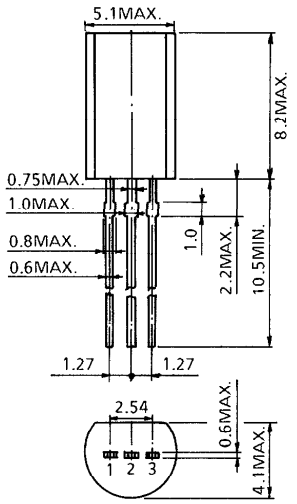
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

2SC2705

AUDIO FREQUENCY AMPLIFIER APPLICATIONS.

- Complementary to 2SA1145.
- Small Collector Output Capacitance : C_{ob} = 1.8pF (Typ.)
- High Transition Frequency : f_T = 200MHz (Typ.)

Unit in mm



1. EMITTER
2. COLLECTOR
3. BASE

JEDEC	TO-92MOD
EIAJ	—
TOSHIBA	2-5J1A

Weight : 0.36g

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	150	V
Collector-Emitter Voltage	V_{CEO}	150	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	50	mA
Base Current	I_B	5	mA
Collector Power Dissipation	P_C	800	mA
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	−55~150	°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB} = 150V, I_E = 0	—	—	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 5V, I_C = 0	—	—	0.1	μA
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0	150	—	—	V
DC Current Gain	h_{FE} (Note)	V_{CE} = 5V, I_C = 10mA	80	—	240	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 1mA	—	—	1.0	V
Base-Emitter Voltage	V_{BE}	V_{CE} = 5V, I_C = 10mA	—	—	0.8	V
Transition Frequency	f_T	V_{CE} = 5V, I_C = 10mA	—	200	—	MHz
Collector Output Capacitance	C_{ob}	V_{CB} = 10V, I_E = 0, f = 1MHz	—	1.8	—	pF

Note : h_{FE} Classification O : 80 ~ 160, Y : 120 ~ 240

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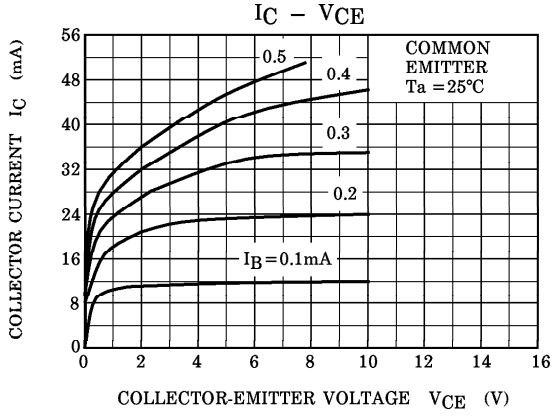
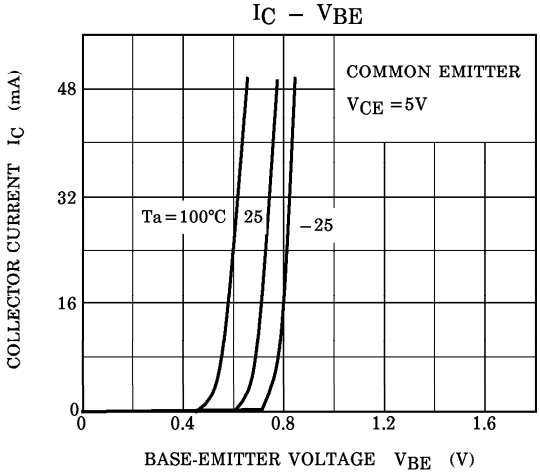
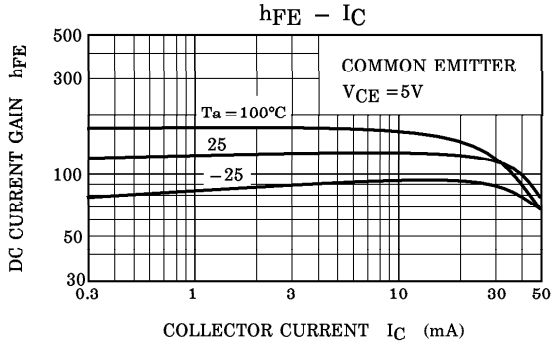
I_C – V_{CE}



