TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

TSD1664

Low Vcesat NPN Transistor

SOT-89

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	SOT-89	1Kpcs / 7” Reel
TSD1664CY RMG	SOT-89	1Kpcs / 7” Reel

Note: “G” denote for Halogen Free Product

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	DC	I_C	1	A
	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}	120	--	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	Q	R
hFE	120~270	180~390

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

Figure 1. DC Current Gain

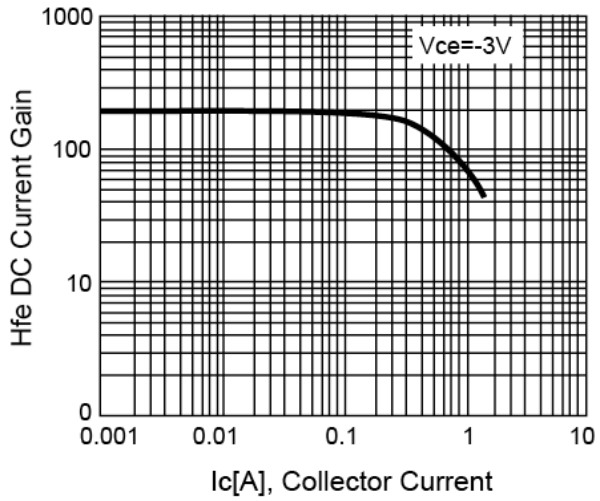


Figure 2. $V_{CE(SAT)}$ v.s. Ic

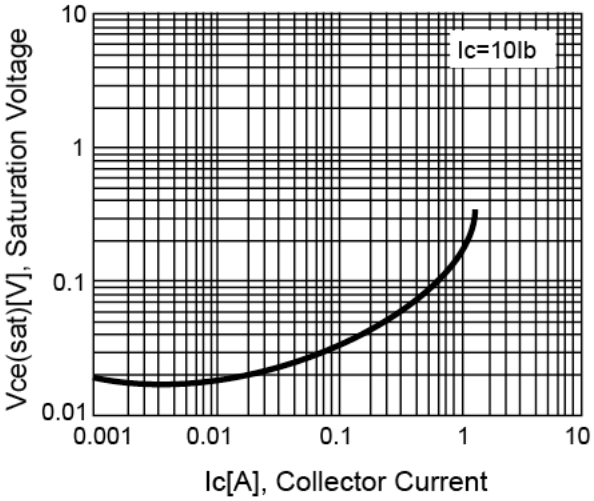


Figure 3. Transition Frequency v.s. I_E

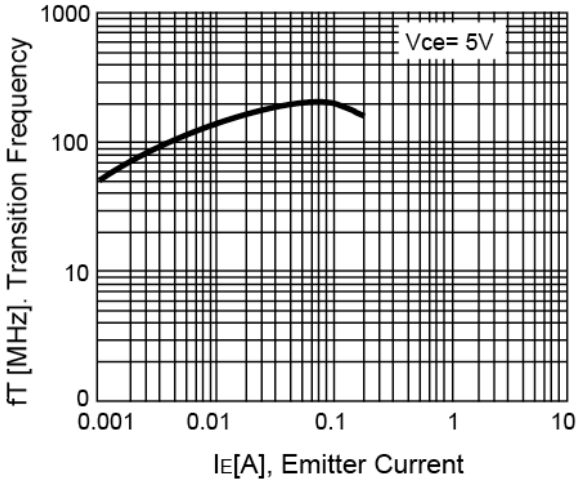
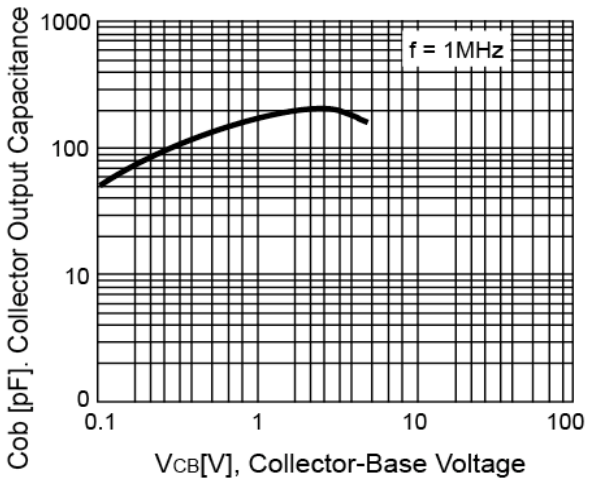


Figure 4. Collector Output Capacitance vs. Vcb



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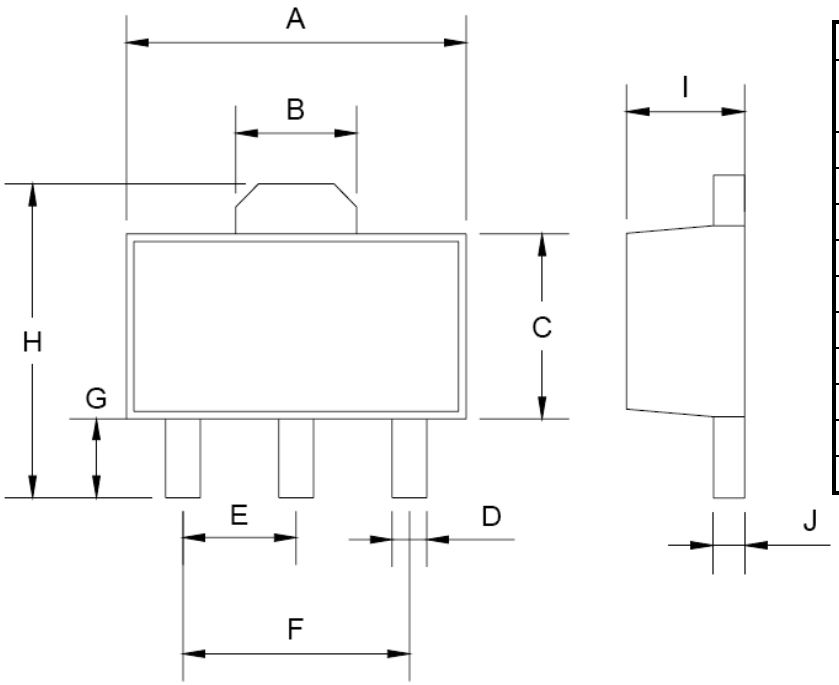
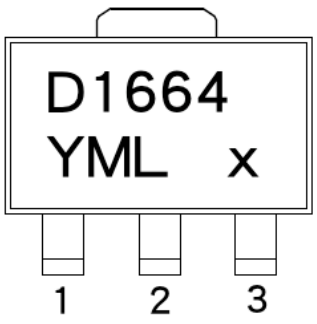
SOT-89 Mechanical Drawing



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

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)
= Month Code for Halogen Free Product
(**O**=Jan, **P**=Feb, **Q**=Mar, **R**=Apl, **S**=May, **T**=Jun, **U**=Jul, **V**=Aug, **W**=Sep, **X**=Oct, **Y**=Nov, **Z**=Dec)

L = Lot Code

X = hFE rank code

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