

Die no. B-11

PNP medium power transistor

These are epitaxial planar PNP silicon transistors.

Features

- available in an SST3 (SST, SOT-23) package, see page 300
- collector-to-emitter breakdown voltage, $BV_{CEO} = 40\text{ V (min)}$ at 1.0 mA
- current gain specified from 0.1 mA to 500 mA
- high transition frequency, typically $f_T = 200\text{ MHz min}$ at $I_C = 20\text{ mA}$

Device types

Package style	Part number	Marking
SST3 (SOT-23)	BCX17	GT1

Applications

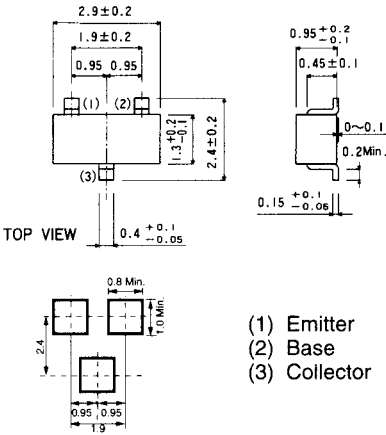
- general purpose, medium power, amplifier applications

Absolute maximum ratings ($T_a = 25^{\circ}\text{C}$)

Parameter	Symbol	Limits	Unit	Conditions
Collector-to-base voltage	V_{CBO}	50	V	
Collector-to-emitter voltage	V_{CEO}	40	V	
Emitter-to-base voltage	V_{EBO}	6	V	
Collector current	I_C	800	mA	DC
Power dissipation	P_C	200	mW	For derating, see derating curve following
Junction temperature	T_j	$-55 \sim +150$	$^{\circ}\text{C}$	

Dimensions (Units : mm)

SST3



Electrical characteristics (unless otherwise noted, $T_a = 25^\circ\text{C}$)

Parameter	Symbol	Min	Typical	Max	Unit	Conditions
Collector-to-base breakdown voltage	BV_{CBO}	50			V	$I_C = 50\text{ }\mu\text{A}$
Collector-to-emitter breakdown voltage	BV_{CEO}	40			V	$I_C = 1.0\text{ mA}$
Emitter-to-base breakdown voltage	BV_{EBO}	6			V	$I_E = 10\text{ }\mu\text{A}$
Collector cutoff current	I_{CBO}			50	nA	$V_{CB} = 60\text{ V}$
Emitter cutoff current	I_{EBO}			50	nA	$V_{EB} = 4\text{ V}$
DC current gain	h_{FE}	50	200			$I_C = 100\text{ }\mu\text{A}$, $V_{CE} = 10\text{ V}$
		50	230			$I_C = 1.0\text{ mA}$, $V_{CE} = 10\text{ V}$
		50	240			$I_C = 10\text{ mA}$, $V_{CE} = 10\text{ V}$
		50	210			$I_C = 100\text{ mA}$, $V_{CE} = 10\text{ V}$
		50	180			$I_C = 500\text{ mA}$, $V_{CE} = 10\text{ V}$
Collector-to-emitter saturation voltage	$V_{CE(sat)}$		0.1	0.4	V	$I_C/I_B = 100\text{ mA}/10\text{ mA}$
			0.3	0.6		$I_C/I_B = 500\text{ mA}/50\text{ mA}$
Base-to-emitter saturation voltage	$V_{BE(sat)}$			0.95	V	$I_C/I_B = 100\text{ mA}/10\text{ mA}$
				1.2		$I_C/I_B = 500\text{ mA}/50\text{ mA}$
AC current gain	h_{fe}	40				$I_C = 10\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 1\text{ kHz}$
Collector output capacitance	C_{ob}			15	pF	$V_{CB} = 5.0\text{ V}$, $I_E = 0$, $f = 1\text{ MHz}$
Collector input capacitance	C_{ib}			25	pF	$V_{EB} = 5.0\text{ V}$, $I_C = 0$, $f = 1\text{ MHz}$
Transition frequency	f_T	200			MHz	$I_C = 20\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 100\text{ MHz}$
Noise figure	NF		2	3	dB	$I_C = 100\text{ }\mu\text{A}$, $V_{CE} = 10\text{ V}_{dc}$, $R_S = 10\text{ k}\Omega$, $f = 1\text{ kHz}$

