

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

# 2SC5144

HORIZONTAL DEFLECTION OUTPUT FOR HIGH RESOLUTION DISPLAY, COLOR TV

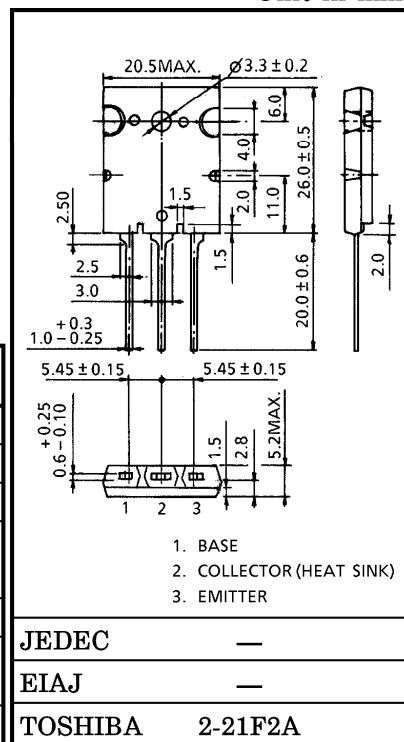
Unit in mm

HIGH SPEED SWITCHING APPLICATIONS

- High Speed :  $t_f = 0.15 \mu s$  (Typ.)
- High Voltage :  $V_{CBO} = 1700V$
- Low Saturation Voltage :  $V_{CE(sat)} = 3V$  (Max.) ( $I_C = 11A, I_B = 2.75A$ )

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	$^\circ C$



JEDEC	—
EIAJ	—
TOSHIBA	2-21F2A
Weight	: 9.75g

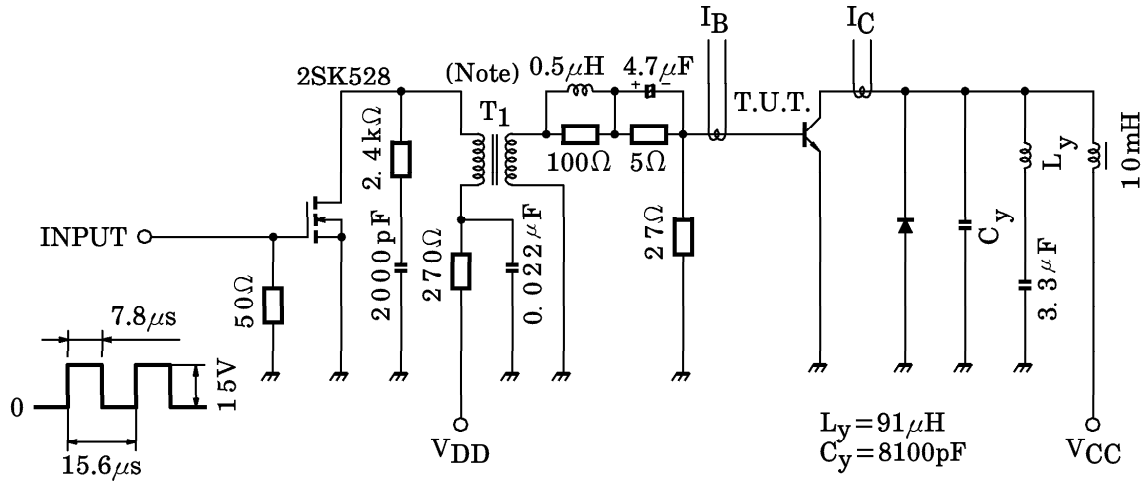
ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 1700V, I_E = 0$	—	—	1	mA
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = 5V, I_C = 0$	—	—	10	$\mu A$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10mA, I_B = 0$	600	—	—	V
DC Current Gain	$h_{FE(1)}$	$V_{CE} = 5V, I_C = 2A$	10	—	30	
	$h_{FE(2)}$	$V_{CE} = 5V, I_C = 11A$	4.5	—	8.5	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 11A, I_B = 2.75A$	—	—	3	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 11A, I_B = 2.75A$	—	1.0	1.3	V
Transition Frequency	$f_T$	$V_{CE} = 10V, I_C = 0.1A$	—	1.7	—	MHz
Collector Output Capacitance	$C_{ob}$	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	290	—	pF
Switching Time (Fig.1)	Storage Time	$t_{stg}$	—	2.5	4.0	$\mu s$
	Fall Time	$t_f$				
		$I_{CP} = 10A, I_{B1}(end) = 1.8A, f_H = 64kHz$	—	0.15	0.3	

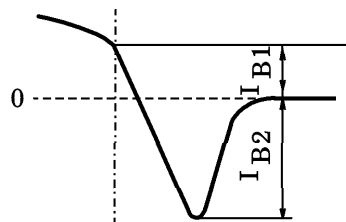
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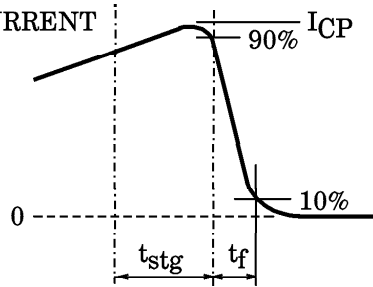
Fig.1 SWITCHING TIME TEST CIRCUIT



BASE CURRENT



COLLECTOR CURRENT



Base Current Gradient

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

Note : Leakage Inductance of secondary winding LB is 1.2μH.

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