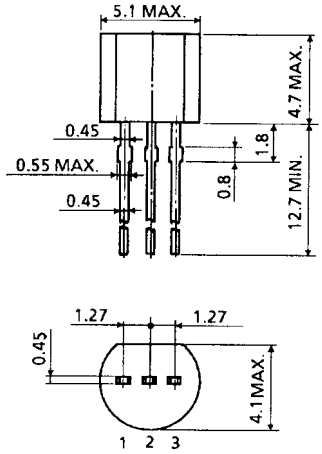
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

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 h_{FE}
  : $h_{FE\ (2)}$ = 100 (typ.) at V_{CE} = 6 V, I_C = 150 mA
  : h_{FE} (I_C = 0.1 mA)/h_{FE} (I_C = 2 mA) = 0.95 (typ.)
- Low noise: NF = 0.2dB (typ.) (f = 1 kHz).
- Complementary to 2SA1015 (L). (O, Y, GR class).

Unit: mm



1. EMITTER
2. COLLECTOR
3. BASE

JEDEC	TO-92
JEITA	SC-43
TOSHIBA	2-5F1B

Weight: 0.21 g (typ.)

Maximum Ratings (Ta = 25°C)

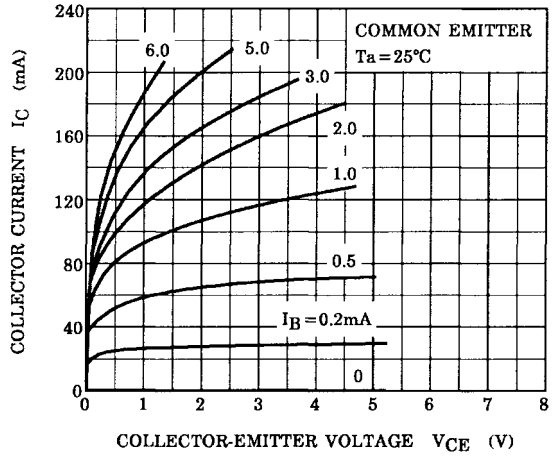
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	60	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	150	mA
Base current	I_B	50	mA
Collector power dissipation	P_C	400	mW
Junction temperature	T_j	125	°C
Storage temperature range	T_{stg}	−55~125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

Electrical Characteristics (Ta = 25°C)

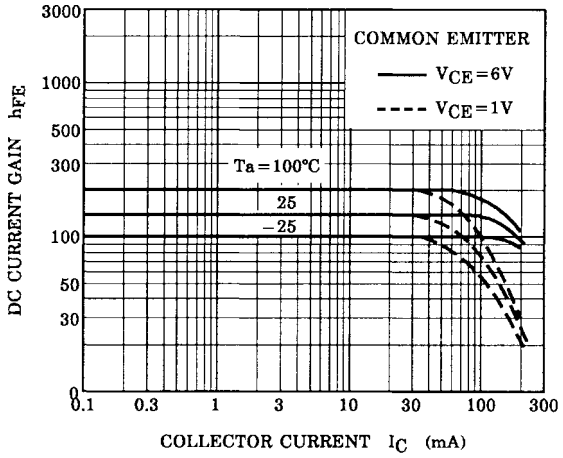
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	V_{CB} = 60 V, I_E = 0	—	—	0.1	μA
Emitter cut-off current		I_{EBO}	V_{EB} = 5 V, I_C = 0	—	—	0.1	μA
DC current gain		$h_{FE\ (1)}$ (Note)	V_{CE} = 6 V, I_C = 2 mA	70	—	700	
		$h_{FE\ (2)}$	V_{CE} = 6 V, I_C = 150 mA	25	100	—	
Saturation voltage	Collector-emitter	$V_{CE\ (sat)}$	I_C = 100 mA, I_B = 10 mA	—	0.1	0.25	V
	Base-emitter	$V_{BE\ (sat)}$	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 kΩ, f = 100 Hz	—	0.5	6	dB
		NF (2)	V_{CE} = 6 V, I_C = 0.1 mA R_G = 10 kΩ, f = 1 kHz	—	0.2	3	

