


SOT-89

SOT-223

Pin Definition:

1. Base
2. Collector
3. Emitter

PRODUCT SUMMARY

V_{CEO}	32V
V_{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 ($T_a = 25^\circ C$ 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	$^\circ C$
Operating Junction and Storage Temperature Range	T_{STG}	- 55 to +150	$^\circ C$

Note: 1. Single pulse, $P_w=20ms$, $Duty \leq 50\%$

2. When mounted on a 40 x 50 x 0.7mm ceramic board.

Electrical Specifications ($T_a = 25^\circ C$ unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$I_C = 50\mu A, I_E = 0$	V_{CBO}	40	--	--	V
Collector-Emitter Breakdown Voltage	$I_C = 1mA, I_B = 0$	V_{CEO}	32	--	--	V
Emitter-Base Breakdown Voltage	$I_E = 50\mu A, I_C = 0$	V_{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	$I_C / I_B = 500mA / 50mA$	$V_{CE(SAT)}$	--	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	$V_{CB} = 10V, I_E = 0, f = 1MHz$	C_{ob}	--	10	20	pF

h_{FE} values are classified as follows:

Rank	P	Q	R
h_{FE}	82~180	120~270	180~390

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

Figure 1. DC Current Gain

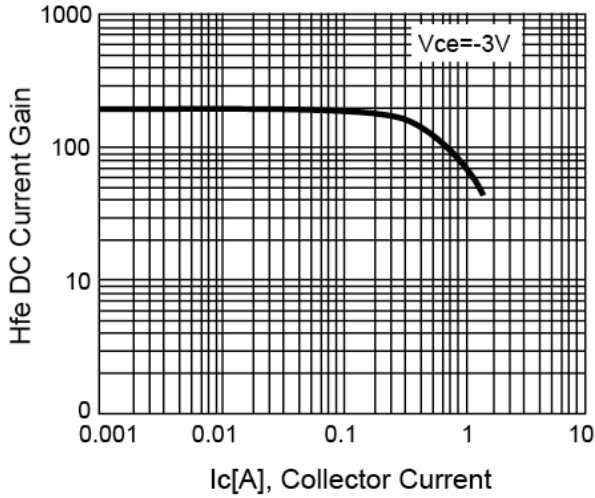


Figure 2. VCE(SAT) v.s. Ic

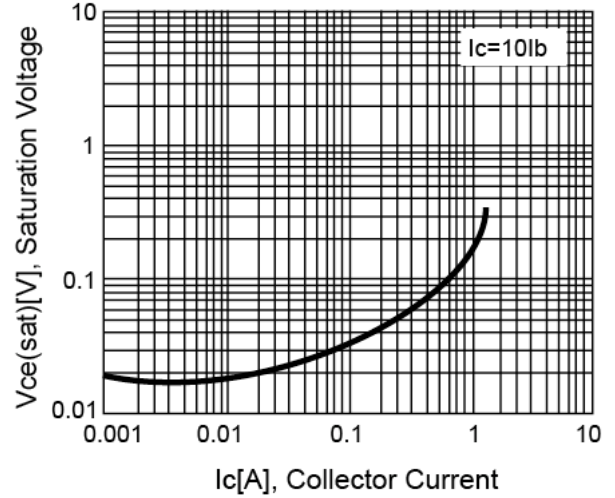


Figure 3. Transition Frequency v.s. IE

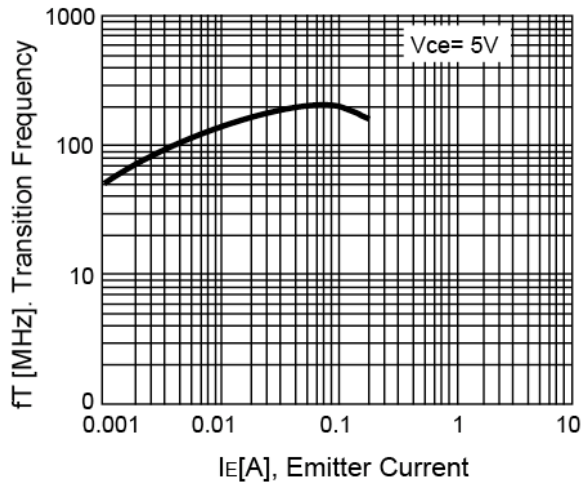
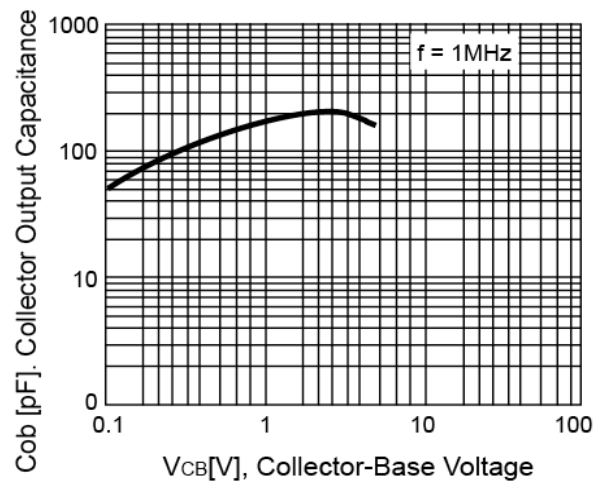
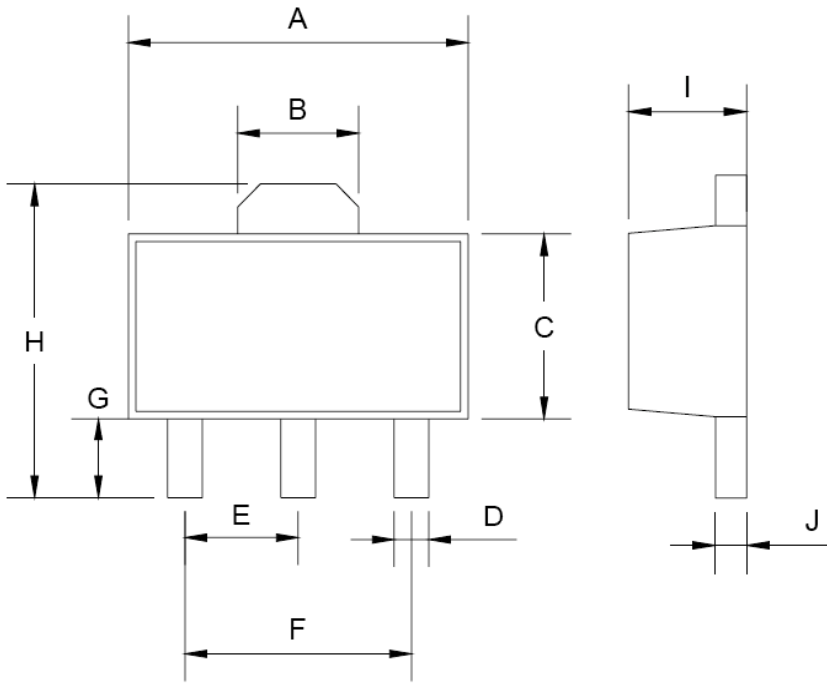


Figure 4. Collector Output Capacitance vs. Vcb

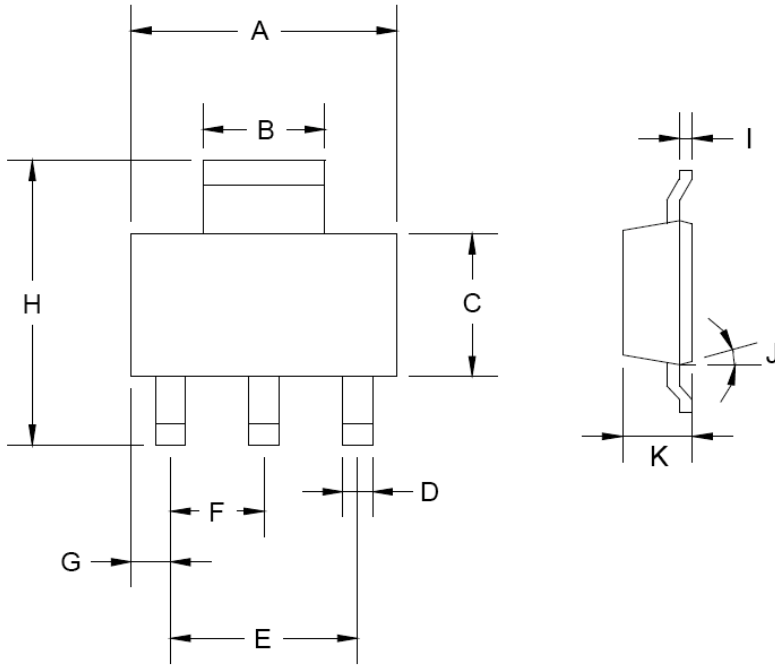


SOT-89 Mechanical Drawing



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

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

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