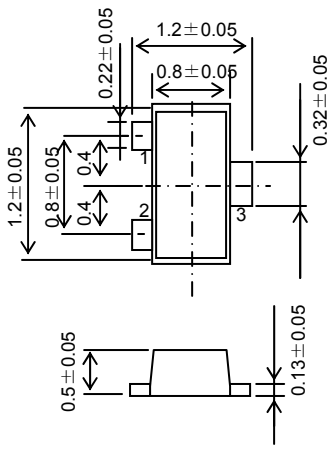
TOSHIBA Transistor Silicon NPN Epitaxial Type

2SC5376FV

Audio Frequency General Purpose Amplifier Applications
For Muting and Switching Applications

- Low Collector Saturation Voltage: $V_{CE\ (sat)\ (1)}$ = 15 mV (typ.)
  @I_C = 10 mA/I_B = 0.5 mA
- High Collector Current: I_C = 400 mA (max)

Unit: mm



VESM	1.BASE 2.EMITTER 3.COLLECTOR
JEDEC	—
JEITA	—
TOSHIBA	2-1L1A

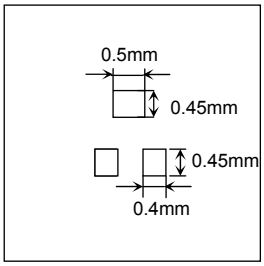
Weight: 1.5 mg (typ.)

Absolute Maximum Ratings (Ta = 25°C)

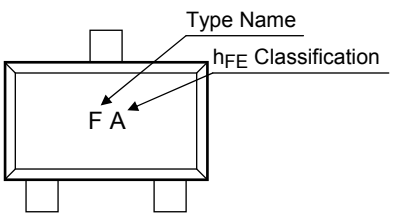
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	15	V
Collector-emitter voltage	V_{CEO}	12	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	400	mA
Base current	I_B	50	mA
Collector power dissipation	P_C	150 *	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−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).

* : Mounted on FR4 board (25.4 mm × 25.4 mm × 1.6mmt)

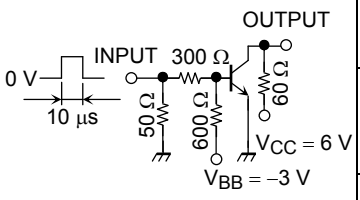


Marking



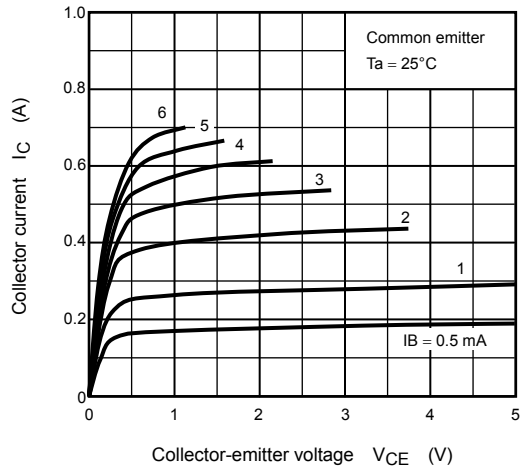
Start of commercial production
2003-07

Electrical Characteristics (Ta = 25°C)

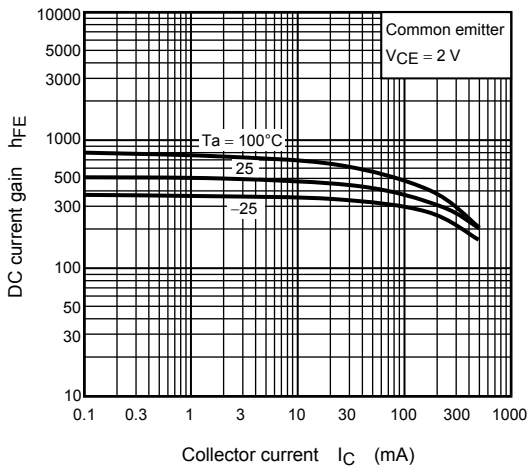
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	V_{CB} = 15 V, I_E = 0	—	—	0.1	μA
Emitter cut-off current		I_{EBO}	V_{EB} = 5 V, I_C = 0	—	—	0.1	μA
DC current gain		h_{FE} (Note)	V_{CE} = 2 V, I_C = 10 mA	300	—	1000	
Collector-emitter saturation voltage		$V_{CE\ (sat)\ (1)}$	I_C = 10 mA, I_B = 0.5 mA	—	15	30	mV
		$V_{CE\ (sat)\ (2)}$	I_C = 200 mA, I_B = 10 mA	—	110	250	mV
Base-emitter voltage		$V_{BE\ (sat)}$	I_C = 200 mA, I_B = 10 mA	—	0.87	1.2	V
Transition frequency		f_T	V_{CE} = 2 V, I_C = 10 mA	80	130	—	MHz
Collector output capacitance		C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	4.2	—	pF
Collector-emitter on resistance		R_{on}	I_B = 1 mA, V_{in} = 1 V_{rms}, f = 1 kHz	—	0.9	—	Ω
Switching time	Turn-on time	t_{on}	 Duty Cycle ≤ 2% IB1 = −IB2 = 5 mA	—	85	—	ns
	Storage time	t_{stg}		—	170	—	ns
	Falll time	t_f		—	40	—	ns

