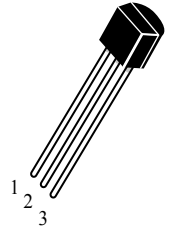


**PNP General Purpose Transistors**

**(Pb)** Lead(Pb)-Free

**TO-92**


1. EMITTER  
2. COLLECTOR  
3. BASE

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

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	-50	V
Collector-Base Voltage	$V_{CBO}$	-50	V
Emitter-Base Voltage	$V_{EBO}$	-5.0	V
Collector Current Continuous	$I_C$	-150	mA
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	$^{\circ}\text{C}$

\*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

**ELECTRICAL CHARACTERISTICS**

Characteristics	Symbol	Min	Max	Unit
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**OFF CHARACTERISTICS**

Collector-Base Breakdown Voltage, $I_C = -100\mu\text{A}$ , $I_E = 0$	$V(BR)_{CBO}$	-	-50	V
Collector-Emitter Breakdown Voltage, $I_C = -0.1\text{mA}$ , $I_B = 0$	$V(BR)_{CEO}$	-	-50	V
Emitter-Base Breakdown Voltage, $I_E = -100\mu\text{A}$ , $I_C = 0$	$V(BR)_{EBO}$	-	-5.0	V
Collector Cut-off Current, $V_{CB} = -50\text{V}$ , $I_E = 0$	$I_{CBO}$	-	-0.1	$\mu\text{A}$
Collector Cut-off Current, $V_{CE} = -50\text{V}$ , $I_B = 0$	$I_{CEO}$	-	-0.1	$\mu\text{A}$
Emitter Cut-off Current, $V_{EB} = -5.0\text{V}$ , $I_C = 0$	$I_{EBO}$	-	-0.1	$\mu\text{A}$

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

Characteristics	Symbol	Min	Typ	Max	Unit
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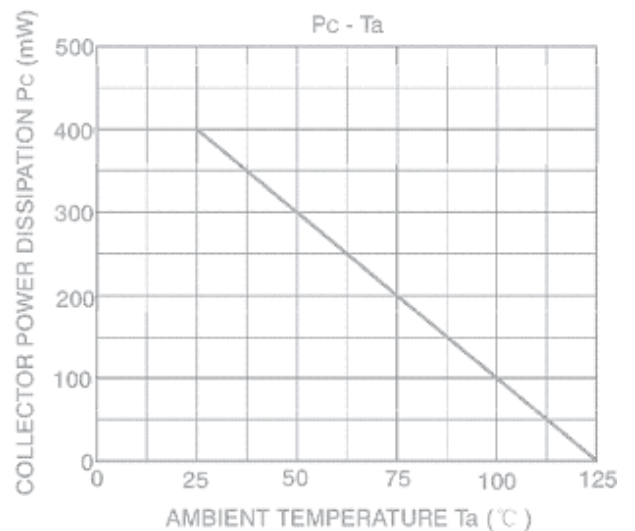
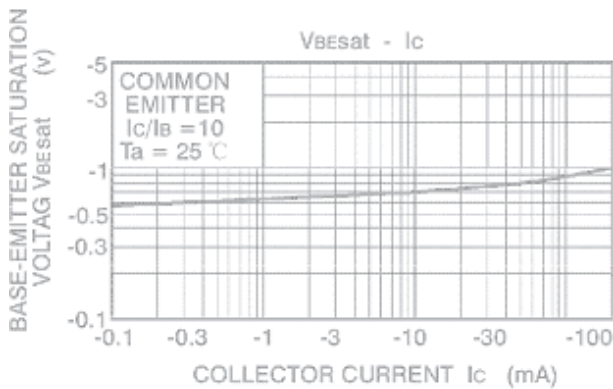
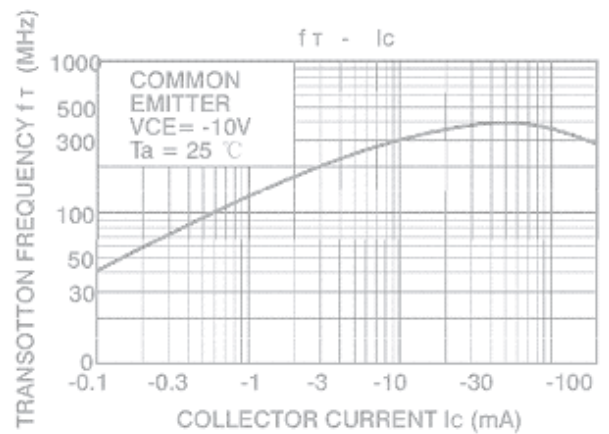
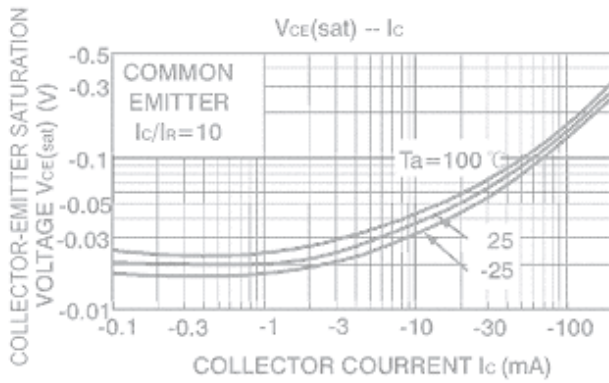
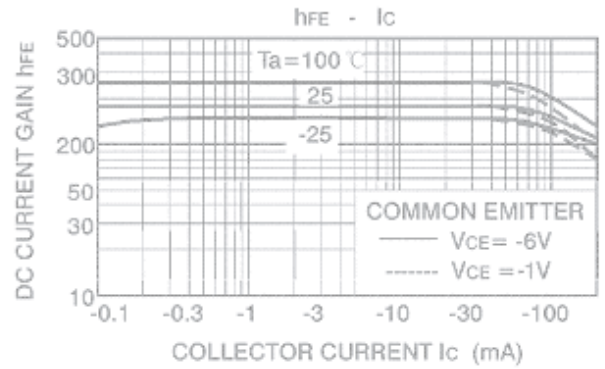
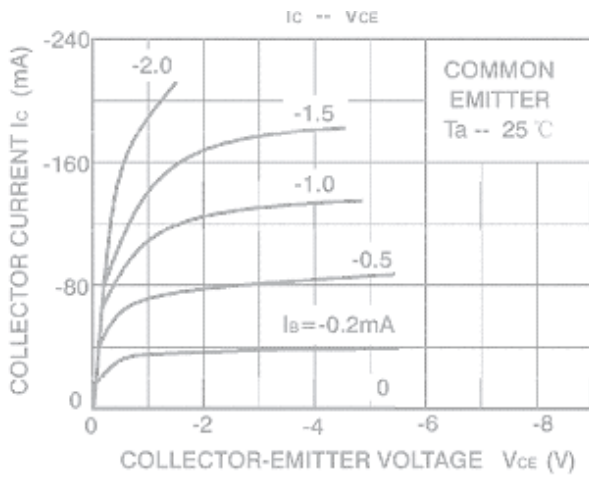
### ON CHARACTERISTICS

