

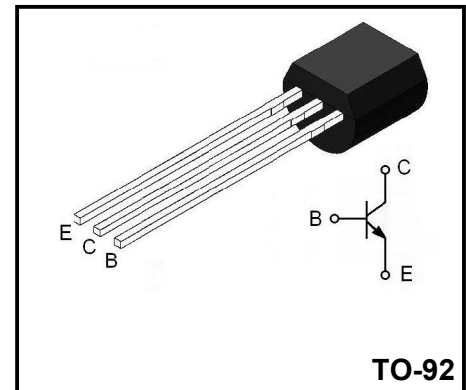
NPN Plastic-Encapsulate Transistors

Applications

- ◆ Low frequency amplifier
- ◆ Low noise amplifier

FEATURES

- ◆ Low noise:
NF = 4dB (typ.) $R_G = 100\Omega$, $V_{CE} = 6V$, $I_C = 100\mu A$, $f = 1kHz$
NF = 0.5dB (typ.) $R_G = 1k\Omega$, $V_{CE} = 6V$, $I_C = 100\mu A$, $f = 1kHz$
- ◆ Low pulse noise: Low 1/f noise
- ◆ High DC current gain: $h_{FE} = 200\sim 700$
- ◆ High breakdown voltage: $V_{CEO} = 120V$



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Value	Unit
Collector-base voltage	BV_{CBO}	120	V
Collector-emitter voltage	BV_{CEO}	120	V
Emitter-base voltage	BV_{EBO}	5	V
Collector current	I_C	100	mA
Base current	I_B	20	mA
Collector power dissipation	P_C	300	mW
Junction temperature	T_j	125	°C
Storage temperature	T_{stg}	-55~+125	°C

Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	BV_{CBO}	$I_C = 100\mu A$, $I_E = 0$	120			V
Collector-emitter breakdown voltage	BV_{CEO}	$I_C = 1mA$, $I_B = 0$	120			V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = 100\mu A$, $I_C = 0$	5			V
Collector cut-off current	I_{CBO}	$V_{CB} = 120V$, $I_E = 0$			0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 6V$, $I_C = 0$			0.1	μA
DC current gain	h_{FE}	$V_{CE} = 6V$, $I_C = 2mA$	200		700	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10mA$, $I_B = 1mA$			0.3	V
Base-emitter voltage	$V_{BE(on)}$	$V_{CE} = 6V$, $I_C = 2mA$			1.0	V
Transition frequency	f_T	$V_{CE} = 5V$, $I_B = 10mA$		100		MHz
Collector output capacitance	C_{ob}	$V_{CB} = 10V$, $I_E = 0$, $f = 1kHz$		3		pF