Note: h_{FE} Classification A: 300 to 600, B: 500 to 1000

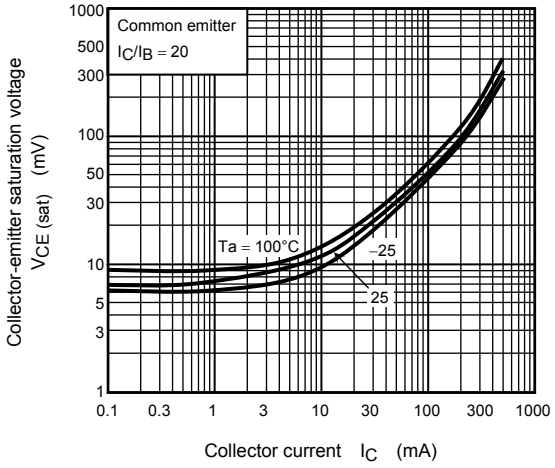
$I_C - V_{CE}$



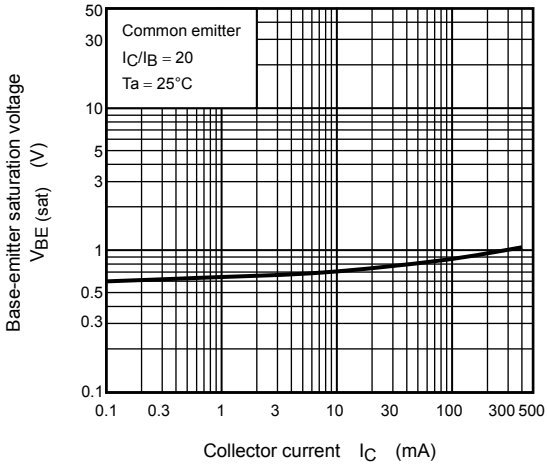
$h_{FE} - I_C$



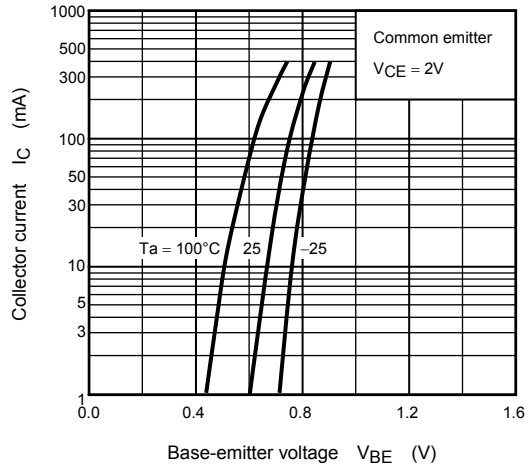
$V_{CE\ (sat)} - I_C$



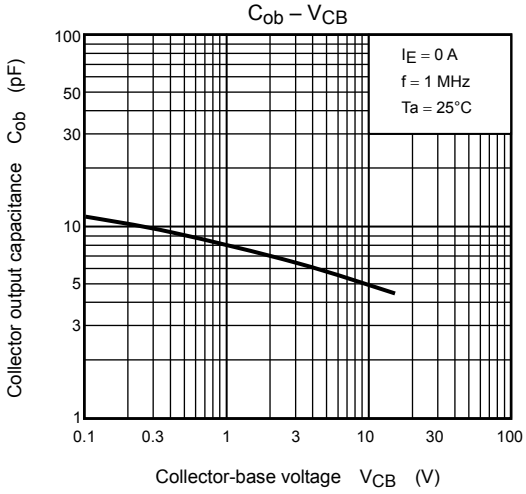
$V_{BE\ (sat)} - I_C$

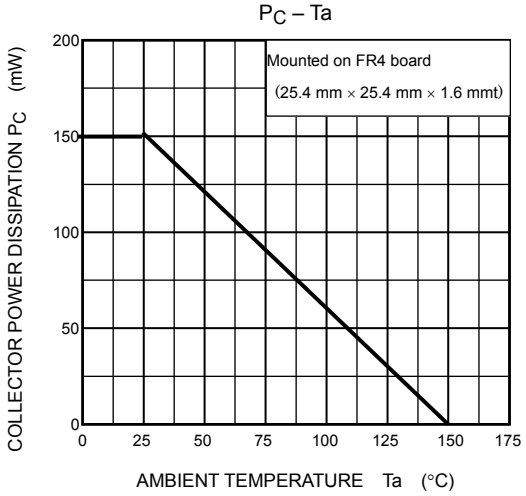


$I_C - V_{BE}$



$C_{ob} - V_{CB}$




P_C – Ta
Mounted on FR4 board
(25.4 mm × 25.4 mm × 1.6 mmt)
COLLECTOR POWER DISSIPATION P_C (mW)
200
150
100
50
0
0
25
50
75
100
125
150
175
AMBIENT TEMPERATURE Ta (°C)

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