Note: Minus sign for PNP transistor is omitted

Electrical characteristic curves

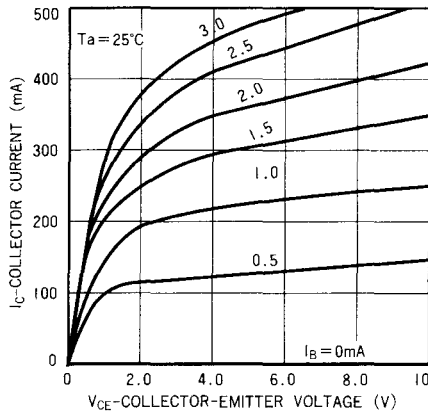


Figure 1

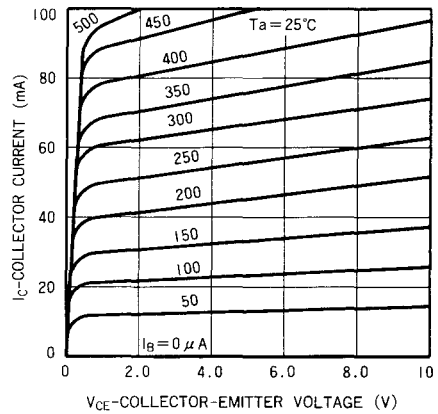


Figure 2

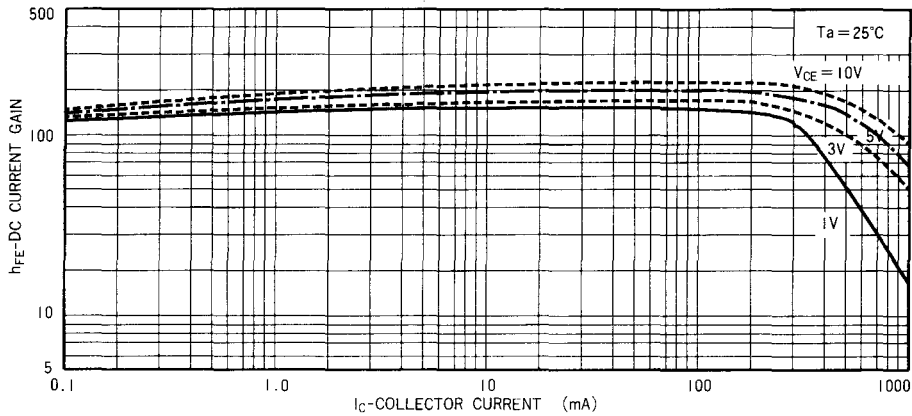


Figure 3

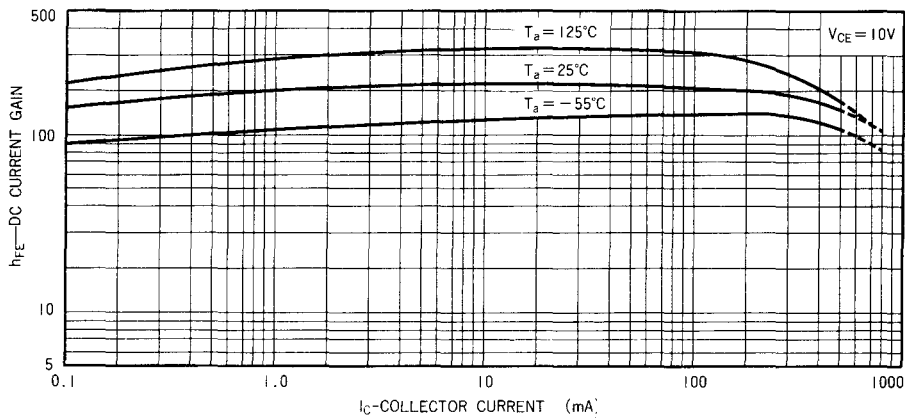


Figure 4

