TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

TSC4505

High Voltage NPN Transistor

SOT-23



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

TO-92



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PRODUCT SUMMARY

BV_{CEO}	400V
BV_{CBO}	400V
I_C	300mA
$V_{CE(SAT)}$	0.1V @ I_C / I_B = 10mA / 1mA

Features

- Low $V_{CE(SAT)}$ 0.15V @ I_C / I_B = 10mA / 10mA (Typ.)
- Complementary part with TSA1759

Structure

- Epitaxial Planar Type
- NPN Silicon Transistor

Ordering Information

Part No.	Package	Packing
TSC4505CX RF	SOT-23	3Kpcs / 7" Reel
TSC4505CT B0	TO-92	1Kpcs / Bulk
TSC4505CT A3	TO-92	2Kpcs / Ammo

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

Parameter		Symbol	Limit	Unit
Collector-Base Voltage		V_{CBO}	400	V
Collector-Emitter Voltage		V_{CEO}	400	V
Emitter-Base Voltage		V_{EBO}	6	V
Collector Current		I_C	300	mA
Collector Power Dissipation	SOT-23	P_D	0.225	W
	TO-92		0.6	
Operating Junction Temperature		T_J	+150	°C
Operating Junction and Storage Temperature Range		T_{STG}	- 55 to +150	°C

Note: 1. Single pulse, Pw=20ms, Duty≤50%

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}	400	--	--	V
Collector-Emitter Breakdown Voltage	I_C = 1mA, I_B = 0	BV_{CEO}	400	--	--	V
Emitter-Base Breakdown Voltage	I_E = 50uA, I_C = 0	BV_{EBO}	6	--	--	V
Collector Cutoff Current	V_{CB} = 400V, I_E = 0	I_{CBO}	--	--	10	uA
Collector-Emitter Reverse Current	V_{CE} = 300V, R_{EB} = 4kΩ	I_{CER}	--	--	20	nA
Emitter Cutoff Current	V_{EB} = 6V, I_C = 0	I_{EBO}	--	--	10	uA
Collector-Emitter Saturation Voltage	I_C / I_B = 10mA / 1mA	$V_{CE(SAT)}$	--	0.1	0.5	V
Base-Emitter Saturation Voltage	I_C / I_B = 10mA / 1mA	$V_{BE(SAT)}$	--	--	1.5	V
DC Current Transfer Ratio	V_{CE} = 10V, I_C = 10mA	h_{FE}	100	--	270	
Transition Frequency	V_{CE} =10V, I_C=-10mA, f=10MHz	f_T	--	20	--	MHz
Output Capacitance	V_{CB} = 10V, I_E = 0, f=1MHz	Cob	--	7	--	pF

TSC4505
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Electrical Characteristics Curve (Ta = 25°C, unless otherwise noted)

