

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

2SD2499

HORIZONTAL DEFLECTION OUTPUT FOR COLOR TVs

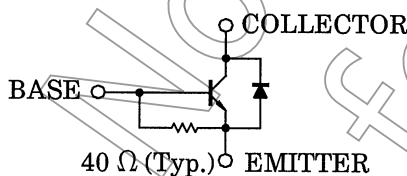
- High Voltage : $V_{CBO} = 1500\text{ V}$
- Low Saturation Voltage : $V_{CE(sat)} = 5\text{ V (Max.)}$
- High Speed : $t_f = 0.3\text{ }\mu\text{s (Typ.)}$
- Built-in Damper Type
- Collector Metal (Fin) is Fully Covered with Mold Resin.

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

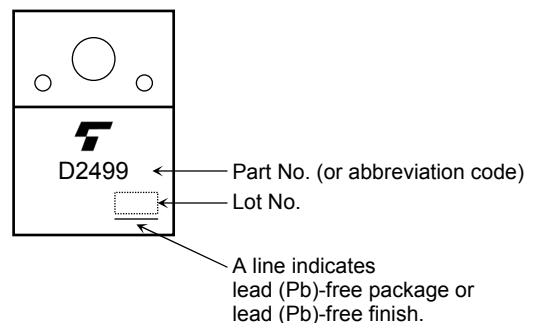
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	1500	V
Collector-Emitter Voltage		V_{CEO}	600	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current	DC	I_C	6	A
	Pulse	I_{CP}	12	
Base Current		I_B	3	A
Collector Power Dissipation		P_C	50	W
Junction Temperature		T_j	150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55~150	$^\circ\text{C}$

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).

