

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

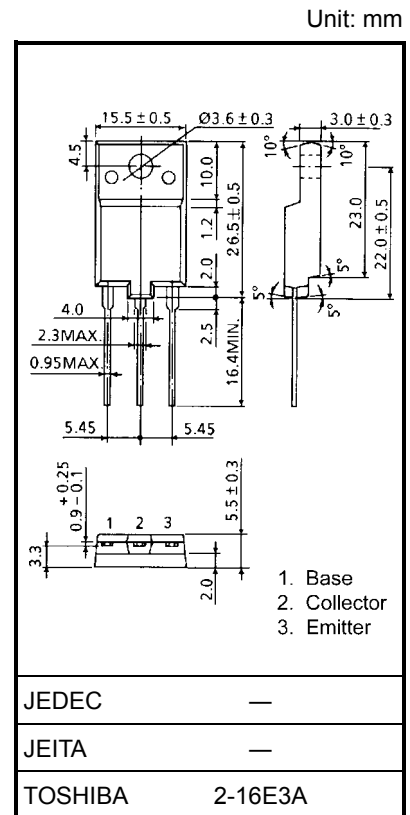
# 2SD2499

HORIZONTAL DEFLECTION OUTPUT FOR COLOR TV

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

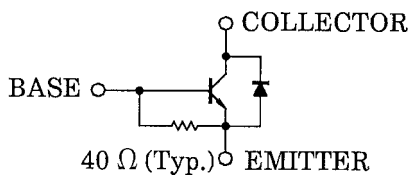
## MAXIMUM RATINGS ( $T_c = 25^\circ\text{C}$ )

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
	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	$^\circ\text{C}$



Weight: 5.5 g (typ.)

