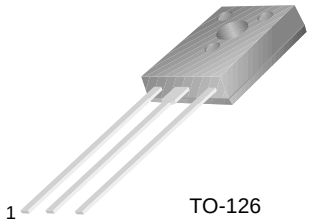
FAIRCHILD
SEMICONDUCTOR®

BD176/178/180

Medium Power Linear and Switching Applications

- Complement to BD 175/177/179 respectively



TO-126

1. Emitter 2.Collector 3.Base

PNP Epitaxial Silicon Transistor

Absolute Maximum Ratings T_C=25°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°C)		30	W
$R_{\theta ja}$	Junction to Ambient		70	°C/W
$R_{\theta jc}$	Junction to Case		8.5	°C/W
T_J	Junction Temperature		150	°C
T_{STG}	Storage Temperature		- 65 ~ 150	°C

Electrical Characteristics T_C=25°C unless otherwise noted

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

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

h_{FE} Classificntion

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

* Classification 16: Only BD 176

Typical Characteristics

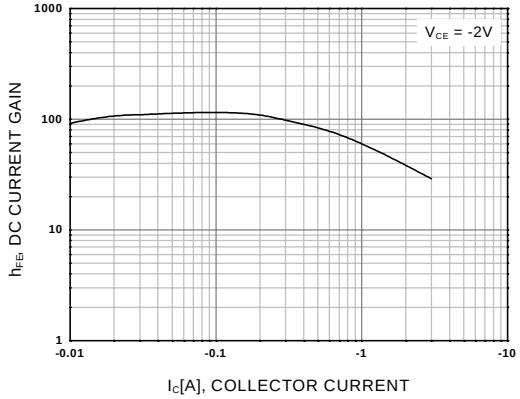


Figure 1. DC current Gain

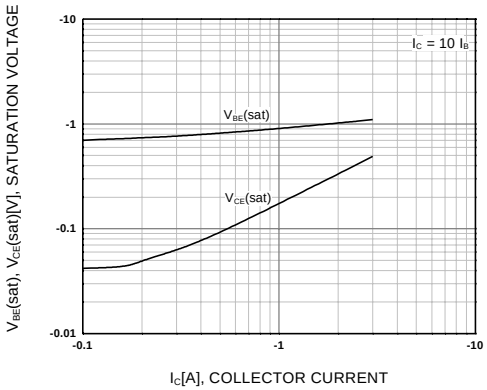


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

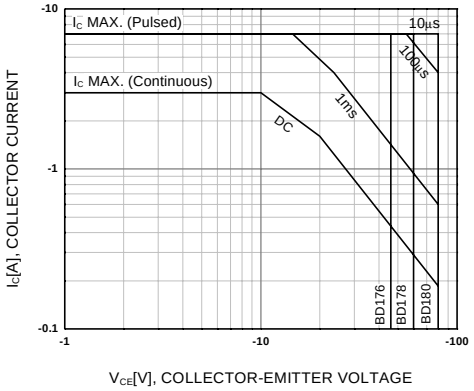


Figure 3. Safe Operating Area

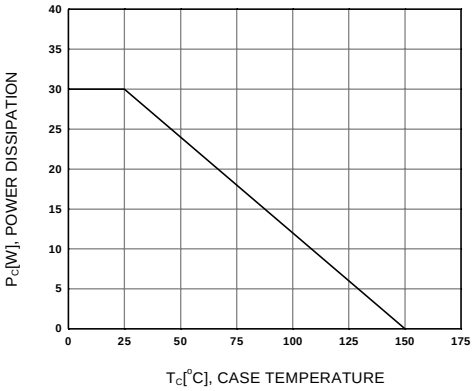
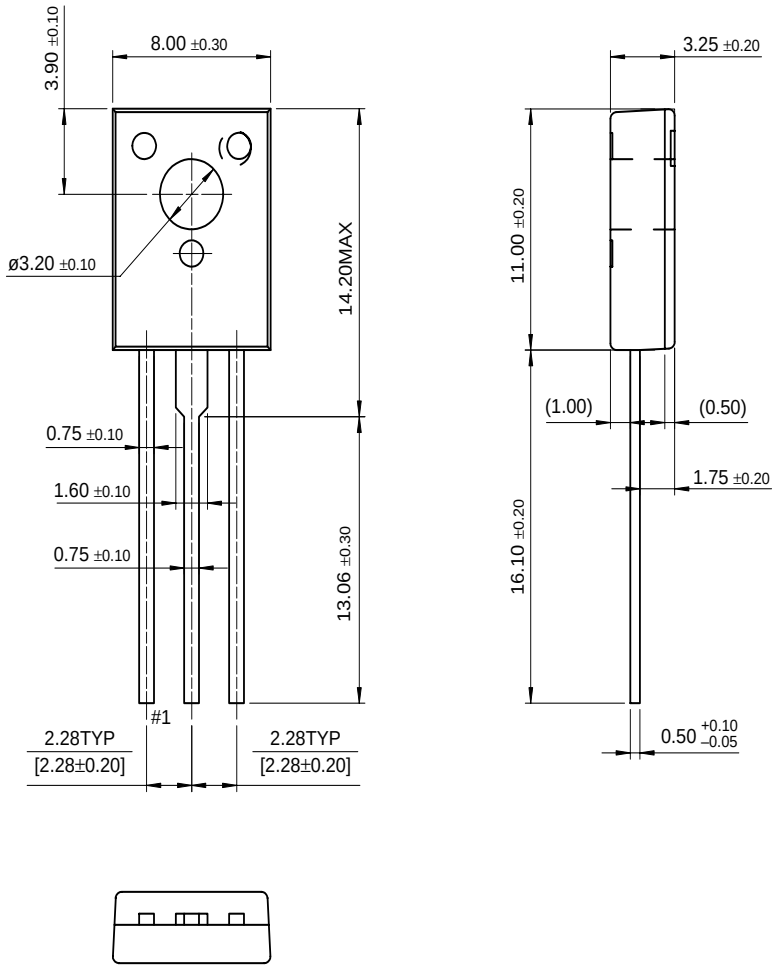


Figure 4. Power Derating

Package Dimensions

TO-126



Dimensions in Millimeters

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CoolFET™	FASTr™	MicroFET™	PowerTrench®	SuperSOT™-6
CROSSVOLT™	FRFET™	MicroPak™	QFET™	SuperSOT™-8
DOME™	GlobalOptoisolator™	MICROWIRE™	QS™	SyncFET™
EcoSPARK™	GTO™	MSX™	QT Optoelectronics™	TinyLogic™
E^2CMOS™	HiSeC™	MSXPro™	Quiet Series™	TruTranslation™
EnSigna™	I^2C™	OCX™	RapidConfigure™	UHC™
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The Power Franchise™		OPTOLOGIC®	SILENT SWITCHER®	VCX™
Programmable Active Droop™		OPTOPLANAR™	SMART START™	

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