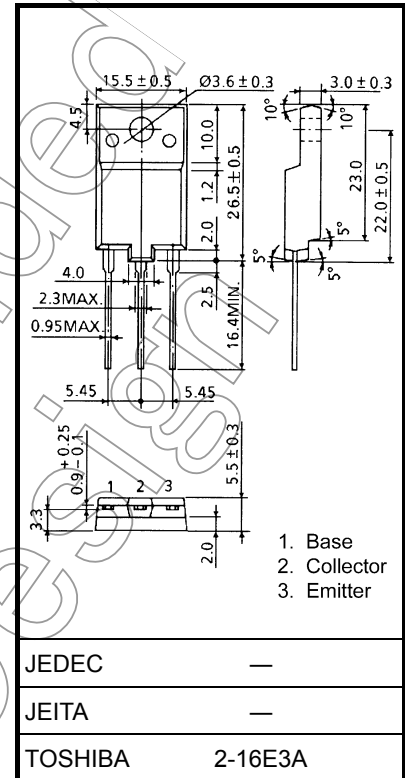
EQUIVALENT CIRCUIT



MARKING



Unit: mm

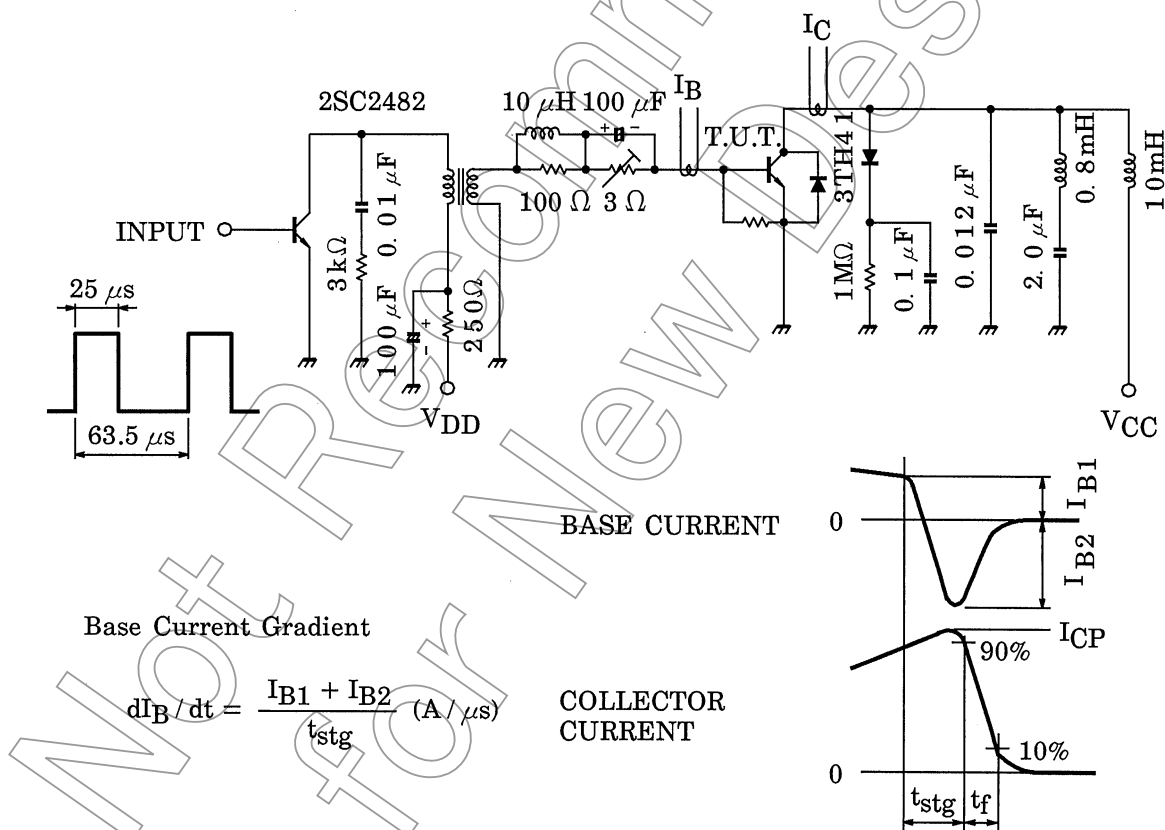


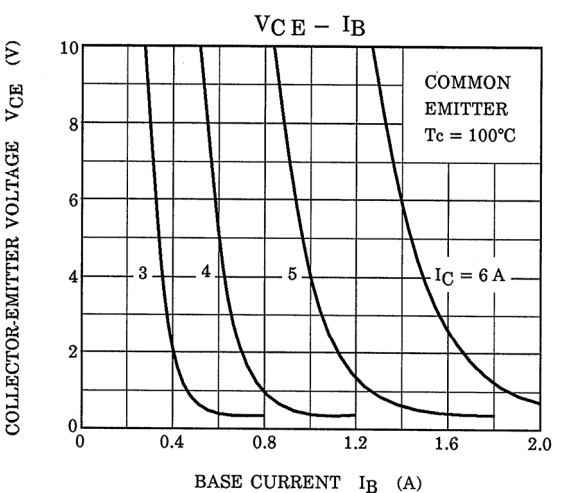
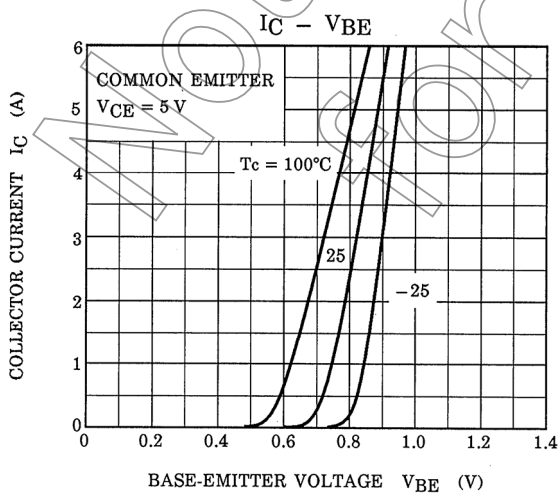
