

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process)

2SA1300

Strobe Flash Applications

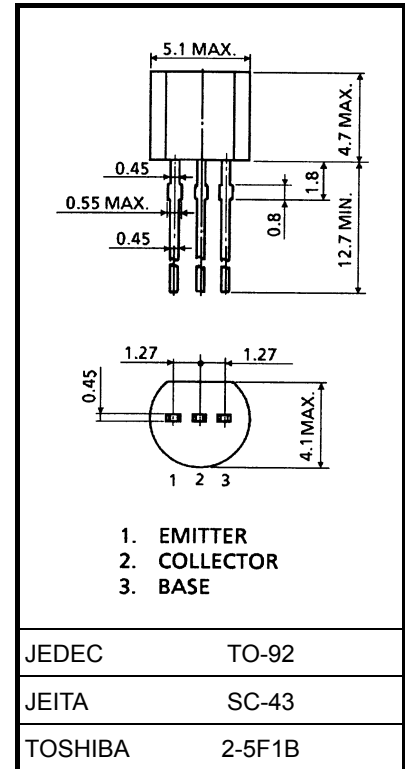
Medium Power Amplifier Applications

Unit: mm

- High DC current gain and excellent h_{FE} linearity
 : $h_{FE} (1) = 140\sim 600$ ($V_{CE} = -1\text{ V}$, $I_C = -0.5\text{ A}$)
 : $h_{FE} (2) = 60$ (min), 120 (typ.) ($V_{CE} = -1\text{ V}$, $I_C = -4\text{ A}$)
- Low saturation voltage: $V_{CE(sat)} = -0.5\text{ V}$ (max)
 ($I_C = -2\text{ A}$, $I_B = -50\text{ mA}$)

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	-20	V
Collector-emitter voltage		V_{CES}	-20	V
		V_{CEO}	-10	
Emitter-base voltage		V_{EBO}	-6	V
Collector current	DC	I_C	-2	A
	Pulsed (Note 1)	I_{CP}	-5	
Base current		I_B	-0.2	A
Collector power dissipation		P_C	750	mW
Junction temperature		T_j	150	$^\circ\text{C}$
Storage temperature range		T_{stg}	-55~150	$^\circ\text{C}$



Weight: 0.21 g (typ.)