h_{FE} Classification

Classification	G	BL
Range	200~400	350~700

Typical Characteristics

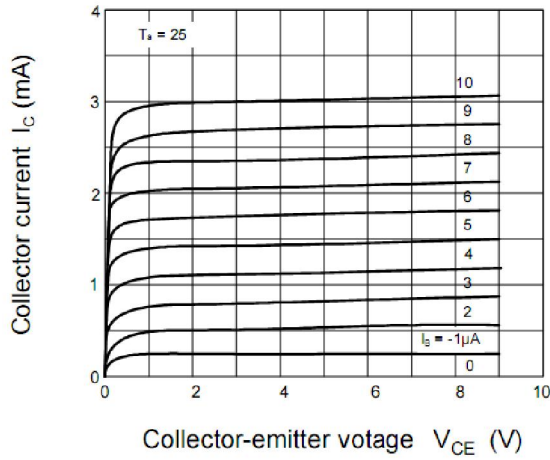


Figure 1. Static Characteristic

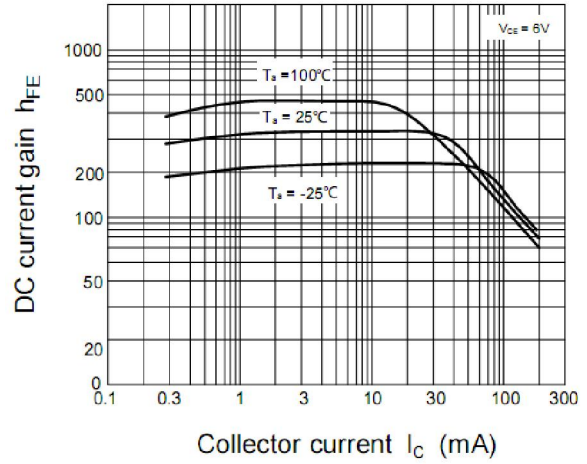


Figure 2. DC current Gain

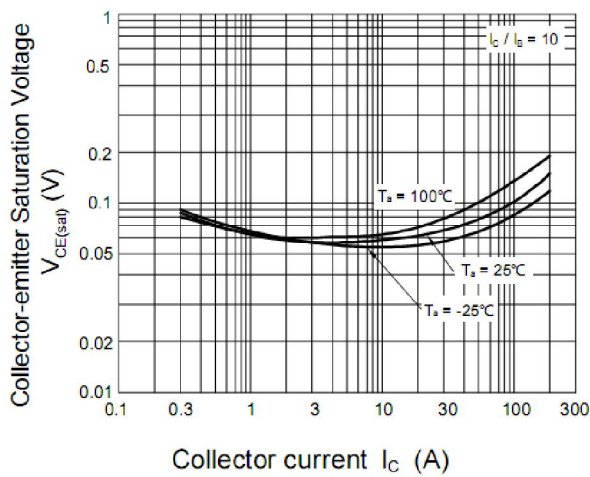


Figure 3. Collector-Emitter Saturation Voltage

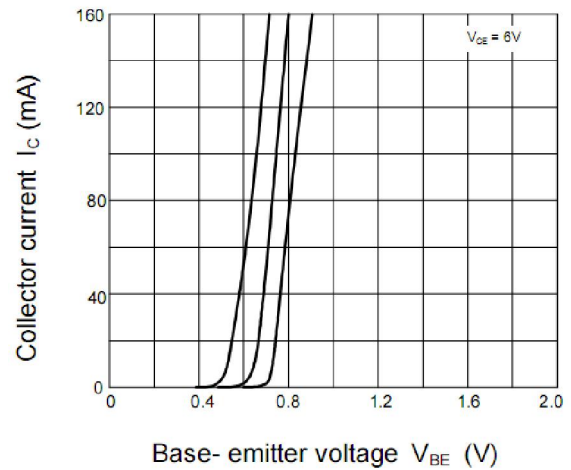


Figure 4. Base-Emitter Voltage

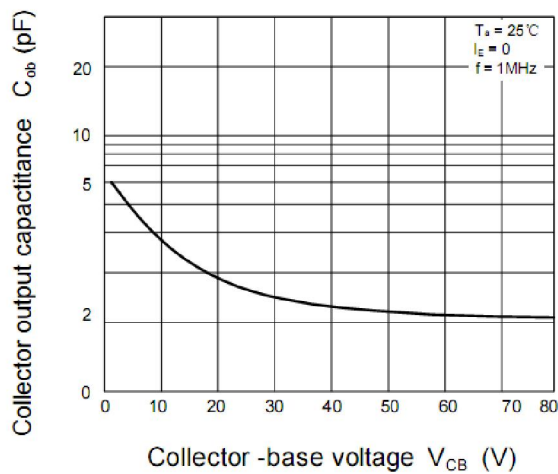


Figure 5. Output Capacitance

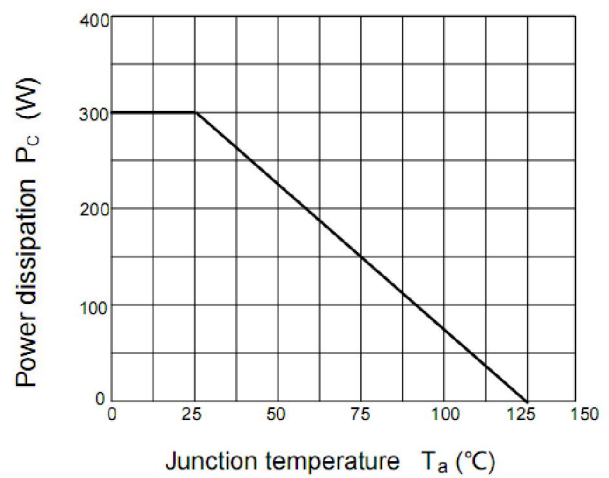


Figure 6. Power Derating

Package Dimensions

TO-92

Symbol	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

Package	Packing Method	Pack quantity
TO-92	Bulk	1000pcs/Bag
TO-92	Tape	2000pcs/Box