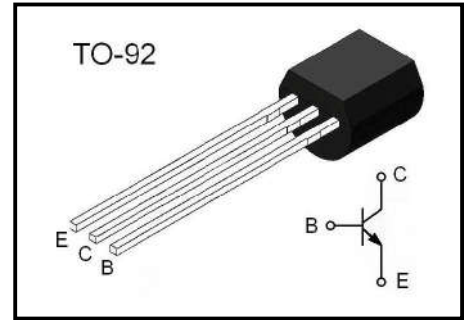


NPN Plastic-Encapsulate Transistors

Features

- ◆ High breakdown Voltage
- ◆ High DC Current Gain
- ◆ Complementary to with 2SA1013



Absolute Maximum Ratings Ta=25°C unless otherwise noted

Parameter	Symbol	Value	Unit
Collector-Base Voltage	BV_{CBO}	180	V
Collector-Emitter Voltage	BV_{CEO}	160	V
Emitter-Base Voltage	BV_{EBO}	6	V
Collector Current	I_C	1	A
Collector Power Dissipation	P_C	700	mW
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	-55~150	°C

Electrical Characteristics Ta=25°C unless otherwise noted

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Collector-base breakdown voltage	BV_{CBO}	$I_C = 100\mu A, I_E = 0$	180			V
Collector-emitter breakdown voltage	BV_{CEO}	$I_C = 1mA, I_B = 0$	160			V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = 100\mu A, I_C = 0$	6			V
Collector cut-off current	I_{CBO}	$V_{CB} = 160V, I_E = 0$			1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 5V, I_C = 0$			1	μA
DC current gain	h_{FE}	$V_{CE} = 5V, I_C = 200mA$	60		320	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 500mA, I_B = 50mA$			1.5	V
Base-emitter on voltage	$V_{BE(on)}$	$V_{CE} = 5V, I_C = 5mA$			0.75	V
Transition frequency	f_T	$V_{CE} = 5V, I_C = 200mA$	20			MHz
Collector output capacitance	C_{ob}	$V_{CB} = 10V, I_E = 0, f = 1MHz$			20	pF

