



TO-92



**Pin Definition:**

1. Emitter
2. Base
3. Collector

**PRODUCT SUMMARY**

<b>BV<sub>CBO</sub></b>	150V
<b>BV<sub>CEO</sub></b>	60V
<b>I<sub>C</sub></b>	6A
<b>V<sub>CE(SAT)</sub></b>	0.55V @ I <sub>C</sub> / I <sub>B</sub> = 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)

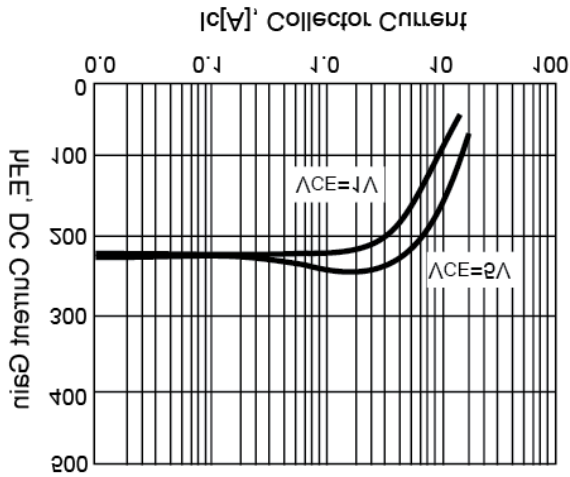
Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V <sub>CBO</sub>	150	V
Collector-Emitter Voltage	V <sub>CEO</sub>	60	V
Emitter-Base Voltage	V <sub>EBO</sub>	6	V
Collector Current	I <sub>C</sub>	DC	5
		Pulse	20
Total Power Dissipation	P <sub>TOT</sub>	1.0	W
Operating Junction Temperature	T <sub>J</sub>	+150	°C
Operating Junction and Storage Temperature Range	T <sub>STG</sub>	- 55 to +150	°C

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

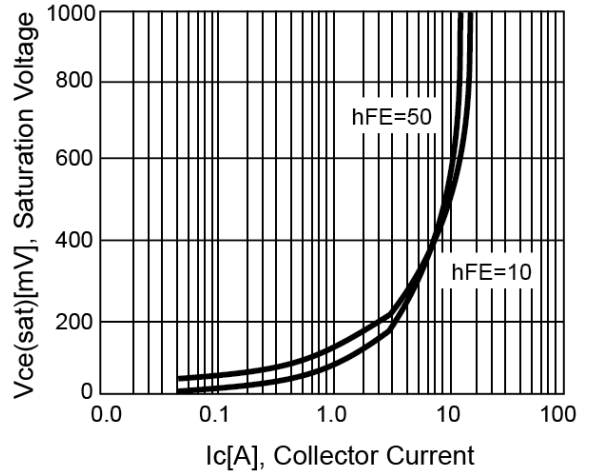
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	I <sub>C</sub> = 100uA, I <sub>E</sub> = 0	BV <sub>CBO</sub>	150	170	--	V
Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 10mA, I <sub>B</sub> = 0	BV <sub>CEO</sub>	60	70	--	V
Emitter-Base Breakdown Voltage	I <sub>E</sub> = 100uA, I <sub>C</sub> = 0	BV <sub>EBO</sub>	6	8	--	V
Collector Cutoff Current	V <sub>CB</sub> = 120V, I <sub>E</sub> = 0	I <sub>CBO</sub>	--	--	50	nA
	V <sub>CB</sub> = 120V, T <sub>A</sub> = 100°C		--	--	1	uA
Emitter Cutoff Current	V <sub>EB</sub> = 6V, I <sub>C</sub> = 0	I <sub>EBO</sub>	--	--	10	nA
Collector-Emitter Saturation Voltage	I <sub>C</sub> = 100mA, I <sub>B</sub> = 5mA	V <sub>CE(SAT)</sub> 1	--	20	50	mV
	I <sub>C</sub> = 1A, I <sub>B</sub> = 50mA	V <sub>CE(SAT)</sub> 2	--	50	100	
	I <sub>C</sub> = 2A, I <sub>B</sub> = 50mA	V <sub>CE(SAT)</sub> 3	--	125	150	
	I <sub>C</sub> = 5A, I <sub>B</sub> = 200mA	V <sub>CE(SAT)</sub> 4	--	260	350	
Base-Emitter Saturation Voltage	I <sub>C</sub> = 4A, I <sub>B</sub> = 200mA	V <sub>BE(SAT)</sub>	--	920	1050	mV
Base-Emitter on Voltage	V <sub>CE</sub> = 1V, I <sub>C</sub> = 4A	V <sub>BE(ON)</sub>	--	840	950	mV
DC Current Transfer Ratio	V <sub>CE</sub> = 1V, I <sub>C</sub> = 10mA	h <sub>FE</sub> 1	100	--	--	
	V <sub>CE</sub> = 1V, I <sub>C</sub> = 2A	h <sub>FE</sub> 2	120	200	300	
	V <sub>CE</sub> = 1V, I <sub>C</sub> = 5A	h <sub>FE</sub> 3	75	140	--	
	V <sub>CE</sub> = 1V, I <sub>C</sub> = 10A	h <sub>FE</sub> 4	--	70	--	
Transition Frequency	V <sub>CE</sub> = 10V, I <sub>C</sub> = 100mA	f <sub>T</sub>	--	130	--	MHz
Output Capacitance	V <sub>CB</sub> = 10V, f = 1MHz	Cob	--	72	--	pF

