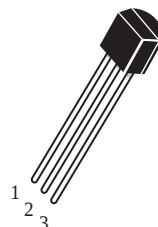


High-Voltage NPN Transistors

Pb Lead(Pb)-Free

TO-92

1. EMITTER
2. BASE
3. COLLECTOR



ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	400	Vdc
Collector-Base Voltage	V _{CBO}	400	Vdc
Emitter-Base Voltage	V _{EBO}	5.0	Vdc
Collector Current	I _C	200	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

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ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Max	Unit
Collector-Emitter Breakdown Voltage (I _C = 1.0 mAdc, I _B =0)	V _{(BR)CEO}	400	-	Vdc
Collector-Base Breakdown Voltage (I _C = 100 uAdc, I _E =0)	V _{(BR)CBO}	400	-	Vdc
Emitter-Base Breakdown Voltage (I _E = 100 uAdc, I _C =0)	V _{(BR)EBO}	5.0	-	Vdc
Collector Cutoff Current (V _{CE} = 400 Vdc, I _B =0)	I _{CE0}	-	5.0	uAdc
Collector Cutoff Current (V _{CB} = 400 Vdc, I _E =0)	I _{CBO}	-	0.1	uAdc
Emitter Cutoff Current (V _{EB} = 4.0Vdc, I _C =0)	I _{EBO}	-	0.1	uAdc

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 ($I_C = 1.0\text{ mA}$, $V_{CE} = 10\text{ Vdc}$) ($I_C = 10\text{ mA}$, $V_{CE} = 10\text{ Vdc}$) ($I_C = 100\text{ mA}$, $V_{CE} = 10\text{ Vdc}$)	$H_{FE(1)}$ $H_{FE(2)}$ $H_{FE(3)}$	70 80 60	- 300 .	- - -
Collector-Emitter Saturation Voltage ($I_C = 10\text{ mA}$, $I_B = 1.0\text{ mA}$) ($I_C = 50\text{ mA}$, $I_B = 5.0\text{ mA}$)	$V_{CE(sat)}$	- -	0.2 0.3	Vdc
Base-Emitter Saturation Voltage ($I_C = 10\text{ mA}$, $I_B = 1.0\text{ mA}$)	$V_{BE(sat)}$	-	0.75	Vdc
Current-Gain-Bandwidth Product ($I_C = 10\text{ mA}$, $V_{CE} = 20\text{ Vdc}$, $f = 30\text{ MHz}$)	f_T	50	-	MHz

