

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

# 2SC5144

HORIZONTAL DEFLECTION OUTPUT FOR HIGH RESOLUTION DISPLAY, COLOR TV

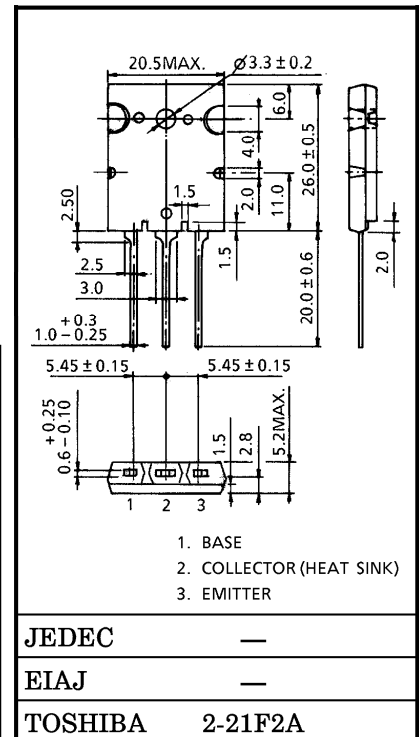
HIGH SPEED SWITCHING APPLICATIONS

- 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



Weight : 9.75 g (Typ.)

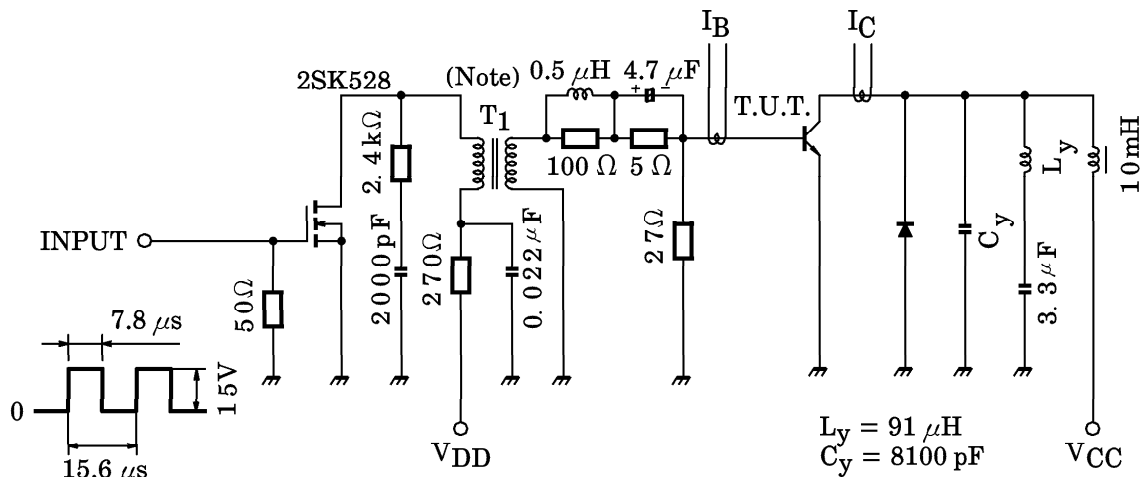
ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 1700 V, I_E = 0$	—	—	1	mA
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = 5 V, I_C = 0$	—	—	10	$\mu A$
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	$\mu s$
	Fall Time	$t_f$	—	0.15	0.3	

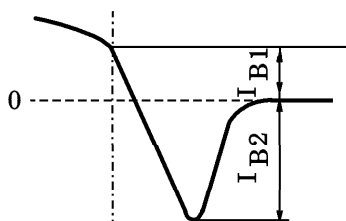
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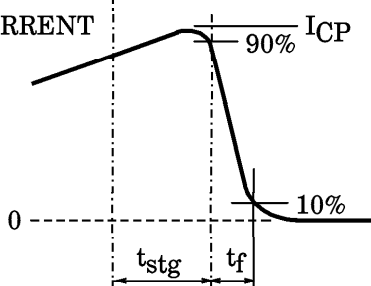
Fig.1 SWITCHING TIME TEST CIRCUIT



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 LB is  $1.2 \mu\text{H}$ .

