TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

TSB1590

Low Vcesat PNP Transistor

SOT-23

Pin Definition:
1. Base
2. Emitter
3. Collector

PRODUCT SUMMARY

BV_{CBO}	-40V
BV_{CEO}	-25V
I_C	-1A
$V_{CE(SAT)}$	-0.18V @ I_C / I_B = -500mA / -50mA

Features

- Low $V_{CE(SAT)}$ -0.4 @ I_C / I_B = -150mA / -15mA
- Complementary part with TSD2444

Ordering Information

Part No.	Package	Packing
TSB1590CX RF	SOT-23	3Kpcs / 7" Reel

Structure

- Epitaxial Planar Type
- PNP Silicon Transistor

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

Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-25	V
Emitter-Base Voltage	V_{EBO}	-6	V
Collector Current	I_C	-1	A
Collector Power Dissipation	P_D	225	mW
Thermal Resistance, Junction to Ambient	$R\theta_{JA}$	556	°C/W
Operating Junction Temperature	T_J	+150	°C
Operating Junction and Storage Temperature Range	T_{STG}	- 55 to +150	°C

Note: Single pulse, Pw≤350us, Duty≤2%

Electrical Specifications (Ta = 25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	I_C = -50uA, I_E = 0	BV_{CBO}	-40	--	--	V
Collector-Emitter Breakdown Voltage	I_C = -1mA, I_B = 0	BV_{CEO}	-25	--	--	V
Emitter-Base Breakdown Voltage	I_E = -50uA, I_C = 0	BV_{EBO}	-6	--	--	V
Collector Cutoff Current	V_{CB} = -35V, I_E = 0	I_{CBO}	--	--	-100	nA
Emitter Cutoff Current	V_{EB} = -6V, I_C = 0	I_{EBO}	--	--	-100	nA
Collector-Emitter Saturation Voltage	I_C / I_B = -500mA / -50mA	*$V_{CE(SAT)}$	--	-0.18	-0.4	V
Base-Emitter Saturation Voltage	I_C / I_B = -500mA / -50mA	*$V_{BE(SAT)}$	--	-0.9	-1.3	V
DC Current Transfer Ratio	V_{CE} = -3V, I_C = -100mA	*h_{FE} 1	120	--	560	
	V_{CE} = -3V, I_C = -800mA	*h_{FE} 2	80	--	--	
Transition Frequency	V_{CE} =-5V, I_C=-50mA, f=100MHz	f_T	--	150	--	MHz
Output Capacitance	V_{CB} = -10V, f=1MHz	Cob	--	15	--	pF

* Pulse Test: Pulse Width ≤380uS, Duty Cycle≤2%

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Electrical Characteristics Curve (Ta = 25°C, unless otherwise noted)

