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TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

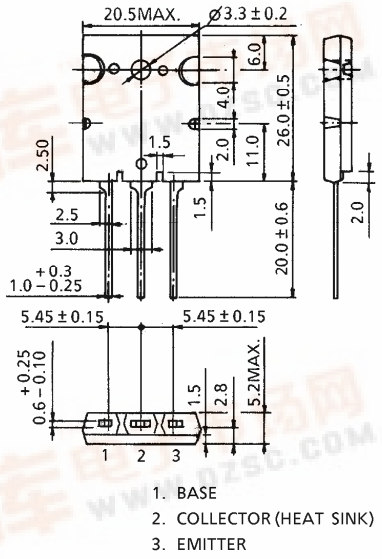
2SC5142

HORIZONTAL DEFLECTION OUTPUT FOR HIGH RESOLUTION DISPLAY, COLOR TV

HIGH SPEED SWITCHING APPLICATIONS

- High Voltage : V_{CBO} = 1500 V
- Low Saturation Voltage : $V_{CE\ (sat)}$ = 3 V (Max.)
- High Speed : t_f = 0.15 μs (Typ.)

Unit in mm



1. BASE
2. COLLECTOR (HEAT SINK)
3. EMITTER

JEDEC	—
EIAJ	—
TOSHIBA	2-21F2A

Weight : 9.75 g (Typ.)

MAXIMUM RATINGS (Ta = 25°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	20	A
	Pulse	I_{CP}	40	
Base Current		I_B	10	A
Collector Power Dissipation (Tc = 25°C)		P_C	200	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} = 1500 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	600	—	—	V
DC Current Gain		h_{FE} (1)	V_{CE} = 5 V, I_C = 2 A	10	—	30	—
		h_{FE} (2)	V_{CE} = 5 V, I_C = 14 A	4.5	—	8.5	
Collector-Emitter Saturation Voltage		$V_{CE\ (sat)}$	I_C = 14 A, I_B = 3.5 A	—	—	3	V
Base-Emitter Saturation Voltage		$V_{BE\ (sat)}$	I_C = 14 A, I_B = 3.5 A	—	1.0	1.4	V
Transition Frequency		f_T	V_{CE} = 10 V, I_E = −0.1 A	—	1.7	—	MHz
Collector Output Capacitance		Cob	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	290	—	pF
Switching Time (Fig.1)	Storage Time	t_{stg}	I_{CP} = 10 A, I_{B1} (end) = 1.8 A	—	2.5	4.0	μs
	Fall Time	t_f	f_H = 64 kHz	—	0.15	0.3	

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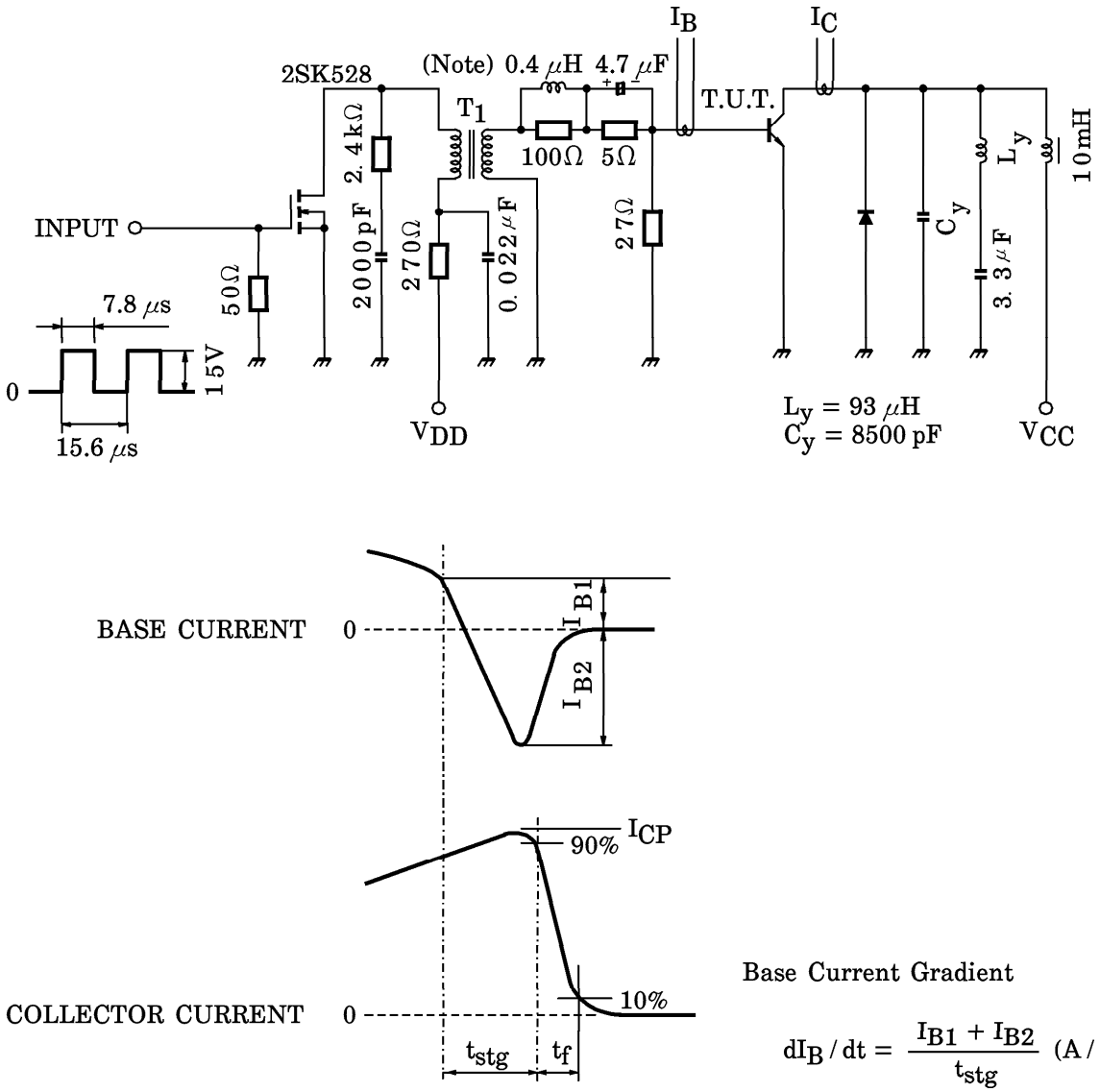
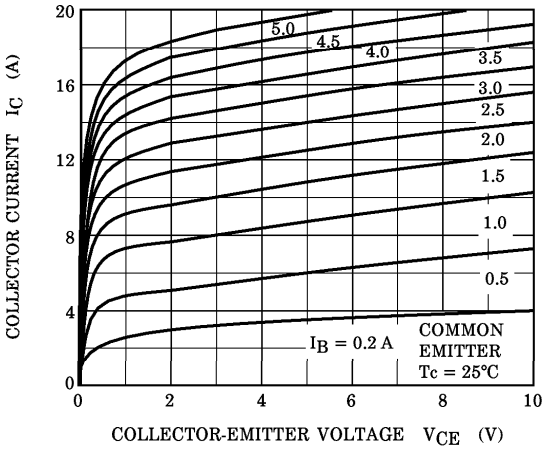
Fig.1 SWITCHING TIME TEST CIRCUIT

