

## TO-126 Plastic-Encapsulate Transistors

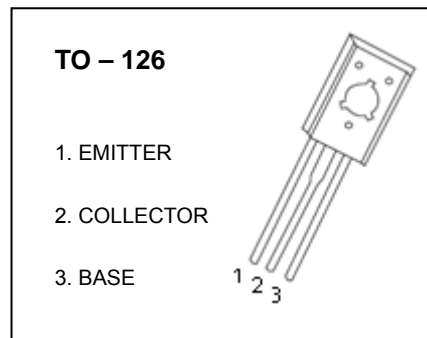
### BD136/138/140 TRANSISTOR (PNP)

#### FEATURES

- High Current
- Complement To BD135, BD137 And BD139

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

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	BD136	-45
		BD138	-60
		BD140	-80
$V_{CEO}$	Collector-Emitter Voltage	BD136	-45
		BD138	-60
		BD140	-80
$V_{EBO}$	Emitter-Base Voltage	-5	V
$I_C$	Collector Current	-1.5	A
$P_C$	Collector Power Dissipation	1.25	W
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	100	$^{\circ}\text{C}/\text{W}$
$T_j$	Junction Temperature	150	$^{\circ}\text{C}$
$T_{stg}$	Storage Temperature	-55~+150	$^{\circ}\text{C}$



#### ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$ unless otherwise specified)

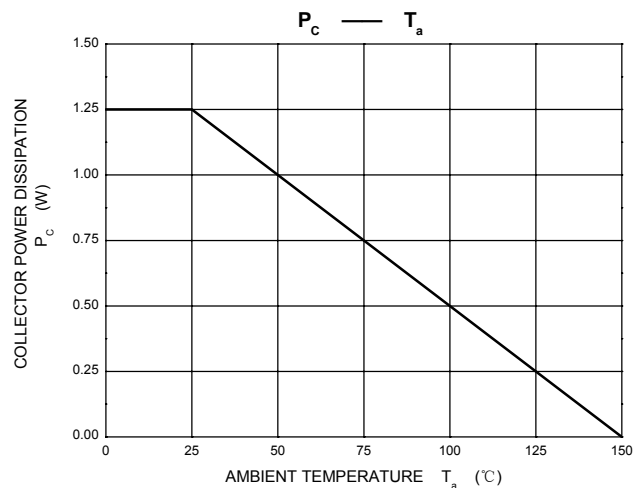
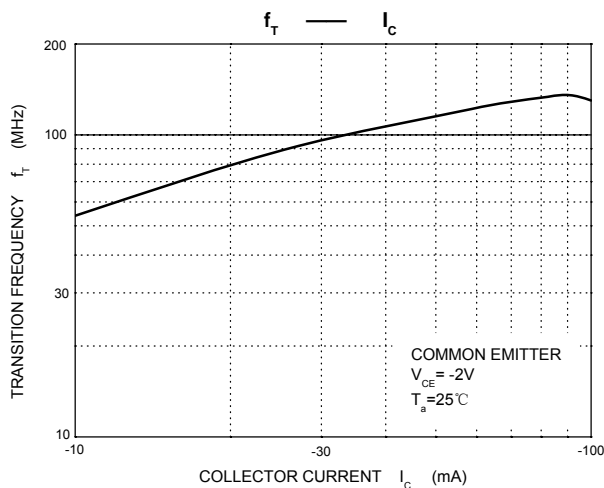
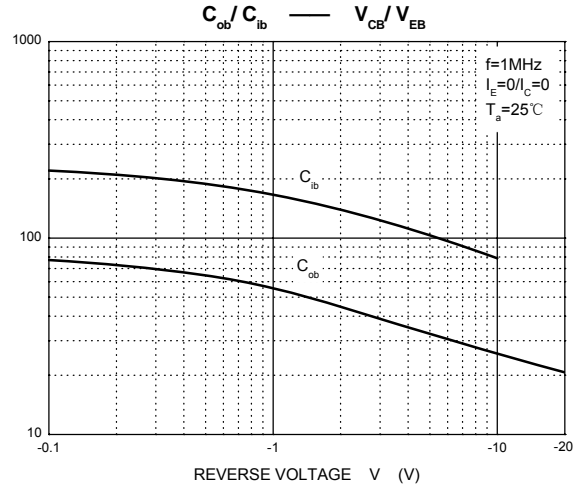
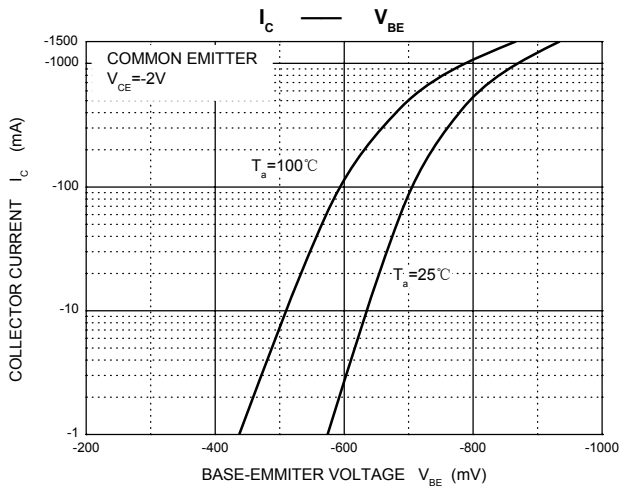
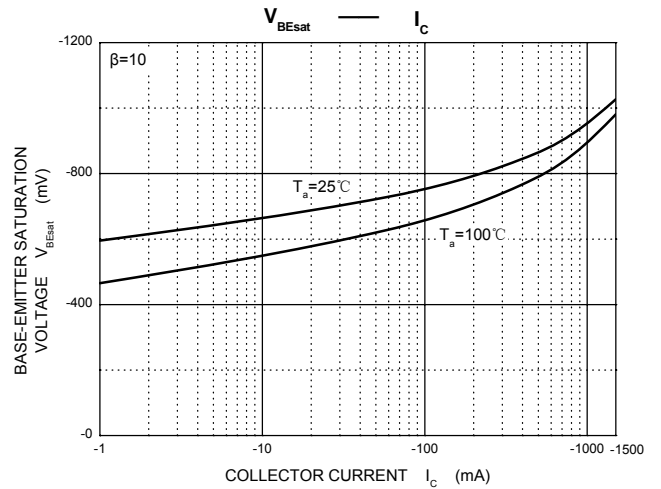
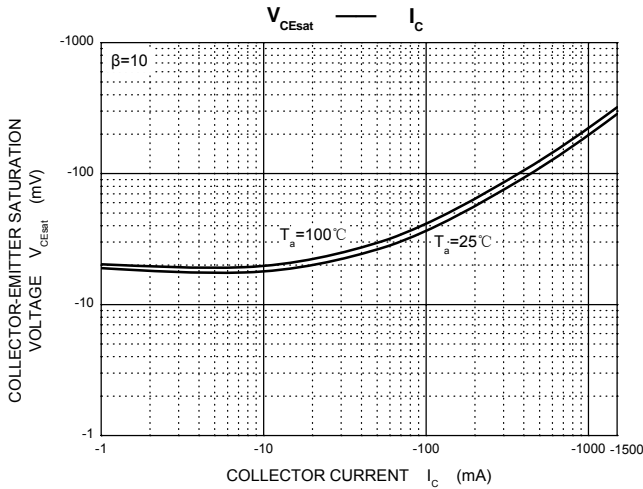
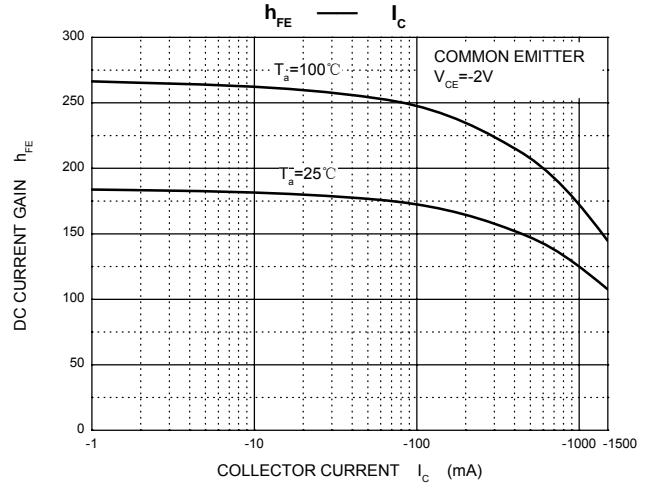
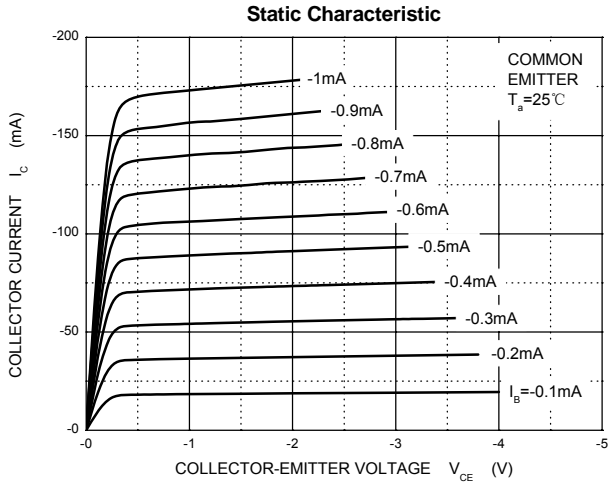
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -0.1\text{mA}, I_E = 0$				V
BD136			-45			
BD138			-60			
BD140			-80			
Collector-emitter sustaining voltage	$V_{CEO(SUS)}$ *	$I_C = -0.03\text{A}, I_B = 0$				V
BD136			-45			
BD138			-60			
BD140			-80			
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -0.1\text{mA}, I_C = 0$	-5			V
Collector cut-off current	$I_{CBO}$	$V_{CB} = -30\text{V}, I_E = 0$			-0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -5\text{V}, I_C = 0$			-10	$\mu\text{A}$
DC current gain	$h_{FE(1)}$ *	$V_{CE} = -2\text{V}, I_C = -150\text{mA}$	40		250	
	$h_{FE(2)}$ *	$V_{CE} = -2\text{V}, I_C = -5\text{mA}$	25			
	$h_{FE(3)}$ *	$V_{CE} = -2\text{V}, I_C = -500\text{mA}$	25			
Collector-emitter saturation voltage	$V_{CE(sat)}$ *	$I_C = -500\text{mA}, I_B = -50\text{mA}$			-0.5	V
Base-emitter voltage	$V_{BE}$ *	$V_{CE} = -2\text{V}, I_C = -500\text{mA}$			-1	V