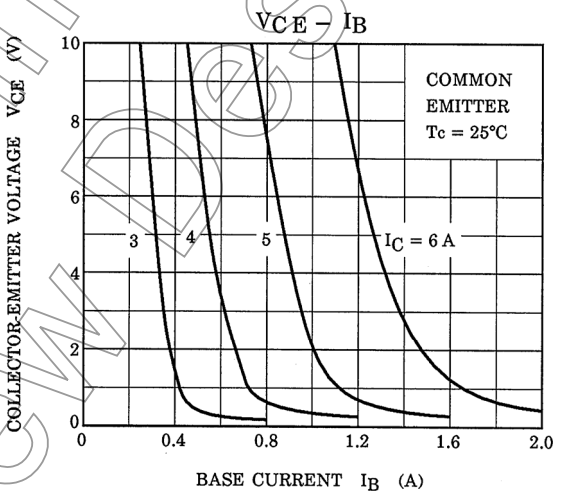
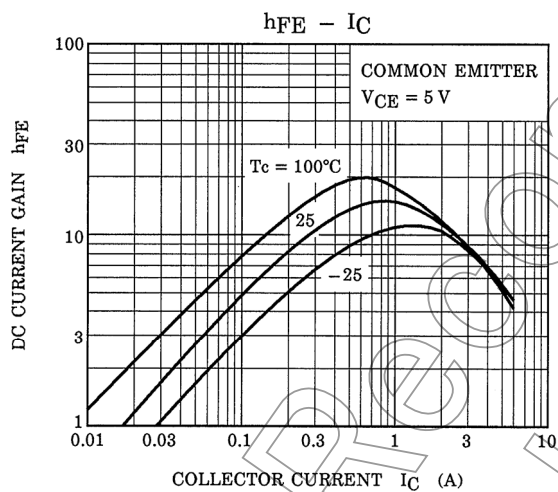
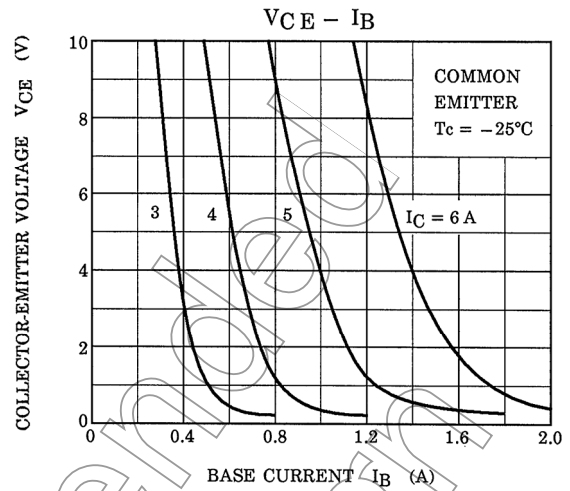
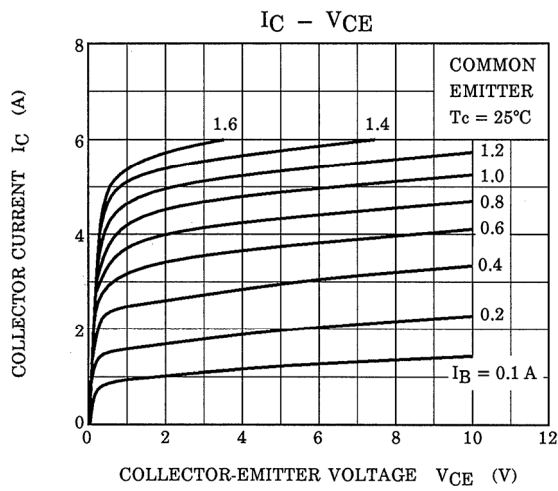
Weight: 5.5 g (typ.)

