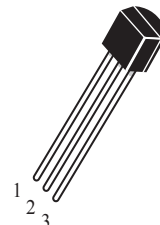


NPN General Purpose Transistors

(Pb) Lead(Pb)-Free

TO-92

1. EMITTER
2. BASE
3. COLLECTOR



ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	45	Vdc
Collector-Base Voltage	V_{CBO}	50	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current	I_C	100	mA _{dc}
Total Device Dissipation $T_A=25^{\circ}\text{C}$	P_D	0.4	W
Junction Temperature	T_j	150	$^{\circ}\text{C}$
Storage, Temperature	T_{stg}	-55 to +150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Max	Unit
Collector-Emitter Breakdown Voltage ($I_C=0.1\text{ mA}_{dc}$, $I_B=0$)	$V_{(BR)CEO}$	45	-	Vdc
Collector-Base Breakdown Voltage ($I_C=100\text{ uA}_{dc}$, $I_B=0$)	$V_{(BR)CBO}$	50	-	Vdc
Emitter-Base Breakdown Voltage ($I_E=100\text{ uA}_{dc}$, $I_C=0$)	$V_{(BR)EBO}$	5.0	-	Vdc
Collector Cutoff Current ($V_{CB}=50\text{ Vdc}$, $I_E=0$)	I_{CBO}	-	0.1	uA_{dc}
Emitter Cutoff Current ($V_{EB}=3.0\text{ Vdc}$, $I_C=0$)	I_{EBO}	-	0.1	uA_{dc}

S9014



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

Characteristics	Symbol	Min	Max	Unit
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On Characteristics

DC Current Gain ($I_C=1\text{mA}$, $V_{CE}=5\text{V}$)	h_{FE}	60	1000	-
Collector-Emitter Saturation Voltage ($I_C=100\text{mA}$, $I_B=5\text{mA}$)	$V_{CE(sat)}$	-	0.3	Vdc
Base-Emitter Saturation Voltage ($I_C=100\text{mA}$, $I_B=5\text{mA}$)	$V_{BE(sat)}$	-	1	Vdc
Transition Frequency ($I_C=10\text{mA}$, $V_{CE}=5\text{V}$, $f=30\text{MHz}$)	f_T	150	-	MHz

