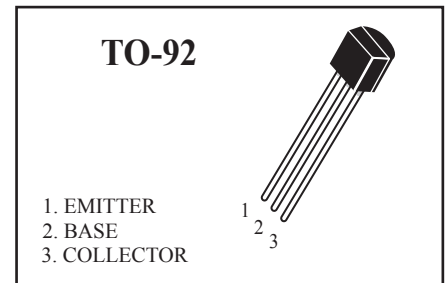


NPN General Purpose Transistors

 **Lead(Pb)-Free**



ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	25	Vdc
Collector-Base Voltage	V _{CBO}	40	Vdc
Emitter-Base Voltage	V _{EBO}	5.0	Vdc
Collector Current	I _C	500	mAdc
Total Device Dissipation T _A =25 °C	P _D	0.625	W
Junction Temperature	T _j	150	°C
Storage, Temperature	T _{stg}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Max	Unit
Collector-Emitter Breakdown Voltage (I _C = 0.1 mAdc, I _B =0)	V _{(BR)CEO}	25	-	Vdc
Collector-Base Breakdown Voltage (I _C = 100 μAdc, I _E =0)	V _{(BR)CBO}	40	-	Vdc
Emitter-Base Breakdown Voltage (I _E = 100 μAdc, I _C =0)	V _{(BR)EBO}	5.0	-	Vdc
Collector Cutoff Current (V _{CE} = 20 Vdc, I _B =0)	I _{CEO}	-	0.1	uAdc
Collector Cutoff Current (V _{CB} = 40 Vdc, I _E =0)	I _{CBO}	-	0.1	uAdc
Emitter Cutoff Current (V _{EB} = 3.0Vdc, I _C =0)	I _{EBO}	-	0.1	uAdc

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise noted) (Continued)

Characteristics	Symbol	Min	TYP	Max	Unit
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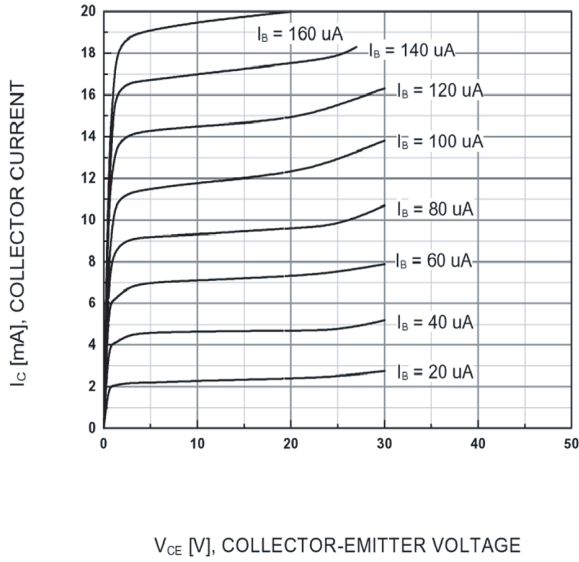
ON CHARACTERISTICS

DC Current Gain ($I_C=50\text{ Adc}, V_{CE}=1.0\text{ Vdc}$)	$h_{FE(1)}$	85	-	300	-
DC Current Gain ($I_C=500\text{ mAdc}, V_{CE}=1.0\text{ Vdc}$)	$h_{FE(2)}$	50	-	-	-
Collector-Emitter Saturation Voltage ($I_C=500\text{ Adc}, I_B=50\text{ mAdc}$)	$V_{CE(sat)}$	-	-	0.6	Vdc
Base-Emitter Saturation Voltage ($I_C=500\text{ mAdc}, I_B=50\text{ mAdc}$)	$V_{BE(sat)}$	-	-	1.2	Vdc
Current-Gain-Bandwidth Product ($I_C=20\text{ mAdc}, V_{CE}=6.0\text{ Vdc}, f=30\text{ MHz}$)	f_T	150	-	-	MHz