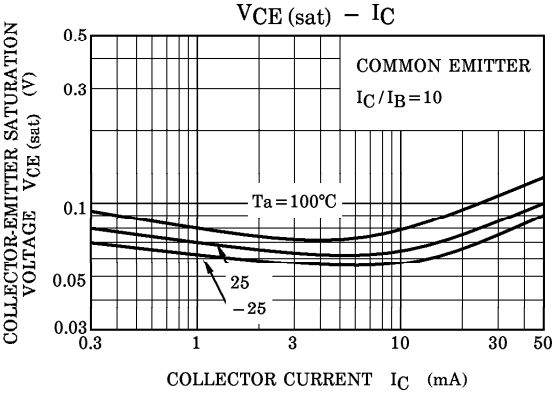
I_C – V_{BE}



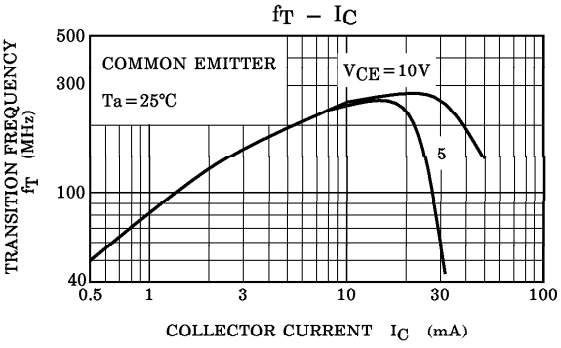
h_{FE} – I_C



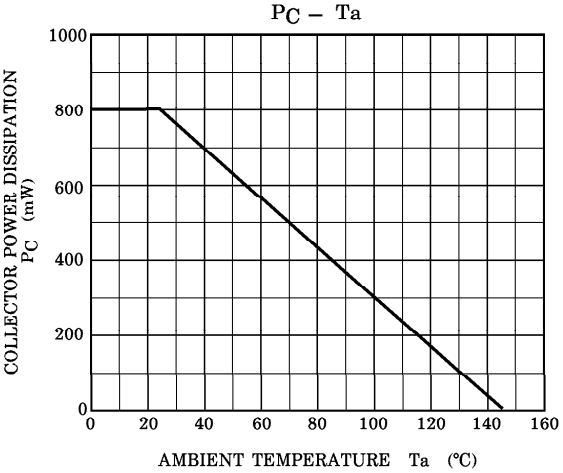
$V_{CE\,(sat)}$ – I_C



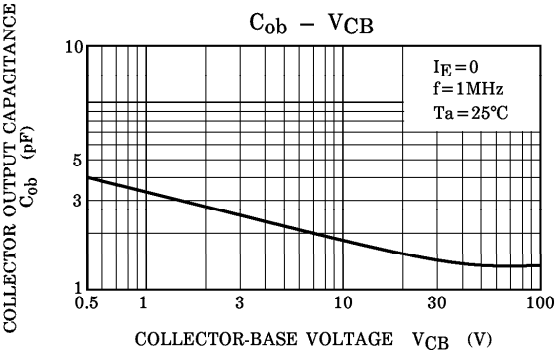
f_T – I_C



P_C – Ta



C_{ob} – V_{CB}



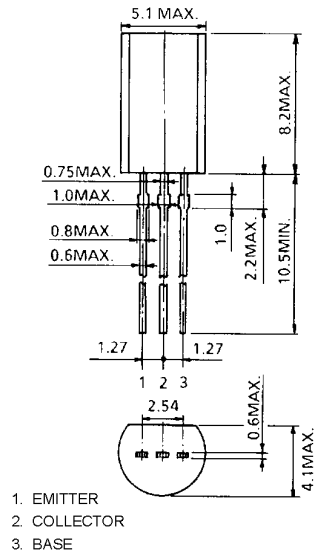
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

2SA1145

Audio Frequency Amplifier Applications

- Complementary to 2SC2705.
- Small Collector Output Capacitance: C_{ob} = 2.5 pF (typ.)
- High Transition Frequency: f_T = 200 MHz (typ.)

