TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS) SILICON PNP EPITAXIAL TYPE (PCT PROCESS)

HN3B01F

AUDIO FREQUENCY GENERAL PURPOSE AMPLIFIER APPLICATIONS.

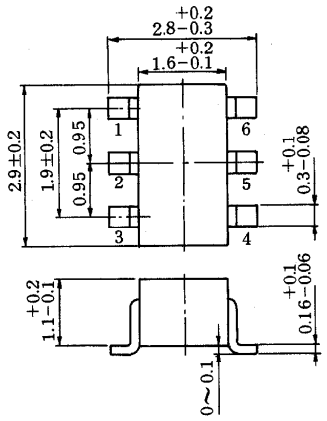
Q1:

- High Voltage and High Current
  : V_{CEO} = 50V, I_C = 150mA (Max.)
- High h_{FE} : h_{FE} = 120~400
- Excellent h_{FE} Linearity
  : h_{FE} (I_C = 0.1mA) / h_{FE} (I_C = 2mA) = 0.95 (Typ.)

Q2:

- High Voltage and High Current
  : V_{CEO} = −50V, I_C = −150mA (Max.)
- High h_{FE} : h_{FE} = 120~400
- Excellent h_{FE} Linearity
  : h_{FE} (I_C = −0.1mA) / h_{FE} (I_C = −2mA) = 0.95 (Typ.)

Unit in mm



SM6	1. COLLECTOR 1 (C1) 2. EMITTER 1 (E1) 3. COLLECTOR 2 (C2) 4. EMITTER 2 (E2) 5. BASE 2 (B2) 6. BASE 1 (B1)
JEDEC	—
EIAJ	—
TOSHIBA	2-3N1B

Weight : 0.015g

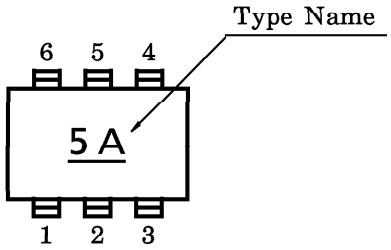
Q1 MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	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	30	mA

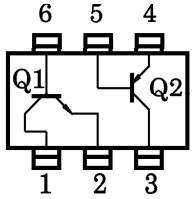
Q2 MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	−50	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	−30	mA

MARKING



EQUIVALENT CIRCUIT (TOP VIEW)



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Q1, Q2 COMMON MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector Power Dissipation	P_C*	300	mW
Junction Temperature	T_j	125	°C
Storage Temperature Range	T_{stg}	−55~125	°C

* Total Rating

Q1 ELECTRICAL CHARACTERISTICS (Ta = 25°C)

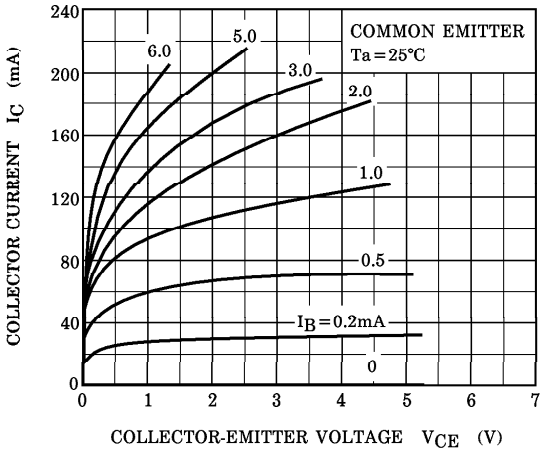
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB} = 60V, I_E = 0	—	—	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 5V, I_C = 0	—	—	0.1	μA
DC Current Gain	h_{FE}	V_{CE} = 6V, I_C = 2mA	120	—	400	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 100mA, I_B = 10mA	—	0.1	0.25	V
Transition Frequency	f_T	V_{CE} = 10V, I_C = 1mA	—	150	—	MHz
Collector Output Capacitance	C_{ob}	V_{CB} = 10V, I_E = 0 f = 1MHz	—	2	—	pF