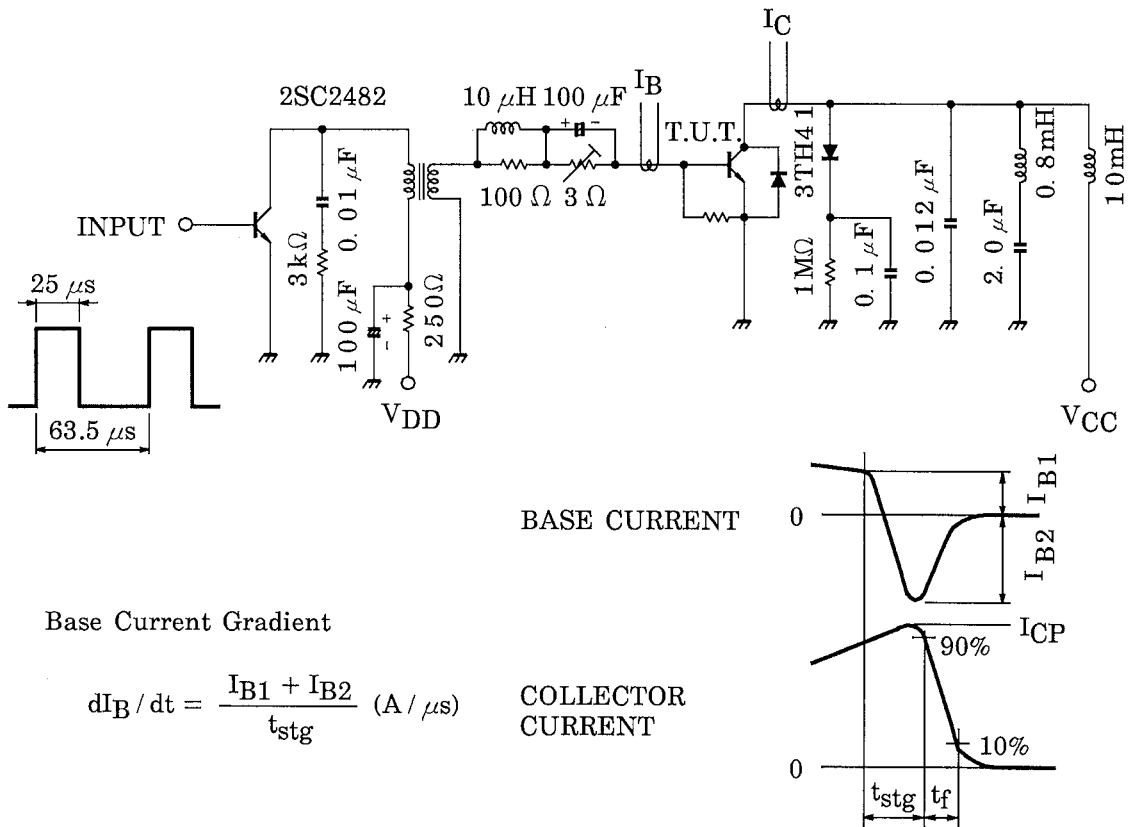
## EQUIVALENT CIRCUIT

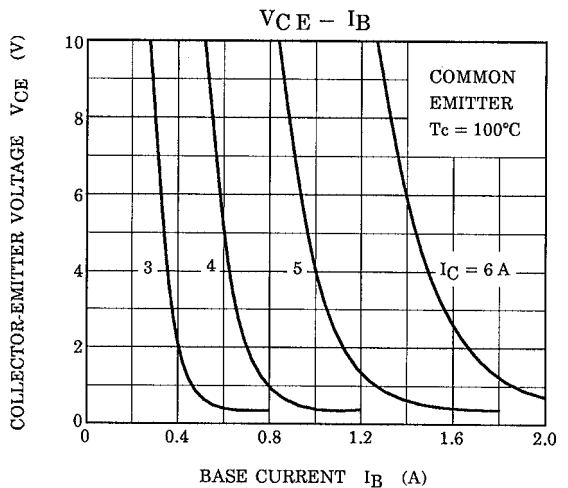
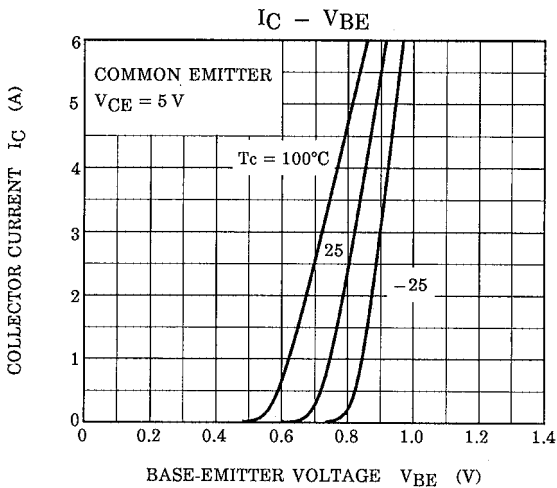
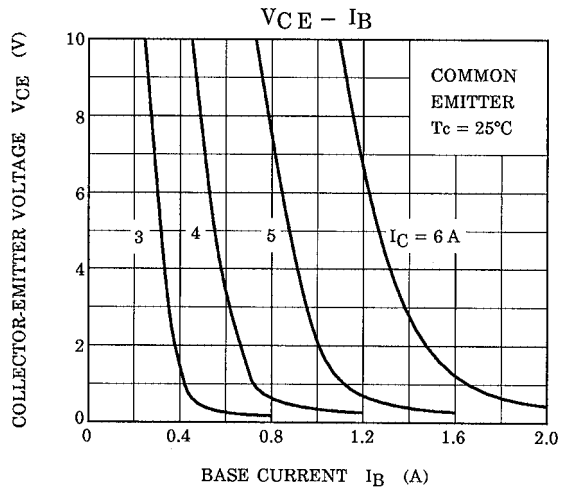
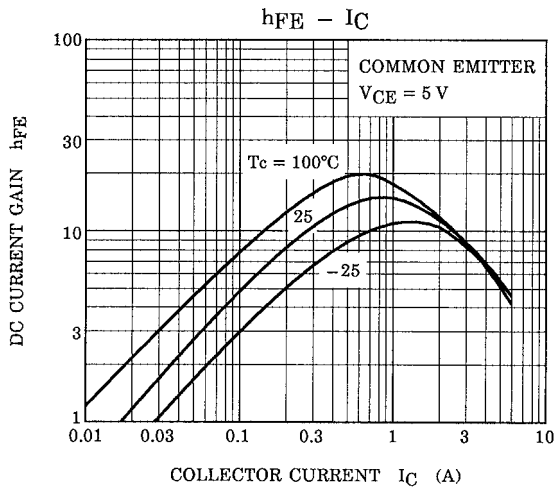
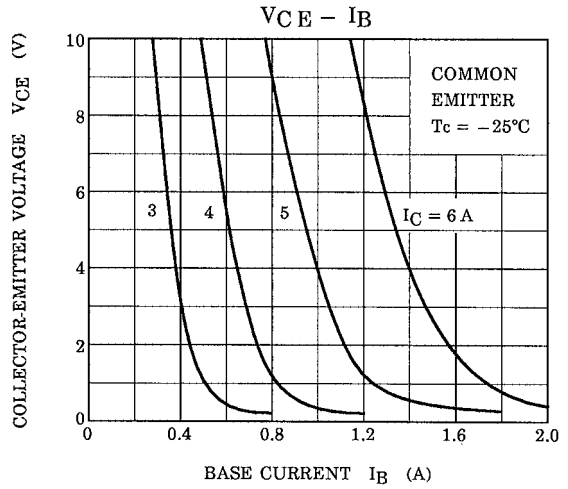
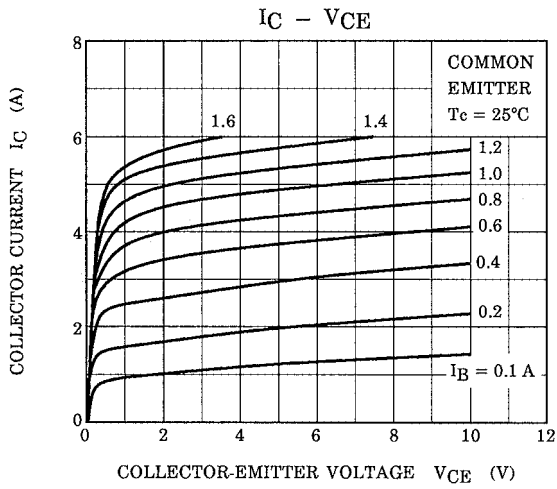