Typical Characteristics

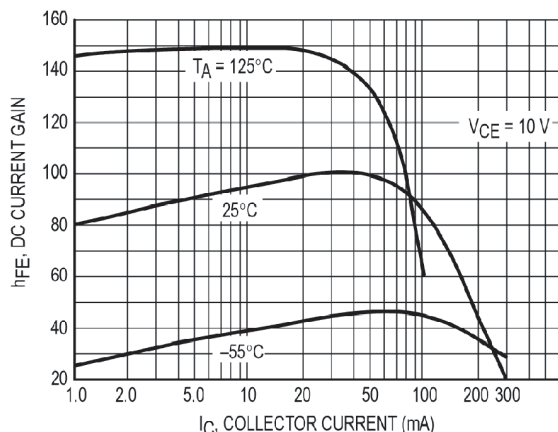


FIG1. DC Current Gain

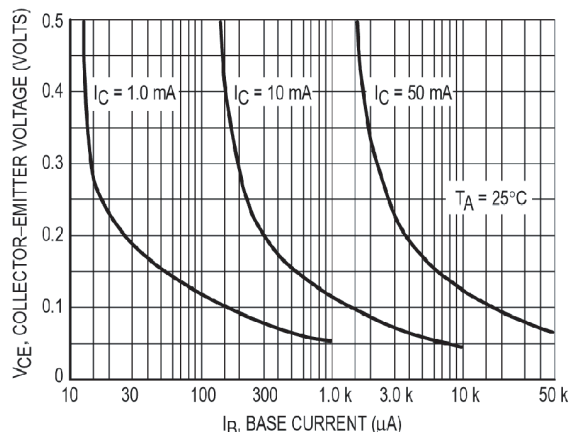


FIG2. Collector Saturation Region

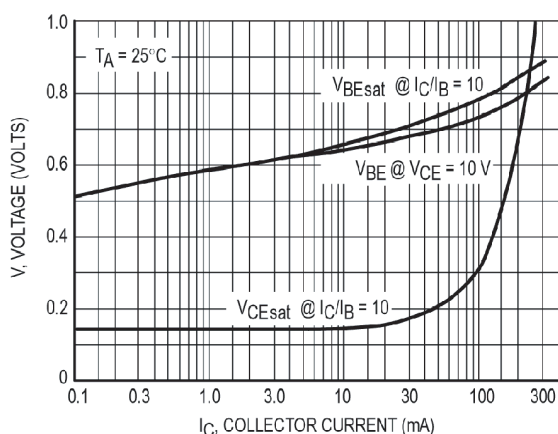


FIG3. "On" Voltages

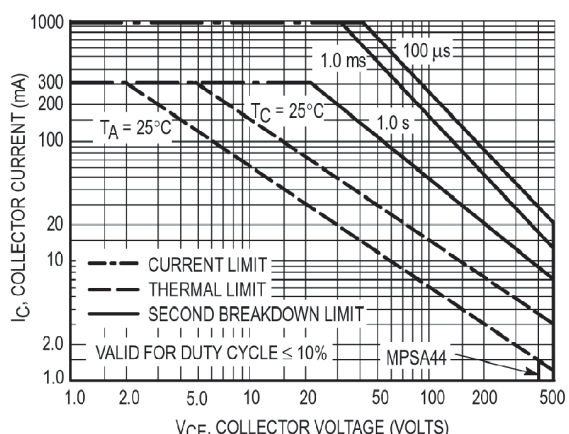


FIG4. Active Region — Safe Operating Area

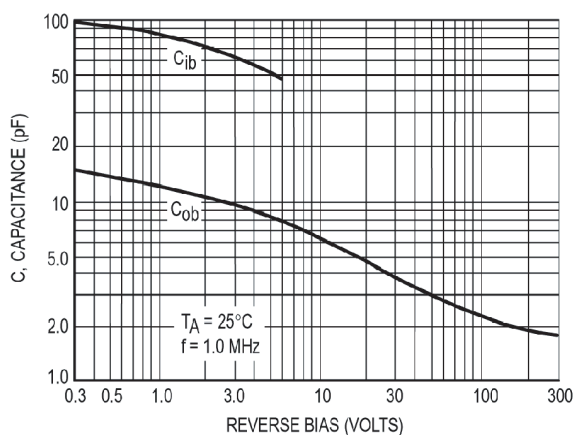


FIG5. Capacitance

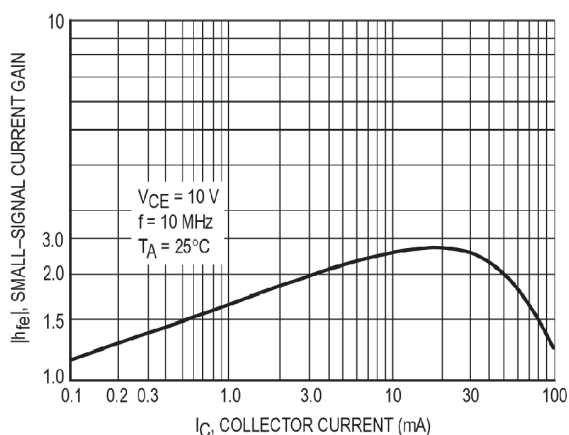
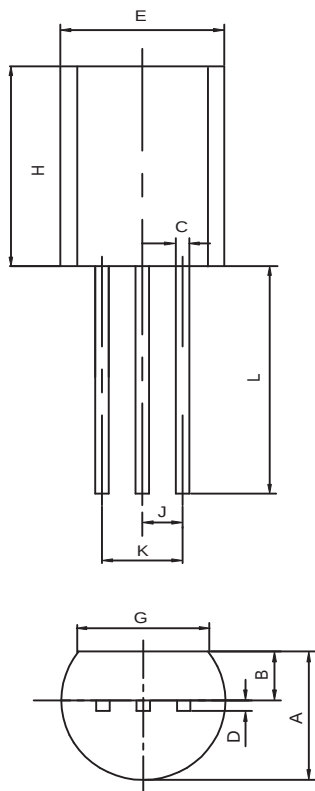


FIG6. High Frequency Current Gain

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