Q2 ELECTRICAL CHARACTERISTICS (Ta = 25°C)

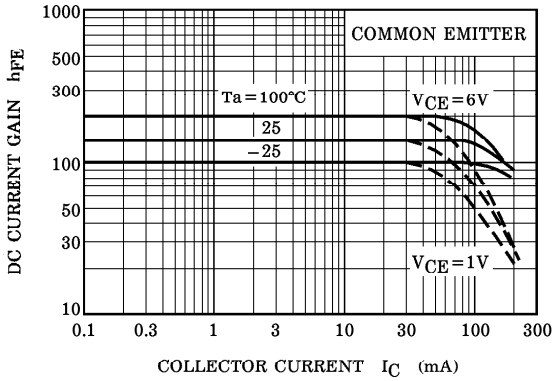
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB} = −50V, I_E = 0	—	—	−0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = −5V, I_C = 0	—	—	−0.1	μA
DC Current Gain	h_{FE}	V_{CE} = −6V, I_C = −2mA	120	—	400	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = −100mA, I_B = −10mA	—	−0.1	−0.3	V
Transition Frequency	f_T	V_{CE} = −10V, I_C = −1mA	—	120	—	MHz
Collector Output Capacitance	C_{ob}	V_{CB} = −10V, I_E = 0 f = 1MHz	—	4	—	pF

Q1 (NPN TRANSISTOR)

