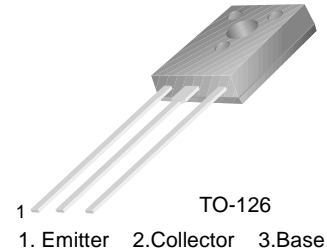


BD176/178/180

Medium Power Linear and Switching Applications

- Complement to BD 175/177/179 respectively



PNP Epitaxial Silicon Transistor

Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	*Collector-Base Voltage : BD176	- 45	V
	: BD178	- 60	V
	: BD180	- 80	V
V_{CEO}	Collector-Emitter Voltage : BD176	- 45	V
	: BD178	- 60	V
	: BD180	- 80	V
V_{EBO}	Emitter-Base Voltage	- 5	V
I_C	Collector Current (DC)	- 3	A
I_C	*Collector Current (Pulse)	- 7	A
P_C	Collector Dissipation ($T_C=25^\circ\text{C}$)	30	W
$R_{\theta ja}$	Junction to Ambient	70	$^\circ\text{C/W}$
$R_{\theta jc}$	Junction to Case	8.5	$^\circ\text{C/W}$
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	- 65 ~ 150	$^\circ\text{C}$

Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units		
$V_{CEO(sus)}$	* Collector-Emitter Sustaining Voltage : BD176	$I_C = -100\text{mA}, I_B = 0$	- 45			V		
	: BD178						- 60	V
	: BD180						- 80	V
I_{CBO}	Collector Cut-off Current : BD176	$V_{CB} = -45\text{V}, I_E = 0$			- 100	μA		
	: BD178	$V_{CB} = -60\text{V}, I_E = 0$			- 100	μA		
	: BD180	$V_{CB} = -80\text{V}, I_E = 0$			- 100	μA		
I_{EBO}	Emitter Cut-off Current	$V_{EB} = -5\text{V}, I_C = 0$			- 1	mA		
h_{FE1}	* DC Current Gain	$V_{CE} = -2\text{V}, I_C = -150\text{mA}$	40		250			
h_{FE2}		$V_{CE} = -2\text{V}, I_C = -1\text{A}$	15					
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = -1\text{A}, I_B = -0.1\text{A}$			- 0.8	V		
$V_{BE(on)}$	* Base-Emitter On Voltage	$V_{CE} = -2\text{V}, I_C = -1\text{A}$			- 1.3	V		
f_T	Current Gain Bandwidth Product	$V_{CE} = -10\text{V}, I_C = -250\text{mA}$	3			MHz		

* Pulse Test: PW=300 μs , duty Cycle=1.5% Pulsed

h_{FE} Classification

Classification	6	10	16
h_{FE1}	40 ~ 100	63 ~ 160	100 ~ 250

* Classification 16: Only BD 176

Typical Characteristics

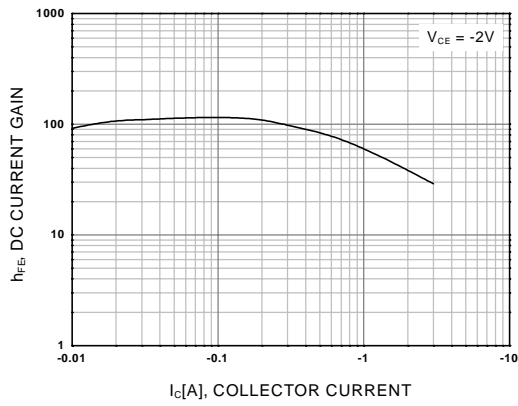
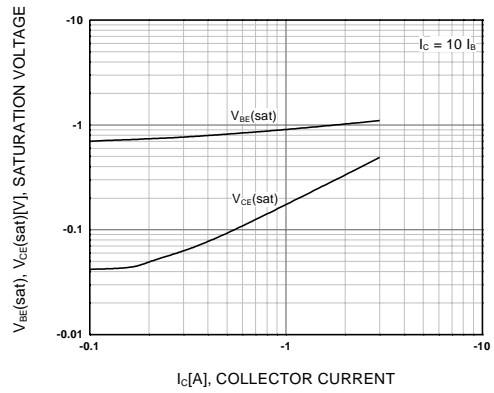


Figure 1. DC current Gain



**Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage**

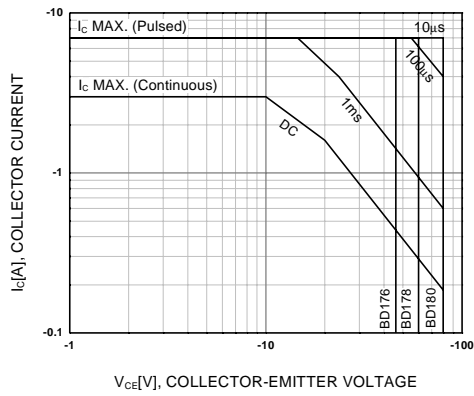


Figure 3. Safe Operating Area

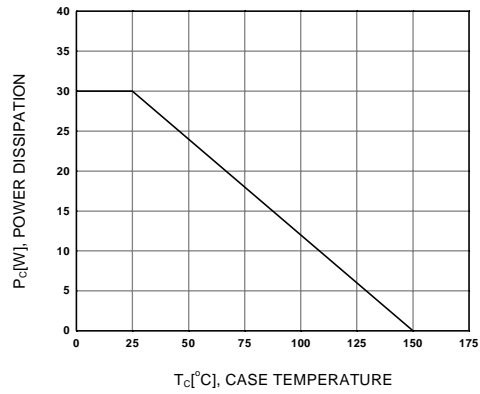


Figure 4. Power Derating

Package Dimensions

TO-126

BD176/178/180



Dimensions in Millimeters

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