CLASSIFICATION OF h_{FE}

Rank	A	B	C	D
Range	60-150	100-300	200-600	400-1000

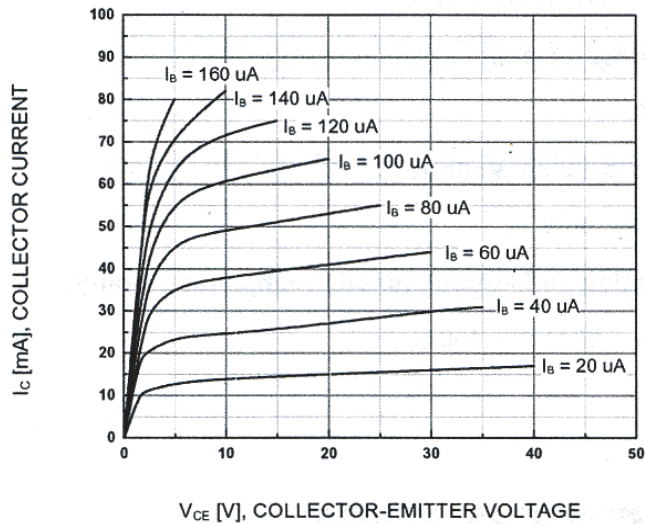


FIG.1 Static Characteristic

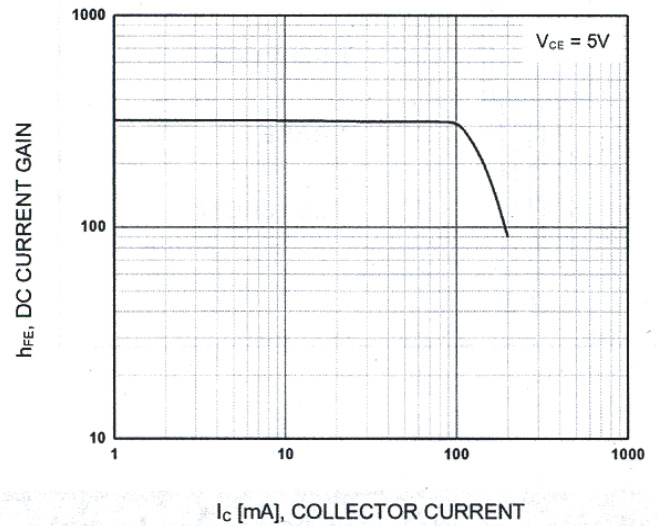
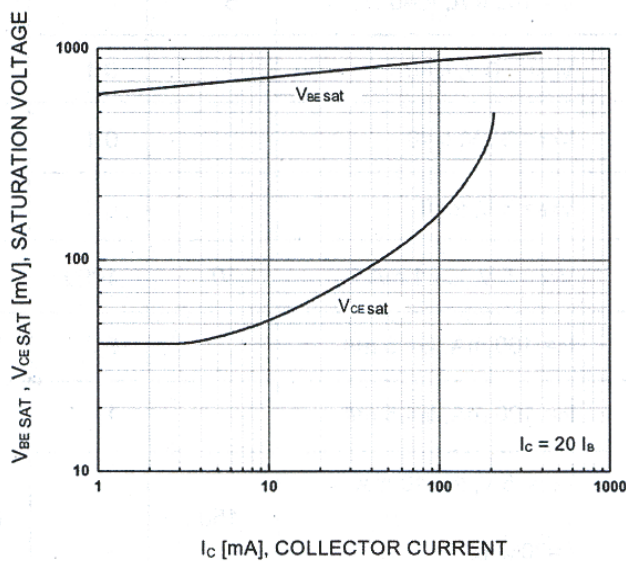


FIG.2 DC current Gain



**FIG.3 Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage**

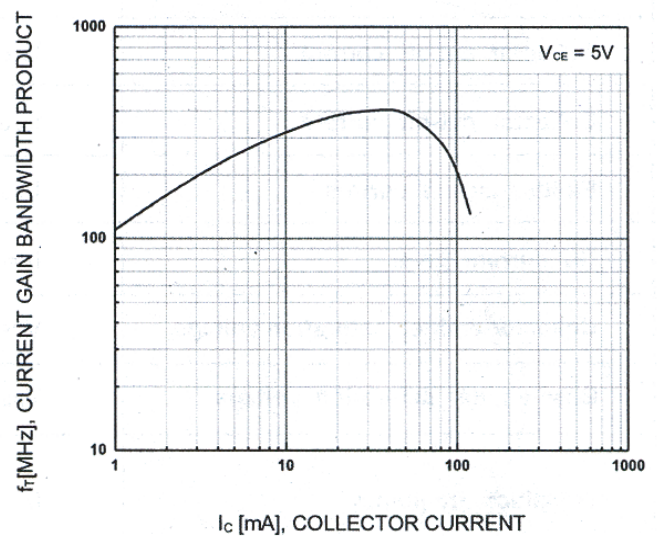
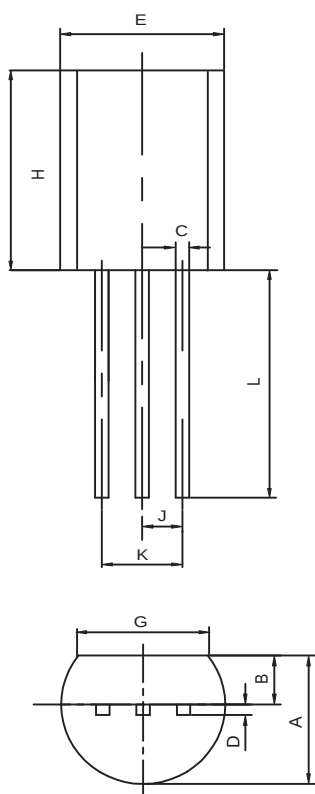


FIG.4 Current Gain Bandwidth Product

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