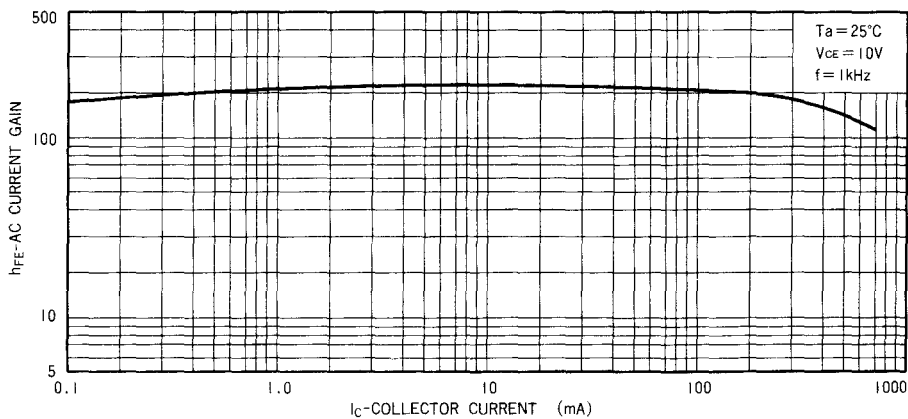


Figure 5

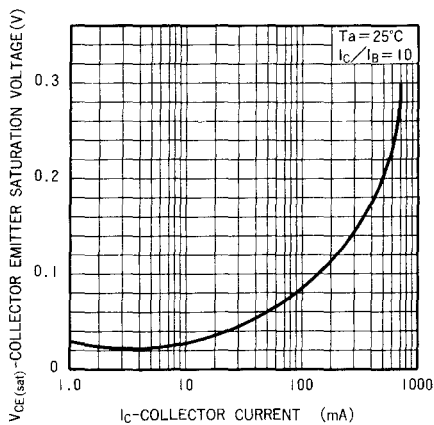


Figure 6

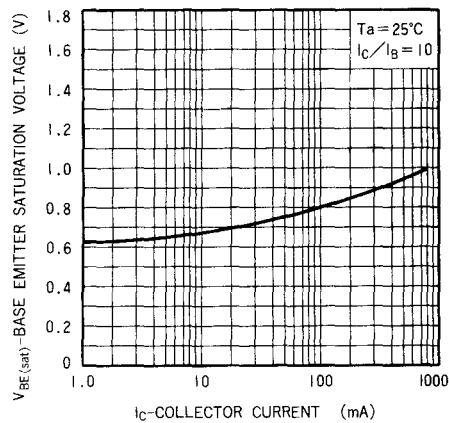


Figure 7

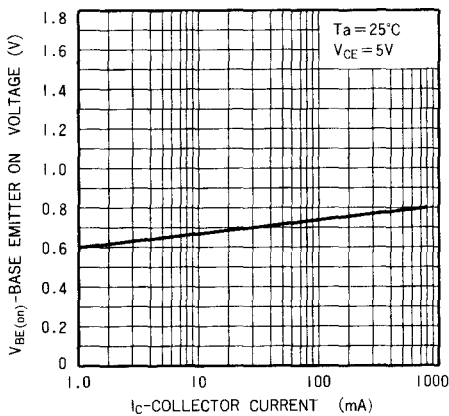


Figure 8

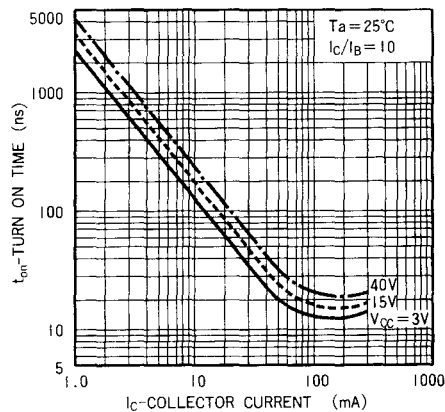


Figure 9

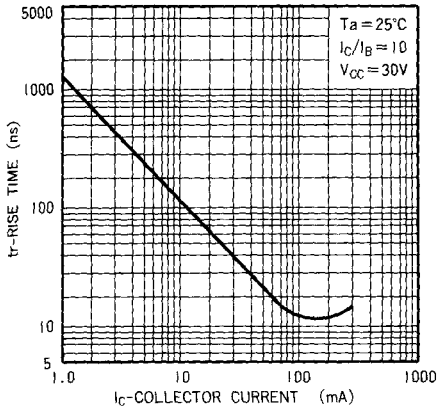


