

SOT-23

Pin Definition:

1. Base
2. Emitter
3. Collector

PRODUCT SUMMARY

BV_{CBO}	80V
BV_{CEO}	60V
I_C	3A
V_{CE(SAT)}	0.60V @ I _C / I _B = 3 / 300mA

Features

- High Collector-Emitter BV_{CEO}=60V
- High Collector Current I_C =3A

Structure

- Epitaxial Planar Type
- NPN Silicon Transistor

Ordering Information

Part No.	Package	Packing
TSC5904CX RF	SOT-23	3Kpcs / 7" Reel

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

Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V _{CBO}	80	V
Collector-Emitter Voltage	V _{CEO}	60	V
Emitter-Base Voltage	V _{EBO}	5	V
Collector Current	I _C	3	A
Total Power Dissipation	P _{tot}	500	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 = 10uA, I _E = 0	BV _{CBO}	80	--	--	V
Collector-Emitter Breakdown Voltage	I _C = 1mA, I _B = 0	BV _{CEO}	60	--	--	V
Emitter-Base Breakdown Voltage	I _E = 10uA, I _C = 0	BV _{EBO}	5	--	--	V
Collector Cutoff Current	V _{CB} = 40V, I _E = 0	I _{CBO}	--	--	0.1	uA
Emitter Cutoff Current	V _{EB} = 4V, I _C = 0	I _{EBO}	--	--	0.1	uA
Collector-Emitter Saturation Voltage	I _C = 1A, I _B = 100mA	V _{CE(SAT)} 1	--	0.12	0.3	V
	I _C = 3A, I _B = 300mA	V _{CE(SAT)} 2	--	0.43	0.6	
Base-Emitter Saturation Voltage	I _C = 1A, I _B = 100mA	V _{BE(SAT)}	--	0.9	1.25	V
Base-Emitter on Voltage	V _{CE} = 2V, I _C = 1A	V _{BE(ON)}	--	0.8	1.0	V
DC Current Transfer Ratio	V _{CE} = 2V, I _C = 50mA	h _{FE} 1	70	--	--	
	V _{CE} = 2V, I _C = 1A	h _{FE} 2	100	--	300	
	V _{CE} = 2V, I _C = 3A	h _{FE} 3	80	--	--	
	V _{CE} = 2V, I _C = 500mA	h _{FE} 4	40	--	--	
Transition Frequency	V _{CE} = 5V, I _C = -100mA	f _T	140		--	MHz
Output Capacitance	V _{CB} = 10V, f=1MHz	Cob	--	--	30	pF
Switching Times	VCC= 10V, IC= 500mA, I _{B1} =-I _{B2} =50mA	Ton	--	45	--	nS
		Toff	--	800	--	nS

