

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

## 2SD2539

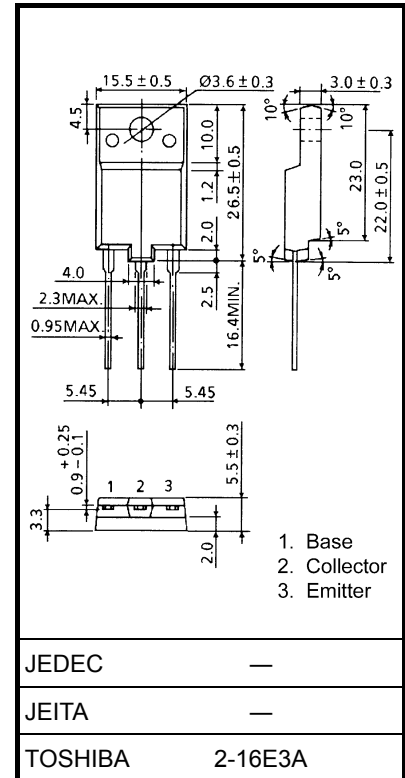
HORIZONTAL DEFLECTION OUTPUT FOR COLOR TVs

Unit: mm

- 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

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

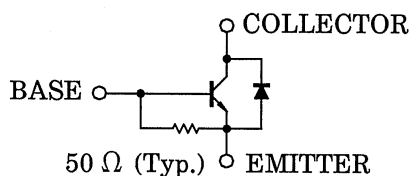
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		$V_{CBO}$	1500	V
Collector-Emitter Voltage		$V_{CEO}$	600	V
Emitter-Base Voltage		$V_{EBO}$	5	V
Collector Current	DC	$I_C$	7	A
	Pulse	$I_{CP}$	14	
Base Current		$I_B$	3.5	A
Collector Power Dissipation		$P_C$	50	W
Junction Temperature		$T_j$	150	$^\circ\text{C}$
Storage Temperature Range		$T_{stg}$	-55~150	$^\circ\text{C}$



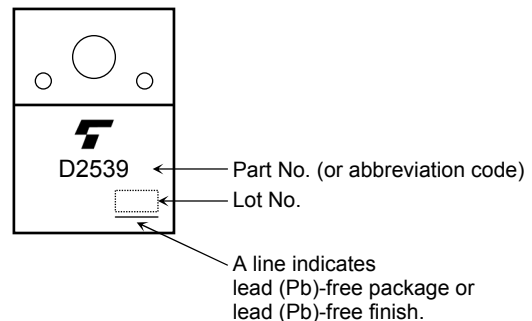
Weight: 5.5 g (typ.)

