

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

# 2SD2499

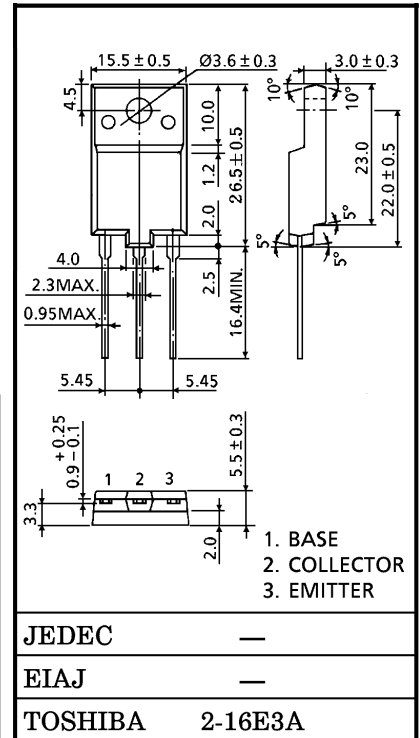
HORIZONTAL DEFLECTION OUTPUT FOR COLOR TV

Unit in mm

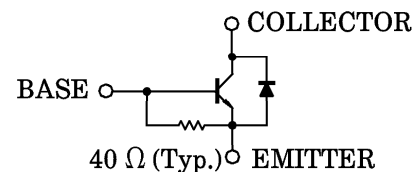
- High Voltage :  $V_{CB0} = 1500\text{ V}$
- Low Saturation Voltage :  $V_{CE(sat)} = 5\text{ V (Max.)}$
- High Speed :  $t_f = 0.3\ \mu\text{s (Typ.)}$
- Built-in Damper Type
- Collector Metal (Fin) is Fully Covered with Mold Resin.

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CB0}$	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 ( $T_c = 25^\circ\text{C}$ )	$P_C$	50	W
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55~150	$^\circ\text{C}$



EQUIVALENT CIRCUIT



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## ELECTRICAL CHARACTERISTICS (Ta = 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		$V_{EBO}$	$I_E = 400\text{ mA}, I_C = 0$	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 (Damper Diode)		$-V_F$	$I_F = 6\text{ A}$	—	1.6	2.0	V
Transition Frequency		$f_T$	$V_{CE} = 10\text{ V}, I_E = 0.1\text{ A}$	—	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	$t_{stg}$	$I_{CP} = 4\text{ A}, I_{B1}(\text{end}) = 0.8\text{ A}$ $f_H = 15.75\text{ kHz}$	—	7.5	11	$\mu\text{s}$
	Fall Time	$t_f$		—	0.3	0.6	

Fig.1 SWITCHING TIME TEST CIRCUIT