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

Figure 1. Static Characteristics

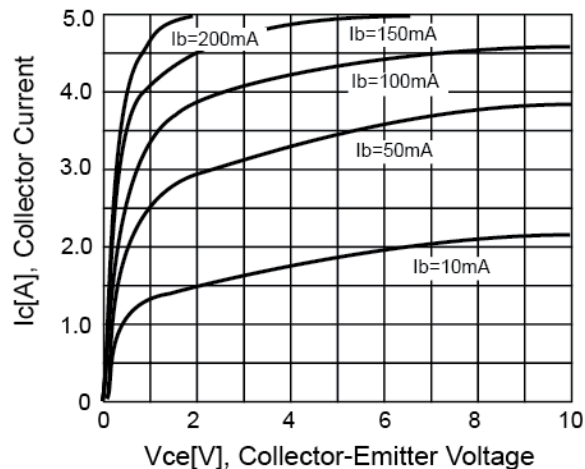


Figure 2. DC Current Gain

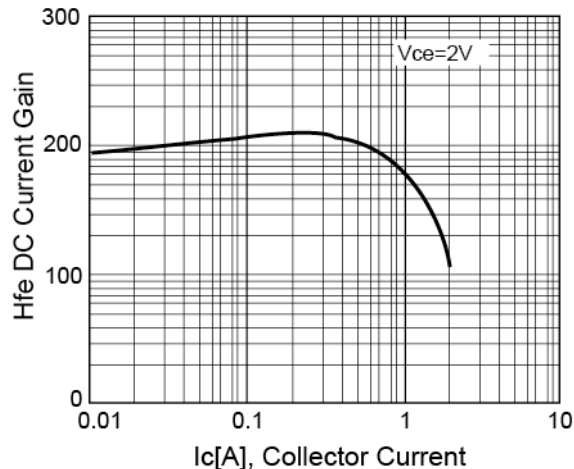


Figure 3. $V_{CE(SAT)}$ v.s. $V_{BE(SAT)}$

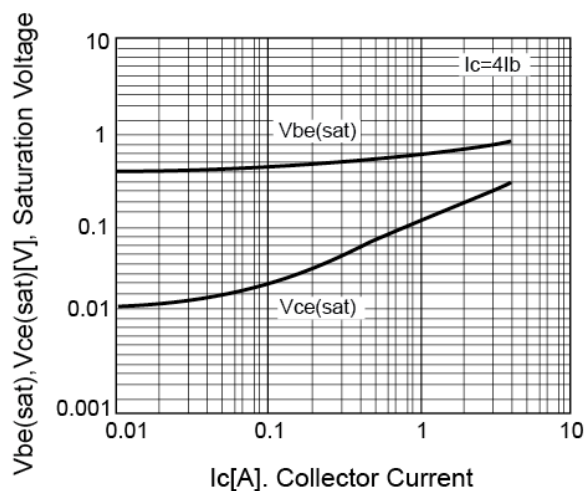
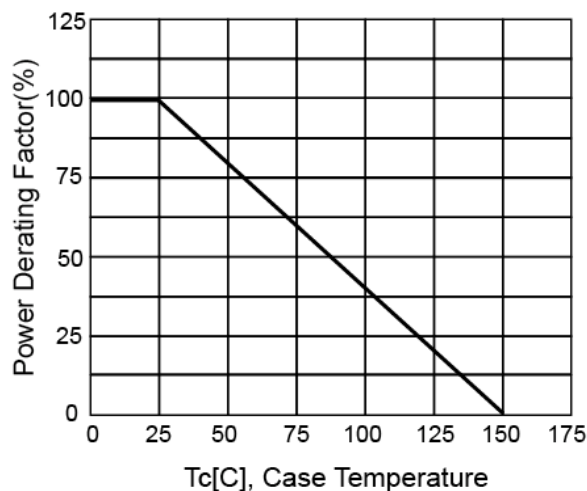
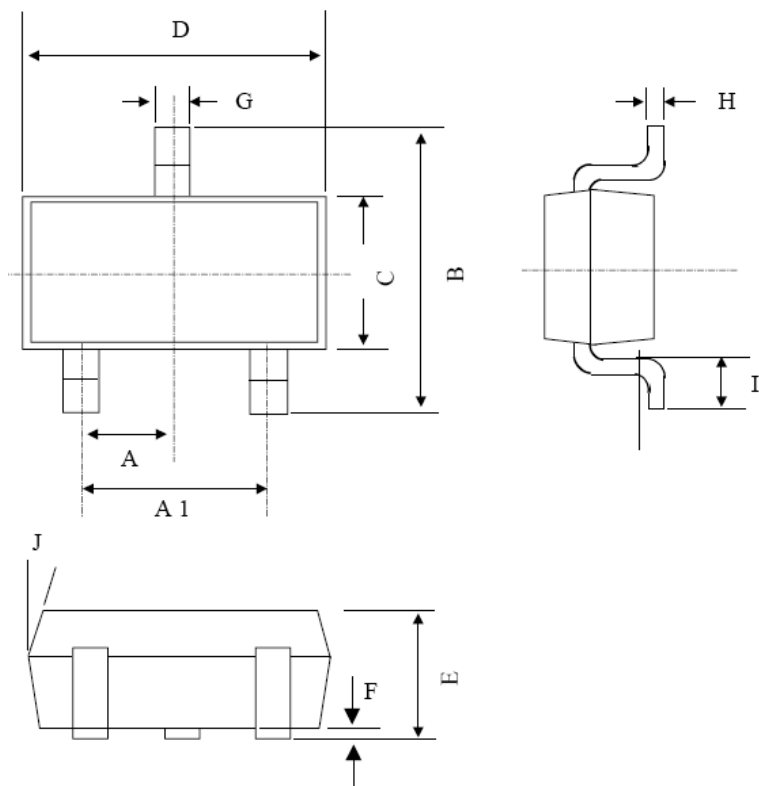


Figure 4. Power Derating

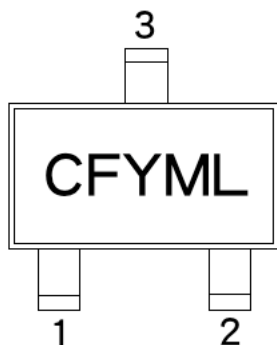


SOT-23 Mechanical Drawing



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°

Marking Diagram



CF = Device Code

Y = Year Code

M = Month Code

(**A**=Jan, **B**=Feb, **C**=Mar, **D**=Apr, **E**=May, **F**=Jun, **G**=Jul, **H**=Aug, **I**=Sep, **J**=Oct, **K**=Nov, **L**=Dec)

L = Lot Code

Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Taiwan Semiconductor:](#)

[TSC5904CX](#)