

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process)

2SA1953

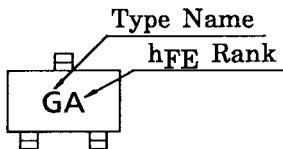
General Purpose Amplifier Applications
Switching and Muting Switch Application

- 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: $I_C = -500 \text{ mA (max)}$

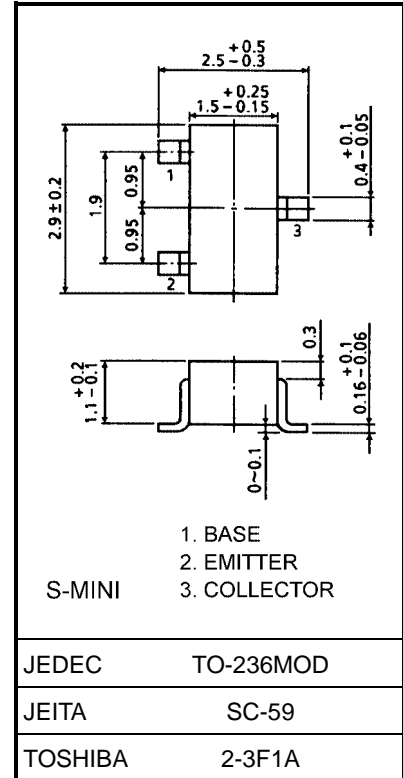
Maximum Ratings (Ta = 25°C)

Characteristics	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	150	mW
Junction temperature	T_j	125	°C
Storage temperature range	T_{stg}	-55~125	°C

Marking



Unit: mm

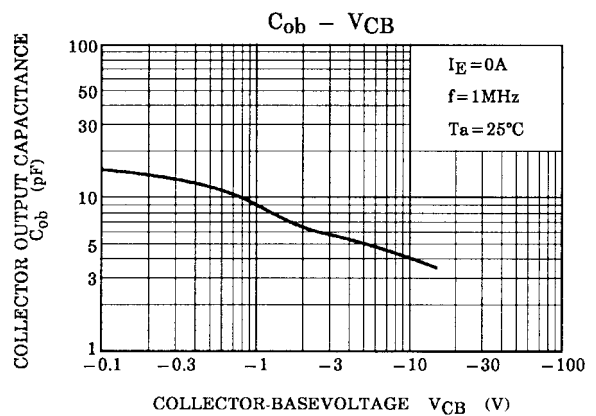
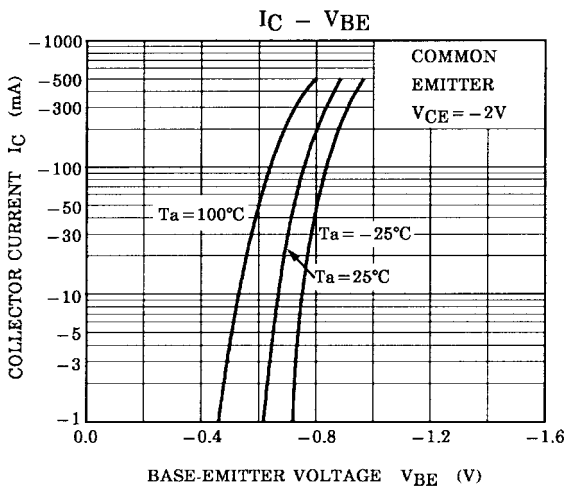
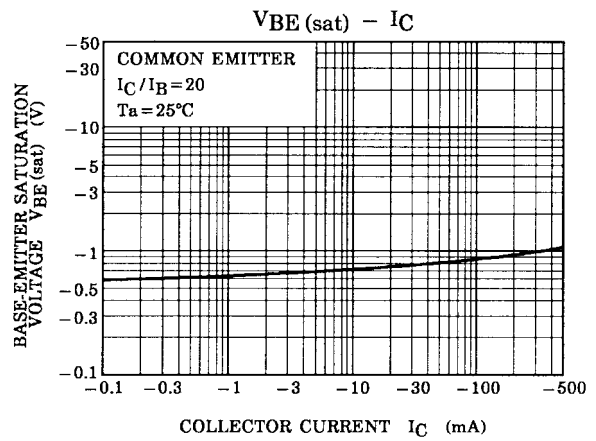
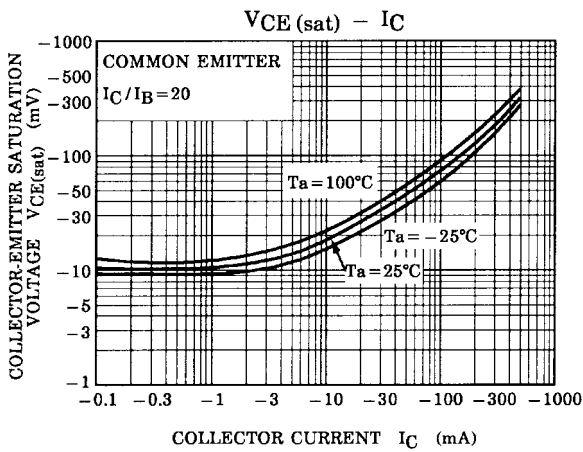
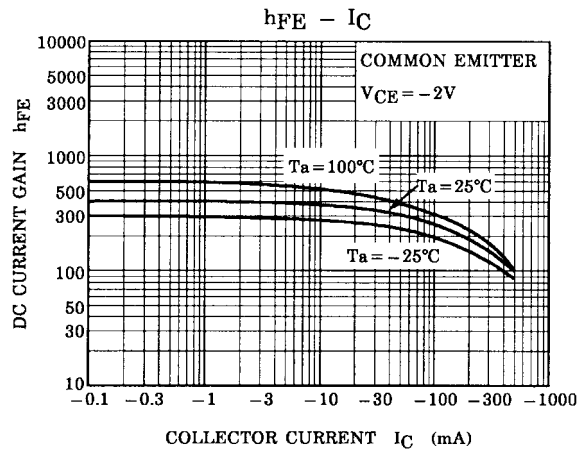
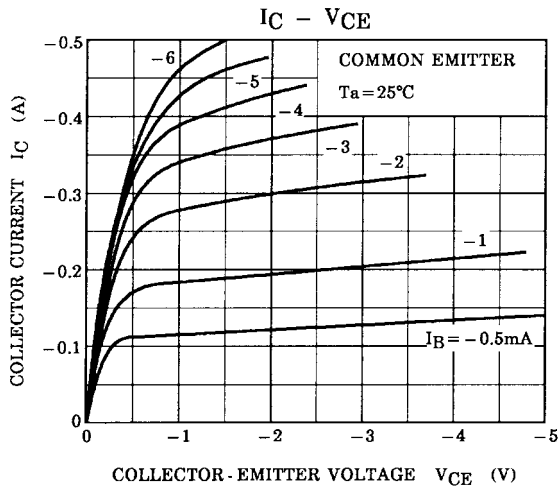


