

TO-126



TO-92



Pin Definition:

1. Emitter
2. Collector
3. Base

PRODUCT SUMMARY

BV_{CBO}	180V
BV_{CEO}	180V
I_C	1.5A
V_{CE(SAT)}	0.6V @ I _C / I _B = 1A / 100mA

Features

- Low V_{CE(SAT)} 0.6 @ I_C / I_B = 1A / 100mA (Typ.)
- High BV_{CEO}

Structure

- Epitaxial Planar Type
- NPN Silicon Transistor

Ordering Information

Part No.	Package	Packing
TSD1857CT B0	TO-92	1K / Bulk
TSD1857CT A3	TO-92	2K / Ammo
TSD1857CK B0	TO-126	500pcs / Bulk

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

Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V _{CBO}	180	V
Collector-Emitter Voltage	V _{CEO}	180	V
Emitter-Base Voltage	V _{EBO}	5	V
Collector Current	DC	1.5	A
	Pulse	3 (note1)	
Collector Power Dissipation	TO-92	0.75	W
	TO-126	1	
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}	180	--	--	V
Collector-Emitter Breakdown Voltage	I _C = 1mA, I _B = 0	BV _{CEO}	180	--	--	V
Emitter-Base Breakdown Voltage	I _E = 50uA, I _C = 0	BV _{EBO}	5	--	--	V
Collector Cutoff Current	V _{CB} = 160V, I _E = 0	I _{CBO}	--	--	1	uA
Emitter Cutoff Current	V _{EB} = 4V, I _C = 0	I _{EBO}	--	--	1	uA
Collector-Emitter Saturation Voltage	I _C / I _B = 1A / 100mA	V _{CE(SAT)}	--	--	0.6	V
Base-Emitter Saturation Voltage	V _{CE} = 5V, I _C = 5mA	V _{BE(ON)}	0.45	--	0.8	V
DC Current Transfer Ratio	V _{CE} = 5V, I _C = 200mA	h _{FE 1}	160	--	320	
	V _{CE} = 5V, I _C = 500mA	h _{FE 2}	30	--	--	
Transition Frequency	V _{CE} = 5V, I _E = 150A, f = 100MHz	f _T	--	140	--	MHz
Output Capacitance	V _{CB} = 10V, f = 1MHz	Cob	--	27	--	pF

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

Electrical Characteristics Curve ($T_a = 25^\circ\text{C}$, unless otherwise noted)

