



TSD1664

Low Frequency NPN Transistor

SOT-89



Pin assignment:

1. Base
2. Collector
3. Emitter

$BV_{CEO} = 20V$

$I_C = 800mA$

$V_{CE(SAT)} = 0.15V(\text{typ.}) @ I_C / I_B = 400mA / 20mA$

Features

- ✧ Low $V_{CE(SAT)}$.
- ✧ Excellent DC current gain characteristics

Structure

- ✧ Epitaxial planar type.
- ✧ NPN silicon transistor

Ordering Information

Part No.	Packing	Package
TSB1664CY	Tape & Reel	SOT-89

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

Parameter		Symbol	Limit	Unit
Collector-Base Voltage		V_{CBO}	40V	V
Collector-Emitter Voltage		V_{CEO}	20V	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current	DC	I_C	0.8	A
	Pulse		1.5 (note 1)	
Collector Power Dissipation	SOT-89	P_D	0.5	W
			2 (note 2)	
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%

2. When mounted on a 40 x 40 x 0.7mm ceramic board

Electrical Characteristics

Ta = 25 °C unless otherwise noted

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Collector-Base Voltage	$I_C = 10\mu A, I_E = 0$	BV_{CBO}	40			V
Collector-Emitter Breakdown Voltage	$I_C = 1mA, I_B = 0$	BV_{CEO}	20			V
Emitter-Base Breakdown Voltage	$I_E = 10\mu A, I_C = 0$	BV_{EBO}	5			V
Collector Cutoff Current	$V_{CB} = 20V, I_E = 0$	I_{CBO}			0.5	μA
Emitter Cutoff Current	$V_{EB} = 4V, I_C = 0$	I_{EBO}			0.5	μA
Collector-Emitter Saturation Voltage	$I_C / I_B = 400mA / 20mA$	$V_{CE(SAT)1}$		0.15	0.3	V
Collector-Emitter Saturation Voltage	$I_C / I_B = 800mA / 80mA$	$V_{CE(SAT)2}$		0.25	0.5	V
DC Current Transfer Ratio	$V_{CE} = 2V, I_C = 0.1A$	h_{FE}	82		560	
Transition Frequency	$V_{CE} = 5V, I_C = 50mA, f = 100MHz$	f_T		150		MHz
Output Capacitance	$V_{CB} = 10V, f = 1MHz$	Cob		20	30	pF