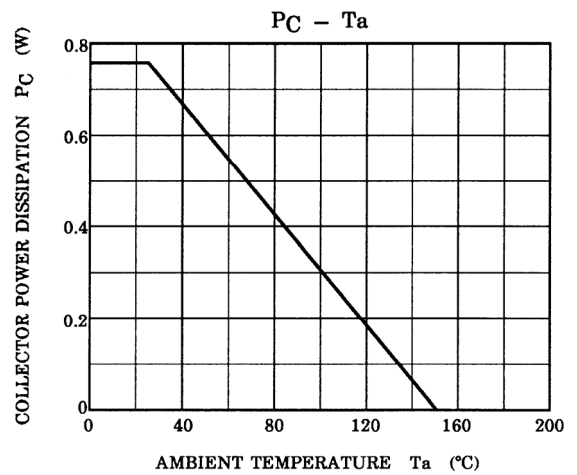
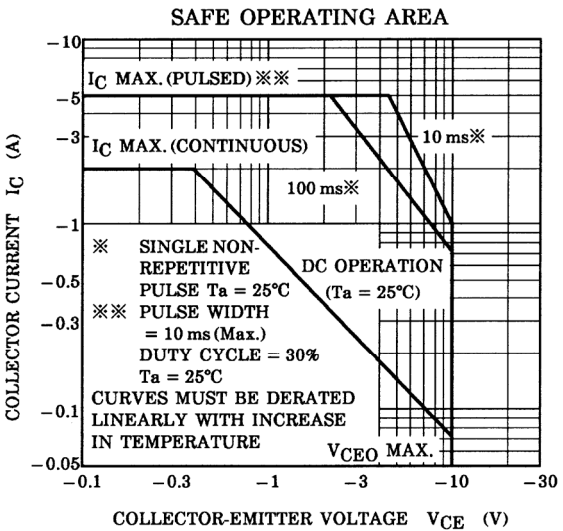
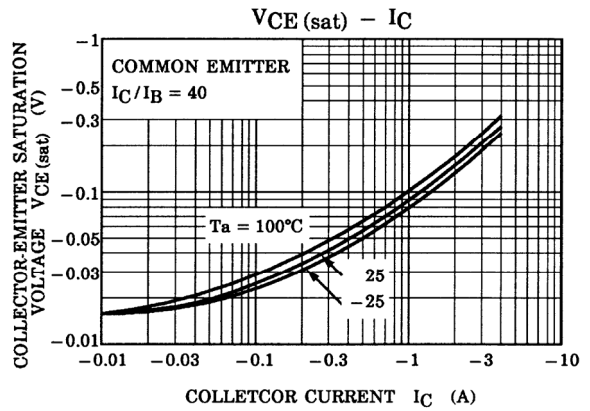
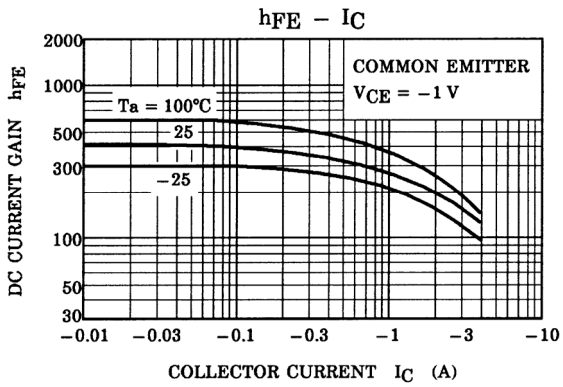
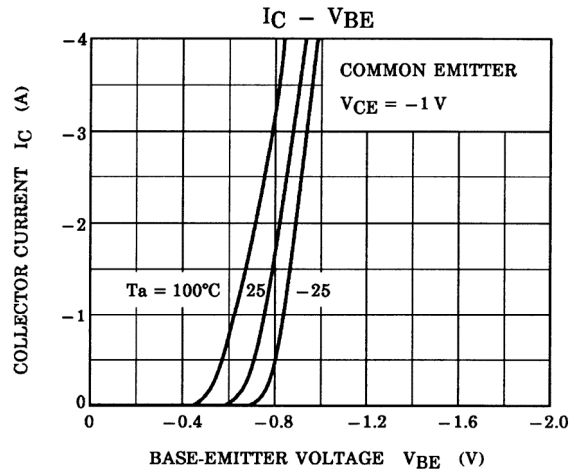
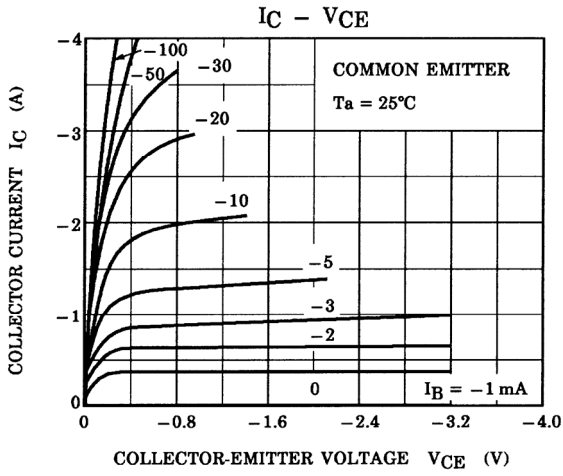
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note 1: Pulse width = 10 ms (max), duty cycle = 30% (max)

Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	$V_{CB} = -20\text{ V}$, $I_E = 0$	—	—	-0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = -6\text{ V}$, $I_C = 0$	—	—	-0.1	μA
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -10\text{ mA}$, $I_B = 0$	-10	—	—	V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -1\text{ mA}$, $I_C = 0$	-6	—	—	V
DC current gain	$h_{FE} (1)$ (Note 2)	$V_{CE} = -1\text{ V}$, $I_C = -0.5\text{ A}$	140	—	600	
	$h_{FE} (2)$	$V_{CE} = -1\text{ V}$, $I_C = -4\text{ A}$	60	120	—	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -2\text{ A}$, $I_B = -50\text{ mA}$	—	-0.2	-0.5	V
Base-emitter voltage	V_{BE}	$V_{CE} = -1\text{ V}$, $I_C = -2\text{ A}$	—	-0.83	-1.5	V
Transition frequency	f_T	$V_{CE} = -1\text{ V}$, $I_C = -0.5\text{ A}$	—	140	—	MHz
Collector output capacitance	C_{ob}	$V_{CB} = -10\text{ V}$, $I_E = 0$, $f = 1\text{ MHz}$	—	50	—	pF

Note 2: $h_{FE} (1)$ classification Y: 140~280, GR: 200~400, BL: 300~600



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20070701-EN GENERAL

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