Figure 1. DC Current Gain

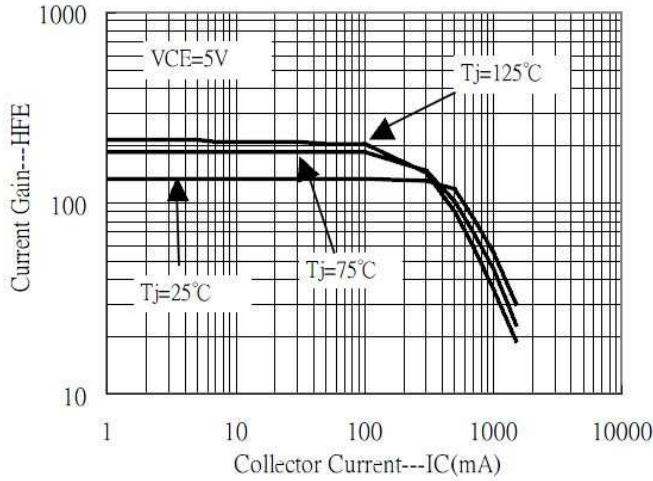


Figure 2. $V_{CE(SAT)}$ vs. Collector Current

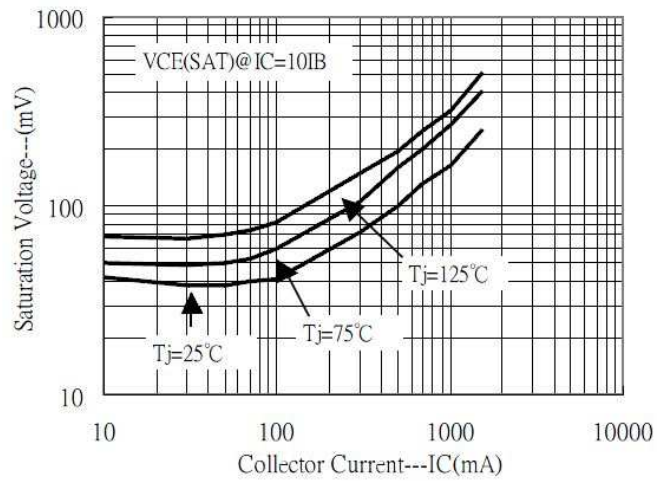


Figure 3. $V_{BE(SAT)}$ vs. Collector Current

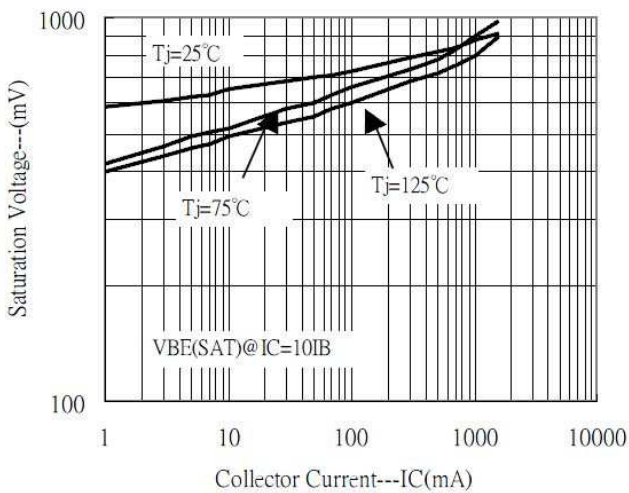


Figure 4. Power Derating Curve (TO-92)

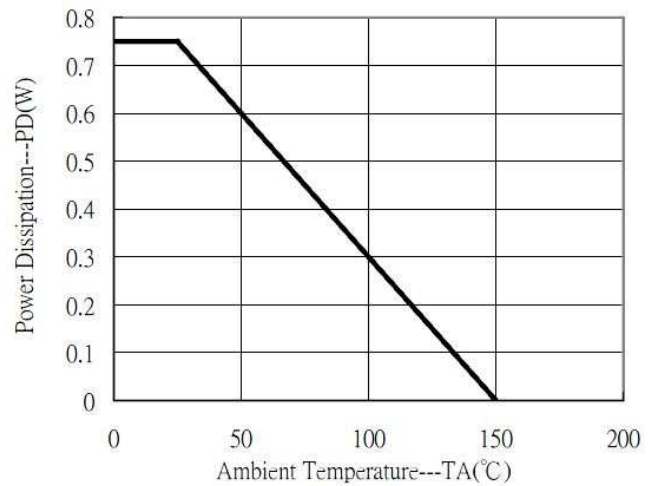


Figure 5. On Voltage vs. Collector Current

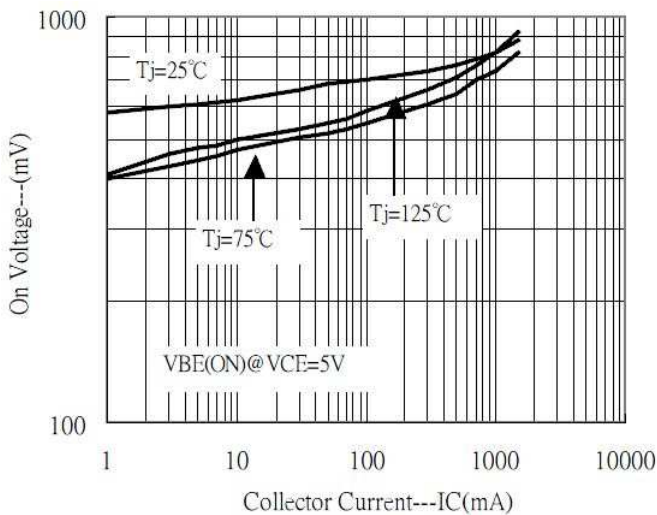
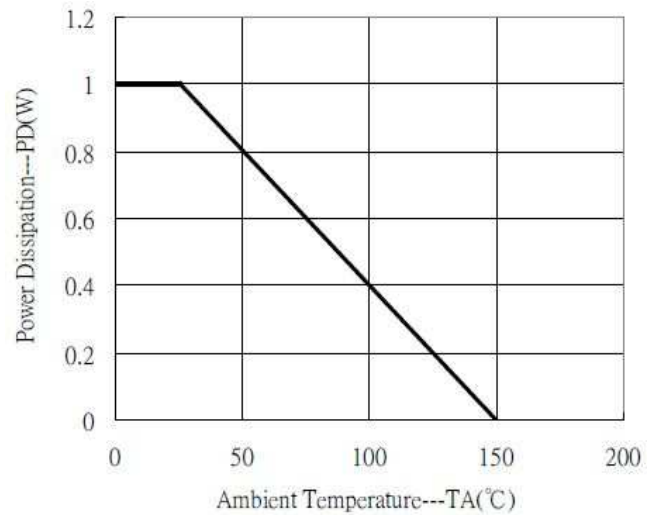
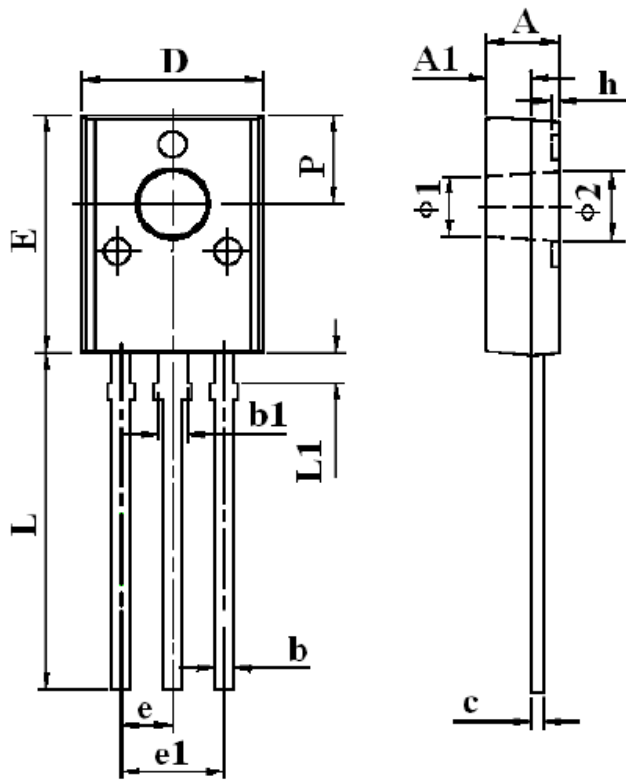