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



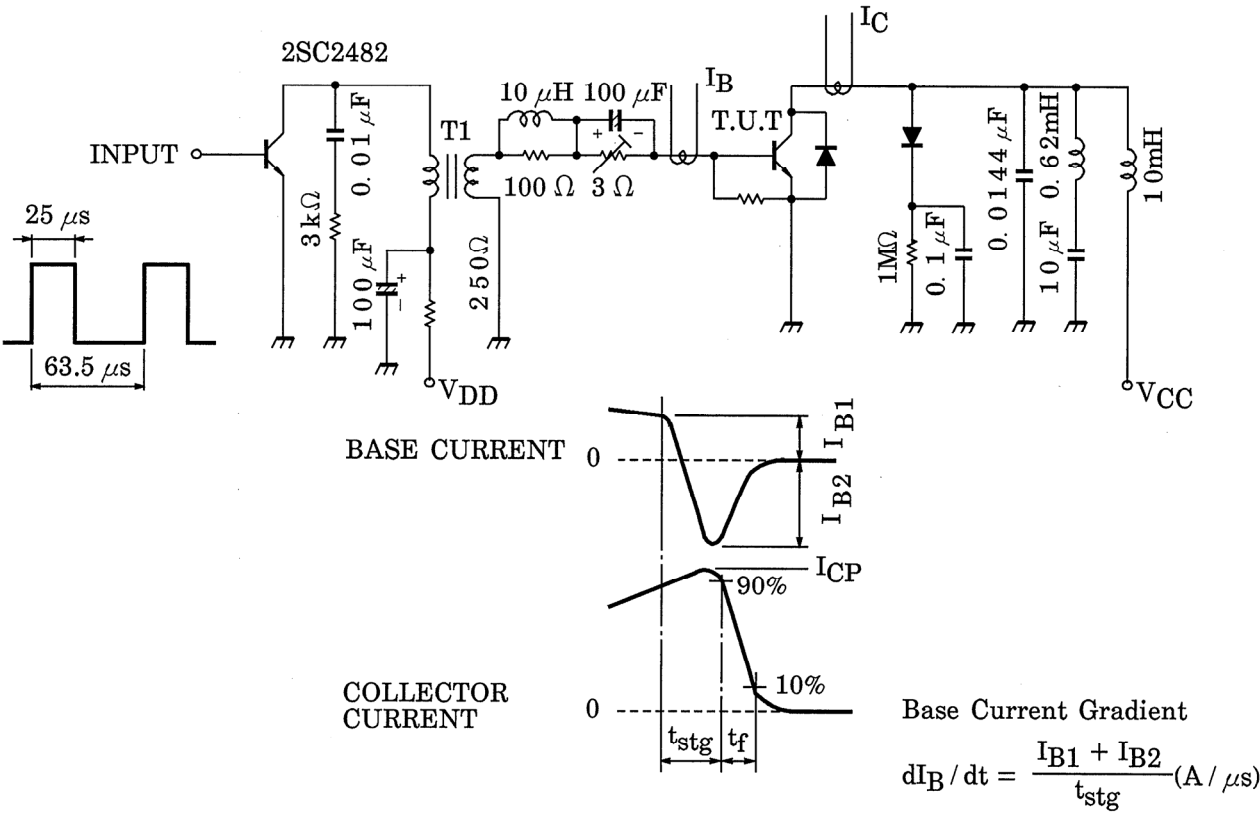
### MARKING

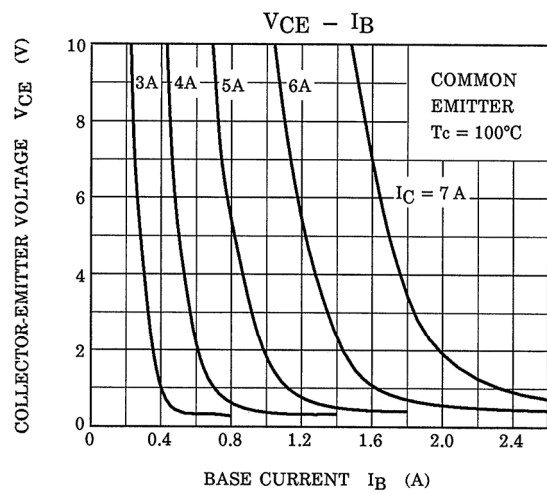
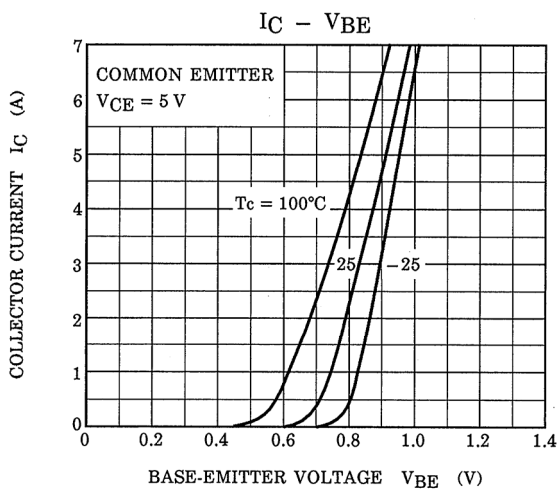