Figure 1. DC Current Gain

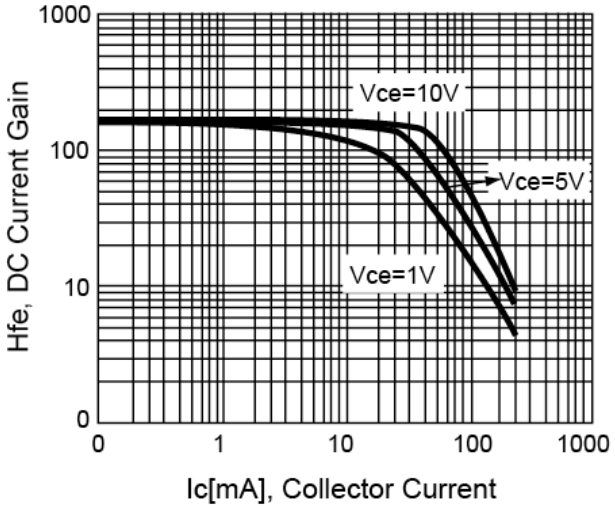


Figure 2. $V_{CE(SAT)}$ v.s. Ic

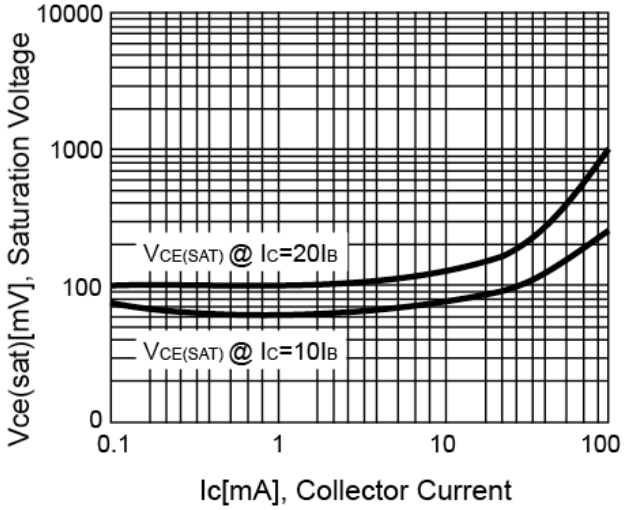


Figure 3. $V_{BE(SAT)}$ v.s. Ic

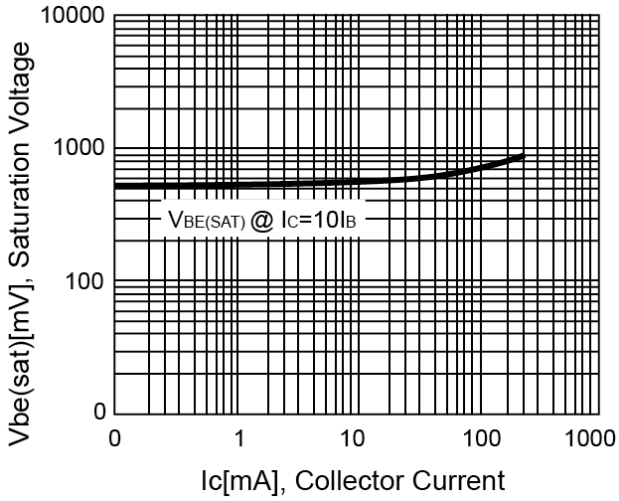
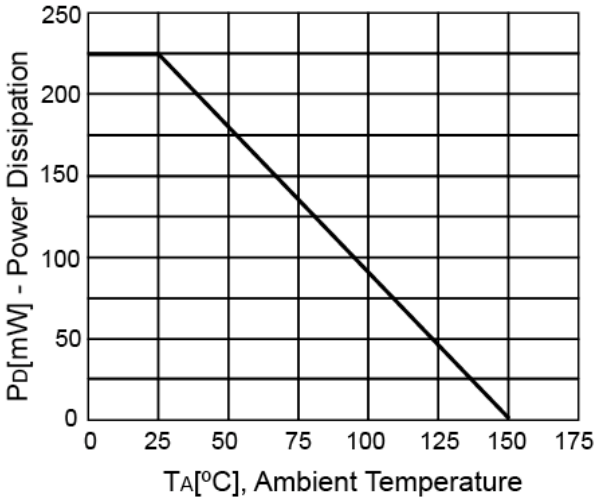
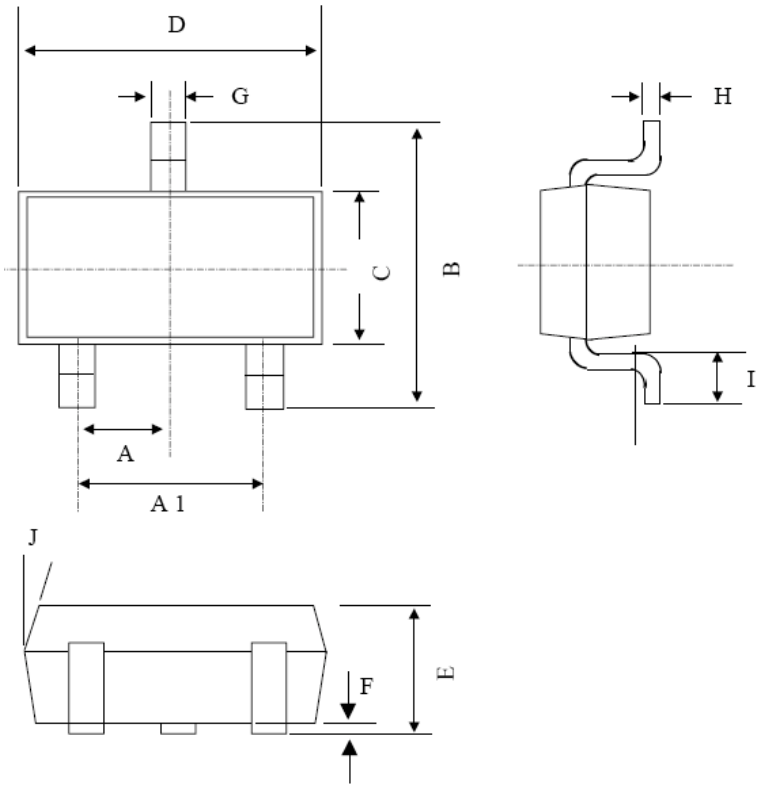