Figure 6. Power Derating Curve (TO-126)

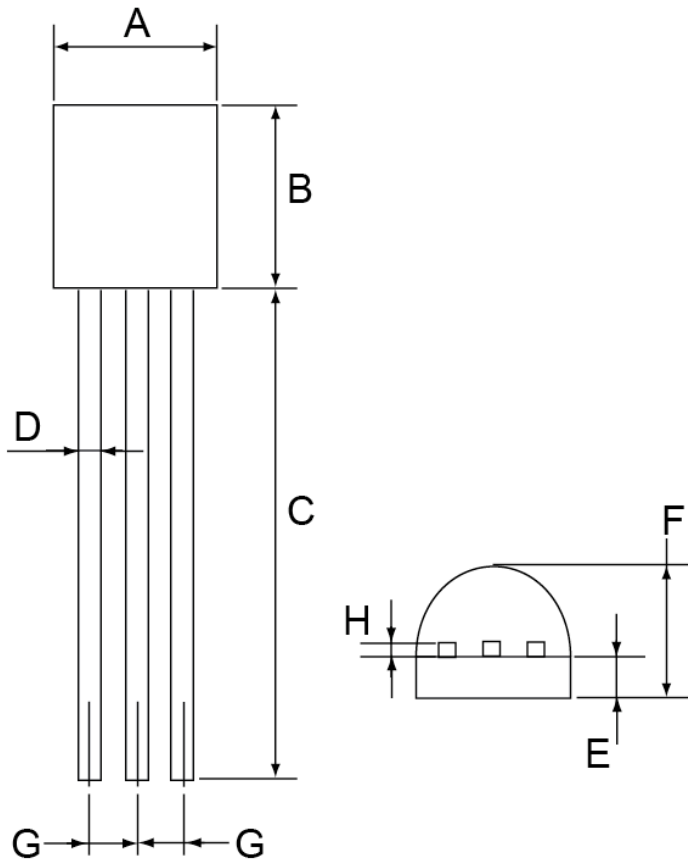


TO-18 Mechanical Drawing



TO-18 DIMENSION				
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.118	0.134	3.00	3.40
A1	0.071	0.087	1.80	2.20
b	0.026	0.034	0.66	0.86
B1	0.046	0.054	1.17	1.37
c	0.018	0.024	0.45	0.60
D	0.307	0.323	7.80	8.20
E	0.425	0.441	10.80	11.2
e	0.090 BSC		2.28 BSC	
e1	0.176	0.183	4.46	4.66
L	0.594	0.610	15.10	15.50
L1	0.051	0.059	1.30	1.50
P	0.159	0.167	4.04	4.24
$\phi 1$	0.118	0.126	3.00	3.20
$\phi 2$	0.122	0.130	3.10	3.30

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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