TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

TSD2444

Low Vcesat NPN Transistor

SOT-23

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

PRODUCT SUMMARY

BV_{CBO}	40V
BV_{CEO}	25V
I_C	800mA
$V_{CE(SAT)}$	40mV @ I_C / I_B = 50 / 2.5mA

Features

- Low $V_{CE(SAT)}$
- Excellent DC Current Gain Characteristics

Ordering Information

Part No.	Package	Packing
TSD2444CX RF	SOT-23	3Kpcs / 7" Reel

Structure

- Epitaxial Planar Type
- Complementary to TSB1590CX

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	800	mA
Total Power Dissipation	P_{tot}	225	mW
Operating Junction Temperature	T_J	+150	°C
Operating Junction and Storage Temperature Range	T_{STG}	- 55 to +150	°C

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

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	I_C = 100uA, I_E = 0	BV_{CBO}	40	--	--	V
Collector-Emitter Breakdown Voltage	I_C = 2mA, I_B = 0	BV_{CEO}	25	--	--	V
Emitter-Base Breakdown Voltage	I_E = 100uA, I_C = 0	BV_{EBO}	6	--	--	V
Collector Cutoff Current	V_{CB} = 30V, I_E = 0	I_{CBO}	--	--	0.5	uA
Emitter Cutoff Current	V_{EB} = 6V, I_C = 0	I_{EBO}	--	--	0.5	uA
Collector-Emitter Saturation Voltage	I_C = 50mA, I_B = 2.5mA	*$V_{CE(SAT)}$ 1		0.04	0.06	V
	I_C = 400mA, I_B = 20mA	*$V_{CE(SAT)}$ 2	--	0.15	0.3	
	I_C = 800mA, I_B = 80mA	*$V_{CE(SAT)}$ 3	--	0.25	0.6	
Base-Emitter on Voltage	V_{CE} = 1V, I_C = 10mA	$V_{BE(ON)}$	--	--	1.0	V
DC Current Transfer Ratio	V_{CE} = 1V, I_C = 100mA	h_{FE} 1	180	--	560	
	V_{CE} = 1V, I_C = 600mA	h_{FE} 2	40	--	--	
Transition Frequency	V_{CE} = 5V, I_C=-100mA	f_T	--	150	--	MHz
Output Capacitance	V_{CB} = 10V, f=1MHz	Cob	--	15	--	pF

