TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

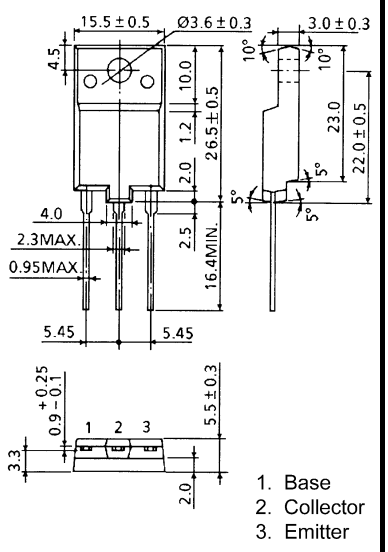
2SD2553

HORIZONTAL DEFLECTION OUTPUT FOR HIGH RESOLUTION DISPLAY, COLOR TV

HIGH SPEED SWITCHING APPLICATIONS

- High Voltage : V_{CBO} = 1700 V
- Low Saturation Voltage : $V_{CE\ (sat)}$ = 5 V (Max.)
- High Speed : t_f = 0.3 μs (Typ.)
- Built-in Damper Type
- Collector Metal (Fin) is Fully Covered with Mold Resin.

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	2-16E3A

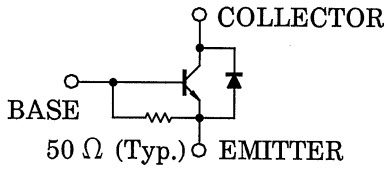
Weight: 5.5 g (typ.)

ABSOLUTE MAXIMUM RATINGS (Tc = 25°C)

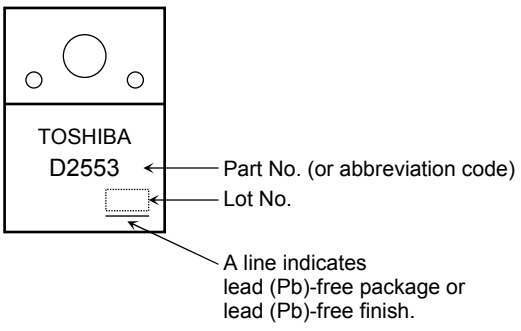
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector−Base Voltage		V_{CBO}	1700	V
Collector−Emitter Voltage		V_{CEO}	600	V
Emitter−Base Voltage		V_{EBO}	5	V
Collector Current	DC	I_C	8	A
	Pulse	I_{CP}	16	
Base Current		I_B	4	A
Collector Power Dissipation		P_C	50	W
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