\*Pulse test: pulse width  $\leq 350\mu\text{s}$ , duty cycles  $\leq 2.0\%$ .

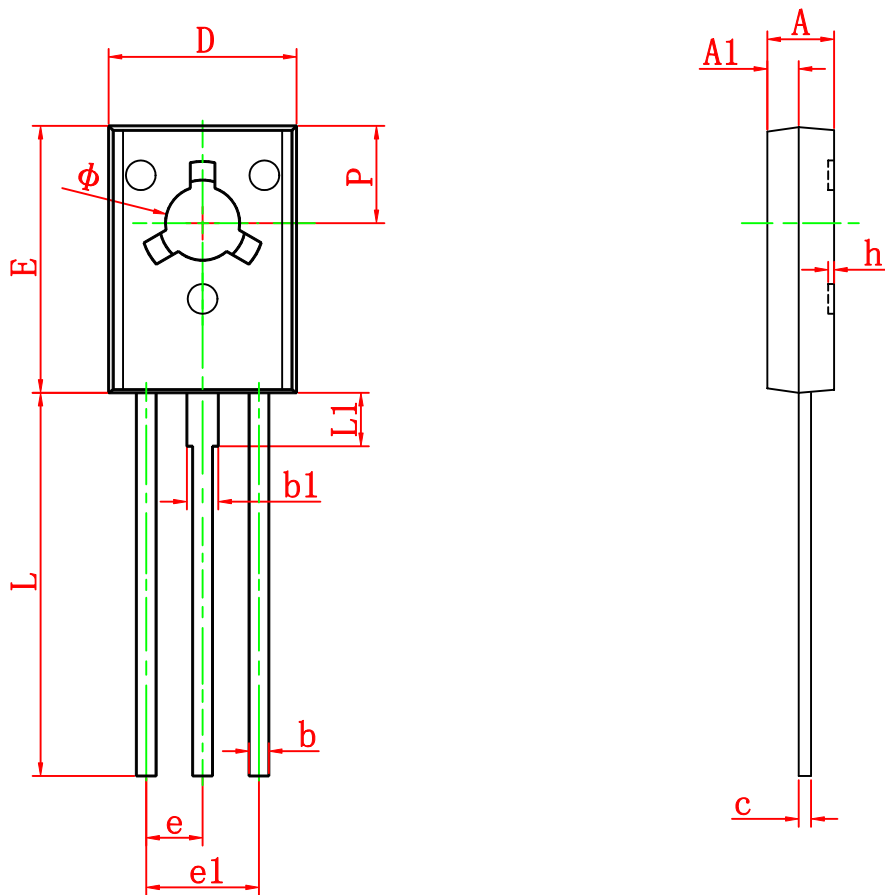
#### CLASSIFICATION OF $h_{FE(1)}$

RANK	6	10	16
RANGE	40-100	63-160	100-250

# Typical Characteristics



# TO-126 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	2.500	2.900	0.098	0.114
A1	1.100	1.500	0.043	0.059
b	0.660	0.860	0.026	0.034
b1	1.170	1.370	0.046	0.054
c	0.450	0.600	0.018	0.024
D	7.400	7.800	0.291	0.307
E	10.600	11.000	0.417	0.433
e	2.290 TYP		0.090 TYP	
e1	4.480	4.680	0.176	0.184
h	0.000	0.300	0.000	0.012
L	15.300	15.700	0.602	0.618
L1	2.100	2.300	0.083	0.091
P	3.900	4.100	0.154	0.161
Φ	3.000	3.200	0.118	0.126