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

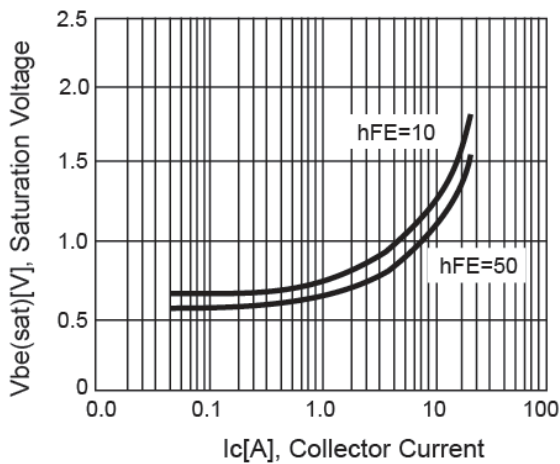
**Figure 1. DC Current Gain vs. Collector Current**



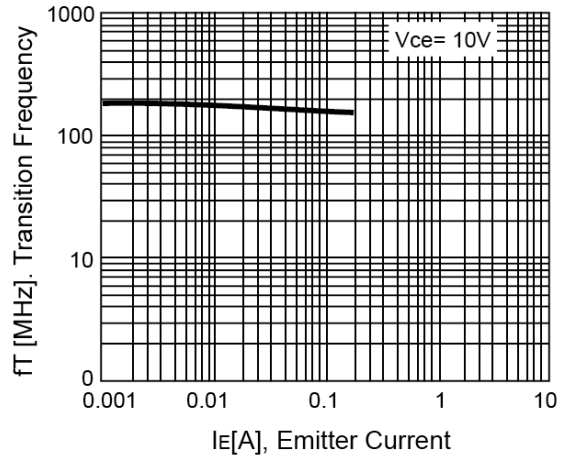
**Figure 2.  $V_{CE(SAT)}$  vs. Collector Current**



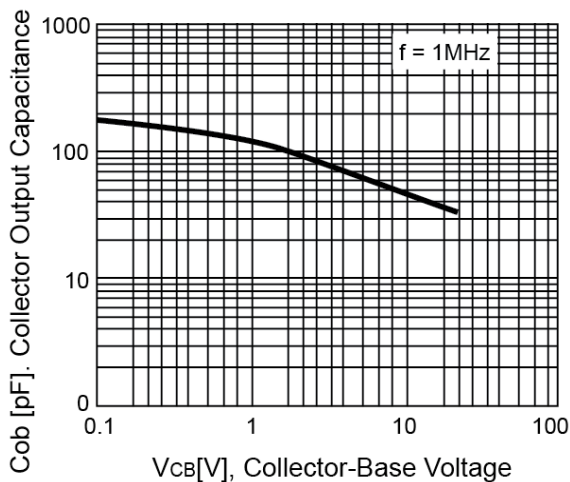
**Figure 3.  $V_{BE(SAT)}$  vs. Collector Current**



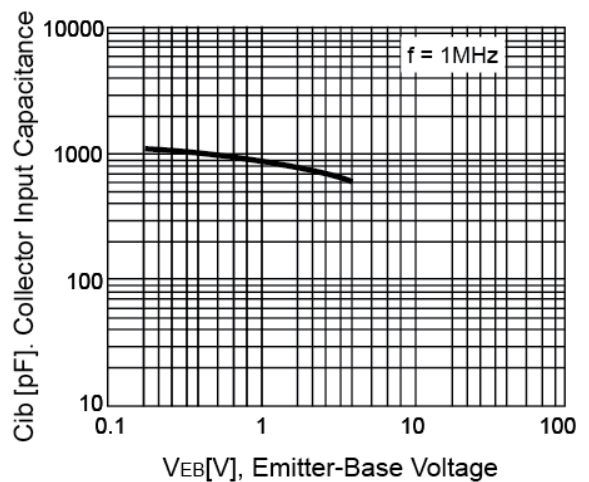
**Figure 4.  $f_T$  vs. Emitter Current**



