

TOSHIBA TRANSISTOR SILICON PNP EPITAXIAL TYPE (PCT PROCESS)

# 2SA1954

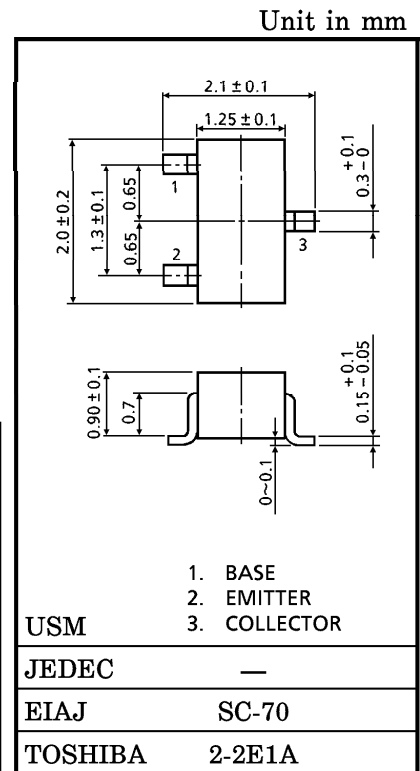
GENERAL PURPOSE AMPLIFIER APPLICATIONS

SWITCHING AND MUTING SWITCH APPLICATION

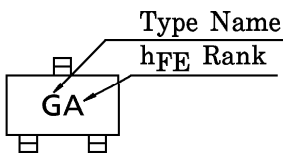
- Low Saturation Voltage :  $V_{CE(sat)}(1) = -15\text{mV (Typ.)}$   
@  $I_C = -10\text{mA} / I_B = -0.5\text{mA}$
- Large Collector Current :  $I_C = -500\text{mA (Max.)}$

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CB0}$	-15	V
Collector-Emitter Voltage	$V_{CE0}$	-12	V
Emitter-Base Voltage	$V_{EB0}$	-5	V
Collector Current	$I_C$	-500	mA
Base Current	$I_B$	-50	mA
Collector Power Dissipation	$P_C$	100	mW
Junction Temperature	$T_j$	125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55~125	$^\circ\text{C}$



MARKING



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		$I_{CBO}$	$V_{CB} = -15V, I_E = 0$	—	—	-0.1	$\mu A$
Emitter Cut-off Current		$I_{EBO}$	$V_{EB} = -5V, I_C = 0$	—	—	-0.1	$\mu A$
DC Current Gain		$h_{FE}$ (Note)	$V_{CE} = -2V, I_C = -10mA$	300	—	1000	
Collector-Emitter Saturation Voltage		$V_{CE(sat)} (1)$	$I_C = -10mA, I_B = -0.5mA$	—	-15	-30	mV
		$V_{CE(sat)} (2)$	$I_C = -200mA, I_B = -10mA$	—	-110	-250	
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	$I_C = -200mA, I_B = -10mA$	—	-0.87	-1.2	V
Transition Frequency		$f_T$	$V_{CE} = -2V, I_C = -10mA$	80	130	—	MHz
Collector Output Capacitance		$C_{ob}$	$V_{CB} = -10V, I_E = 0, f = 1MHz$	—	4.2	—	pF
Collector-Emitter On Resistance		$R_{on}$	$I_B = -1mA, V_{in} = -1V_{rms}, f = 1kHz$	—	0.9	—	$\Omega$
Switching Time	Turn-on Time	$t_{on}$	<p>INPUT 300Ω OUTPUT  <math>10\mu s</math>                      50Ω 60Ω  <math>V_{BB} = 3V</math> <math>V_{CC} = -6V</math>  <math>I_{B1} = -I_{B2} = 5mA</math></p>	—	40	—	ns
	Storage Time	$t_{stg}$		—	280	—	
	Fall Time	$t_f$		—	45	—	

(Note)  $h_{FE}$  Classification    A : 300~600, B : 500~1000

