

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

2SC5144

HORIZONTAL DEFLECTION OUTPUT FOR HIGH RESOLUTION DISPLAY, COLOR TV

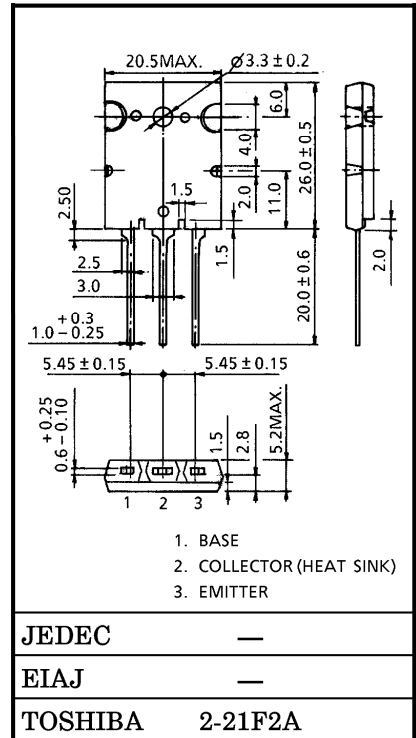
HIGH SPEED SWITCHING APPLICATIONS

- High Speed : $t_f = 0.15 \mu s$ (Typ.)
- High Voltage : $V_{CBO} = 1700 V$
- Low Saturation Voltage : $V_{CE(sat)} = 3 V$ (Max.)

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	1700	V
Collector-Emitter Voltage	V_{CEO}	600	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	DC	I_C	20
	Pulse	I_{CP}	40
Base Current	I_B	10	A
Collector Power Dissipation ($T_c = 25^\circ C$)	P_C	200	W
Junction Temperature	T_j	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55~150	$^\circ C$

Unit in mm



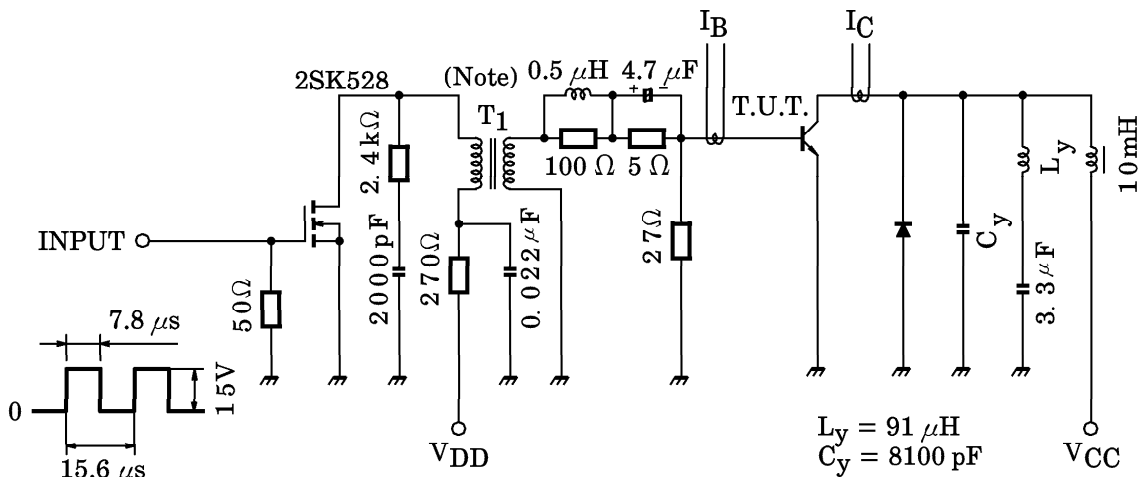
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ C$)

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	$V_{(BR)CEO}$	$I_C = 10 mA, I_B = 0$	600	—	—	V
DC Current Gain	$h_{FE(1)}$	$V_{CE} = 5 V, I_C = 2 A$	10	—	30	—
	$h_{FE(2)}$	$V_{CE} = 5 V, I_C = 11 A$	4.5	—	8.5	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 11 A, I_B = 2.75 A$	—	—	3	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 11 A, I_B = 2.75 A$	—	1.0	1.3	V
Transition Frequency	f_T	$V_{CE} = 10 V, I_E = 0.1 A$	—	1.7	—	MHz
Collector Output Capacitance	C_{ob}	$V_{CB} = 10 V, I_E = 0, f = 1 MHz$	—	290	—	pF
Switching Time (Fig.1)	Storage Time	t_{stg}	—	2.5	4.0	μs
	Fall Time	t_f	—	0.15	0.3	

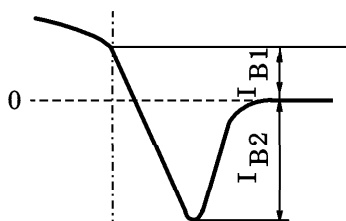
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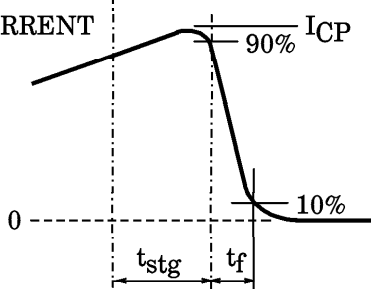
Fig.1 SWITCHING TIME TEST CIRCUIT



BASE CURRENT



COLLECTOR CURRENT



Base Current Gradient

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

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