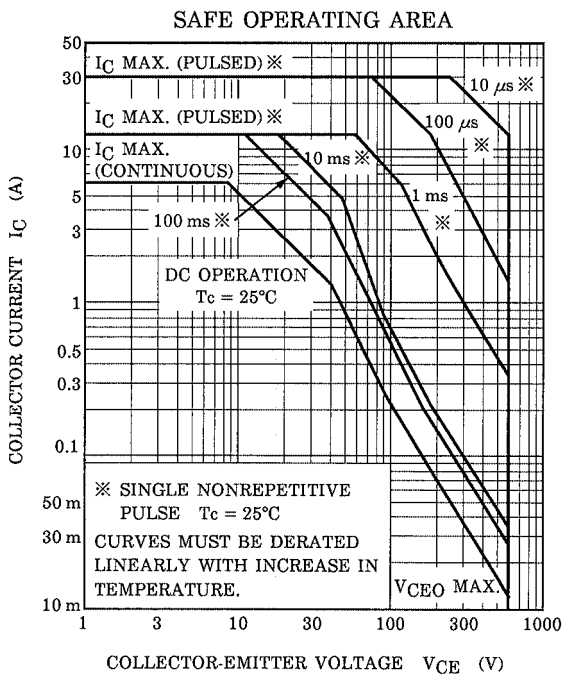
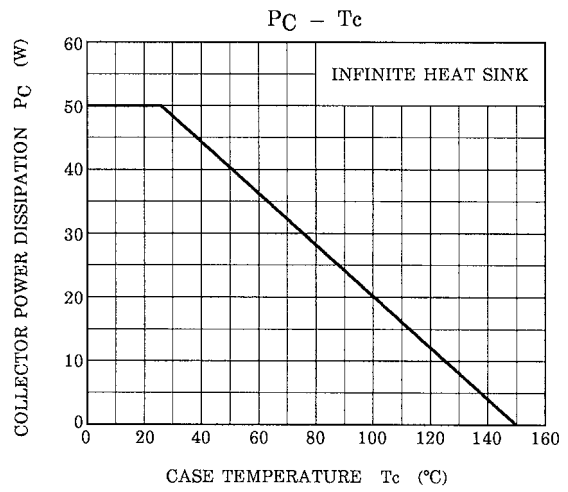
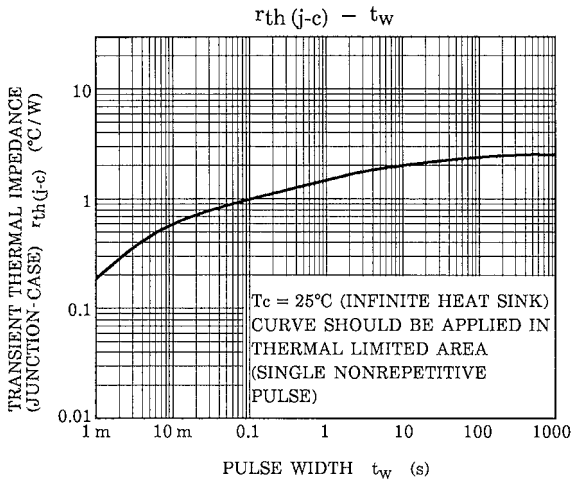
**ELECTRICAL CHARACTERISTICS (Tc = 25°C)**

