

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

2SC5233

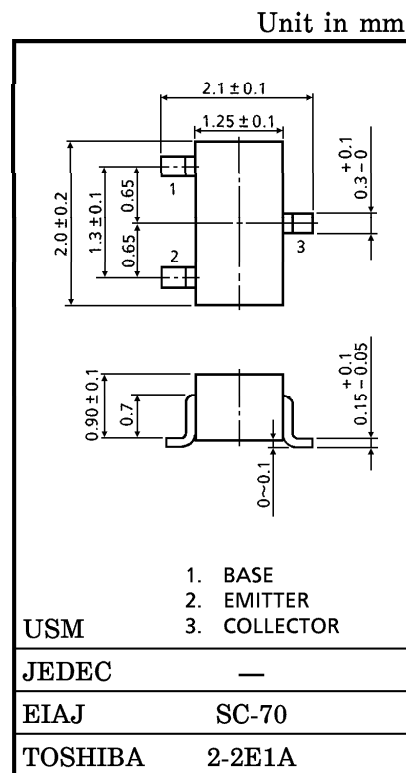
GENERAL PURPOSE AMPLIFIER APPLICATIONS

SWITCHING AND MUTING SWITCH APPLICATION

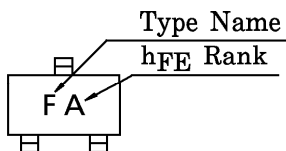
- Low Saturation Voltage : $V_{CE(sat)}(1) = 15\text{mV (Typ.)}$
@ $I_C = 10\text{mA} / I_B = 0.5\text{mA}$
- Large Collector Current : $I_C = 500\text{mA (Max.)}$

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	15	V
Collector-Emitter Voltage	V_{CEO}	12	V
Emitter-Base Voltage	V_{EBO}	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	μA
Emitter Cut-off Current		I_{EBO}	$V_{EB} = 5V, I_C = 0$	—	—	0.1	μA
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	—	Ω
Switching Time	Turn-on Time	t_{on}	<p>DUTY CYCLE $\leq 2\%$ $I_{B1} = -I_{B2} = 5mA$ $V_{BB} = V_{CC}$ $-3V = 6V$</p>	—	85	—	ns
	Storage Time	t_{stg}		—	170	—	
	Fall Time	t_f		—	—	40	

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

