



SOT-89



SOT-223



Pin Definition:

1. Base
2. Collector
3. Emitter

PRODUCT SUMMARY

BV_{CEO}	32V
BV_{CBO}	40V
I_C	1A
V_{CE(SAT)}	0.15V @ I _C / I _B = 500mA / 50mA

Features

- Low V_{CE(SAT)} 0.15V @ I_C / I_B = 500mA / 50mA (Typ.)
- Complementary part with TSB1132

Structure

- Epitaxial Planar Type
- NPN Silicon Transistor

Ordering Information

Part No.	Package	Packing
TSD1664CY RM	TO-92	1Kpcs / 7" Reel
TSD1664CW RP	TO-223	2.5Kpcs / 13" Reel

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

Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V _{CBO}	40	V
Collector-Emitter Voltage	V _{CEO}	32	V
Emitter-Base Voltage	V _{EBO}	5	V
Collector Current	I _C	DC	1
		Pulse	2 (note1)
Collector Power Dissipation	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 50 x 0.7mm ceramic board.

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}	40	--	--	V
Collector-Emitter Breakdown Voltage	I _C = 1mA, I _B = 0	BV _{CEO}	32	--	--	V
Emitter-Base Breakdown Voltage	I _E = 50uA, I _C = 0	BV _{EBO}	5	--	--	V
Collector Cutoff Current	V _{CB} = 20V, I _E = 0	I _{CBO}	--	--	0.5	uA
Emitter Cutoff Current	V _{EB} = 4V, I _C = 0	I _{EBO}	--	--	0.5	uA
Collector-Emitter Saturation Voltage	I _C / I _B = 500mA / 50mA	V _{CE(SAT)}	--	0.15	0.4	V
DC Current Transfer Ratio	V _{CE} = 3V, I _C = 100mA	h _{FE}	82	--	390	
Transition Frequency	V _{CE} = 5V, I _C = 50mA, f = 100MHz	f _T	50	150	--	MHz
Output Capacitance	V _{CB} = 10V, I _E = 0, f = 1MHz	Cob	--	10	20	pF

hFE values are classified as follows:

