



TO-126 Plastic-Encapsulate Transistors

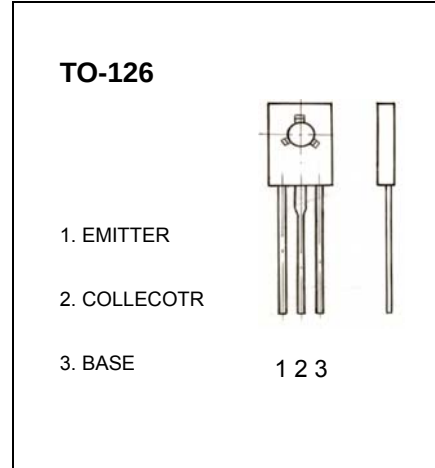
BD438,440,442 TRANSISTOR (PNP)

FEATURES

Amplifier and switching applications

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

Symbol	Parameter	Value	Units
V_{CB0}	Collector-Base Voltage BD438	-45	V
	BD440	-60	
	BD442	-80	
V_{CEO}	Collector-Emitter Voltage BD438	-45	V
	BD440	-60	
	BD442	-80	
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current –Continuous	-4	A
P_C	Collector Power Dissipation	1.25	W
T_J	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55-150	$^{\circ}\text{C}$



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

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-100\mu\text{A}$, $I_E=0$ BD438 BD440 BD442	-45 -60 -80			V
Collector-emitter breakdown voltage	$V_{CEO(SUS)}^{(1)}$	$I_C=-100\text{mA}$, $I_B=0$ BD438 BD440 BD442	-45 -60 -80			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-100\mu\text{A}$, $I_C=0$	-5			V
Collector cut-off current	I_{CBO}	$V_{CB}=-45\text{V}$, $I_E=0$ BD438 $V_{CB}=-60\text{V}$, $I_E=0$ BD440 $V_{CB}=-80\text{V}$, $I_E=0$ BD442			-0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=-5\text{V}$, $I_C=0$			-1	μA
DC current gain	$h_{FE(1)}^{(1)}$	$V_{CE}=-5\text{V}$, $I_C=-10\text{mA}$ BD438 BD440 BD442	30 20 15			
	$h_{FE(2)}^{(1)}$	$V_{CE}=-1\text{V}$, $I_C=-500\text{mA}$ BD438 BD440/BD442	85 40		375 475	
	$h_{FE(3)}^{(1)}$	$V_{CE}=-1\text{V}$, $I_C=-2\text{A}$ BD438 BD440 BD442	40 25 15			
Collector-emitter saturation voltage	$V_{CE(sat)}^{(1)}$	$I_C=-3\text{A}$, $I_B=-300\text{mA}$ BD438 BD440/BD442			-0.7 -0.8	V
Base-emitter voltage	$V_{BE}^{(1)}$	$V_{CE}=-1\text{V}$, $I_C=-2\text{A}$ BD438 BD440/BD442			-1.1 -1.5	V
Transition frequency	f_T	$V_{CE}=-1\text{V}$, $I_C=-250\text{mA}$, $f=1\text{MHz}$	3			MHz

⁽¹⁾Pulse test.