**Figure 5.  $C_{ob}$  vs. Collector-Base Voltage**

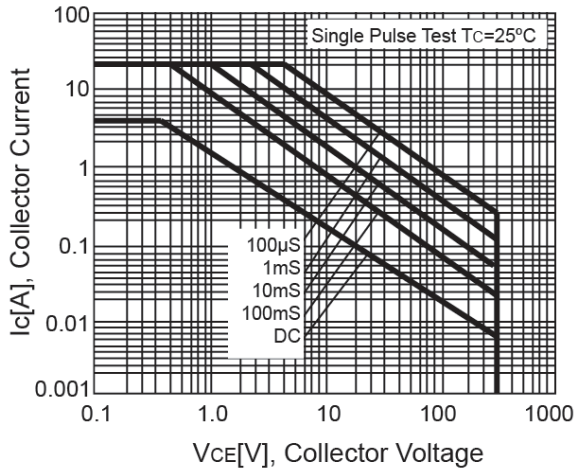


**Figure 6.  $C_{ib}$  vs. Emitter-Base Voltage**

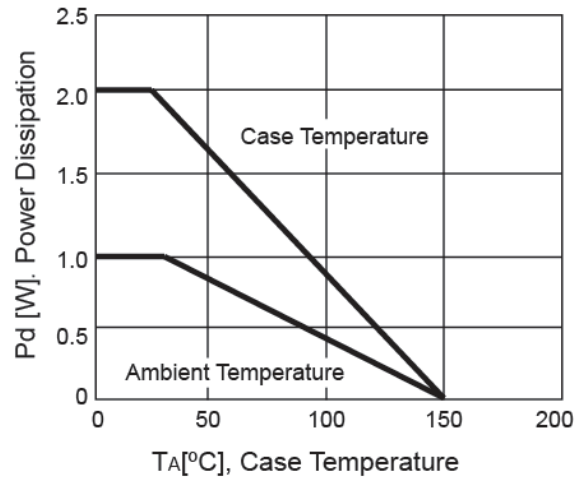


**Electrical Characteristics Curve** ( $T_a = 25^\circ\text{C}$ , unless otherwise noted)

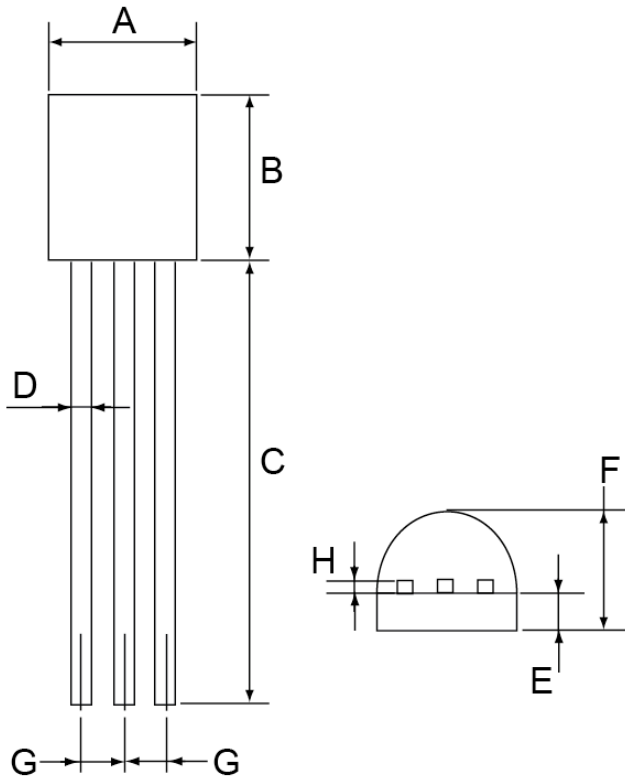
**Figure 7. Safety Operation Area**



**Figure 8. Derating Curve**

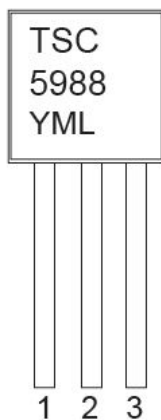


**TO-92 Mechanical Drawing**



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

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