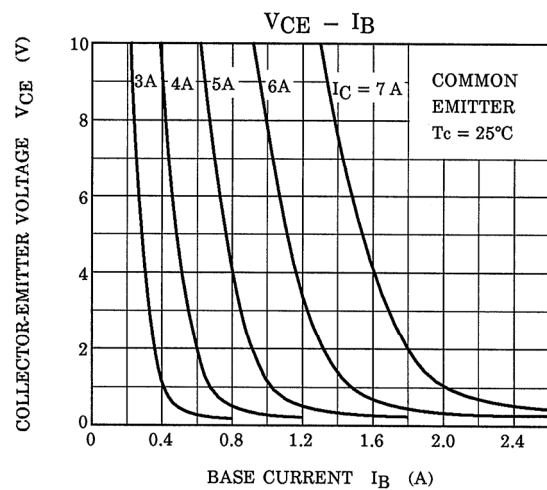
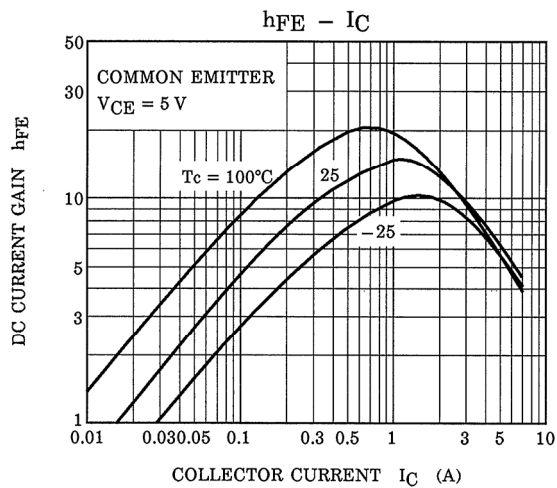
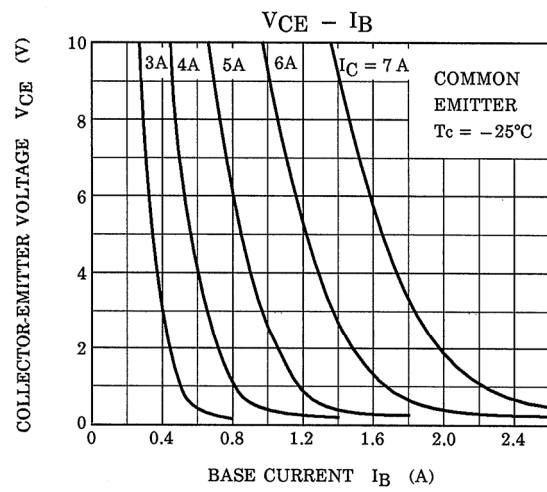
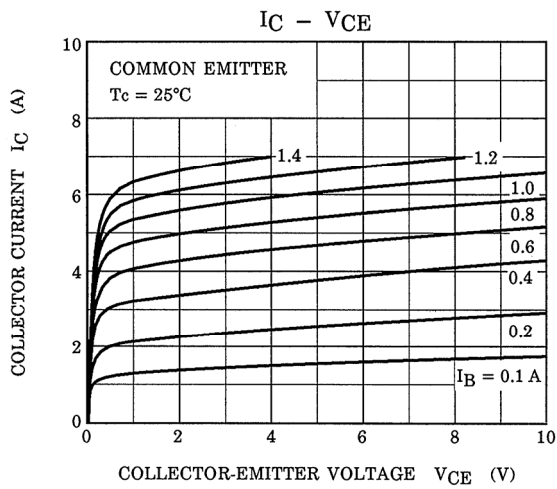