* Pulse Test: Pulse width ≤380us, Duty cycle ≤ 2%

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

Figure 1. DC Current Gain

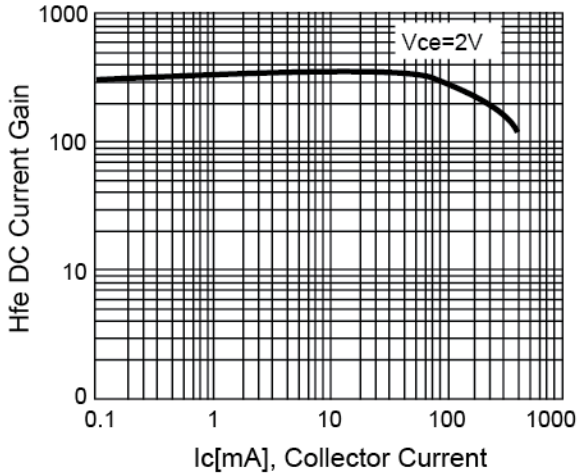


Figure 2. $V_{CE(SAT)}$ v.s. Collector Current

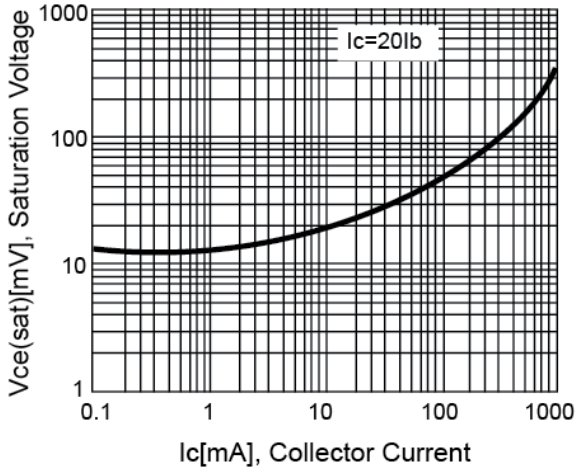


Figure 3. $V_{BE(SAT)}$ v.s. Collector Current

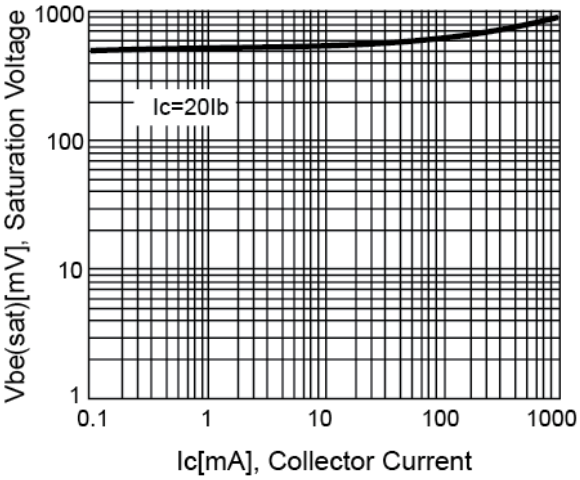


Figure 4. Power Derating Curve

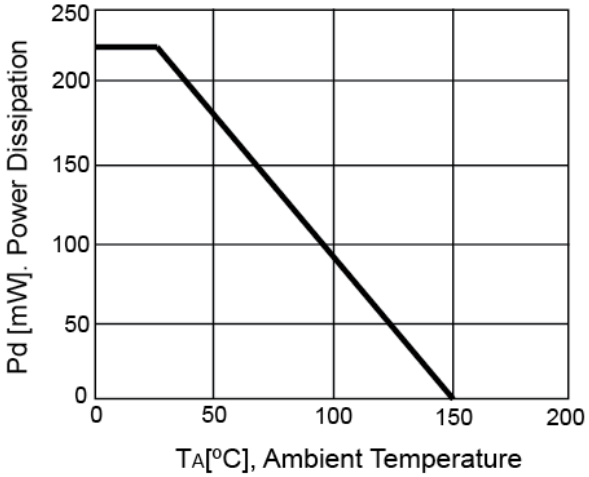
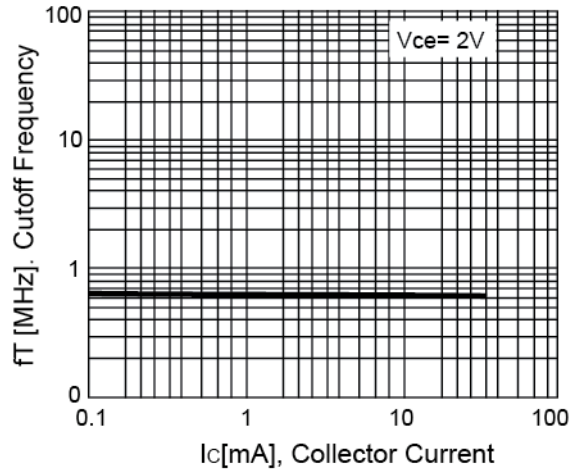


Figure 5. Cutoff Frequency v.s. Collector Current



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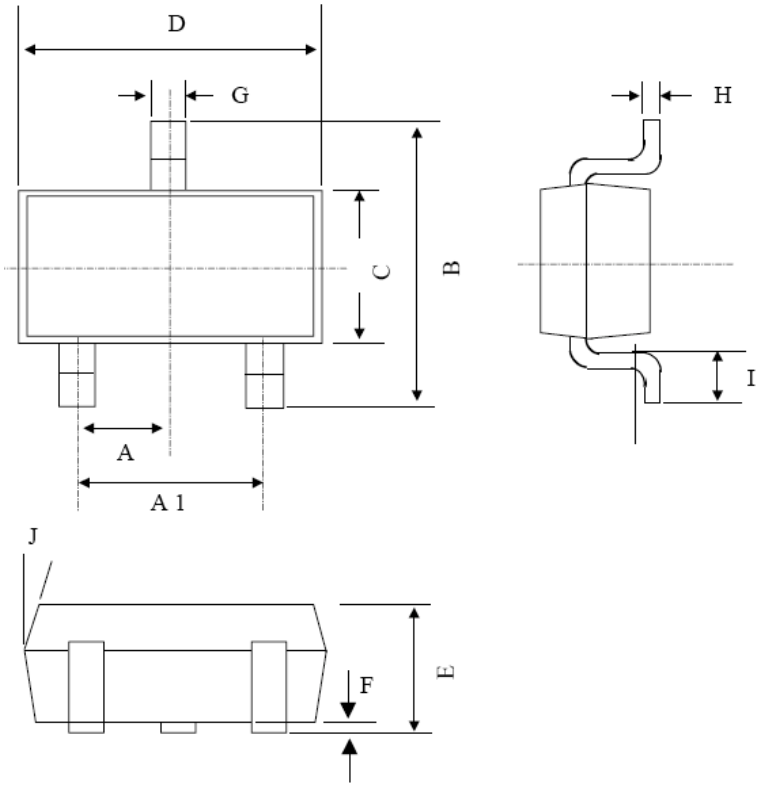
SOT-23 Mechanical Drawing



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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