TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

TSC5988

NPN Silicon Planar Medium Power Transistor

TO-92



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

PRODUCT SUMMARY

BV_{CBO}	150V
BV_{CEO}	60V
I_C	6A
$V_{CE(SAT)}$	0.55V @ I_C / I_B = 6A / 300mA

Features

- Excellent gain characteristics specified up to 10A

Structure

- Epitaxial Planar Type

Ordering Information

Part No.	Package	Packing
TSC5988CT B0	TO-92	1Kpcs / Bulk
TSC5988CT A3	TO-92	2Kpcs / Ammo

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

Parameter		Symbol	Limit	Unit
Collector-Base Voltage		V_{CBO}	150	V
Collector-Emitter Voltage		V_{CEO}	60	V
Emitter-Base Voltage		V_{EBO}	6	V
Collector Current	DC	I_C	5	A
	Pulse		20	
Total Power Dissipation		P_{TOT}	1.0	W
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}	150	170	--	V
Collector-Emitter Breakdown Voltage	I_C =10mA, I_B =0	BV_{CEO}	60	70	--	V
Emitter-Base Breakdown Voltage	I_E =100uA, I_C =0	BV_{EBO}	6	8	--	V
Collector Cutoff Current	V_{CB} =120V, I_E =0	I_{CBO}	--	--	50	nA
	V_{CB} =120V, T_A =100ºC		--	--	1	uA
Emitter Cutoff Current	V_{EB} =6V, I_C =0	I_{EBO}	--	--	10	nA
Collector-Emitter Saturation Voltage	I_C =100mA, I_B =5mA	$V_{CE(SAT)}$ 1	--	20	50	mV
	I_C =1A, I_B =50mA	$V_{CE(SAT)}$ 2	--	50	100	
	I_C =2A, I_B =50mA	$V_{CE(SAT)}$ 3	--	125	150	
	I_C =5A, I_B =200mA	$V_{CE(SAT)}$ 4	--	260	350	
Base-Emitter Saturation Voltage	I_C =4A, I_B =200mA	$V_{BE(SAT)}$	--	920	1050	mV
Base-Emitter on Voltage	V_{CE} =1V, I_C =4A	$V_{BE(ON)}$	--	840	950	mV
DC Current Transfer Ratio	V_{CE} =1V, I_C =10mA	h_{FE} 1	100	--	--	
	V_{CE} =1V, I_C =2A	h_{FE} 2	120	200	300	
	V_{CE} =1V, I_C =5A	h_{FE} 3	75	140	--	
	V_{CE} =1V, I_C =10A	h_{FE} 4	--	70	--	
Transition Frequency	V_{CE} =10V, I_C=100mA	f_T	--	130	--	MHz
Output Capacitance	V_{CB} =10V, f=1MHz	Cob	--	72	--	pF

