

TOSHIBA TRANSISTOR SILICON PNP TRIPLE DIFFUSED TYPE

# 2SA1971

HIGH VOLTAGE SWITCHING APPLICATIONS

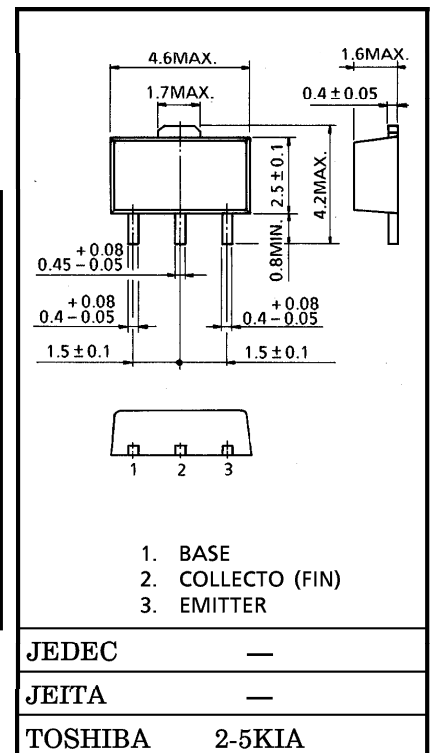
Unit in mm

- High Voltage :  $V_{CE} = -400\text{ V}$

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

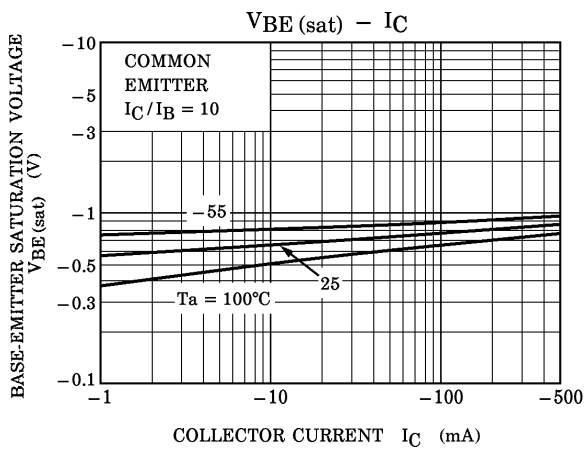
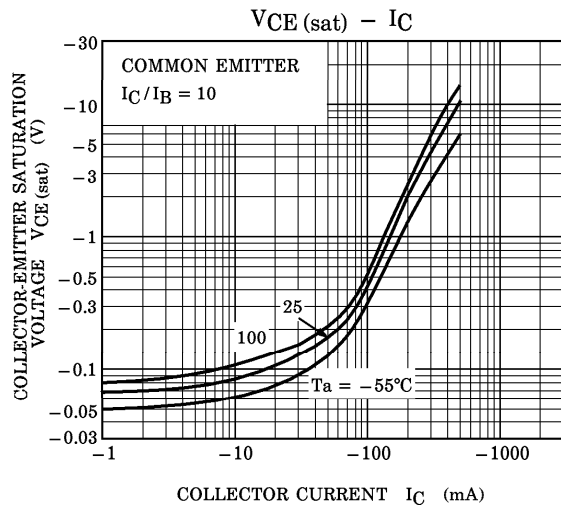
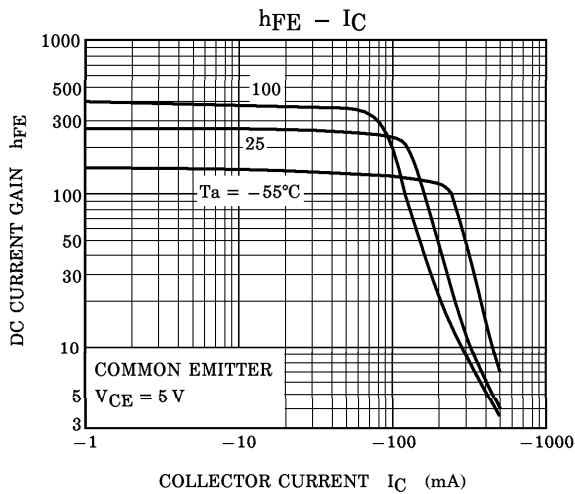
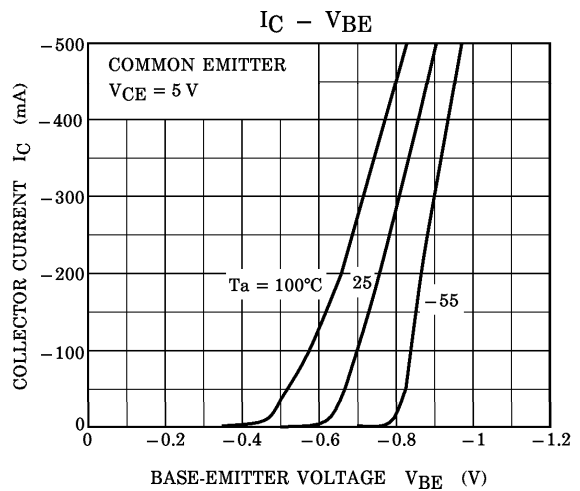
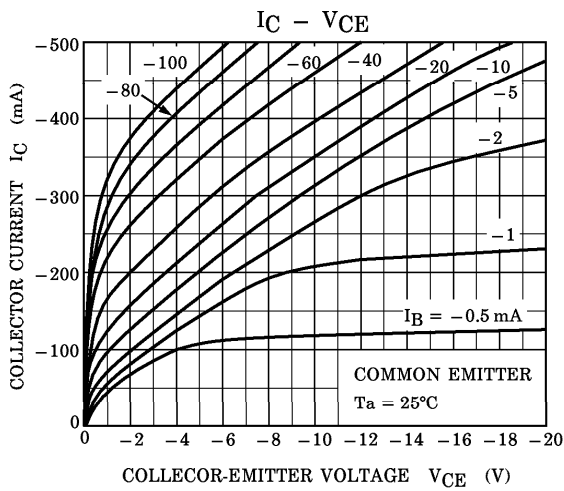
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		$V_{CBO}$	-400	V
Collector-Emitter Voltage		$V_{CEO}$	-400	V
Emitter-Base Voltage		$V_{EBO}$	-7	V
Collector Current	DC	$I_C$	-0.5	A
	Pulse	$I_{CP}$	-1	
Base Current		$I_B$	-0.25	A
Collector Power Dissipation	$T_a = 25^\circ\text{C}$	$PC$	500	mW
	$T_a = 25^\circ\text{C}$ (Note)		1000	
Junction Temperature		$T_j$	150	$^\circ\text{C}$
Storage Temperature Range		$T_{stg}$	-55~150	$^\circ\text{C}$

