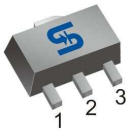
TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

TSD2150A

Low Vcesat NPN Transistor

SOT-89



Pin Definition:
1. Base
2. Collector
3. Emitter

TO-92

Pin Definition:
1. Emitter
2. Collector
3. Base

PRODUCT SUMMARY

BV_{CBO}	80V
BV_{CEO}	50V
I_C	3A
$V_{CE(SAT)}$	0.5V @ I_C / I_B = 2A / 200mA

Features

- Low $V_{CE(SAT)}$ 0.1 @ I_C / I_B = 1A / 50mA (Typ.)
- Complementary part with TSB1424A

Structure

- Epitaxial Planar Type
- NPN Silicon Transistor

Ordering Information

Part No.	Package	Packing
TSD2150ACY RM	SOT-89	1Kpcs / 7” Reel
TSD2150ACT B0	TO-92	1K / Bulk
TSD2150ACT A3	TO-92	2K / Ammo

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

Parameter		Symbol	Limit	Unit
Collector-Base Voltage		V_{CBO}	80	V
Collector-Emitter Voltage		V_{CEO}	50	V
Emitter-Base Voltage		V_{EBO}	6	V
Collector Current	DC	I_C	3	A
	Pulse		6 (note1)	
Collector Power Dissipation	SOT-89	P_D	0.6	W
	TO-92		0.75	
Operating Junction Temperature		T_J	+150	°C
Operating Junction and Storage Temperature Range		T_{STG}	- 55 to +150	°C

Note: 1. Single pulse, Pw=10ms, 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}	80	--	--	V
Collector-Emitter Breakdown Voltage	I_C = 1mA, I_B = 0	BV_{CEO}	50	--	--	V
Emitter-Base Breakdown Voltage	I_E = 50uA, I_C = 0	BV_{EBO}	6	--	--	V
Collector Cutoff Current	V_{CB} = 60V, I_E = 0	I_{CBO}	--	--	0.1	uA
Emitter Cutoff Current	V_{EB} = 3V, I_C = 0	I_{EBO}	--	--	0.1	uA
Collector-Emitter Saturation Voltage	I_C / I_B = 1A / 50mA	$V_{CE(SAT)}$	--	0.1	0.25	V
	I_C / I_B = 2A / 200mA	$V_{CE(SAT)}$	--	0.25	0.5	
Base-Emitter Saturation Voltage	I_C / I_B = 2A / 200mA	$V_{BE(SAT)}$	--	--	2	V
DC Current Transfer Ratio	V_{CE} = 2V, I_C = 100mA	h_{FE} 1	180	--	--	
	V_{CE} = 2V, I_C = 500mA	h_{FE} 2	200	--	400	
	V_{CE} = 2V, I_C = 1A	h_{FE} 3	150	--	--	
Transition Frequency	V_{CE} =5V, I_E=0.1A, f=100MHz	f_T	--	90	--	MHz
Output Capacitance	V_{CB} = 10V, f=1MHz	Cob	--	45	--	pF

