TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

## HN4C51J

#### Audio Frequency General Purpose Amplifier Applications

High voltage : V<sub>CEO</sub> = 120V
 High h<sub>FE</sub> : h<sub>FE</sub> = 200 to 700

Excellent h<sub>FE</sub> linearity

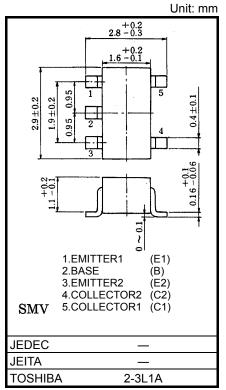
:  $h_{FE} (I_C = 0.1 \text{mA}) / h_{FE} (I_C = 2 \text{mA}) = 0.95 \text{ (typ.)}$ 

Low noise : NF = 1dB(typ.)

# Absolute Maximum Ratings (Ta = 25°C) (Q1, Q2 Common)

Characteristic	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	120	V
Collector-emitter voltage	V <sub>CEO</sub>	120	V
Emitter-base voltage	V <sub>EBO</sub>	5	<b>V</b>
Collector current	IC	100	mA
Base current	ΙΒ	20	mA
Collector power dissipation	P <sub>C</sub> *	300	mW
Junction temperature	Tj	150	°C
Storage temperature range	T <sub>stg</sub>	−55 to 150	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in



Weight: 0.014g (typ.)

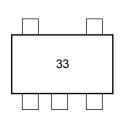
temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

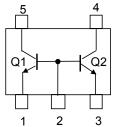
#### Electrical Characteristics (Ta = 25°C) (Q1,Q2 Common)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current	I <sub>CBO</sub>	_	V <sub>CB</sub> = 120V, I <sub>E</sub> = 0	_	_	0.1	μA
Emitter cut-off current	I <sub>EBO</sub>	_	V <sub>EB</sub> = 5V, I <sub>C</sub> = 0	_	_	0.1	μΑ
DC current gain	h <sub>FE</sub>	_	$V_{CE}$ = 6V, $I_C$ = 2mA	200	_	700	
Collector-emitter saturation voltage	V <sub>CE</sub>	_	I <sub>C</sub> = 10mA, I <sub>B</sub> = 1mA	_	_	0.3	V
Transition frequency	f <sub>T</sub>	_	V <sub>CE</sub> = 6V, I <sub>C</sub> = 1mA	_	100	_	MHz
Collector output capacitance	C <sub>ob</sub>	_	V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 1MHz	_	3.0	_	pF
Noise figure	NF	_	$V_{CE}$ = 6 V, $I_{C}$ = 0.1 mA f = 1 kHz, $R_{G}$ = 10 k $\Omega$	_	1.0	_	dB

#### Marking

### **Equivalent Circuit (Top View)**

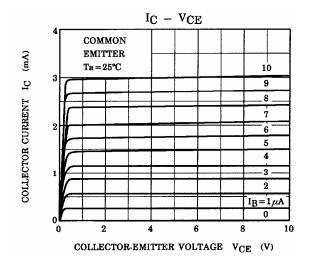


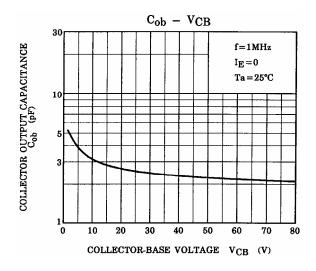


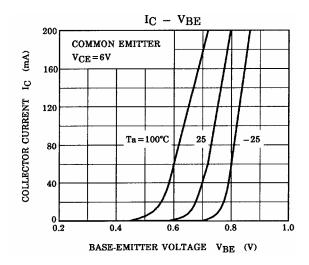
Start of commercial production 2000-08

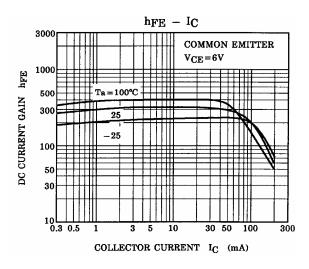
<sup>\*</sup> Total rating. Power dissipation per element should not exceed 200mW.

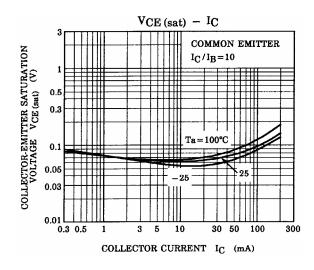
(Q1,Q2 Common)

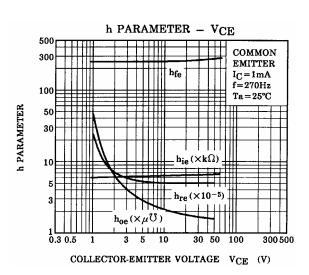




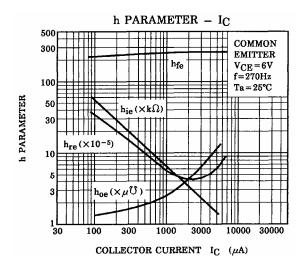


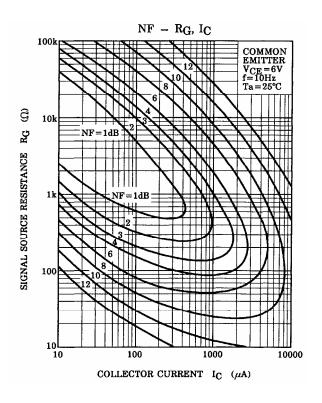


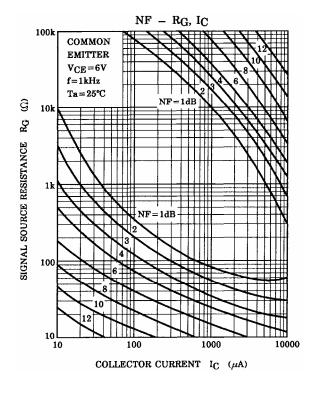


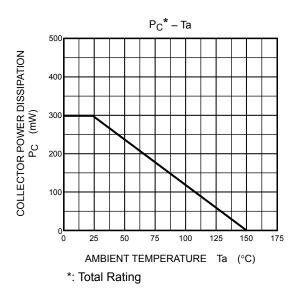


(Q1,Q2 Common)









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