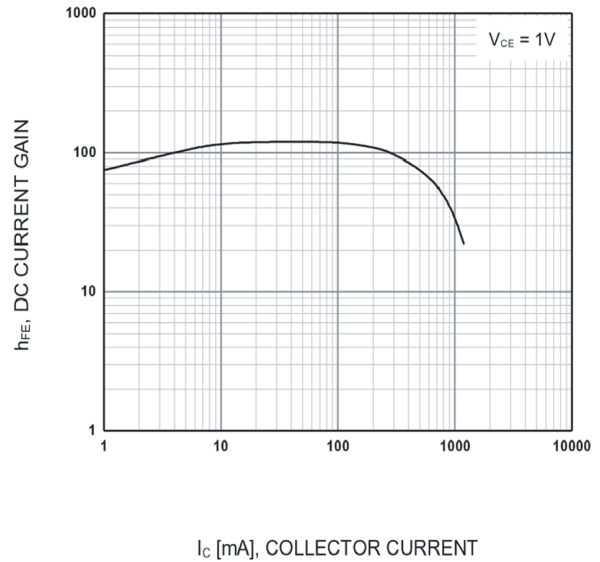
Classification of $h_{FE(1)}$

Rank	B	C	D
Range	85-160	120-200	160-300

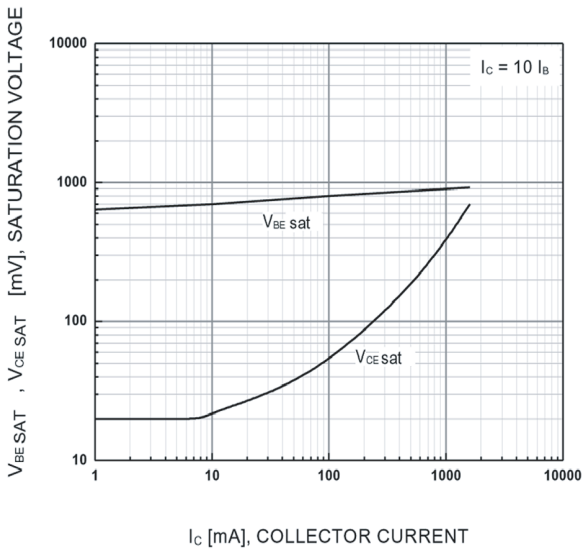
Typical Characteristics



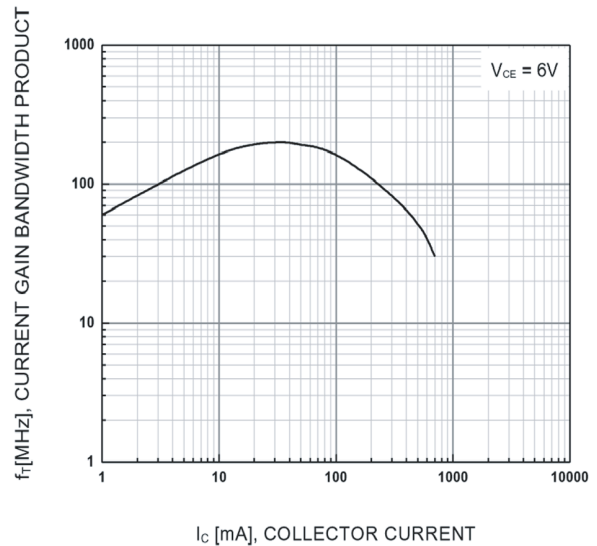
Static Characteristic



DC current Gain



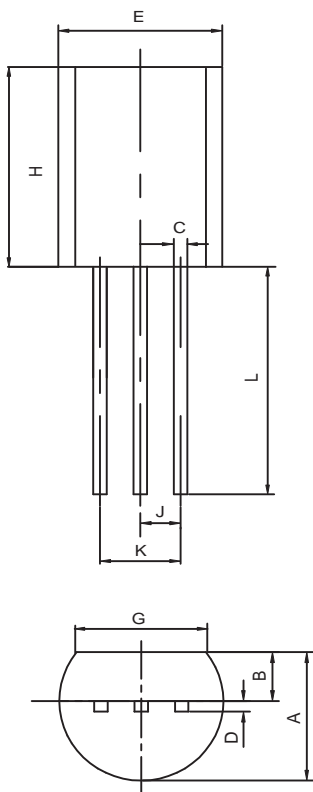
Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage



Current Gain Bandwidth Product

TO-92 Outline Dimensions

unit:mm



TO-92		
Dim	Min	Max
A	3.30	3.70
B	1.10	1.40
C	0.38	0.55
D	0.36	0.51
E	4.40	4.70
G	3.43	-
H	4.30	4.70
J	1.270TYP	
K	2.44	2.64
L	14.10	14.50