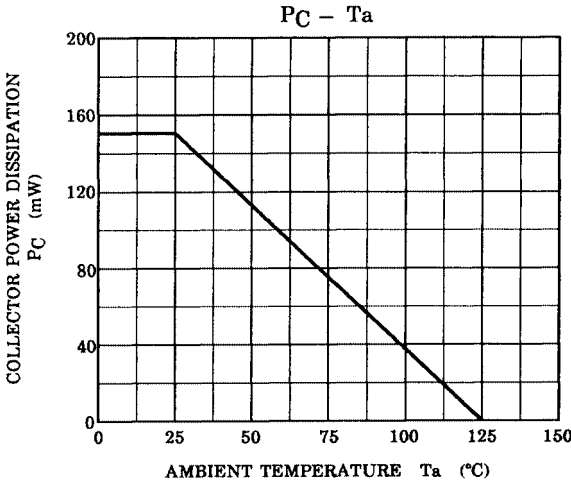
Weight: 0.012 g (typ.)

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = -15\text{ V}, I_E = 0$	—	—	-0.1	μA
Emitter cut-off current		I_{EBO}	$V_{EB} = -5\text{ V}, I_C = 0$	—	—	-0.1	μA
DC current gain		h_{FE} (Note)	$V_{CE} = -2\text{ V}, I_C = -10\text{ mA}$	300	—	1000	
Collector-emitter saturation voltage		$V_{CE(sat)}(1)$	$I_C = -10\text{ mA}, I_B = -0.5\text{ mA}$	—	-15	-30	mV
		$V_{CE(sat)}(2)$	$I_C = -200\text{ mA}, I_B = -10\text{ mA}$	—	-110	-250	
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = -200\text{ mA}, I_B = -10\text{ mA}$	—	-0.87	-1.2	V
Transition frequency		f_T	$V_{CE} = -2\text{ V}, I_C = -10\text{ mA}$	80	130	—	MHz
Collector output capacitance		C_{ob}	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	4.2	—	pF
Collector-emitter on resistance		R_{on}	$I_B = -1\text{ mA}, V_{in} = -1\text{ V}_{rms}, f = 1\text{ kHz}$	—	0.9	—	Ω
Switching time	Turn-on time	t_{on}	<p> $I_{B1} = -I_{B2} = -5\text{ mA}$ </p>	—	40	—	ns
	Storage time	t_{stg}		—	280	—	
	Fall time	t_f		—	45	—	

Note: h_{FE} classification A: 300~600, B: 500~1000





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