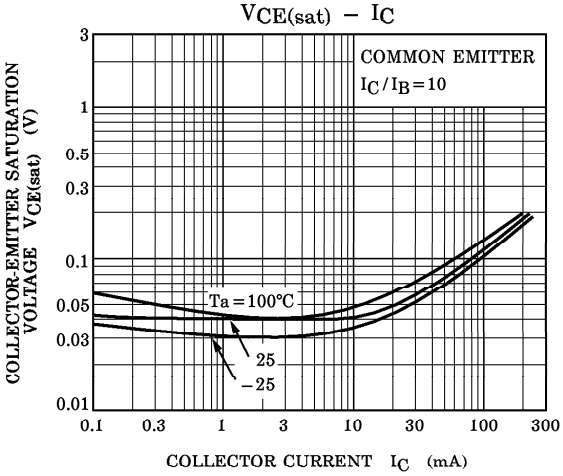
$I_C - V_{CE}$



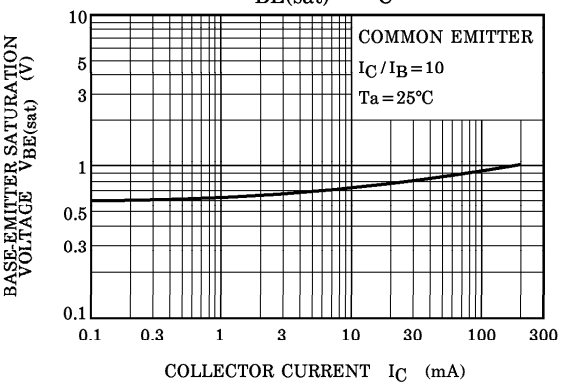
$h_{FE} - I_C$



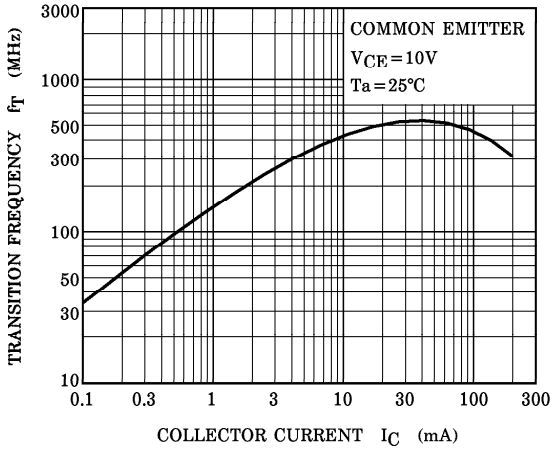
$V_{CE(sat)} - I_C$



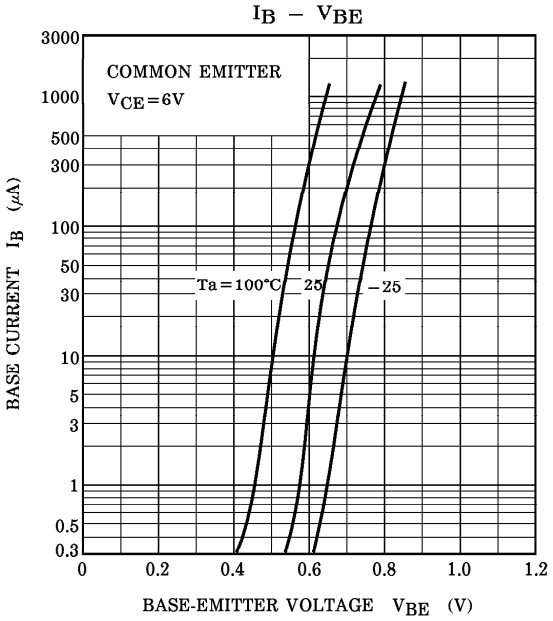
$V_{BE(sat)} - I_C$



$f_T - I_C$

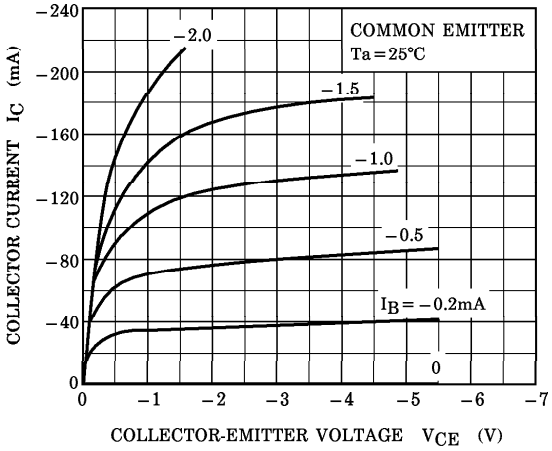


$I_B - V_{BE}$

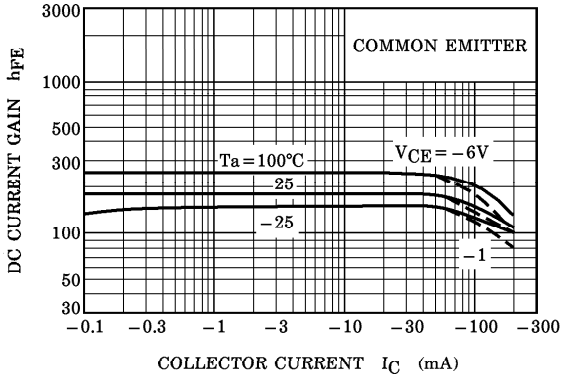


Q2 (PNP TRANSISTOR)

