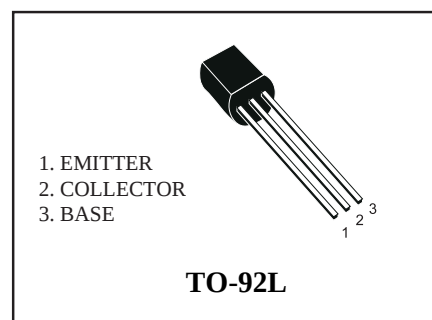


NPN Transistor

(Pb) Lead(Pb)-Free



MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	value	Units
Collector-Base Voltage	V_{CBO}	30	V
Collector-Emitter Voltage	V_{CEO}	30	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current -Continuous	I_C	2	A
Collector Power Dissipation	P_C	1	W
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-55 to- +150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYPE	MAX	UNIT
Collector-base breakdown voltage	$V(BR)_{CBO}$	$I_C=100\mu\text{A}$, $I_E=0$	30			V
Collector-emitter breakdown voltage	$V(BR)_{CEO}$	$I_C=10\text{ mA}$, $I_B=0$	30			V
Emitter-base breakdown voltage	$V(BR)_{EBO}$	$I_E=1\text{mA}$, $I_C=0$	5			V
Collector cut-off current	I_{CBO}	$V_{CB}=30\text{V}$, $I_E=0$			0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=5\text{V}$, $I_C=0$			0.1	μA
DC current gain	h_{FE}	$V_{CE}=2\text{V}$, $I_C=500\text{mA}$	100		320	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=1.5\text{ A}$, $I_B=0.03\text{A}$			2	V
Base-emitter voltage	V_{BE}	$I_C=500\text{ mA}$, $V_{CE}=2\text{V}$			1	V
Transition frequency	f_T	$V_{CE}=2\text{ V}$, $I_C=500\text{mA}$		80		MHz