Rank	P	Q	R
hFE	82~180	120~270	180~390

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

Figure 1. DC Current Gain

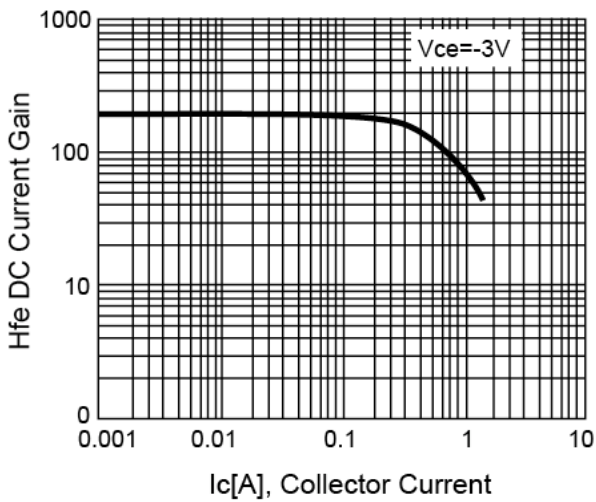


Figure 2. V_{CE(SAT)} v.s. Ic

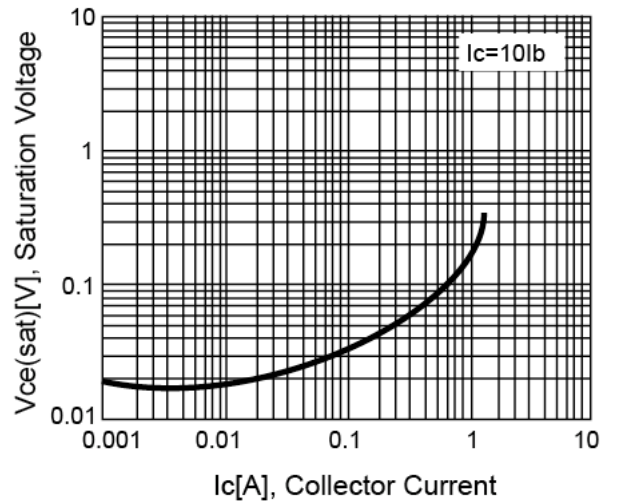


Figure 3. Transition Frequency v.s. I_E

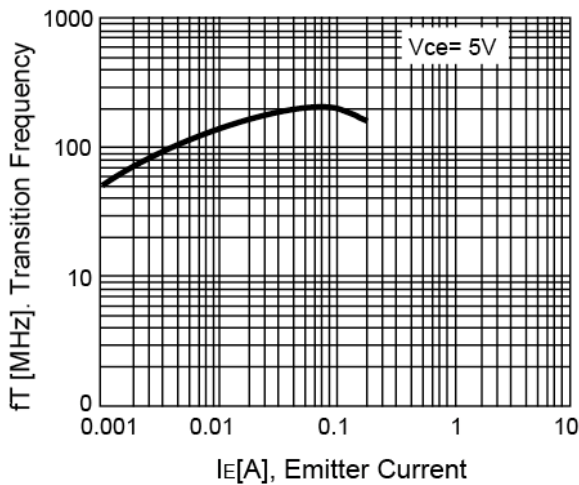
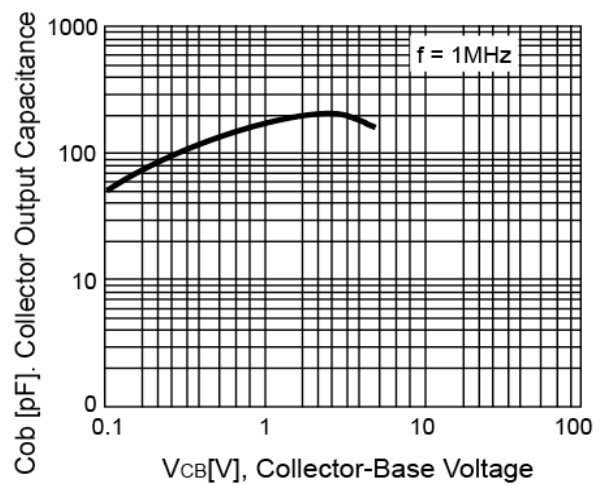
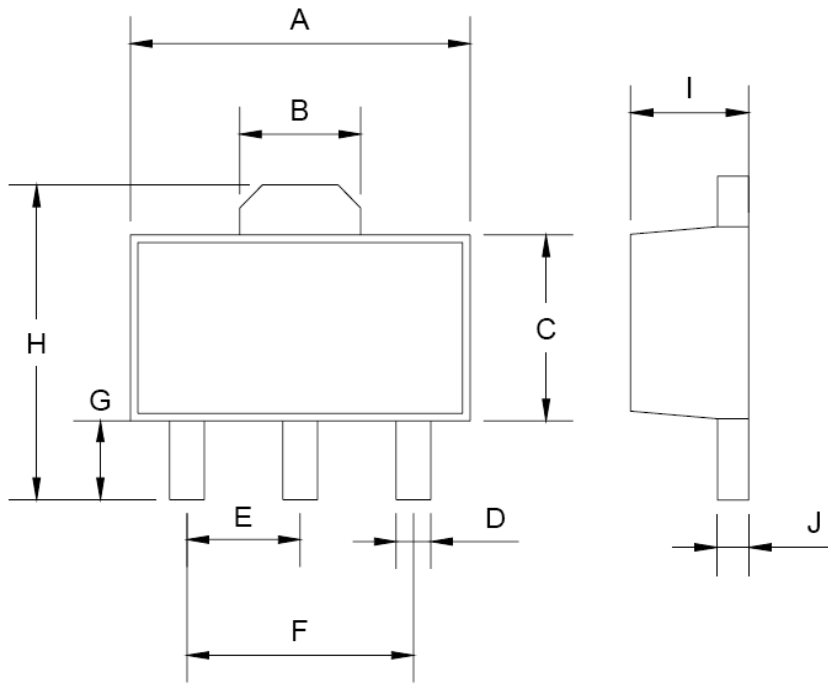


Figure 4. Collector Output Capacitance vs. Vcb

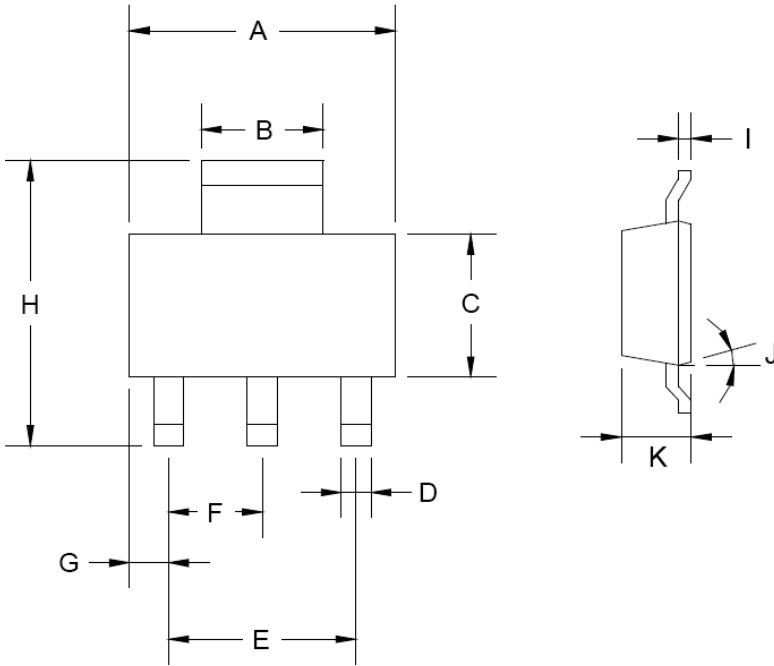


SOT-89 Mechanical Drawing



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

SOT-223 Mechanical Drawing



SOT-223 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.350	6.850	0.250	0.270
B	2.900	3.100	0.114	0.122
C	3.450	3.750	0.136	0.148
D	0.595	0.635	0.023	0.025
E	4.550	4.650	0.179	0.183
F	2.250	2.350	0.088	0.093
G	0.835	1.035	0.032	0.041
H	6.700	7.300	0.263	0.287
I	0.250	0.355	0.010	0.014
J	10°	16°	10°	16°
K	1.550	1.800	0.061	0.071



TSD1664

Low Vcesat NPN Transistor

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