

TOSHIBA**2SC5144**

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

2SC5144HORIZONTAL DEFLECTION OUTPUT FOR HIGH RESOLUTION
DISPLAY, COLOR TV

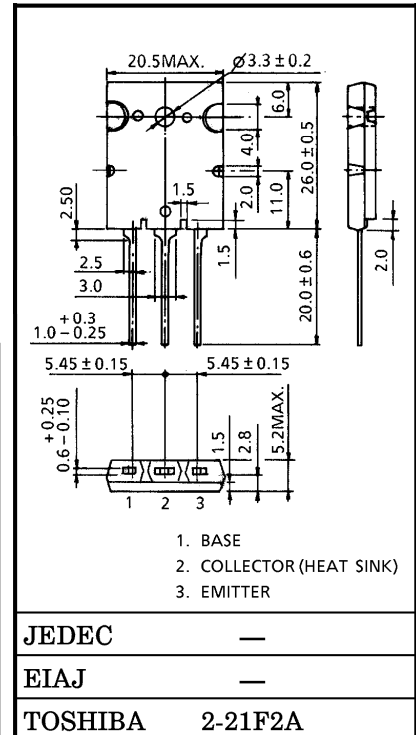
HIGH SPEED SWITCHING APPLICATIONS

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

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

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	A
	Pulse	I_{CP}	40	
Base Current		I_{B}	10	A
Collector Power Dissipation ($T_c = 25^\circ\text{C}$)		P_{C}	200	W
Junction Temperature		T_{j}	150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55~150	$^\circ\text{C}$

Unit in mm



Weight : 9.75 g (Typ.)

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

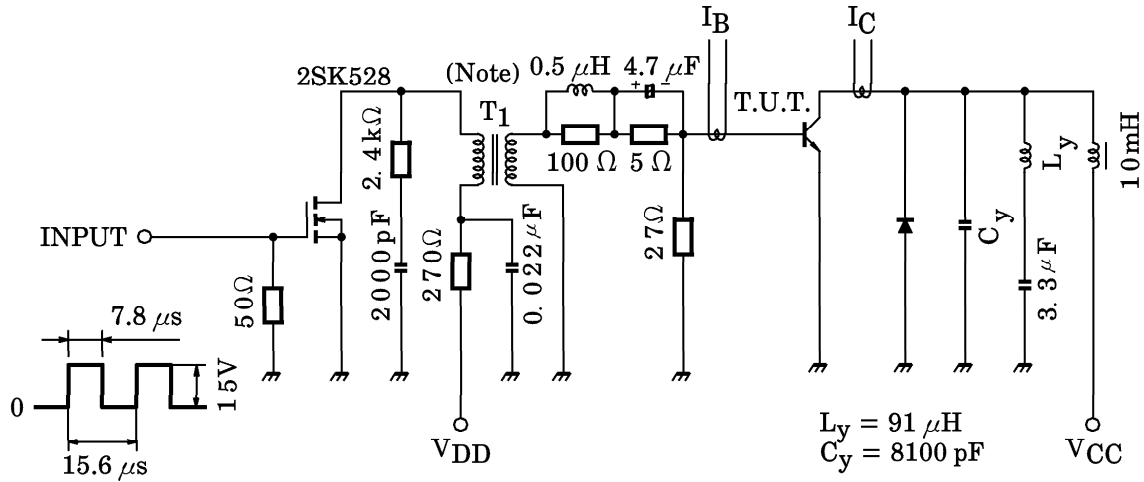
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	$V_{\text{CB}} = 1700 \text{ V}, I_{\text{E}} = 0$	—	—	1	mA
Emitter Cut-off Current		I_{EBO}	$V_{\text{EB}} = 5 \text{ V}, I_{\text{C}} = 0$	—	—	10	μA
Collector-Emitter Breakdown Voltage		$V_{(\text{BR})\text{CEO}}$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

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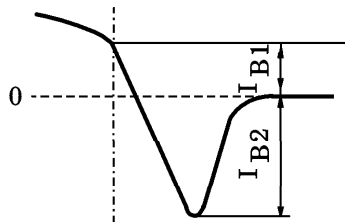
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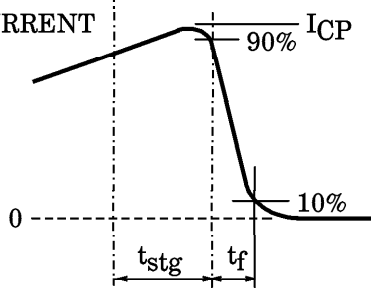
Fig.1 SWITCHING TIME TEST CIRCUIT



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 1.2 μH.

