

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

2SC1815(L)

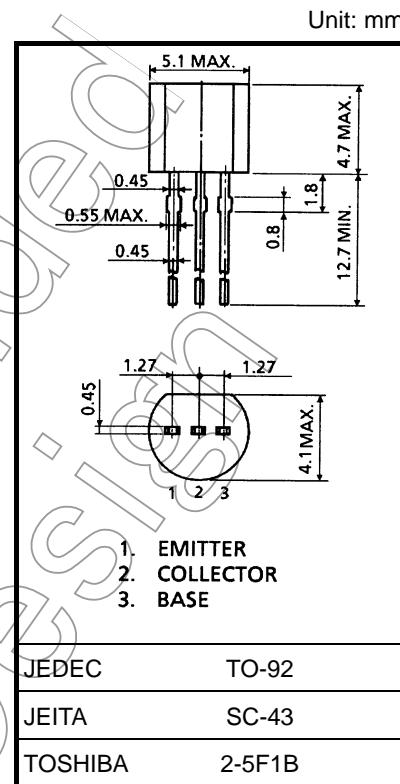
Audio Frequency Voltage Amplifier Applications

Low Noise Amplifier Applications

- High breakdown voltage, high current capability
: $V_{CEO} = 50$ V (min), $I_C = 150$ mA (max)
- Excellent linearity of hFE
: $hFE(2) = 100$ (typ.) at $V_{CE} = 6$ V, $I_C = 150$ mA
: $hFE(I_C = 0.1$ mA)/ $hFE(I_C = 2$ mA) = 0.95 (typ.)
- Low noise: $NF = 0.2$ dB (typ.) ($f = 1$ kHz).
- Complementary to 2SA1015 (L). (O, Y, GR class).

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

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	60	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	150	mA
Base current	I_B	50	mA
Collector power dissipation	P_C	400	mW
Junction temperature	T_j	125	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55~125	$^\circ\text{C}$



Weight: 0.21 g (typ.)