EQUIVALENT CIRCUIT



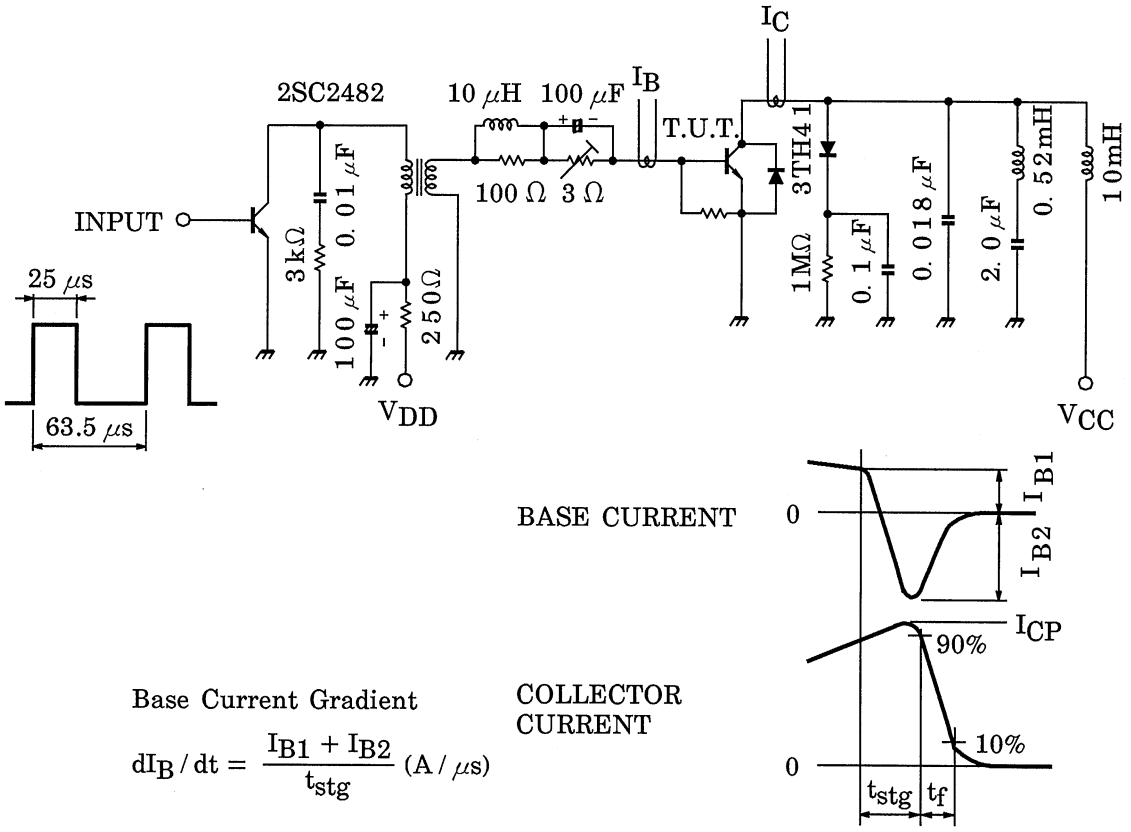
MARKING



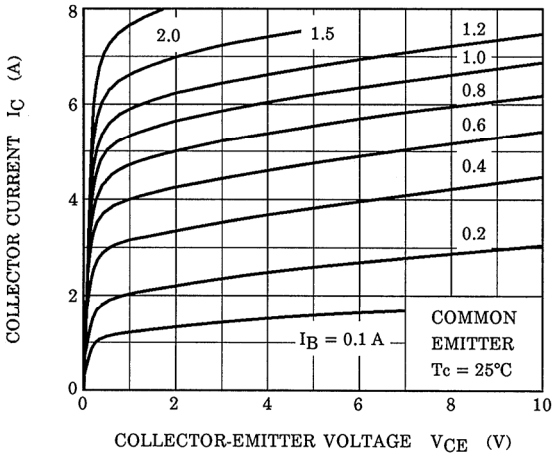
ELECTRICAL CHARACTERISTICS (Tc = 25°C)

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	66	—	200	mA
Emitter−Base Breakdown Voltage		$V_{(BR)\ EBO}$	I_C = 400 mA, I_C = 0	5	—	—	V
DC Current Gain		$h_{FE\ (1)}$	V_{CE} = 5 V, I_C = 1 A	8	—	28	—
		$h_{FE\ (2)}$	V_{CE} = 5 V, I_C = 6 A	5	—	9	
Collector−Emitter Saturation Voltage		$V_{CE\ (sat)}$	I_C = 6 A, I_B = 1.2 A	—	—	5	V
Base−Emitter Saturation Voltage		$V_{BE\ (sat)}$	I_C = 6 A, I_B = 1.2 A	—	0.9	1.2	V
Forward Voltage (Damper Diode)		V_F	I_F = 8 A	—	1.6	2.0	V
Transition Frequency		f_T	V_{CE} = 10 V, I_C = 0.1 A	—	2	—	MHz
Collector Output Capacitance		C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	155	—	pF
Switching Time (Fig.1)	Storage Time	t_{stg}	I_{CP} = 6 A, I_{B1} (end) = 1.5 A f_H = 15.75 kHz	—	9	12	μs
	Fall Time	t_f		—	0.3	0.7	