Note: $h_{FE\ (1)}$ classification O: 70~140, Y: 120~240, GR: 200~400, BL: 350~700

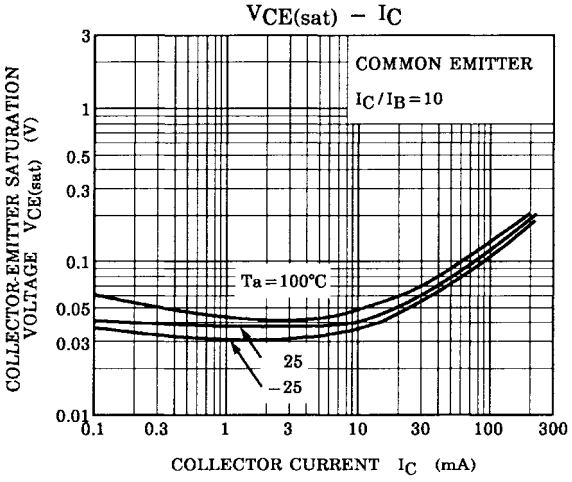
I_C – V_{CE}



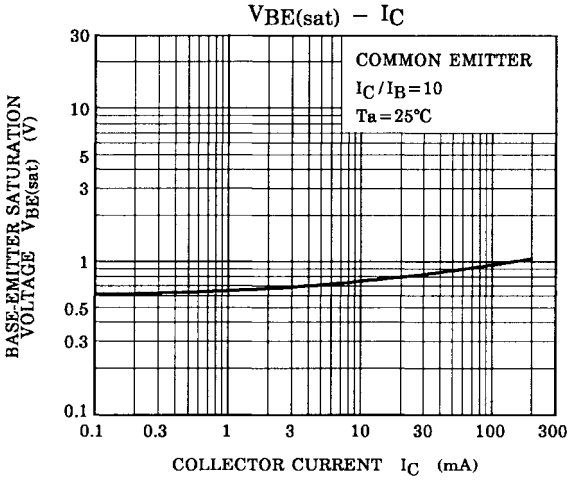
h_{FE} – I_C



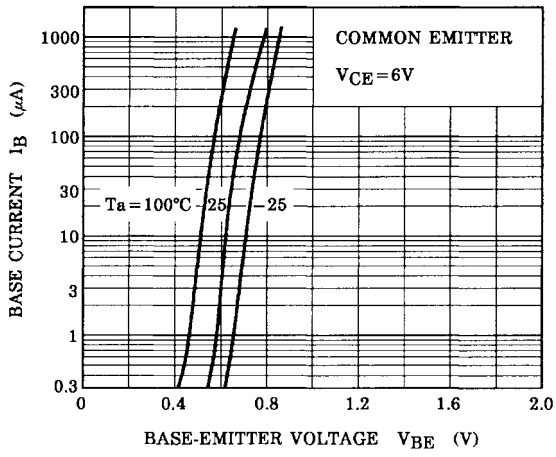
$V_{CE(sat)}$ – I_C



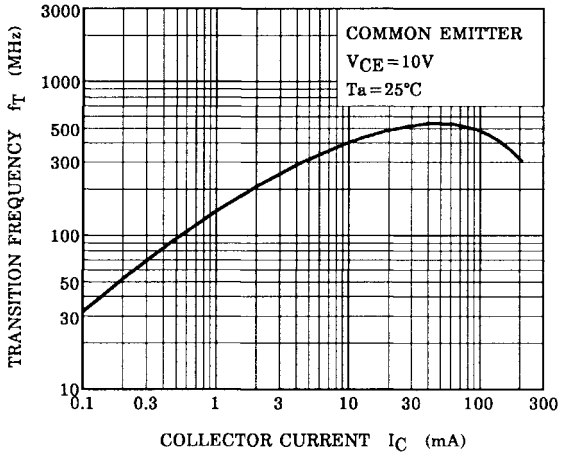