DC Current Gain $V_{CE}=-6.0\text{V}, I_C=-2.0\text{mA}$	$h_{FE1}$	70	-	400	-
Collector-Emitter Saturation Voltage $I_C=-100\text{mA}, I_B=-10\text{mA}$	$V_{CE(sat)}$	-	-	-0.3	V
Base-Emitter Voltage $I_C=-100\text{mA}, I_B=-10\text{mA}$	$V_{BE(sat)}$	-	-	-1.1	V
Transition Frequency $V_{CE}=-10\text{V}, I_C=-1\text{mA}, f=30\text{MHz}$	$f_T$	80	-	-	MHz
Collector Output Capacitance $V_{CB}=-10\text{V}, I_E=0, f=1\text{MHz}$	$C_{ob}$	-	19	-	pF
Noise Figure $V_{CE}=-6\text{V}, I_C=-0.1\text{mA}, R_g=10\text{k}\Omega, f=1\text{KHz}$	NF	-	-	6	dB

### CLASSIFICATION OF $h_{FE1}$

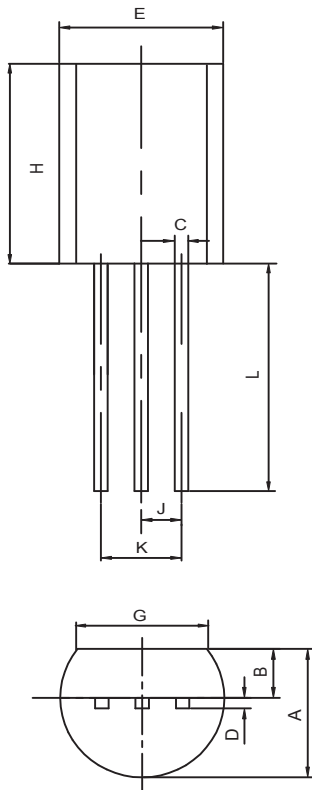
Rank	O	Y	GR
Range	70-140	120-240	200-400

## Typical Characteristics



## 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