Figure 10

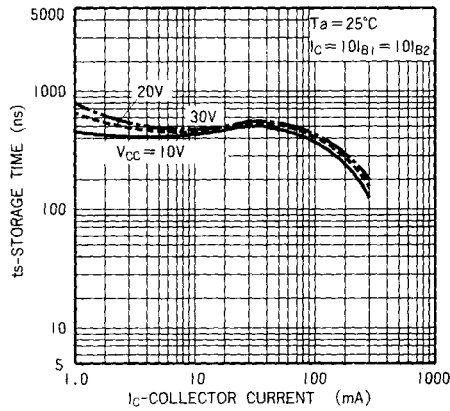


Figure 11

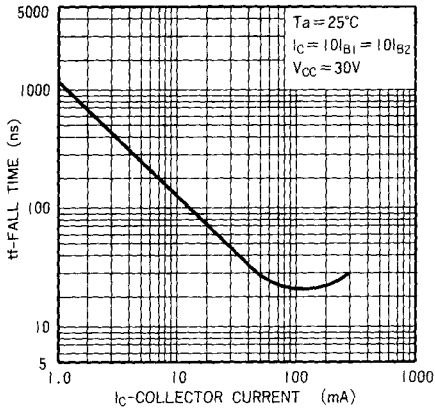


Figure 12

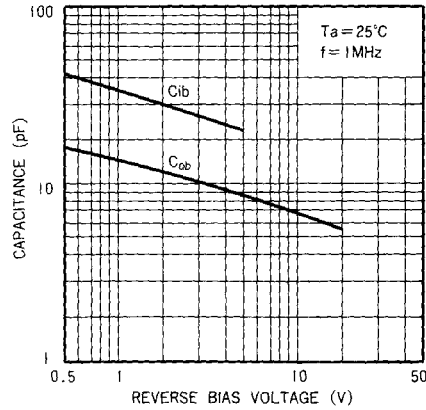


Figure 13

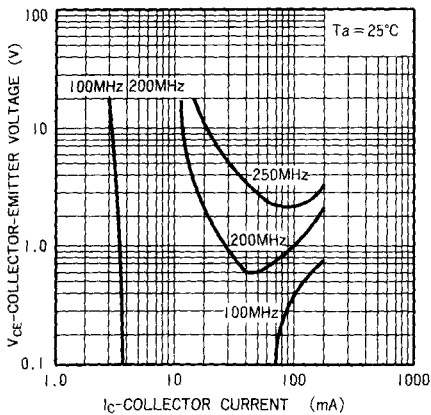


Figure 14

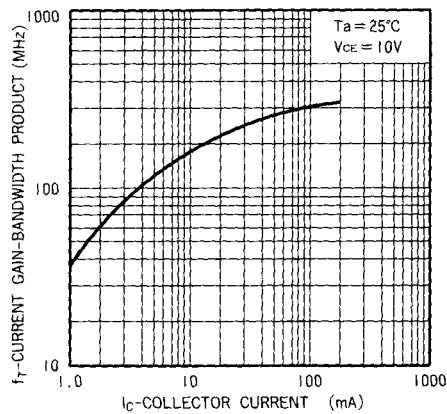


Figure 15

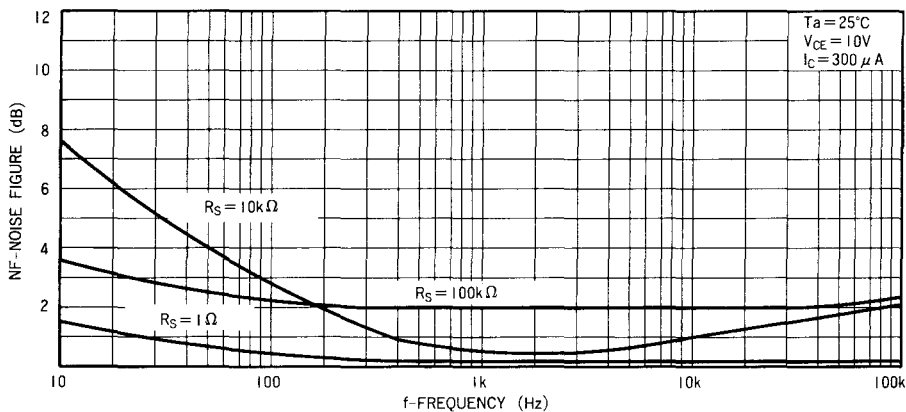