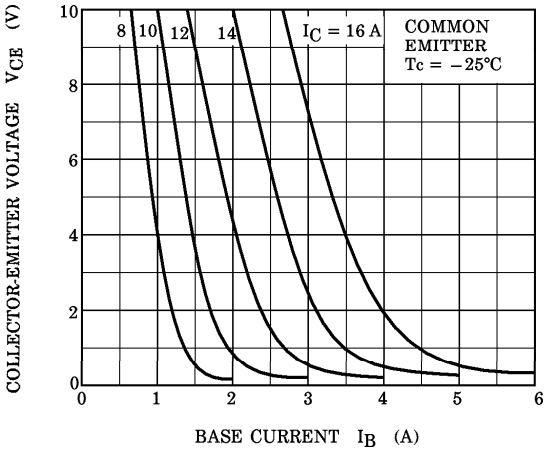


(Note) : Leakage Inductance of secondary winding LB is 1.2 μH

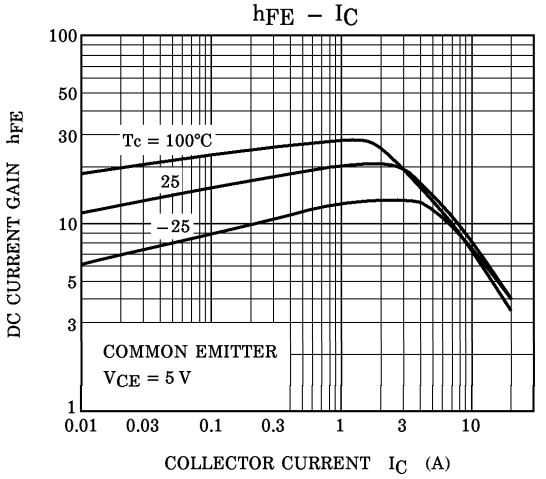
$I_C - V_{CE}$



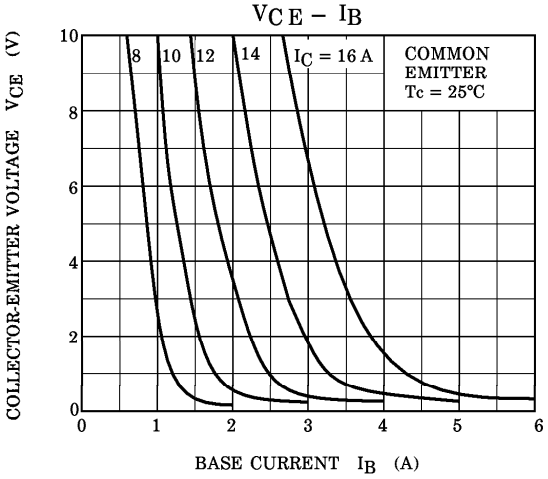
$V_{CE} - I_B$



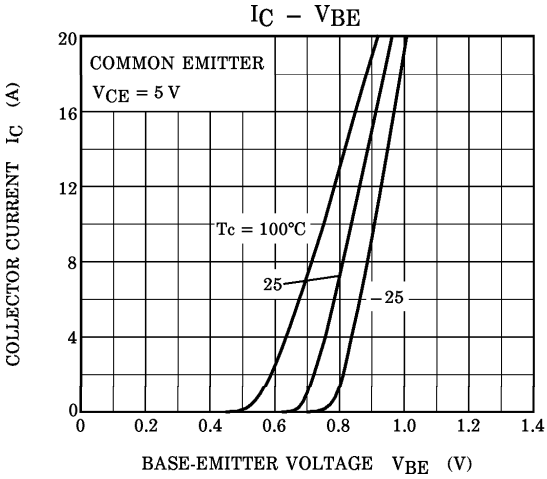
$h_{FE} - I_C$