h_{FE} Classification

Classification	R	O	Y
Range	60-120	100-200	160-320

Typical Characteristics

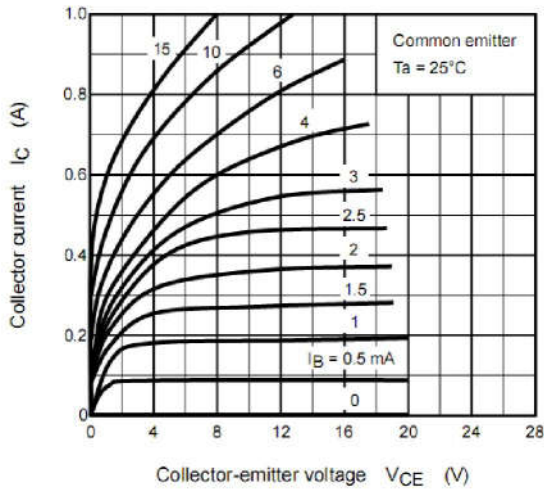


Figure 1. Static Characteristic

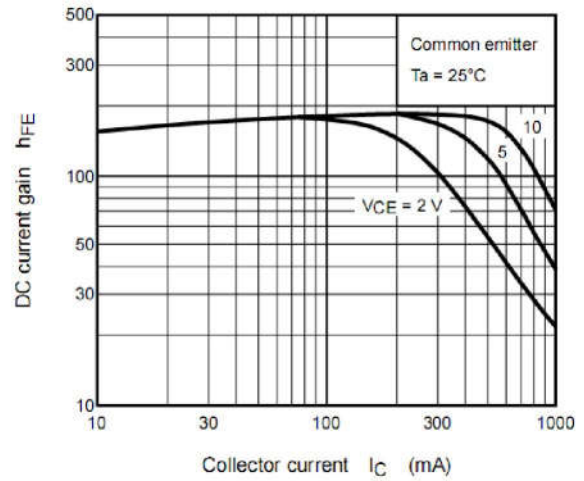


Figure 2. DC current Gain

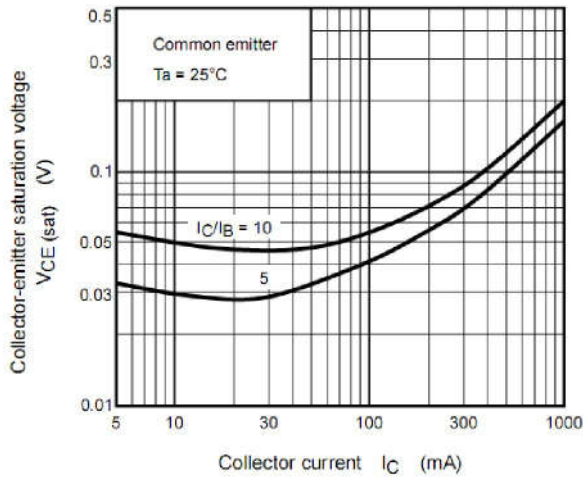


Figure 3. Saturation Voltage

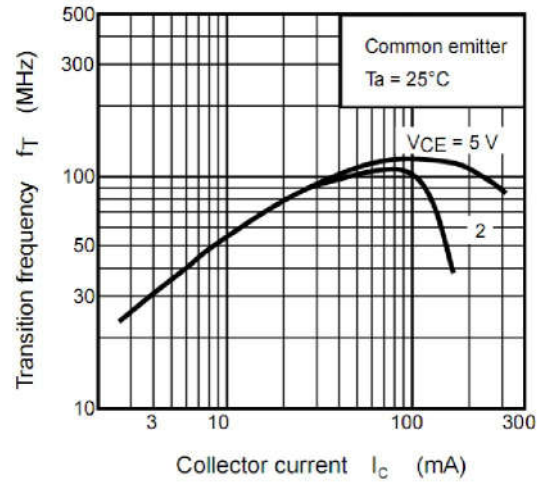


Figure 4. Current Gain Bandwidth Product

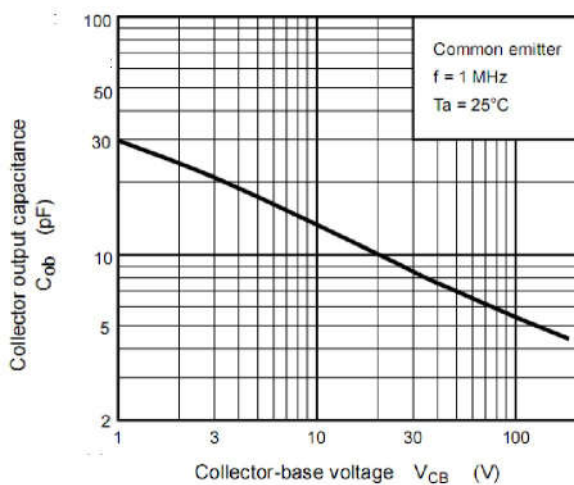


Figure 5. Collector Output Capacitance

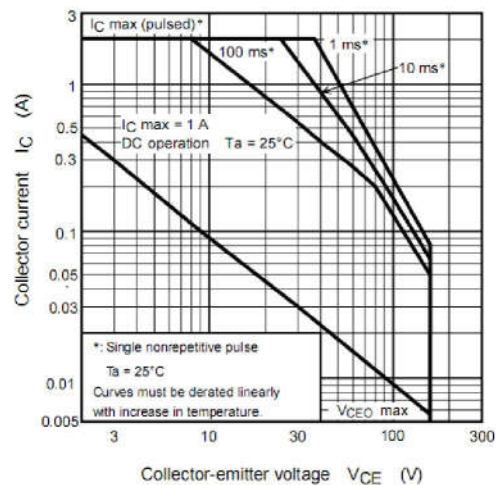


Figure 6. Safe Operating Area

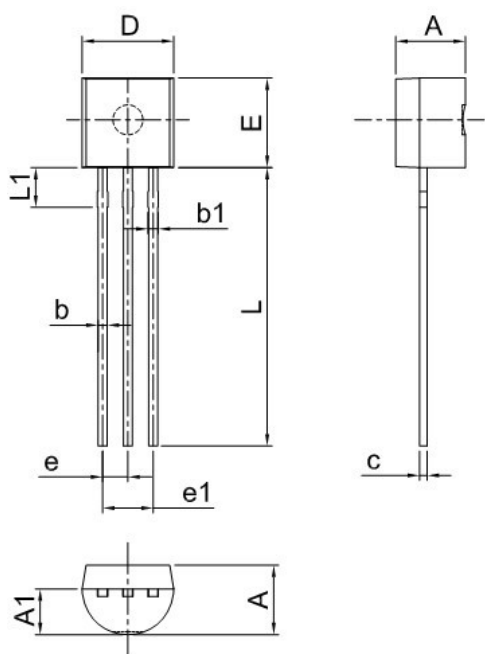
Ordering information

Package	Packing Description	Base Quantity
TO-92	Bulk	1000pcs/Bag
	Tape	2000pcs/Box