Figure 16

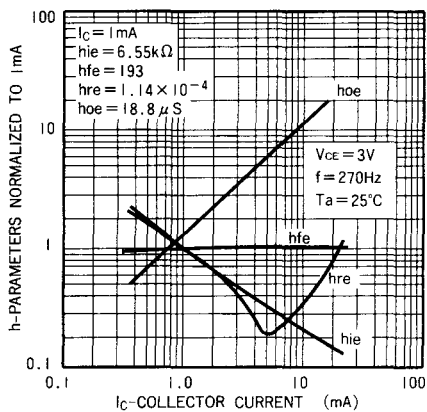


Figure 17

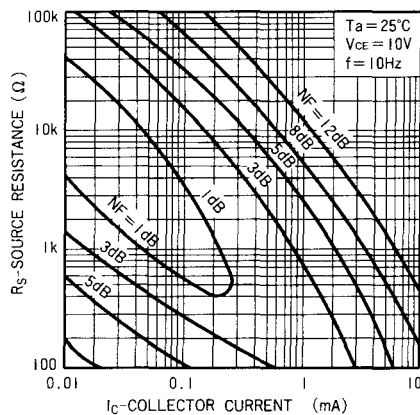


Figure 18

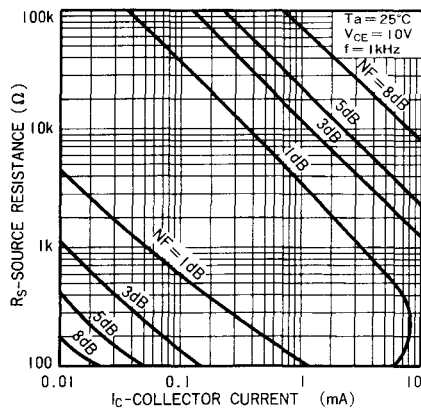


Figure 19

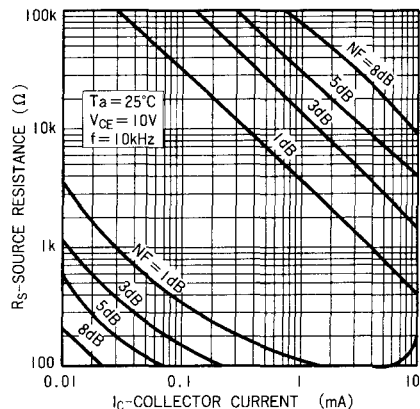
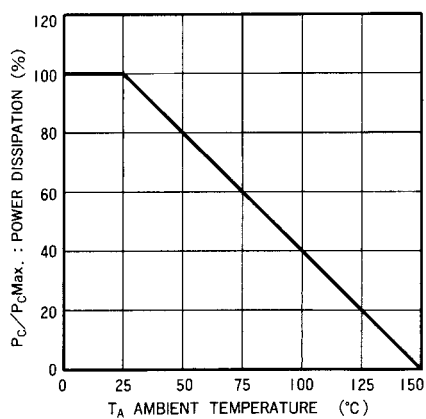


Figure 20

**Figure 21**