Typical Characteristics

BD438,440,442

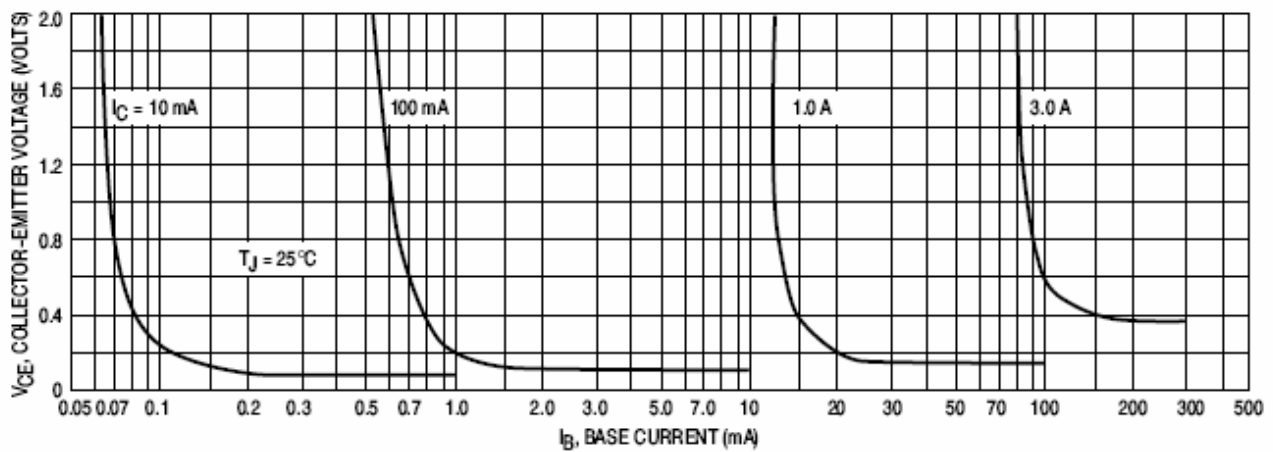


Figure 1. Collector Saturation Region

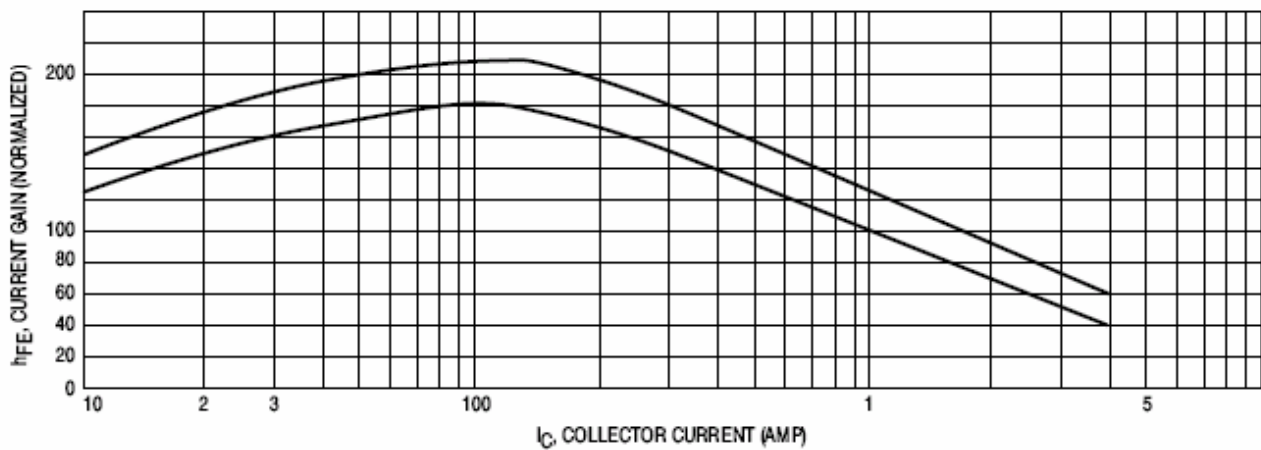


Figure 2. Current Gain

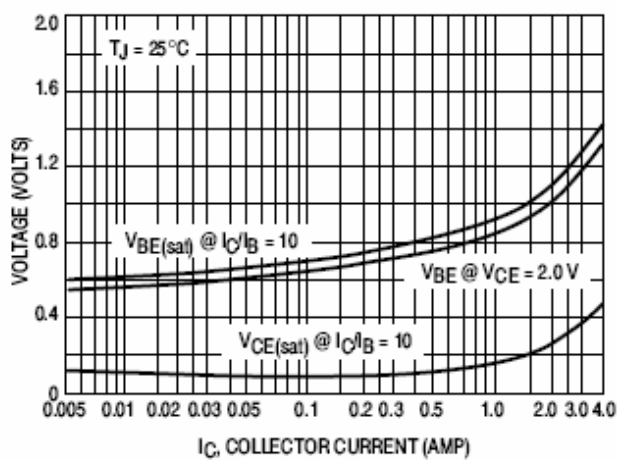


Figure 3. "On" Voltage

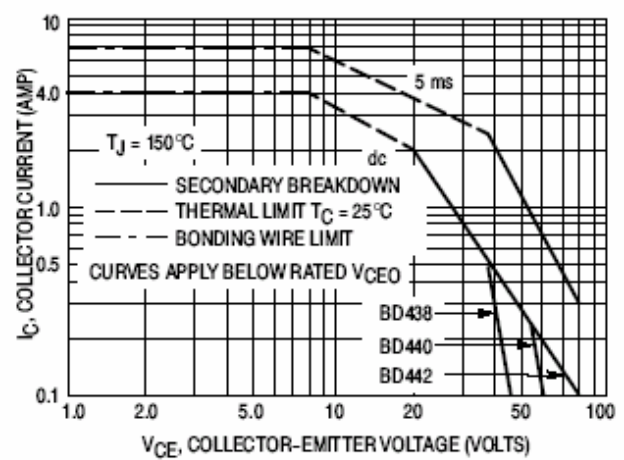


Figure 4. Active Region Safe Operating Area