



TSB1590

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Low Vce(sat) PNP Transistor

SOT-23



Pin assignment:

1. Base
2. Emitter
3. Collector

$BV_{CEO} = -20V$

$I_C = -1A$

$V_{CE(SAT)} = -0.18V(\text{typ.}) @ I_C / I_B = -0.5A / -50mA$

Features

- ✧ Low $V_{CE(SAT)}$.
- ✧ Excellent DC current gain characteristics

Structure

- ✧ Epitaxial planar type.
- ✧ Complementary to TSD2444CX

Ordering Information

Part No.	Packing	Package
TSB1590CX	Tape & Reel	SOT-23

Absolute Maximum Rating (Ta = 25 °C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V_{CBO}	- 30V	V
Collector-Emitter Voltage	V_{CEO}	- 20V	V
Emitter-Base Voltage	V_{EBO}	- 5	V
Collector Current	DC	I_C	A
	Pulse	- 1 - 1.5 (note 1)	
Collector Power Dissipation	P_D	0.225	W
Operating Junction Temperature	T_J	+150	°C
Operating Junction and Storage Temperature Range	T_{STG}	- 55 to +150	°C

Note: 1. Single pulse, Pw = 10mS

Electrical Characteristics

Ta = 25 °C unless otherwise noted

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Collector-Base Voltage	$I_C = -50\mu A, I_E = 0$	BV_{CBO}	- 30	--	--	V
Collector-Emitter Breakdown Voltage	$I_C = -1mA, I_B = 0$	BV_{CEO}	- 20	--	--	V
Emitter-Base Breakdown Voltage	$I_E = -50\mu A, I_C = 0$	BV_{EBO}	- 5	--	--	V
Collector Cutoff Current	$V_{CB} = -20V, I_E = 0$	I_{CBO}	--	--	- 0.5	μA
Emitter Cutoff Current	$V_{EB} = -4V, I_C = 0$	I_{EBO}	--	--	-0.5	μA
Collector-Emitter Saturation Voltage	$I_C / I_B = -500mA / -50mA$	$V_{CE(SAT)}$	--	- 0.18	- 0.4	V
DC Current Transfer Ratio	$V_{CE} = -3V, I_C = -0.1A$	h_{FE}	82	--	390	
Transition Frequency	$V_{CE} = -5V, I_C = -50mA, f = 100MHz$	f_T	--	150	--	MHz
Output Capacitance	$V_{CB} = -10V, f = 1MHz$	C_{ob}	--	15	--	pF