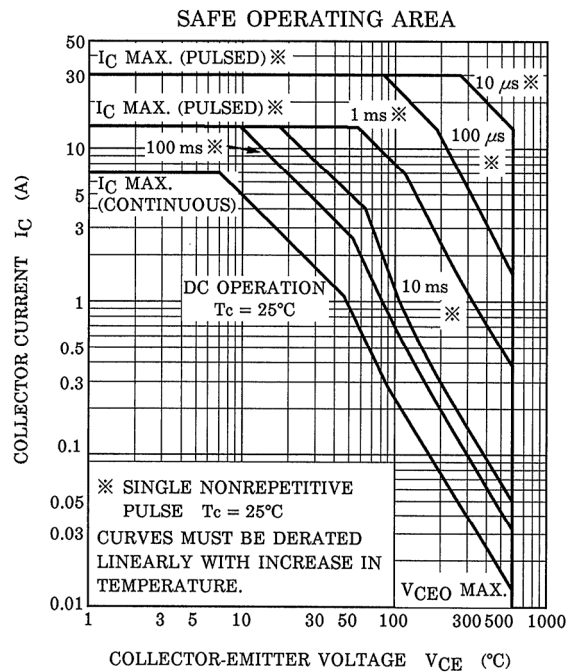
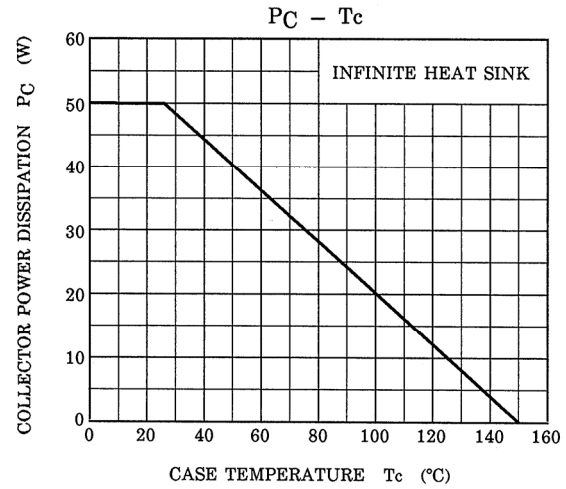
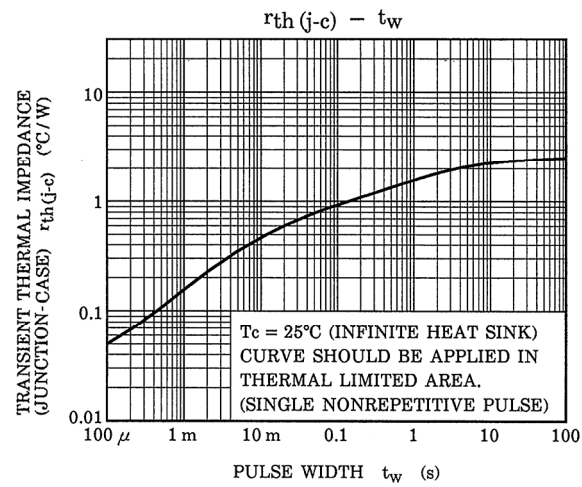
ELECTRICAL CHARACTERISTICS (Tc = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Collector Cut-off Current		ICBO	V <sub>CB</sub> = 1500 V, I <sub>E</sub> = 0	—	—	1	mA
Emitter Cut-off Current		IEBO	V <sub>EB</sub> = 5 V, I <sub>C</sub> = 0	66	—	200	mA
Emitter-Base Breakdown Voltage		V (BR) EBO	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	—	28	—
	h <sub>FE</sub> (2)		V <sub>CE</sub> = 5 V, I <sub>C</sub> = 5A	5	—	9	
Collector-Emitter Saturation Voltage		V <sub>CE</sub> (sat)	I <sub>C</sub> = 5 A, I <sub>B</sub> = 1.0 A	—	—	5	V
Base-Emitter Saturation Voltage		V <sub>BE</sub> (sat)	I <sub>C</sub> = 5 A, I <sub>B</sub> = 1.0 A	—	1.0	1.3	V
Forward Voltage (Damper Diode)		V <sub>F</sub>	I <sub>F</sub> = 5 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	—	115	—	pF
Switching Time	Storage Time	t <sub>stg</sub>	I <sub>CP</sub> = 5 A, I <sub>B1</sub> (end) = 1.0 A f <sub>H</sub> = 15.75 kHz	—	6	9	μs
	Fall Time	t <sub>f</sub>		—	0.3	0.6	

Fig.1 SWITCHING TIME TEST CIRCUIT







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20070701-EN

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