Figure 4. Power Derating Curve

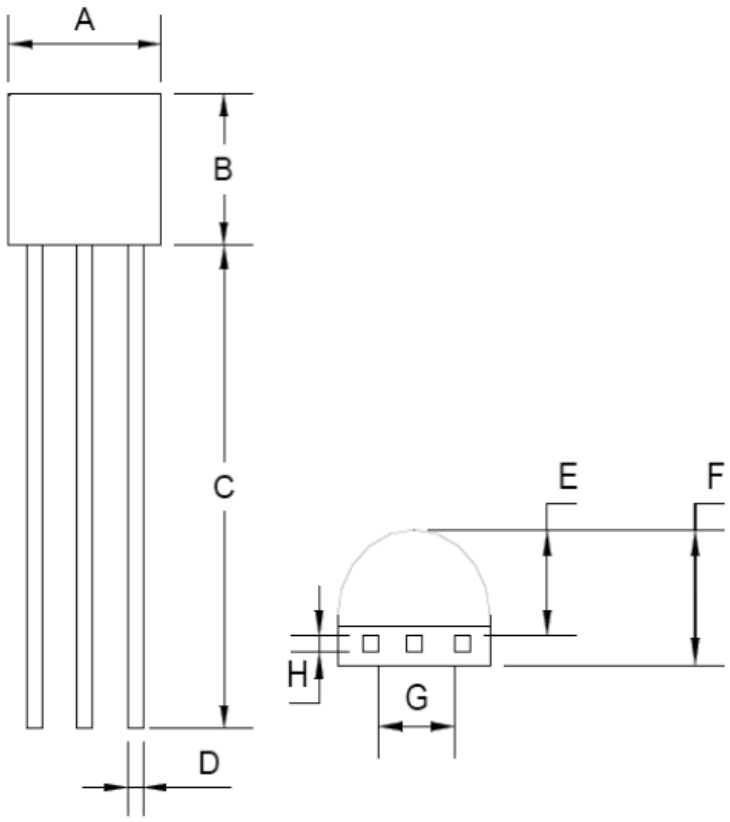


SOT-23 Mechanical Drawing



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°

TO-92 Mechanical Drawing



TO-92 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.30	4.70	0.169	0.185
B	4.30	4.70	0.169	0.185
C	14.30(typ)		0.563(typ)	
D	0.43	0.49	0.017	0.019
E	2.19	2.81	0.086	0.111
F	3.30	3.70	0.130	0.146
G	2.42	2.66	0.095	0.105
H	0.37	0.43	0.015	0.017

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