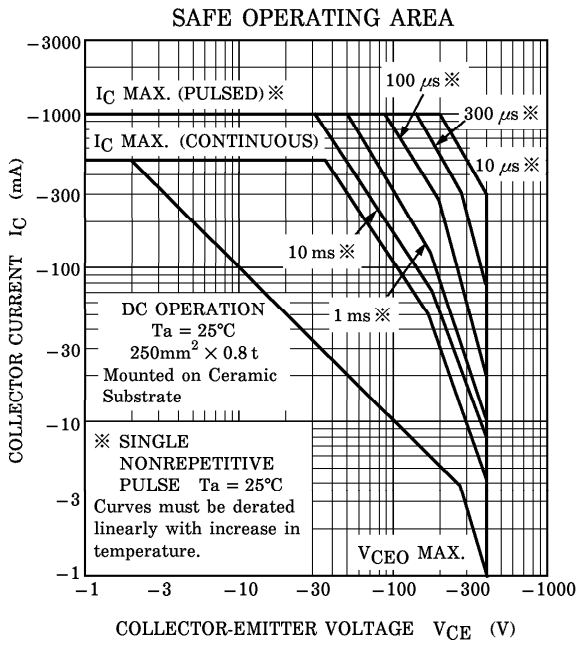
(Note) : Mounted on Ceramic Substrate ( $250\text{ mm}^2 \times 0.8\text{ t}$ )



ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		$I_{CBO}$	$V_{CB} = -400\text{ V}, I_E = 0$	—	—	-10	$\mu\text{A}$
Emitter Cut-off Current		$I_{EBO}$	$V_{EB} = -7\text{ V}, I_C = 0$	—	—	-1	$\mu\text{A}$
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	$I_C = -10\text{ mA}, I_B = 0$	-400	—	—	V
DC Current Gain	$h_{FE}$ (1)	$h_{FE}$ (2)	$V_{CE} = -5\text{ V}, I_C = -20\text{ mA}$	140	—	450	
			$V_{CE} = -5\text{ V}, I_C = -100\text{ mA}$	140	—	400	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = -100\text{ mA}, I_B = -10\text{ mA}$	—	-0.4	-1.0	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	$I_C = -100\text{ mA}, I_B = -10\text{ mA}$	—	-0.76	-0.9	V
Transition Frequency		$f_T$	$V_{CE} = -5\text{ V}, I_C = -50\text{ mA}$	—	35	—	MHz
Collector Output Capacitance		$C_{ob}$	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	18	—	pF
Switching Time	Turn-on Time	$t_{on}$		—	0.2	—	$\mu\text{s}$
	Storage Time	$t_{stg}$		—	2.3	—	
	Fall Time	$t_f$		$I_{B1} = -10\text{ mA}, I_{B2} = 20\text{ mA}$ DUTY CYCLE $\leq 1\%$	—	0.2	





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