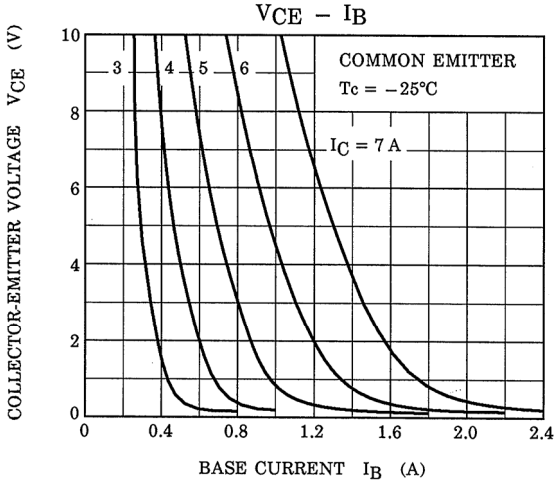
Fig.1 SWITCHING TIME TEST CIRCUIT



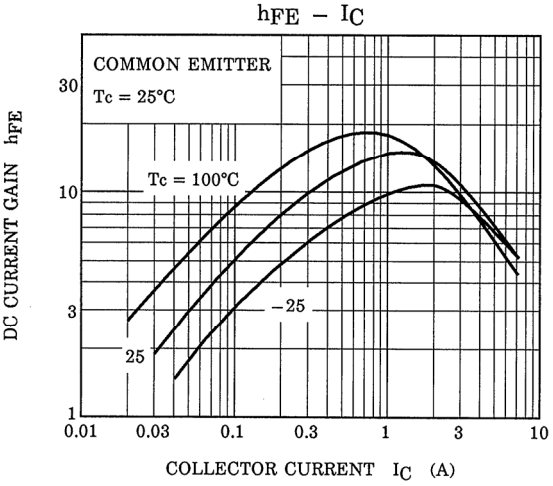
$I_C - V_{CE}$



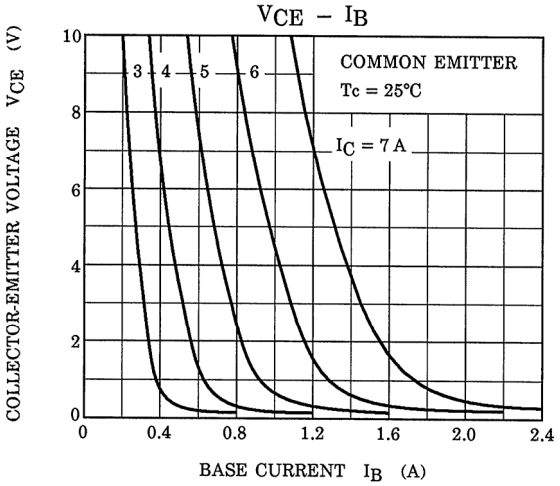
$V_{CE} - I_B$



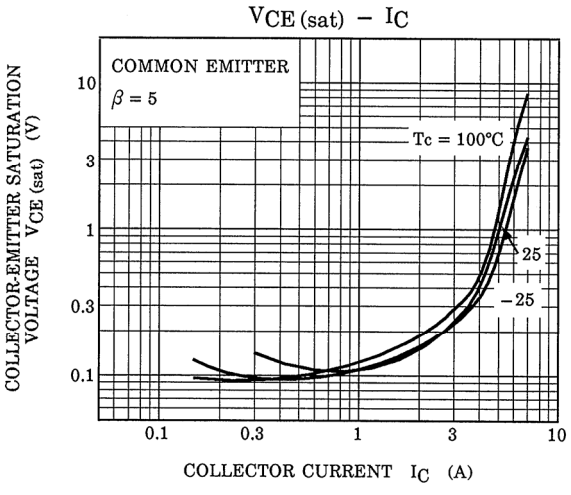
$h_{FE} - I_C$



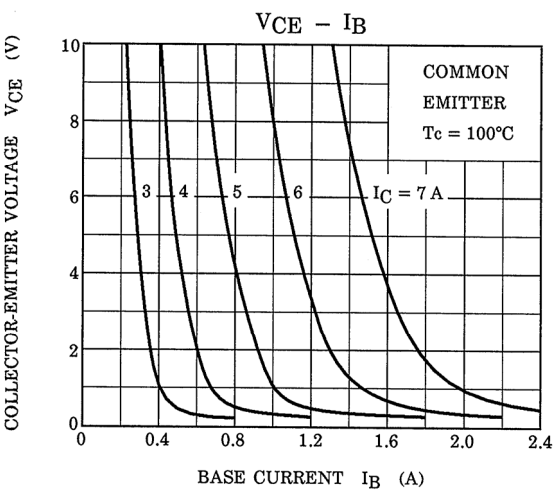
$V_{CE} - I_B$



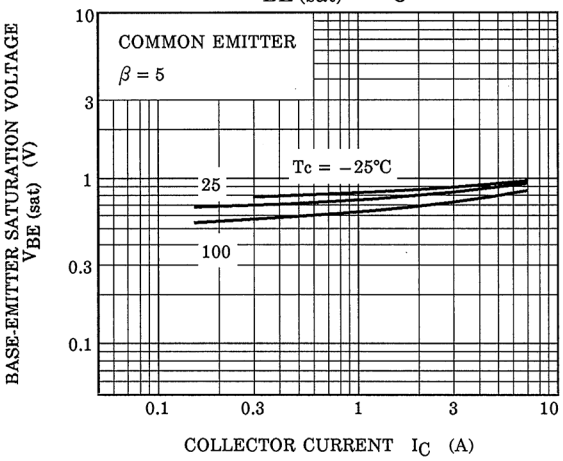
$V_{CE\,(sat)} - I_C$