TSC5988

NPN Silicon Planar Medium Power Transistor

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

Figure 1. DC Current Gain vs. Collector Current

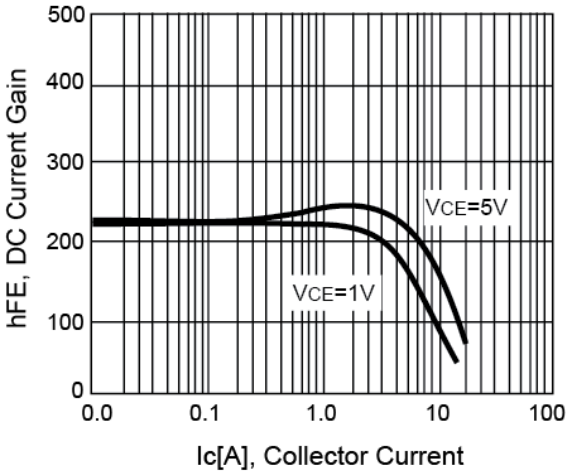


Figure 2. $V_{CE(SAT)}$ vs. Collector Current

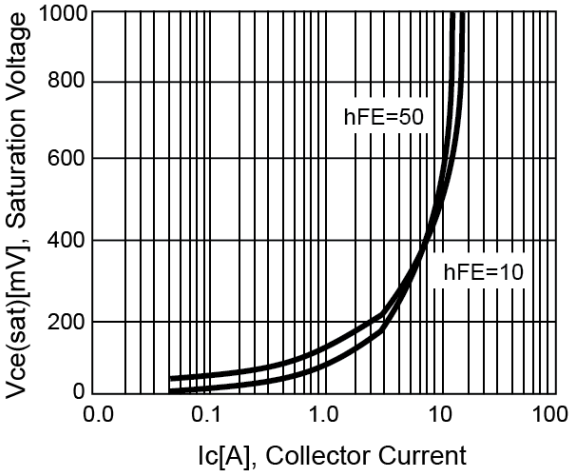


Figure 3. $V_{BE(SAT)}$ vs. Collector Current

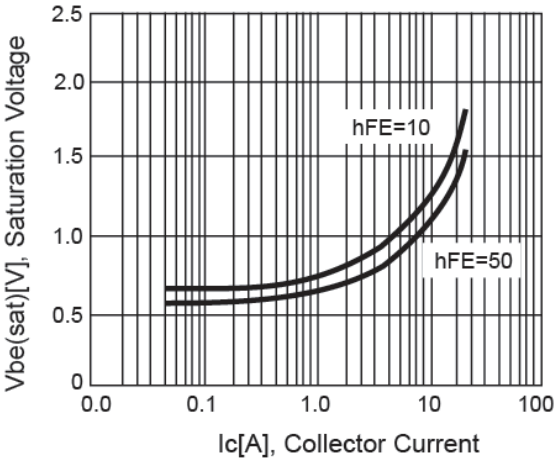


Figure 4. fT vs. Emitter Current

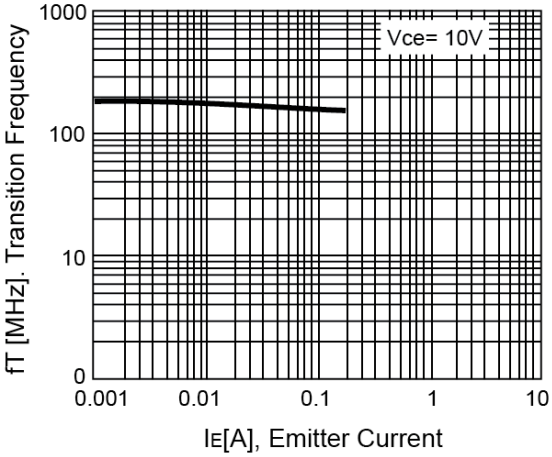


Figure 5. Cob vs. Collector-Base Voltage

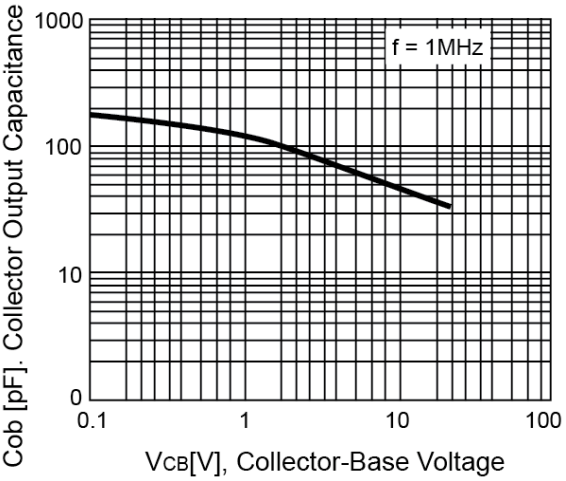
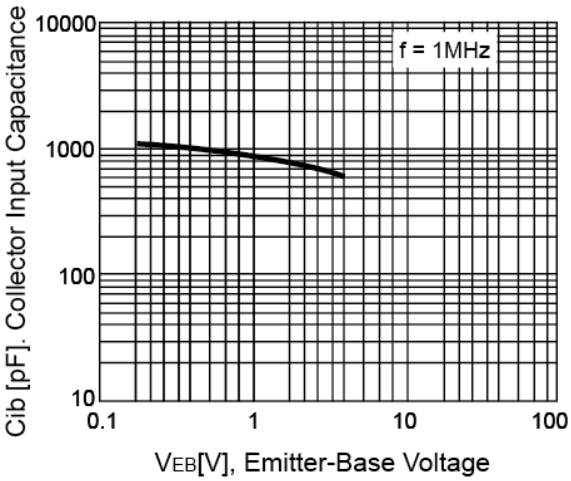