Figure 1. DC Current Gain

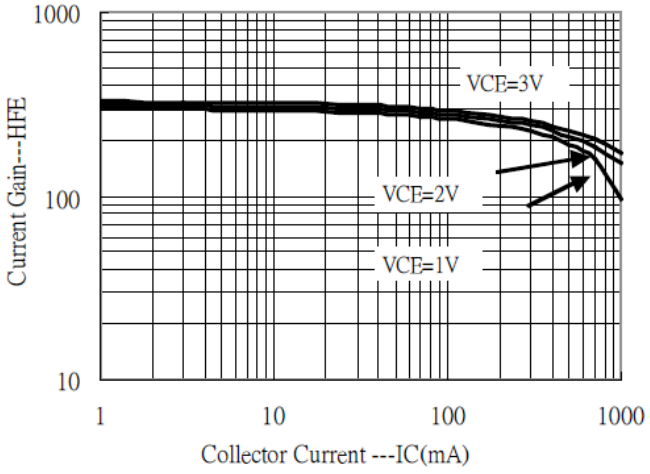


Figure 2. $V_{CE(SAT)}$ v.s. Ic

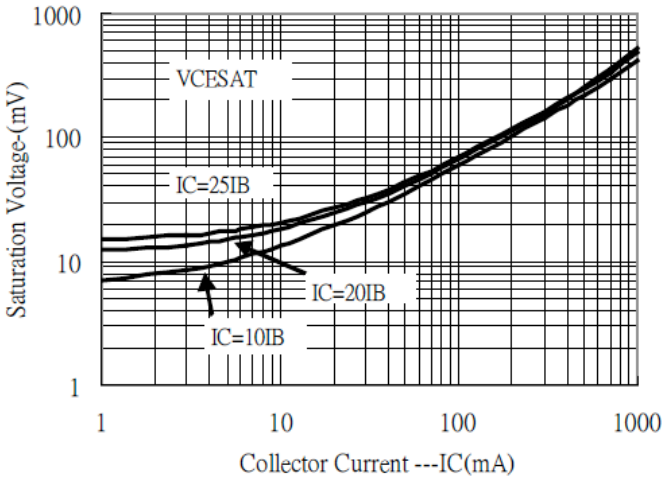


Figure 3. $V_{BE(SAT)}$ v.s. Ic

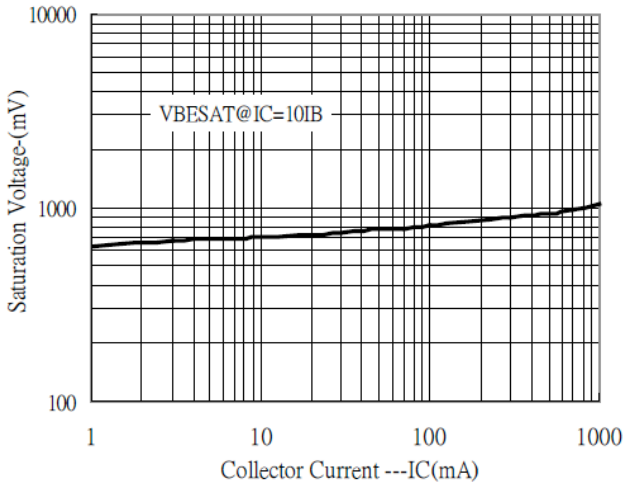


Figure 4. Cutoff Frequency vs. Ic

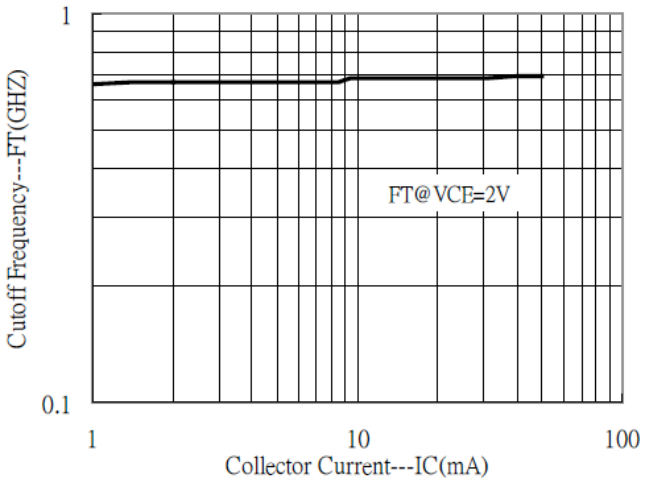
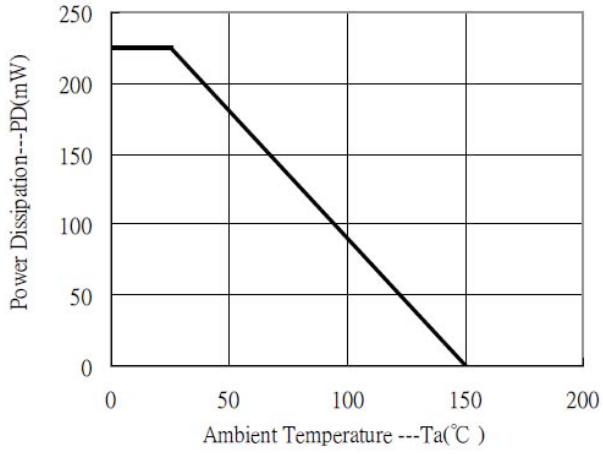


Figure 5. Power Derating Curve



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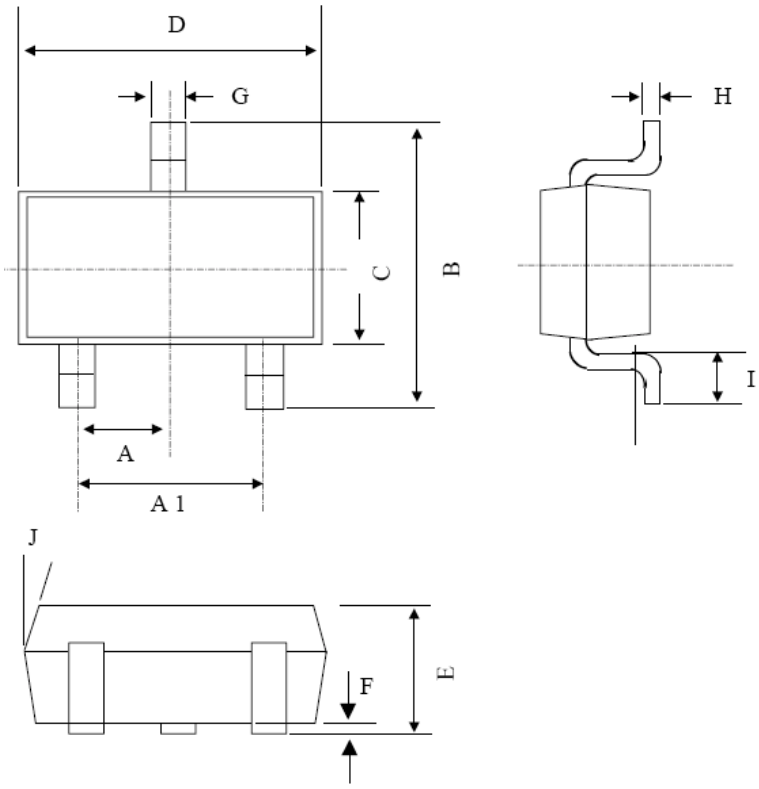
SOT-23 Mechanical Drawing



SOT-23 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX.
A	0.95 BSC		0.037 BSC	
A1	1.9 BSC		0.074 BSC	
B	2.60	3.00	0.102	0.118
C	1.40	1.70	0.055	0.067
D	2.80	3.10	0.110	0.122
E	1.00	1.30	0.039	0.051
F	0.00	0.10	0.000	0.004
G	0.35	0.50	0.014	0.020
H	0.10	0.20	0.004	0.008
I	0.30	0.60	0.012	0.024
J	5°	10°	5°	10°

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