

TOSHIBA Transistor Silicon NPN Epitaxial Type

# 2SC5376

Audio Frequency General Purpose Amplifier Applications  
For Muting and Switching Applications

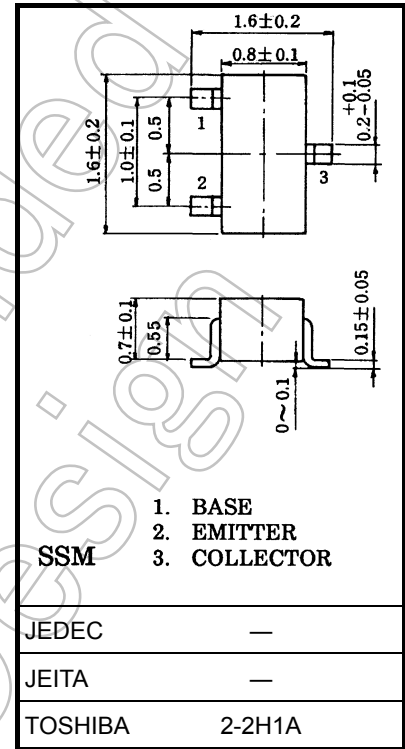
- Low collector saturation voltage:  $V_{CE(sat)}(1) = 15\text{ mV (typ.)}$   
@ $I_C = 10\text{ mA}/I_B = 0.5\text{ mA}$
- High collector current:  $I_C = 400\text{ mA (max)}$

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

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	$P_C$	100	mW
Junction temperature	$T_j$	125	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-55 to 125	$^\circ\text{C}$

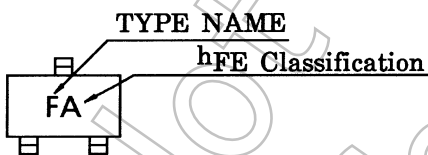
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

Unit: mm



Weight: 2.4 mg (typ.)

### Marking

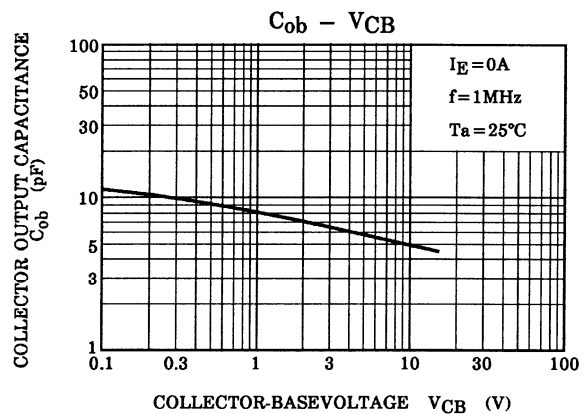
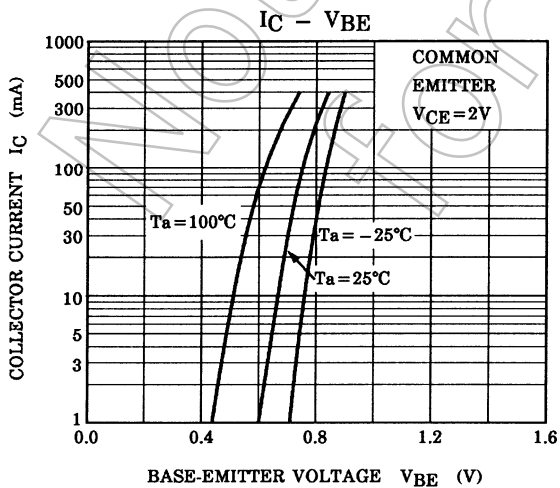
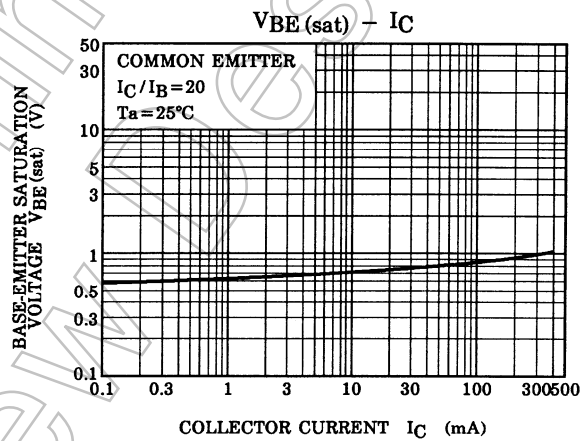
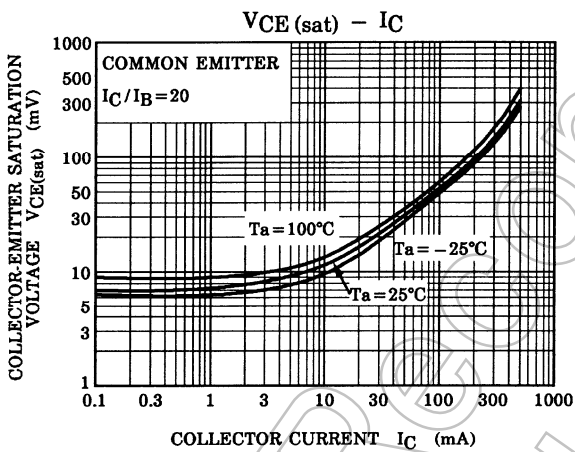
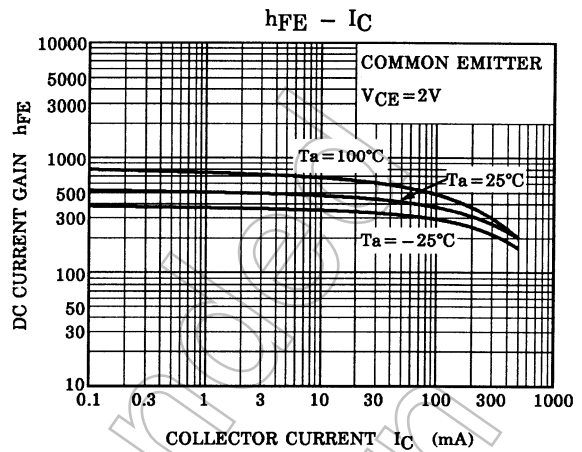
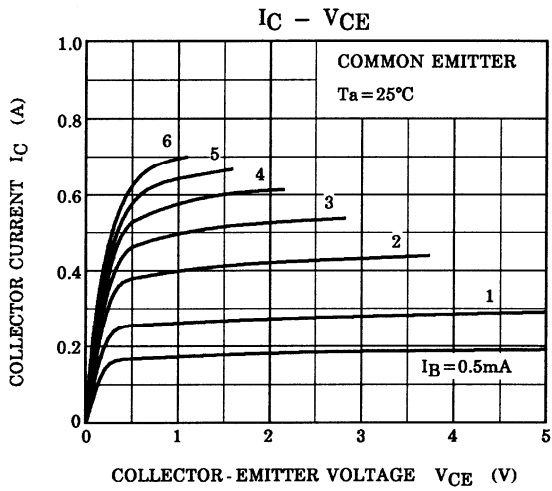