Figure 6. Cib vs. Emitter-Base Voltage



TSC5988

NPN Silicon Planar Medium Power Transistor

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

Figure 7. Safety Operation Area

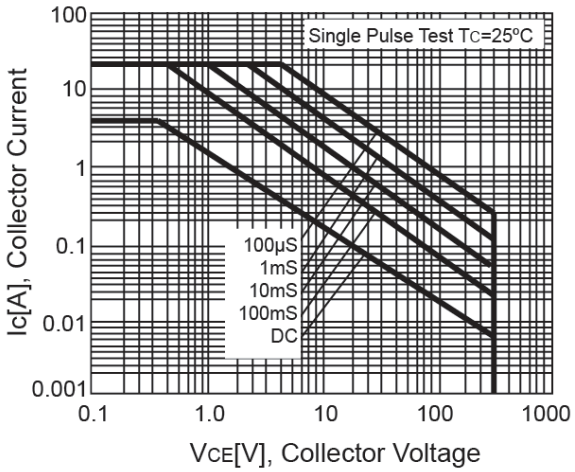
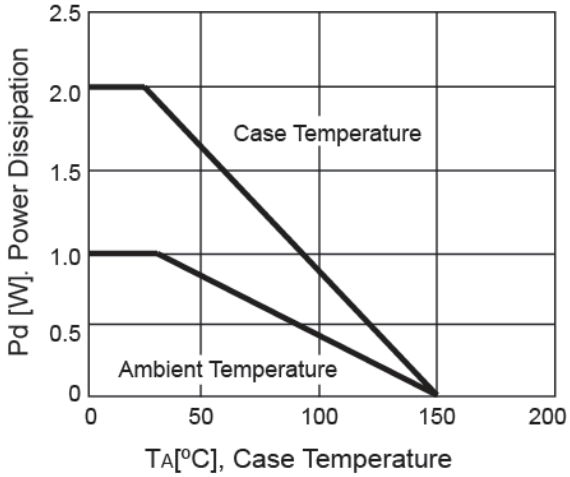


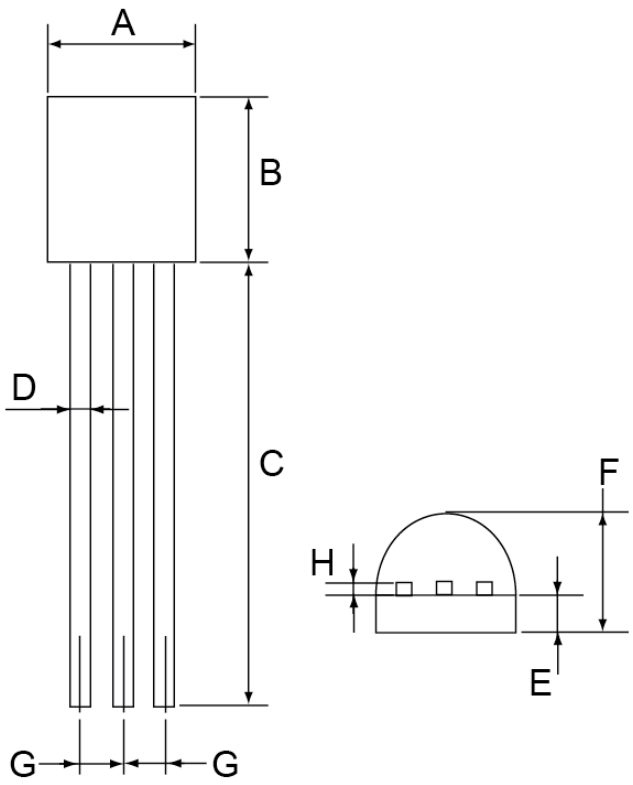
Figure 8. Derating Curve



TSC5988

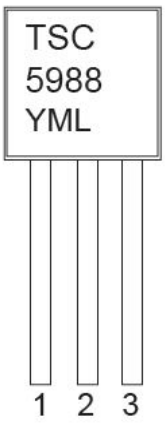
NPN Silicon Planar Medium Power Transistor

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	1.18	1.28	0.046	0.050
F	3.30	3.70	0.130	0.146
G	1.27	1.31	0.05	0.051
H	0.37	0.43	0.015	0.017

Marking Diagram



Y = Year Code
M = Month Code
(**A**=Jan, **B**=Feb, **C**=Mar, **D**=Apl, **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.