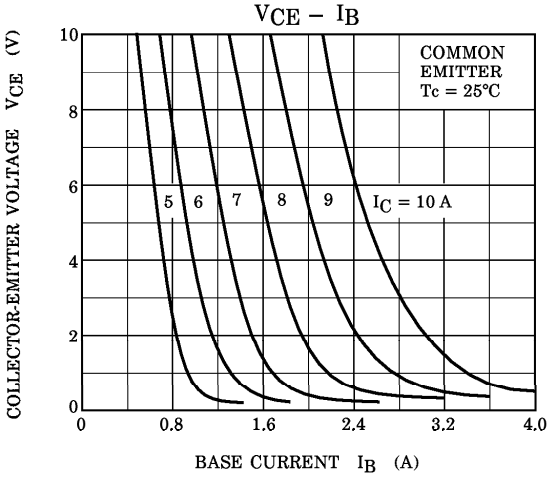
$V_{CE} - I_B$



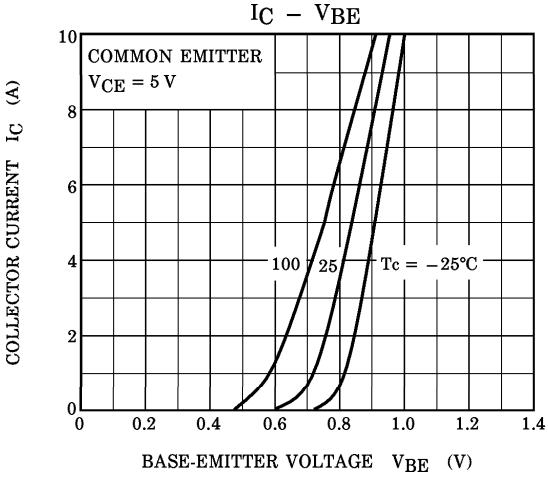
$h_{FE} - I_C$



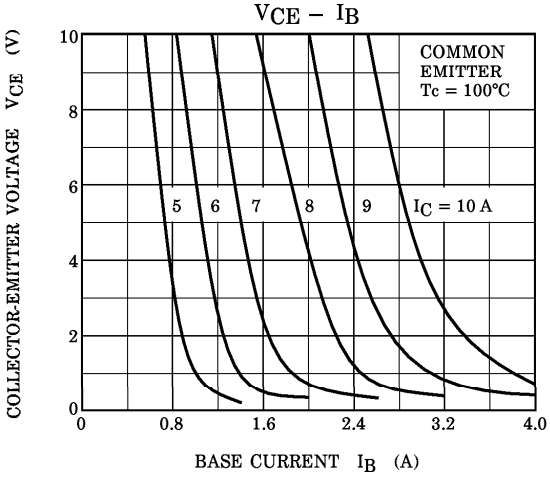
$V_{CE} - I_B$



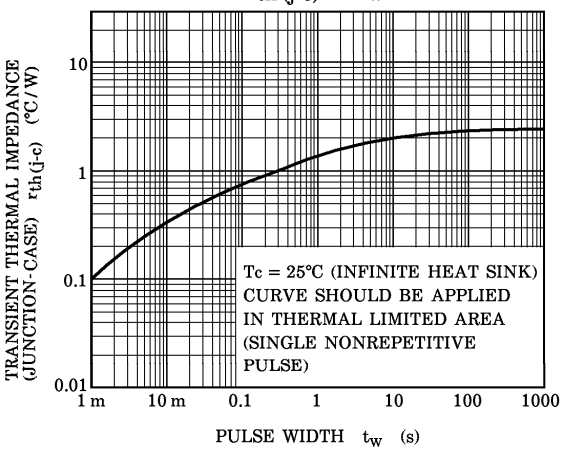
$I_C - V_{BE}$



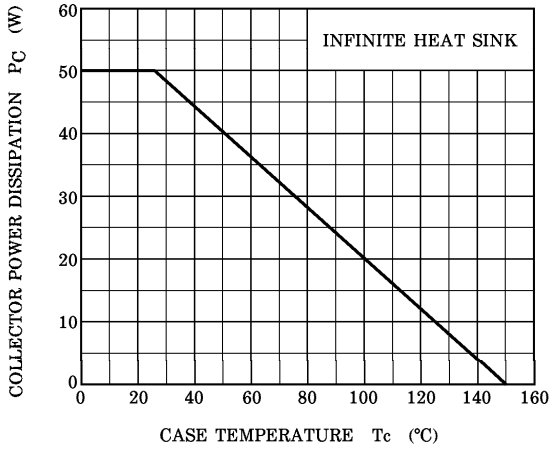
$V_{CE} - I_B$



$r_{th\,(j\text{-}c)}$ – t_w



P_C – Tc



SAFE OPERATING AREA