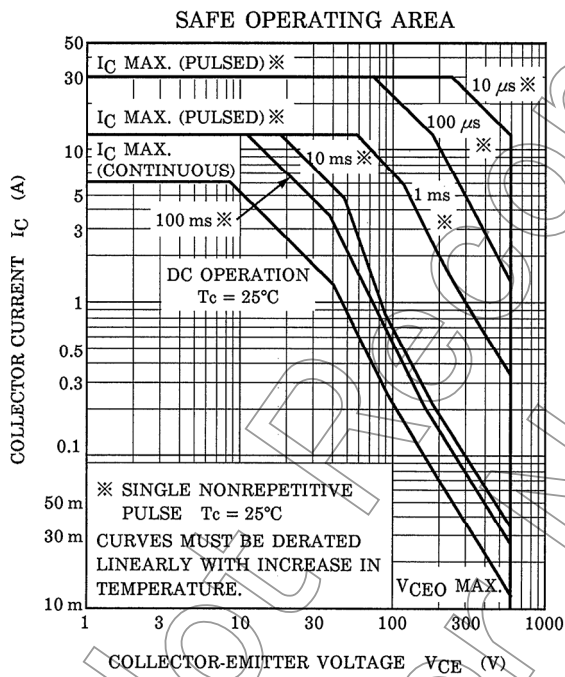
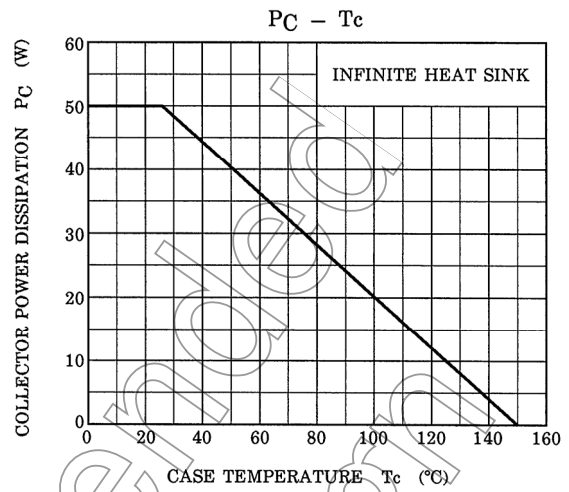
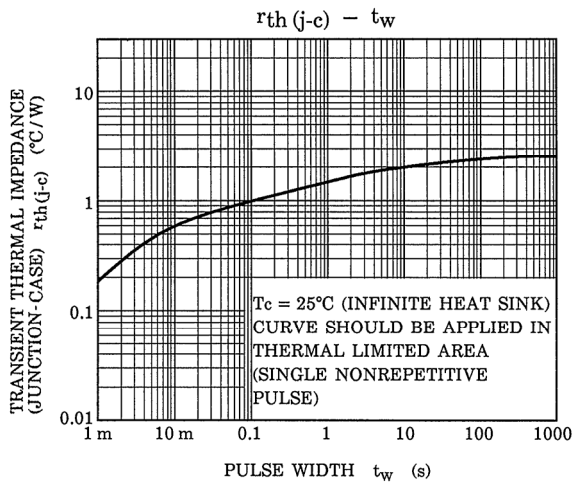
ELECTRICAL CHARACTERISTICS (T_c = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Collector Cut-off Current		I_{CBO}	$V_{CB} = 1500 \text{ V}, I_E = 0$	—	—	1	mA
Emitter Cut-off Current		I_{EBO}	$V_{EB} = 5 \text{ V}, I_C = 0$	67	—	200	mA
Emitter-Base Breakdown Voltage		$V_{(BR) EBO}$	$I_C = 400 \text{ mA}, I_B = 0$	5	—	—	V
DC Current Gain	$h_{FE} (1)$	$V_{CE} = 5 \text{ V}, I_C = 1 \text{ A}$	8	—	25	—	
	$h_{FE} (2)$	$V_{CE} = 5 \text{ V}, I_C = 4 \text{ A}$	5	—	9		
Collector-Emitter Saturation Voltage		$V_{CE (sat)}$	$I_C = 4 \text{ A}, I_B = 0.8 \text{ A}$	—	—	5	V
Base-Emitter Saturation Voltage		$V_{BE (sat)}$	$I_C = 4 \text{ A}, I_B = 0.8 \text{ A}$	—	1.05	1.3	V
Forward Voltage (Dampner Diode)		V_F	$I_F = 6 \text{ A}$	—	1.6	2.0	V
Transition Frequency		f_T	$V_{CE} = 10 \text{ V}, I_C = 0.1 \text{ A}$	—	2	—	MHz
Collector Output Capacitance		C_{ob}	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$	—	95	—	pF
Switching Time (Fig. 1)	Storage Time	t_{stg}	$I_{CP} = 4 \text{ A}, I_{B1} (end) = 0.8 \text{ A}$	—	7.5	11	μs
	Fall Time	t_f	$f_H = 15.75 \text{ kHz}$	—	0.3	0.6	

Fig. 1 SWITCHING TIME TEST CIRCUIT







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20070701-EN

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