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Collector Cut-off Current	I <sub>CBO</sub>	V <sub>CB</sub> = 1500 V, I <sub>E</sub> = 0	—	—	1	mA
Emitter Cut-off Current	I <sub>EBO</sub>	V <sub>EB</sub> = 5 V, I <sub>C</sub> = 0	67	—	200	mA
Emitter-Base Breakdown Voltage	V <sub>(BR) EBO</sub>	I <sub>C</sub> = 400 mA, I <sub>B</sub> = 0	5	—	—	V
DC Current Gain	h <sub>FE</sub> (1)	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 1 A	8	—	25	—
	h <sub>FE</sub> (2)	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 4 A	5	—	9	
Collector-Emitter Saturation Voltage	V <sub>CE (sat)</sub>	I <sub>C</sub> = 4 A, I <sub>B</sub> = 0.8 A	—	—	5	V
Base-Emitter Saturation Voltage	V <sub>BE (sat)</sub>	I <sub>C</sub> = 4 A, I <sub>B</sub> = 0.8 A	—	1.05	1.3	V
Forward Voltage (Damper Diode)	V <sub>F</sub>	I <sub>F</sub> = 6 A	—	1.6	2.0	V
Transition Frequency	f <sub>T</sub>	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 0.1 A	—	2	—	MHz
Collector Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1 MHz	—	95	—	pF
Switching Time (Fig.1)	Storage Time	I <sub>CP</sub> = 4 A, I <sub>B1</sub> (end) = 0.8 A f <sub>H</sub> = 15.75 kHz	—	7.5	11	μs
	Fall Time		—	0.3	0.6	

**Fig.1 SWITCHING TIME TEST CIRCUIT**







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