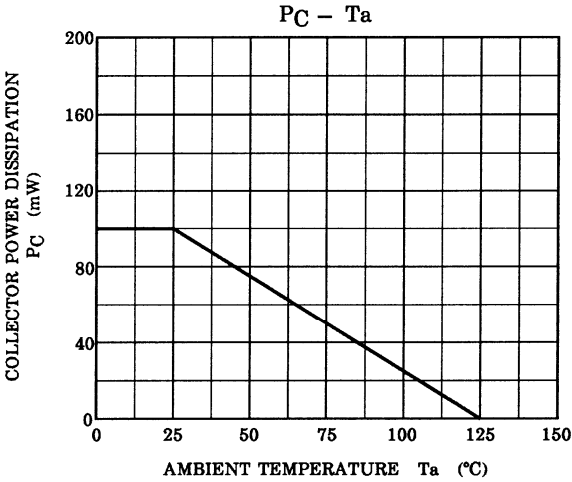
Start of commercial production  
1997-05

## Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		$I_{CBO}$	$V_{CB} = 15\text{ V}, I_E = 0$	—	—	0.1	$\mu\text{A}$
Emitter cut-off current		$I_{EBO}$	$V_{EB} = 5\text{ V}, I_C = 0$	—	—	0.1	$\mu\text{A}$
DC current gain		$h_{FE}$ (Note)	$V_{CE} = 2\text{ V}, I_C = 10\text{ mA}$	300	—	1000	
Collector-emitter saturation voltage		$V_{CE(sat)}(1)$	$I_C = 10\text{ mA}, I_B = 0.5\text{ mA}$	—	15	30	mV
		$V_{CE(sat)}(2)$	$I_C = 200\text{ mA}, I_B = 10\text{ mA}$	—	110	250	
Base-emitter voltage		$V_{BE(sat)}$	$I_C = 200\text{ mA}, I_B = 10\text{ mA}$	—	0.87	1.2	V
Transition frequency		$f_T$	$V_{CE} = 2\text{ V}, I_C = 10\text{ mA}$	80	130	—	MHz
Collector output capacitance		$C_{ob}$	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	4.2	—	pF
Collector-emitter on resistance		$R_{on}$	$I_B = 1\text{ mA}, V_{in} = 1\text{ V}_{rms}, f = 1\text{ kHz}$	—	0.9	—	$\Omega$
Switching time	Turn-on time	$t_{on}$	<p>Duty cycle <math>\leq 2\%</math> <math>I_{B1} = -I_{B2} = 5\text{ mA}</math></p>	—	85	—	ns
	Storage time	$t_{stg}$		—	170	—	
	Fall time	$t_f$		—	40	—	

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





Not Recommended for New Design

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