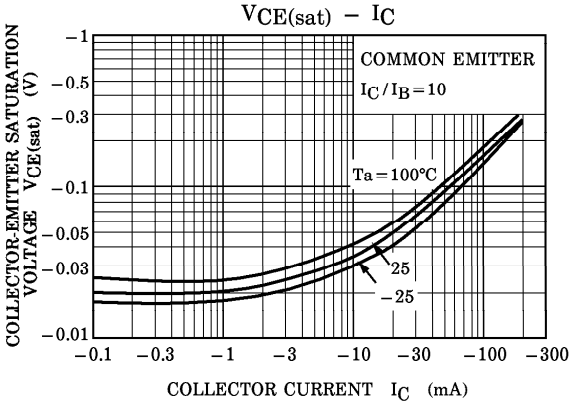
$I_C - V_{CE}$



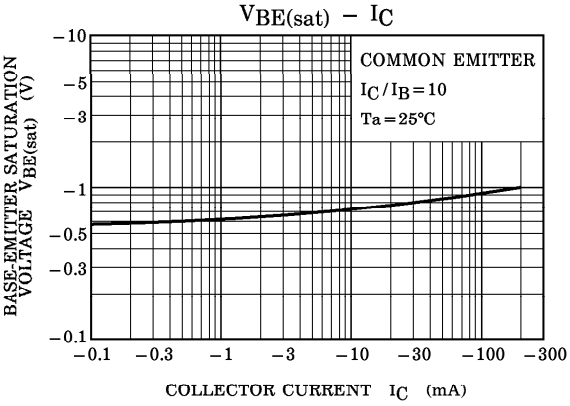
$h_{FE} - I_C$



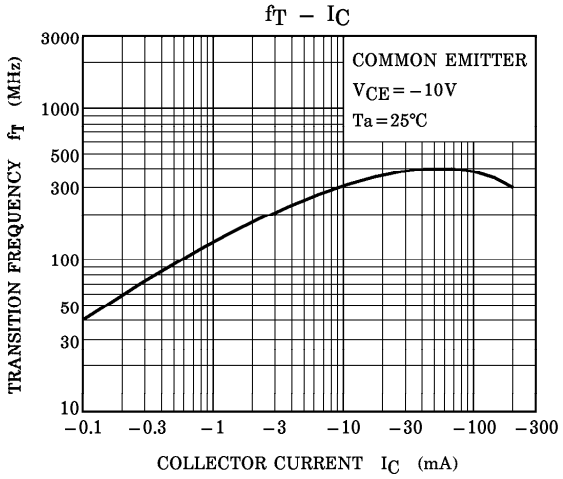
$V_{CE(sat)} - I_C$



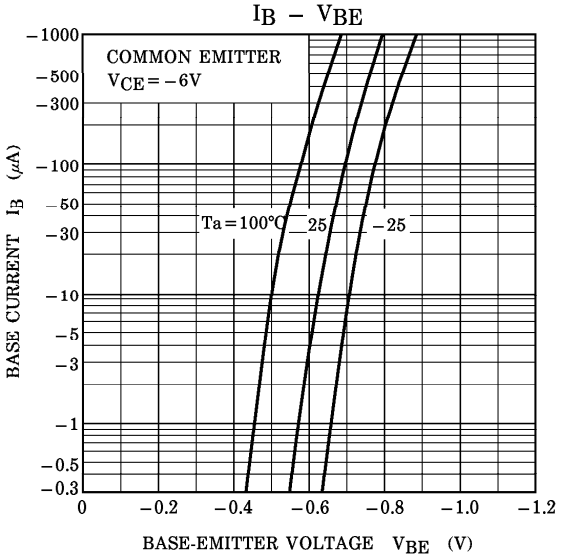
$V_{BE(sat)} - I_C$



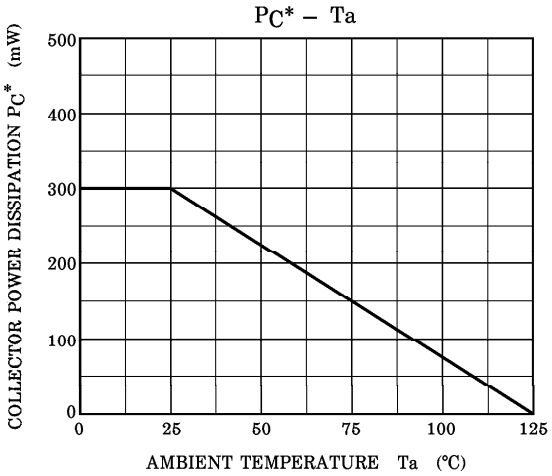
$f_T - I_C$



$I_B - V_{BE}$



(Q1, Q2 COMMON)



*: Total Rating