Note: Pulse test: pulse width ≤380uS, Duty cycle≤2%

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

Figure 1. DC Current Gain

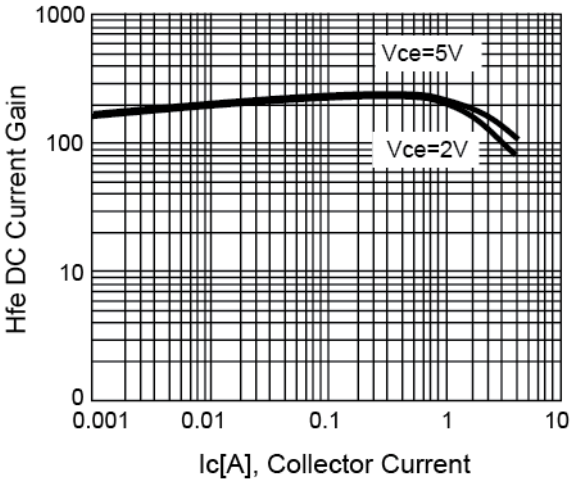


Figure 2. $V_{CE(SAT)}$ v.s. Collector Current

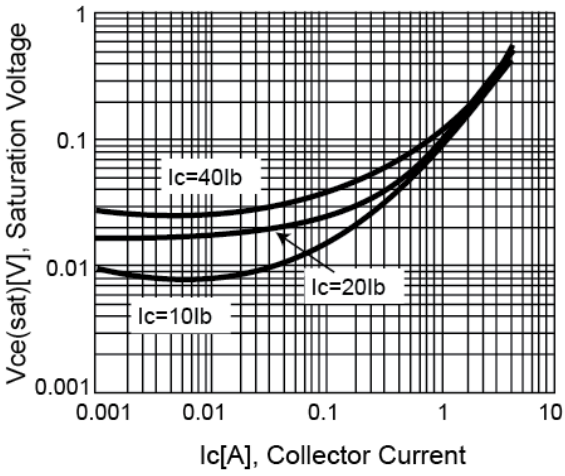


Figure 3. $V_{BE(SAT)}$ v.s. Collector Current

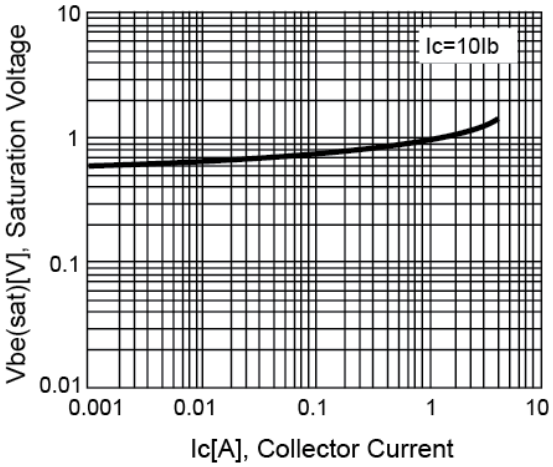
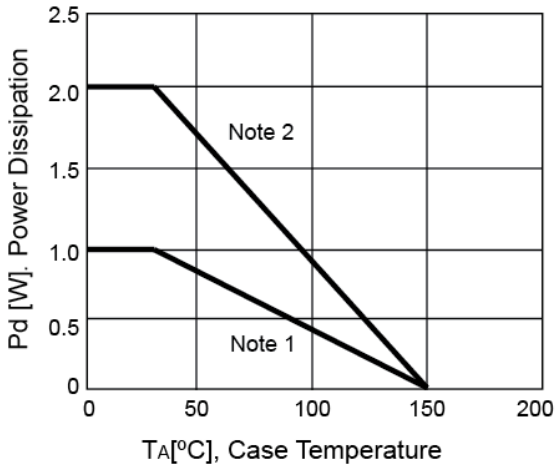
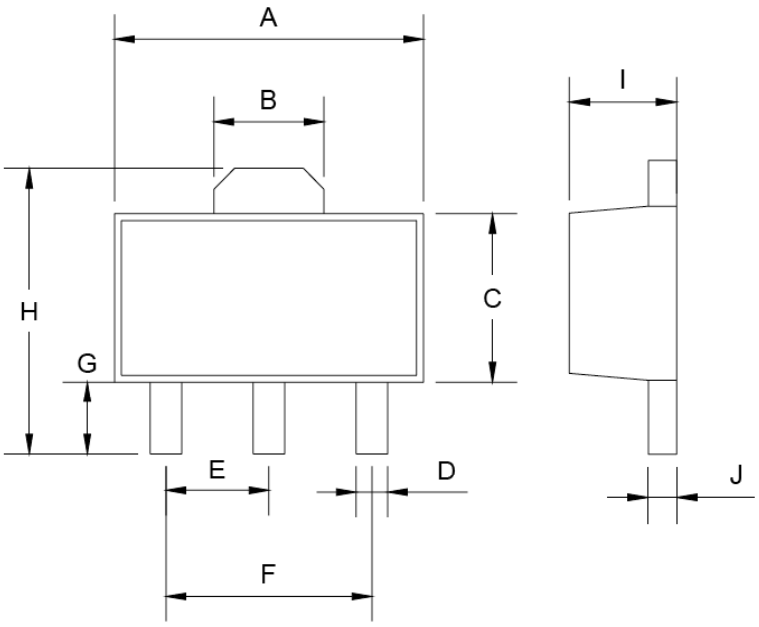


Figure 4. Power Derating Curve



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

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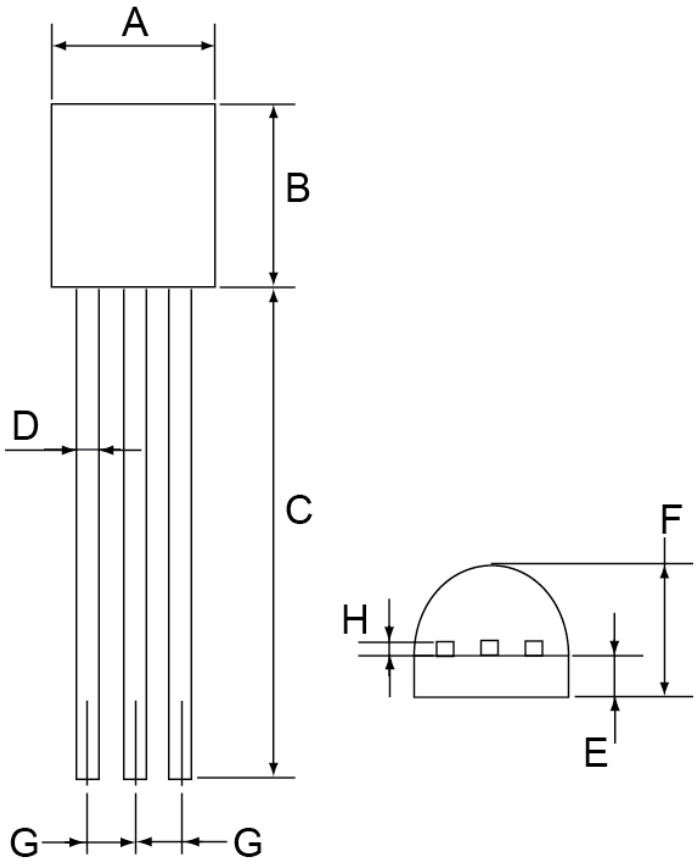
TO-92 Mechanical Drawing



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	13.53 (typ)		0.532 (typ)	
D	0.39	0.49	0.015	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	0.050	0.051
H	0.33	0.43	0.013	0.017

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