Package Dimensions

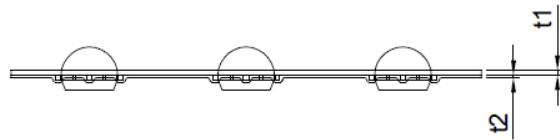
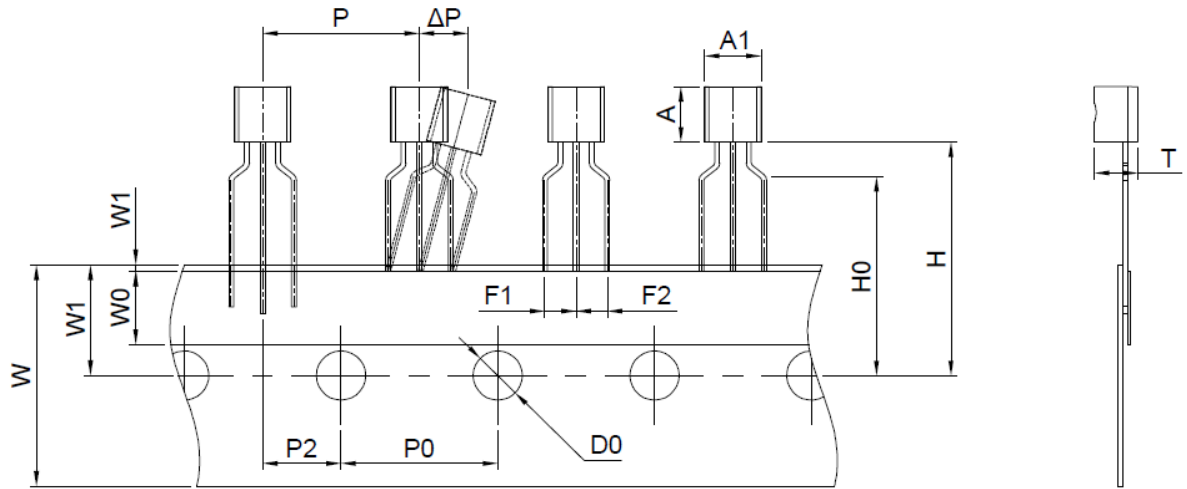
TO-92

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	3.30	3.70	0.130	0.146
A1	2.30	2.70	0.091	0.106
b	0.40	0.50	0.016	0.020
b1	0.50	0.70	0.020	0.028
c	0.35	0.45	0.014	0.018
D	4.45	4.70	0.175	0.185
E	4.40	4.65	0.173	0.183
e	1.17	1.37	0.046	0.054
e1	2.34	2.64	0.092	0.104
L	13.50	14.50	0.531	0.571
L1	1.80	2.20	0.071	0.087

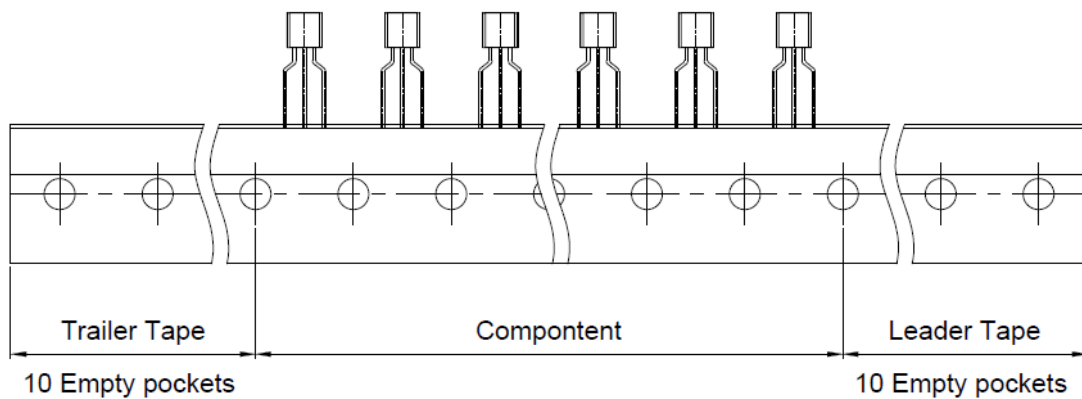


Taping Dimensions

TO-92



Dimensions are in millimeter								
A	A1	T	P	P0	P2	F1	F2	W
4.6	4.6	3.5	12.7	12.7	6.35	2.54	2.54	18.0
W0	W1	W2	H	H0	D0	t1	T2	ΔP
6.0	9.0	1.0Max	19.0	18.0	4.0	0.4	0.2	0



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