Note : pulse test: pulse width <=380uS, duty cycle <=2%

Classification Of h_{FE}

Rank	P	Q	R	S
Range	82 - 180	120 - 270	180 - 390	270 - 560

Electrical Characteristics Curve

Figure 1. Current Gain vs Collector Current

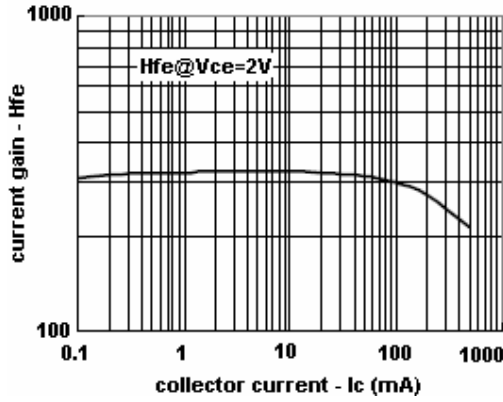


Figure 2. Saturation Voltage vs Collector Current

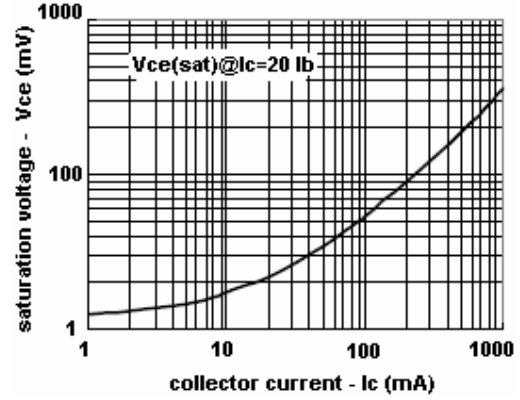


Figure 3. Saturation Voltage vs Collector Current

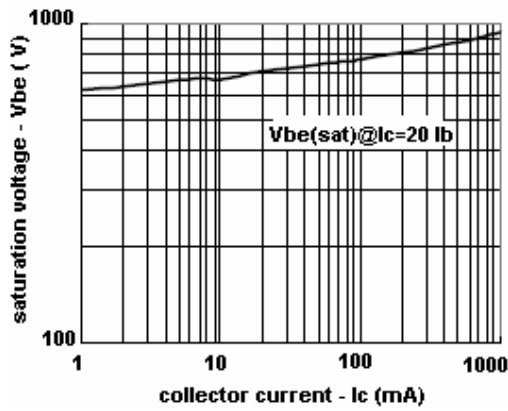


Figure 4. Power Derating Curves

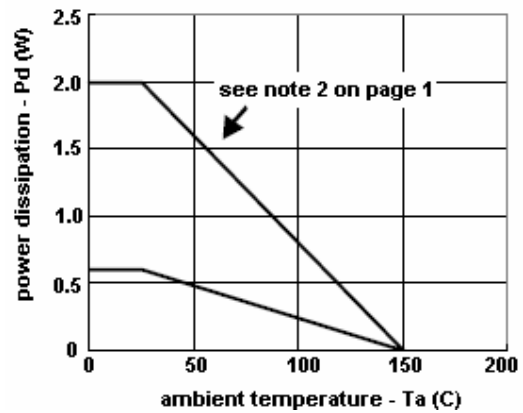
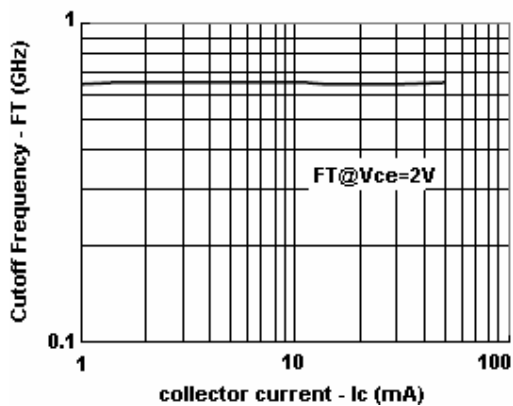
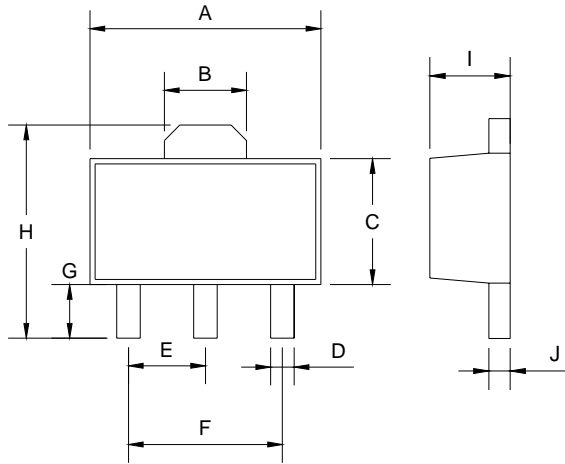


Figure 5. Cutoff Frequency vs Collector Current



SOT-89 Mechanical Drawing



SOT-89 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.40	4.60	0.173	0.181
B	1.50	1.7	0.059	0.070
C	2.30	2.60	0.090	0.102
D	0.40	0.52	0.016	0.020
E	1.50	1.50	0.059	0.059
F	3.00	3.00	0.118	0.118
G	0.89	1.20	0.035	0.047
H	4.05	4.25	0.159	0.167
I	1.4	1.6	0.055	0.068
J	0.35	0.44	0.014	0.017