Note : pulse test: pulse width $\leq 380\mu s$, duty cycle $\leq 2\%$

Classification Of h_{FE}

Rank	P	Q	R
Range	82 - 180	120 - 270	180 - 390

Electrical Characteristics Curve

Figure 1. Current Gain vs Collector Current

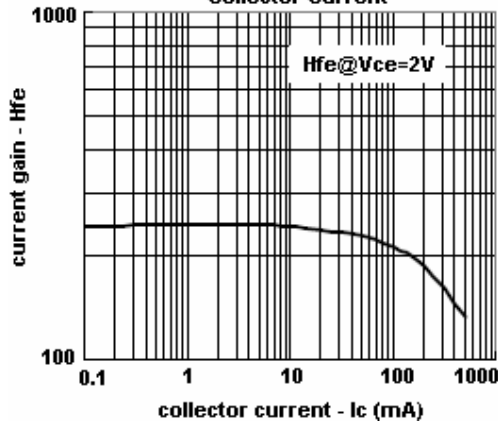


Figure 2. Saturation Voltage vs Collector Current

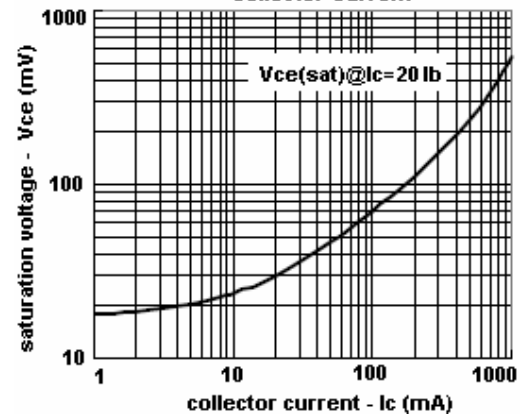


Figure 3. Saturation Voltage vs Collector Current

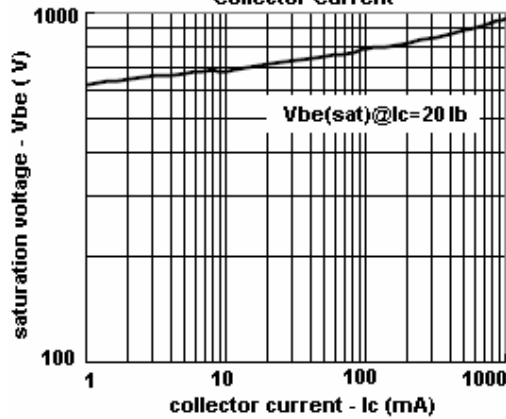


Figure 4. Power Derating Curves

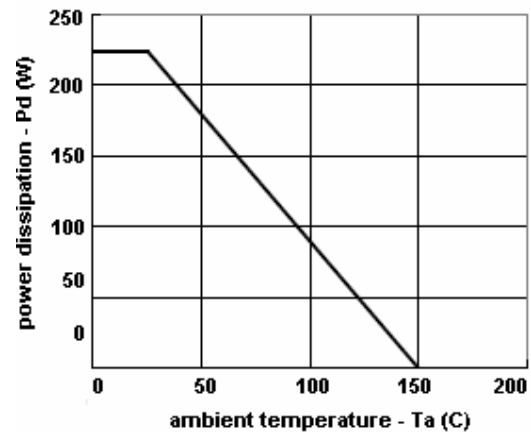
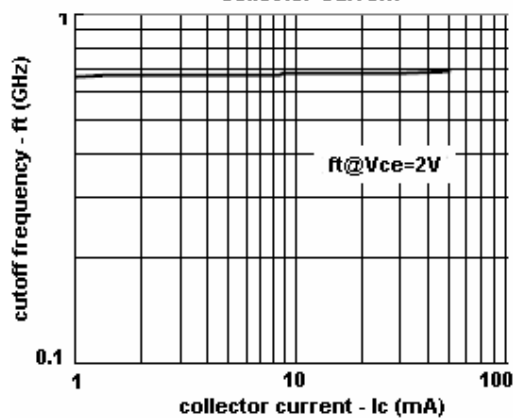
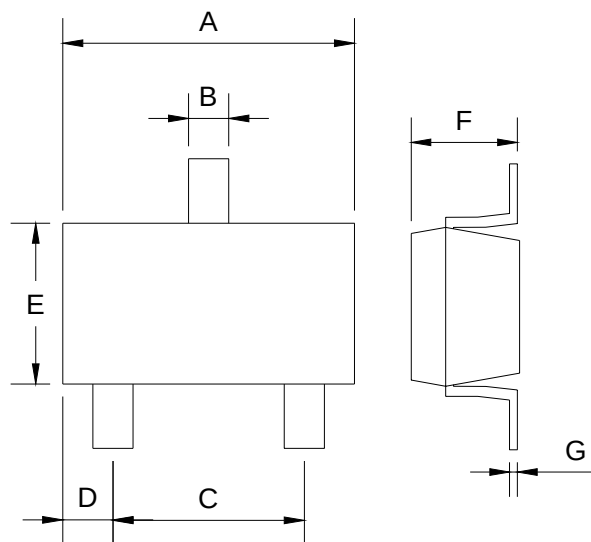


Figure 5. Cutoff Frequency vs Collector Current



SOT-23 Mechanical Drawing



SOT-23 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.04	0.110	0.120
B	0.30	0.50	0.012	0.020
C	1.70	2.30	0.067	0.091
D	0.25	0.65	0.010	0.026
E	1.2	1.60	0.047	0.063
F	0.89	1.30	0.035	0.051
G	0.08	0.17	0.003	0.006

Marking: **BK**