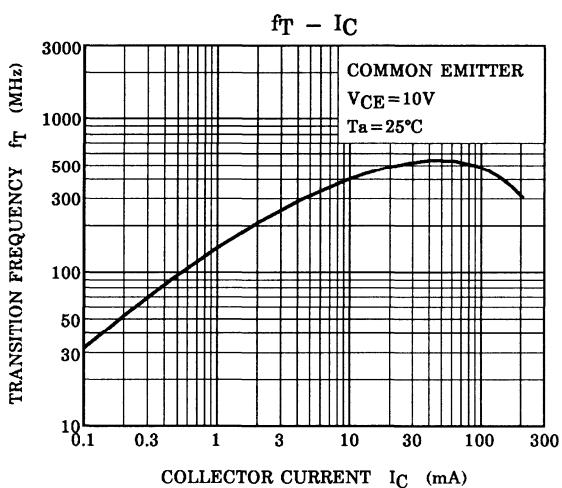
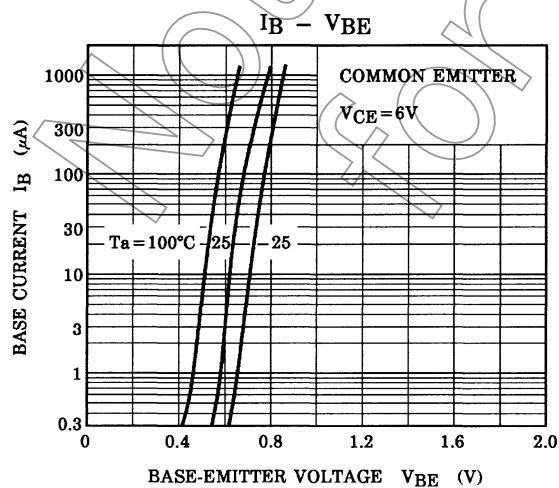
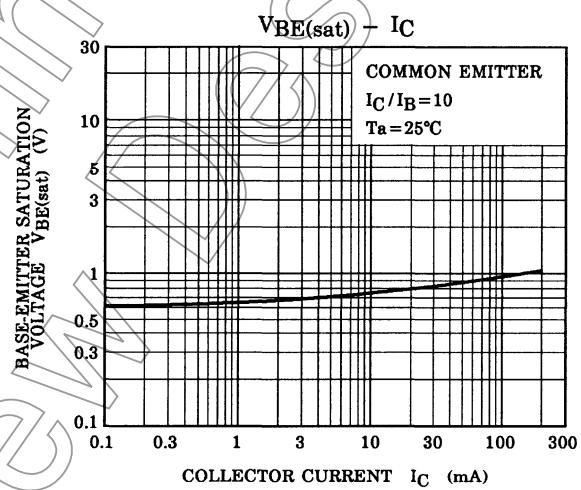
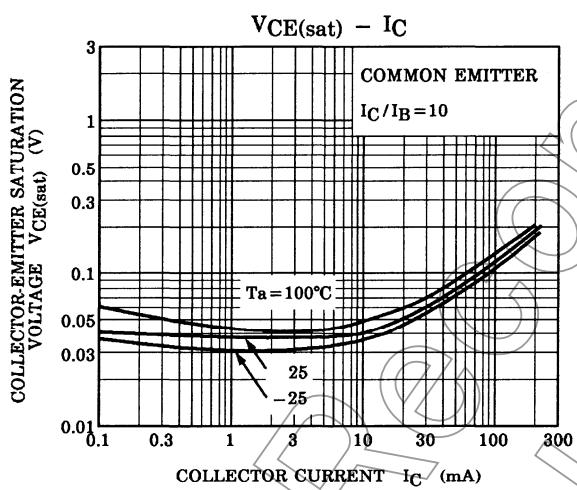
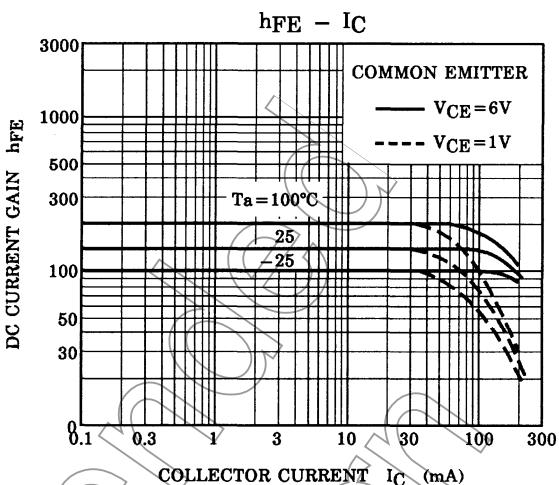
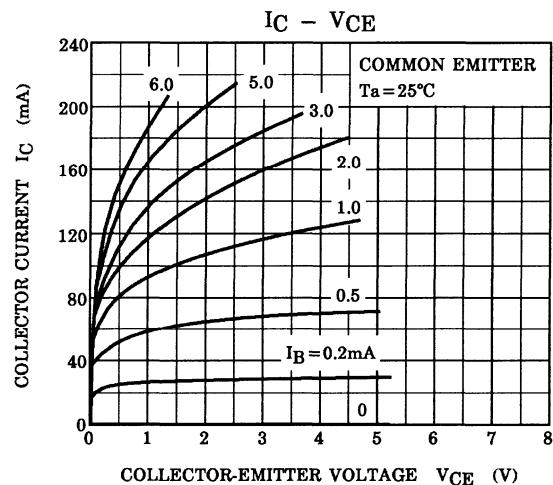
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