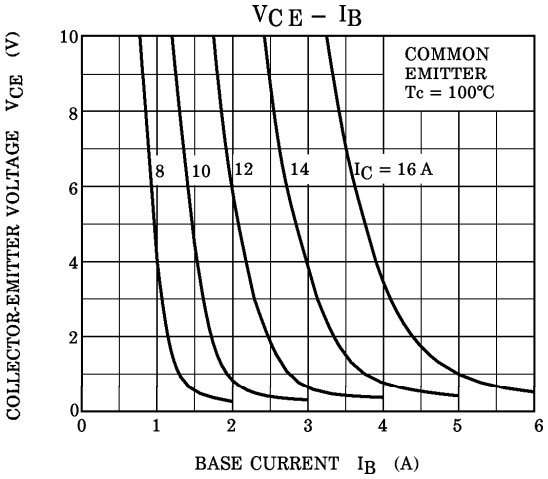
$V_{CE} - I_B$



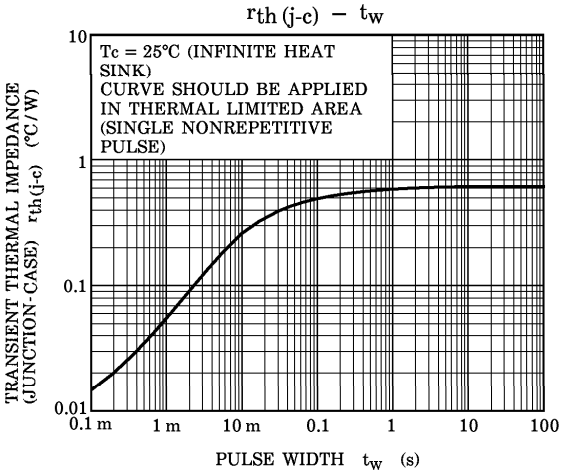
$I_C - V_{BE}$



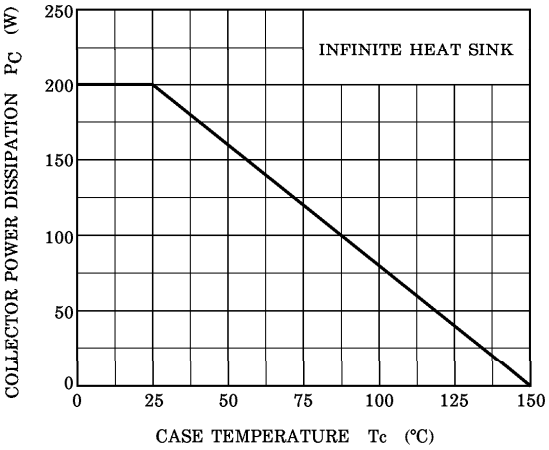
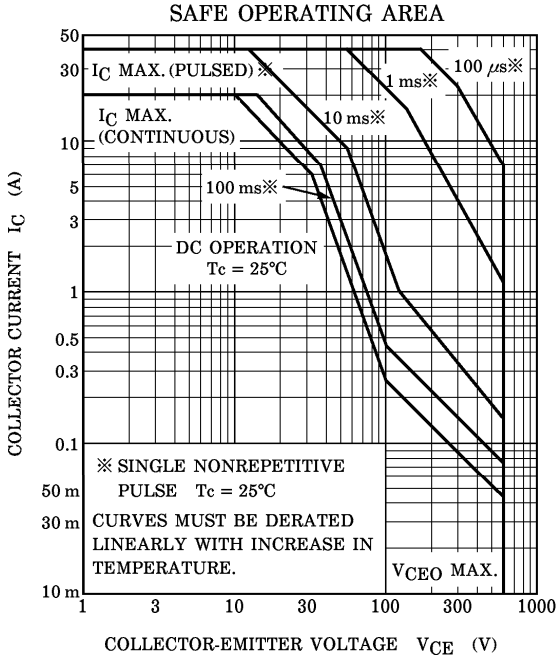
$V_{CE} - I_B$



$r_{th\,(j\text{-}c)} - t_w$



$P_C - T_c$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