CLASSIFICATION OF $h_{FE(1)}$

Rank	O	Y
Range	100-200	160-320

Ratings and Characteristic Curves

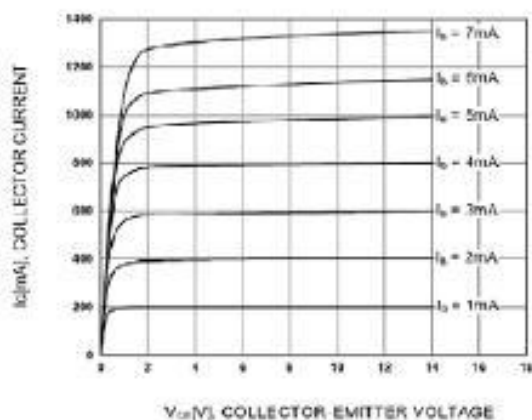


Figure 1. Static Characteristic

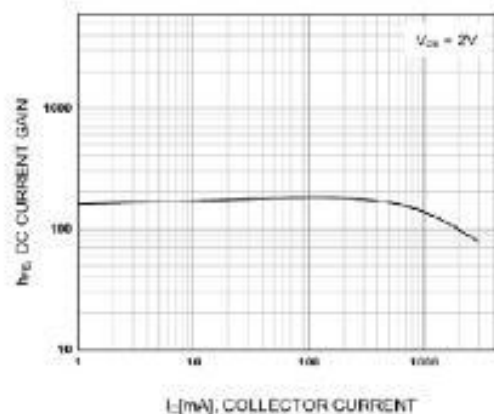


Figure 2. DC current Gain

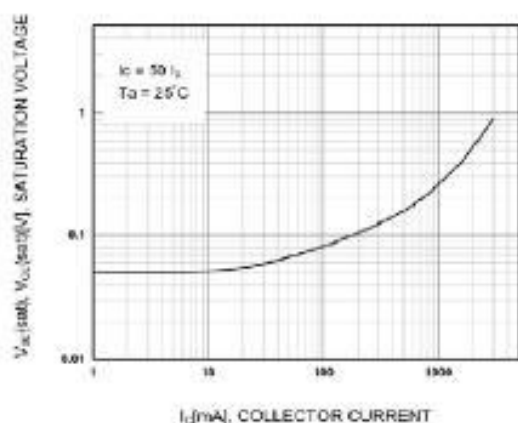


Figure 3. Collector-Emitter Saturation Voltage

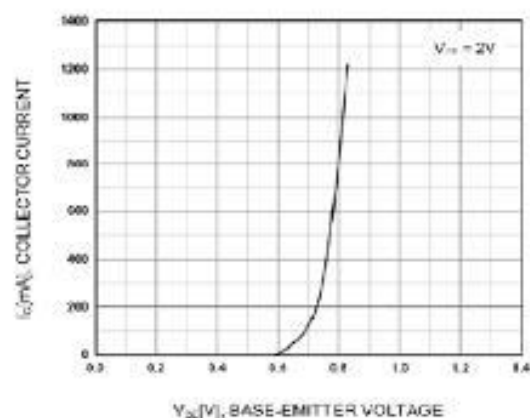


Figure 4. Base-Emitter On Voltage

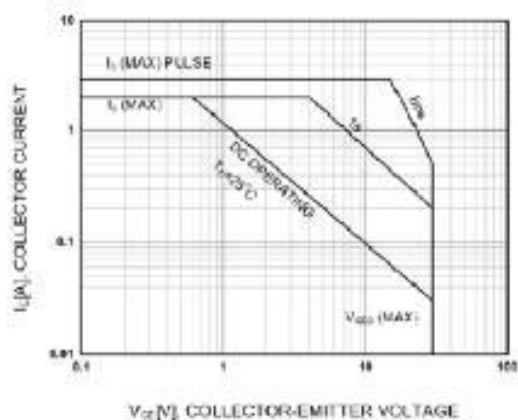


Figure 5. Safe Operating Area

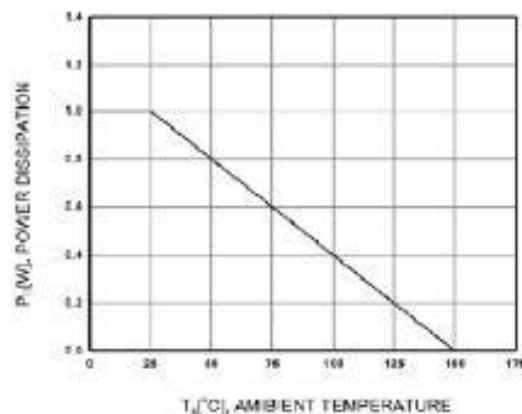
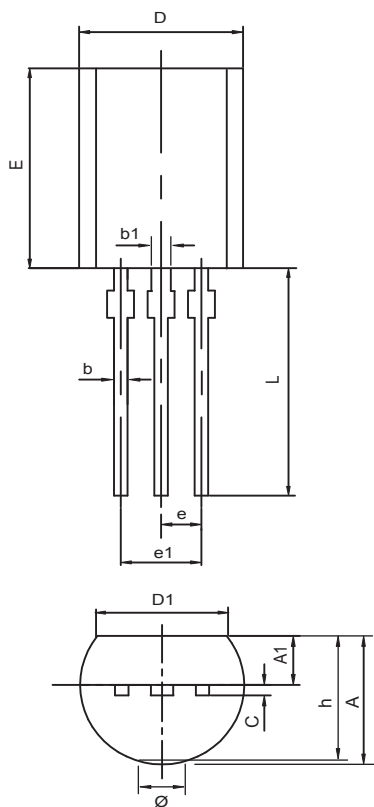


Figure 6. Power Derating

TO-92L Outline Dimensions

unit:mm



TO-92L		
Dim	Min	Max
A	3.70	4.10
A1	1.28	1.58
b	0.35	0.55
b1	0.60	0.80
c	0.35	0.45
D	4.70	5.10
D1	4.00	-
E	7.80	8.20
e	1.270TYP	
e1	2.44	2.64
L	13.8	14.2
Ø	-	1.60
h	0.00	0.30