$V_{BE(sat)}$ – I_C



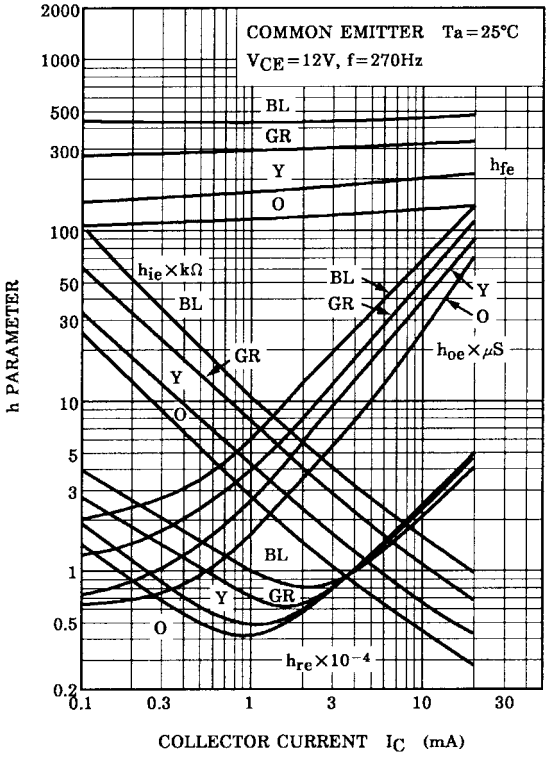
I_B – V_{BE}



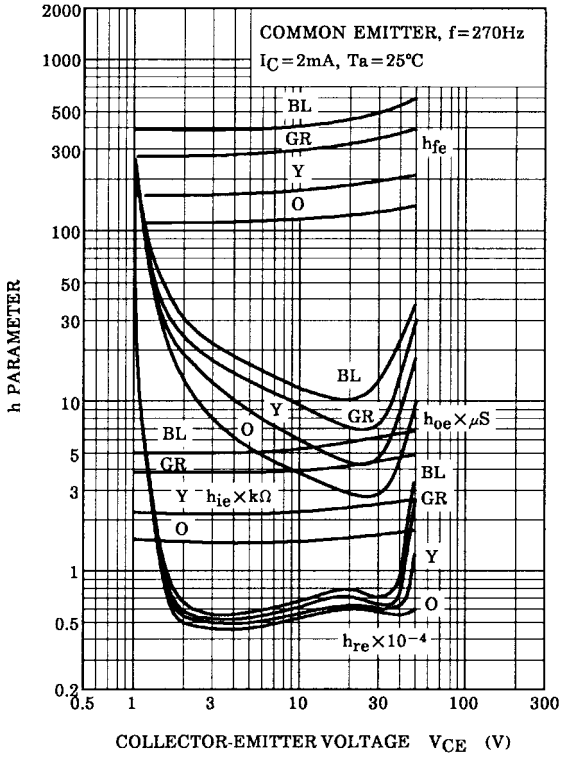
f_T – I_C



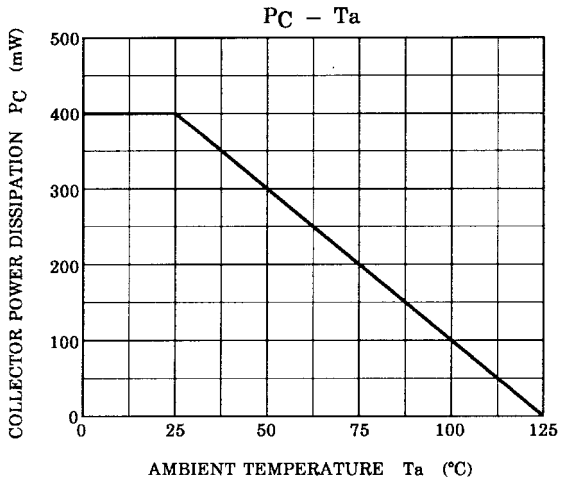
h PARAMETER – I_C



h PARAMETER – V_{CE}



P_C – Ta



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