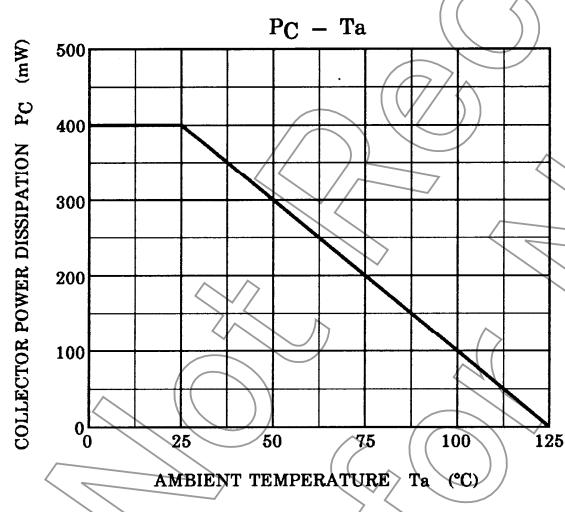
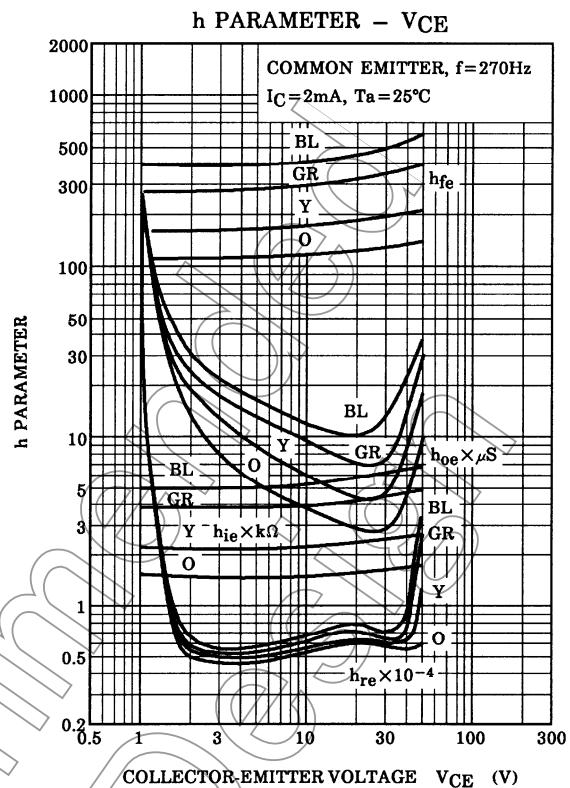
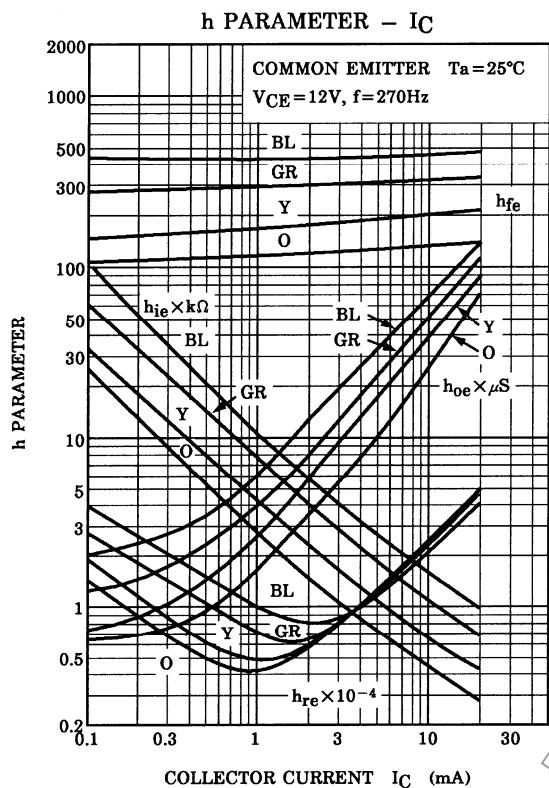
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc.).

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

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	$V_{CB} = 60$ V, $I_E = 0$	—	—	0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 5$ V, $I_C = 0$	—	—	0.1	μA
DC current gain	$hFE(1)$ (Note)	$V_{CE} = 6$ V, $I_C = 2$ mA	70	—	700	V
	$hFE(2)$	$V_{CE} = 6$ V, $I_C = 150$ mA	25	100	—	
Saturation voltage	Collector-emitter	$V_{CE(\text{sat})}$	$I_C = 100$ mA, $I_B = 10$ mA	—	0.1	0.25
	Base-emitter	$V_{BE(\text{sat})}$	$I_C = 100$ mA, $I_B = 10$ mA	—	—	1.0
Transition frequency	f_T	$V_{CE} = 10$ V, $I_C = 1$ mA	80	—	—	MHz
Collector output capacitance	C_{ob}	$V_{CB} = 10$ V, $I_E = 0$, $f = 1$ MHz	—	2.0	3.5	pF
Base intrinsic resistance	$r_{bb'}$	$V_{CE} = 10$ V, $I_E = -1$ mA, $f = 30$ MHz	—	50	—	Ω
Noise figure	NF (1)	$V_{CE} = 6$ V, $I_C = 0.1$ mA $R_G = 10$ k Ω , $f = 100$ Hz	—	0.5	6	dB
	NF (2)	$V_{CE} = 6$ V, $I_C = 0.1$ mA $R_G = 10$ k Ω , $f = 1$ kHz	—	0.2	3	

Note: $hFE(1)$ classification O: 70~140, Y: 120~240, GR: 200~400, BL: 350~700





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