Unit: mm



JEDEC	TO-92MOD
JEITA	—
TOSHIBA	2-5J1A

Weight: 0.36 g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	−150	V
Collector-emitter voltage	V_{CEO}	−150	V
Emitter-base voltage	V_{EBO}	−5	V
Collector current	I_C	−50	mA
Base current	I_B	−5	mA
Collector power dissipation	P_C	800	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−55 to 150	°C

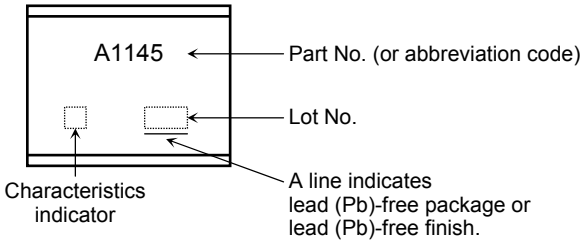
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) 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 (Ta = 25°C)

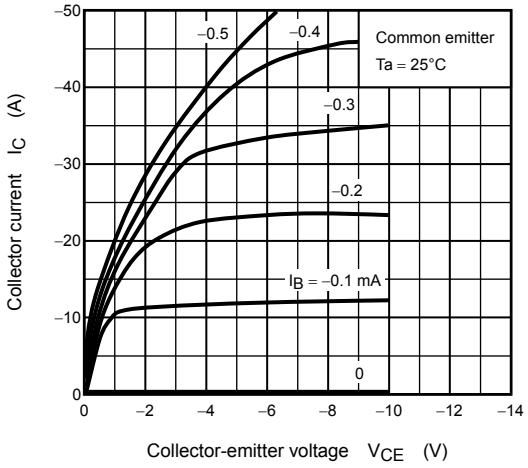
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	V_{CB} = −150 V, I_E = 0	—	—	−0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB} = −5 V, I_C = 0	—	—	−0.1	μA
Collector-emitter breakdown voltage	$V_{(BR)\ CEO}$	I_C = −1 mA, I_B = 0	−150	—	—	V
DC current gain	h_{FE} (Note)	V_{CE} = −5 V, I_C = −10 mA	80	—	240	
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	I_C = −10 mA, I_B = −1 mA	—	—	−1.0	V
Base-emitter voltage	V_{BE}	V_{CE} = −5 V, I_C = −10 mA	—	—	−0.8	V
Transition frequency	f_T	V_{CE} = −5 V, I_C = −10 mA	—	200	—	MHz
Collector output capacitance	C_{ob}	V_{CB} = −10 V, I_E = 0, f = 1 MHz	—	2.5	—	pF