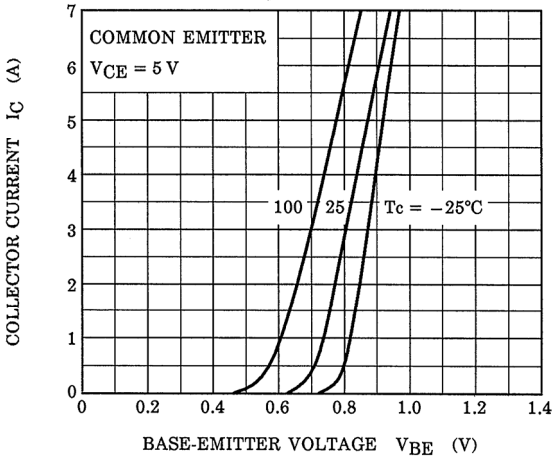
$V_{CE} - I_B$



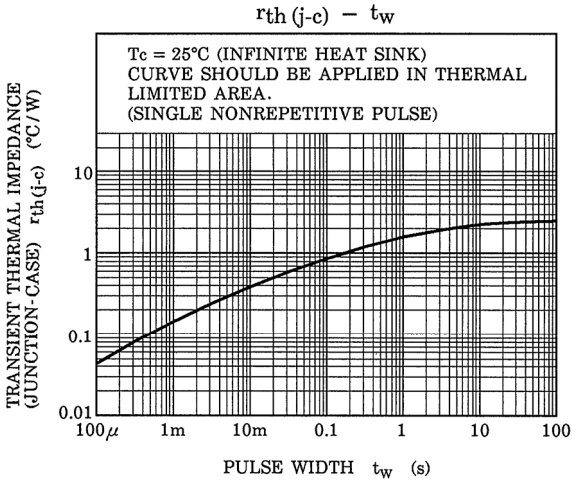
$V_{BE\,(sat)}$ – I_C



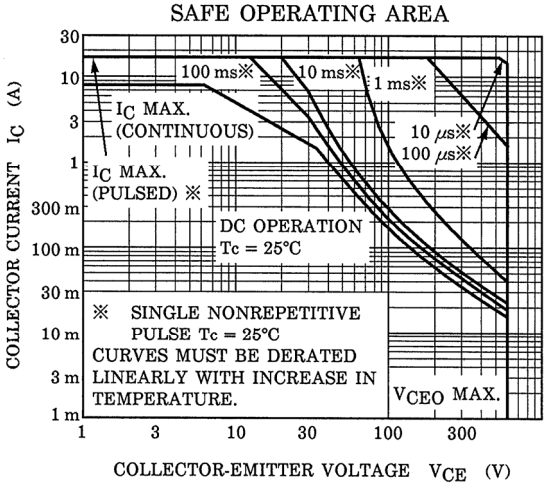
I_C – V_{BE}



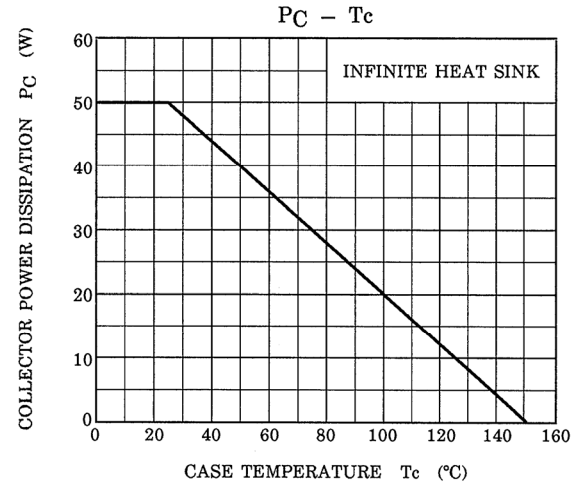
$r_{th\,(j\text{-}c)}$ – t_w



SAFE OPERATING AREA



P_C – T_c



RESTRICTIONS ON PRODUCT USE

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