Note: h_{FE} classification O: 80 to 160, Y: 120 to 240

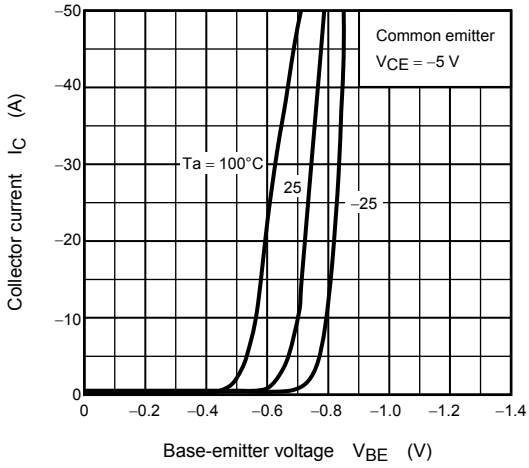
Marking



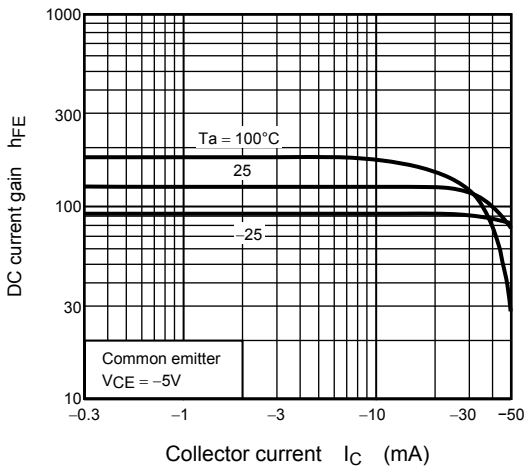
$I_C - V_{CE}$



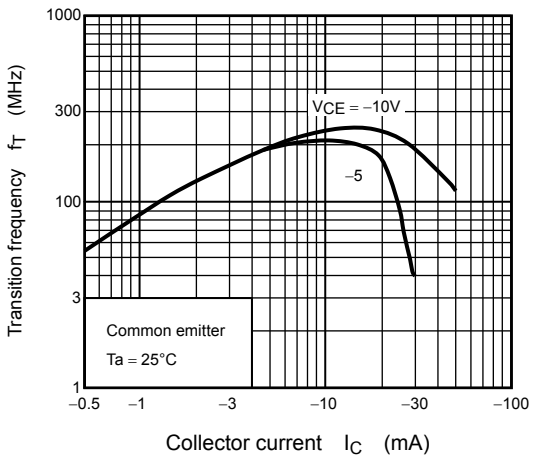
$I_C - V_{CE}$



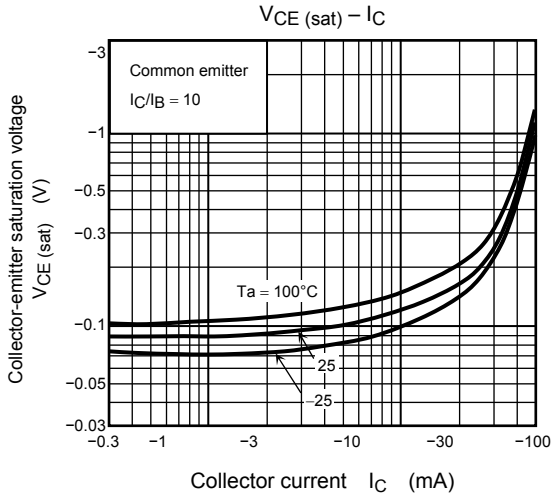
$h_{FE} - I_C$



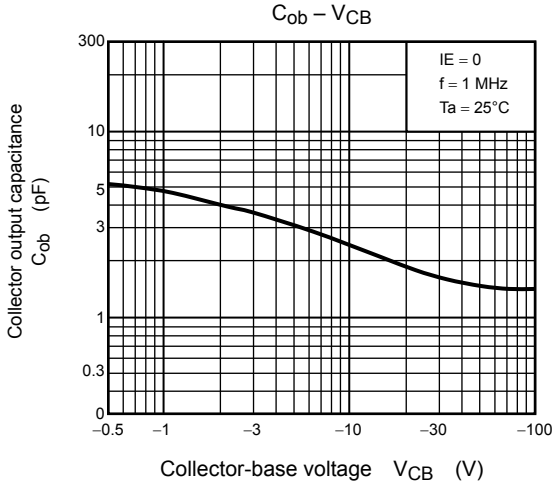
$f_T - I_C$

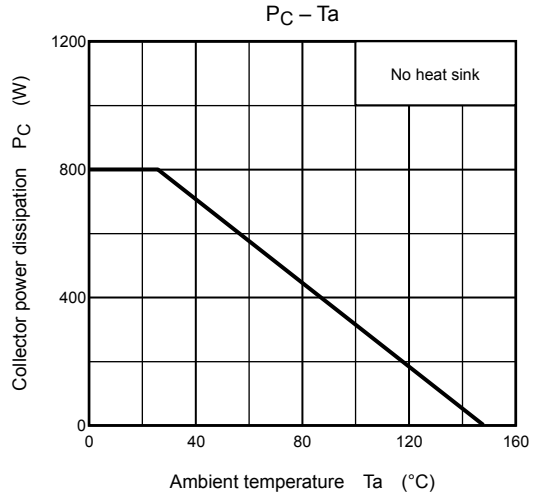


$V_{CE\ (sat)} - I_C$



$C_{ob} - V_{CB}$




P_C – Ta
No heat sink
Collector power dissipation P_C (W)
1200
800
400
0
0
40
80
120
160
Ambient temperature Ta (°C)

RESTRICTIONS ON PRODUCT USE

20070701-EN

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