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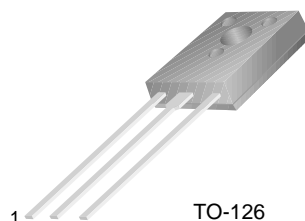
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## BD676A/678A/680A/682

### Medium Power Linear and Switching Applications

- Medium Power Darlington TR
- Complement to BD675A, BD677A, BD679A and BD681 respectively



TO-126  
1. Emitter 2. Collector 3. Base

### 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 : BD676A	- 45	V
	: BD678A	- 60	V
	: BD680A	- 80	V
	: BD682	- 100	V
$V_{CEO}$	Collector-Emitter Voltage : BD676A	- 45	V
	: BD678A	- 60	V
	: BD680A	- 80	V
	: BD682	- 100	V
$V_{EBO}$	Emitter-Base Voltage	- 5	V
$I_C$	Collector Current (DC)	- 4	A
$I_{CP}$	*Collector Current (Pulse)	- 6	A
$I_B$	Base Current	- 100	mA
$P_C$	Collector Dissipation ( $T_C=25^\circ\text{C}$ )	14	W
$R_{\theta ja}$	Thermal Resistance (Junction to Ambient)	88	$^\circ\text{C/W}$
$T_J$	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 : BD676A	$I_C = - 50\text{mA}, I_B = 0$	- 45			
	: BD678A					
	: BD680A					
	: BD682					
$I_{CBO}$	Collector-Base Voltage : BD676A	$V_{CB} = - 45\text{V}, I_E = 0$			- 200	$\mu\text{A}$
	: BD678A	$V_{CB} = - 60\text{V}, I_E = 0$			- 200	$\mu\text{A}$
	: BD680A	$V_{CB} = - 80\text{V}, I_E = 0$			- 200	$\mu\text{A}$
	: BD682	$V_{CB} = - 100\text{V}, V_{BE} = 0$			- 200	$\mu\text{A}$
$I_{CEO}$	Collector Cut-off Current : BD676A	$V_{CE} = - 45\text{V}, V_{BE} = 0$			- 500	$\mu\text{A}$
	: BD678A	$V_{CE} = - 60\text{V}, V_{BE} = 0$			- 500	$\mu\text{A}$
	: BD680A	$V_{CE} = - 80\text{V}, V_{BE} = 0$			- 500	$\mu\text{A}$
	: BD682	$V_{CE} = - 100\text{V}, V_{BE} = 0$			- 500	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = - 5\text{V}, I_C = 0$			- 2	mA
$h_{FE}$	* DC Current Gain : BD676A/678A/680A	$V_{CE} = - 3\text{V}, I_C = - 2\text{A}$	750			
	: BD682	$V_{CE} = - 3\text{V}, I_C = - 1.5\text{A}$	750			
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage : BD676A/678A/680A	$I_C = - 2\text{A}, I_B = - 40\text{mA}$			- 2.8	V
	: BD682	$I_C = - 1.5\text{A}, I_B = - 30\text{mA}$			- 2.5	V
$V_{BE(on)}$	* Base-Emitter On Voltage : BD676A/678A/680A	$V_{CE} = - 3\text{V}, I_C = - 2\text{A}$			- 2.5	V
	: BD682	$V_{CE} = - 3\text{V}, I_C = - 1.5\text{A}$			- 2.5	V

\* Pulse Test: PW=300 $\mu\text{s}$ , duty Cycle=1.5% Pulse

# Typical Characteristics

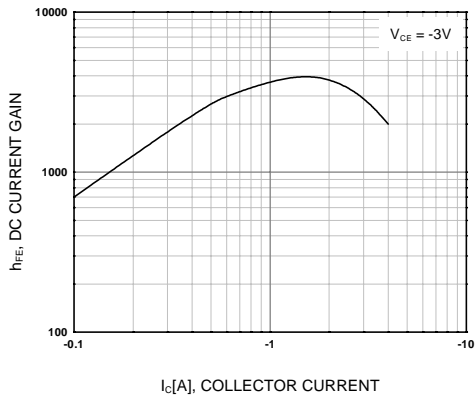


Figure 1. DC current Gain

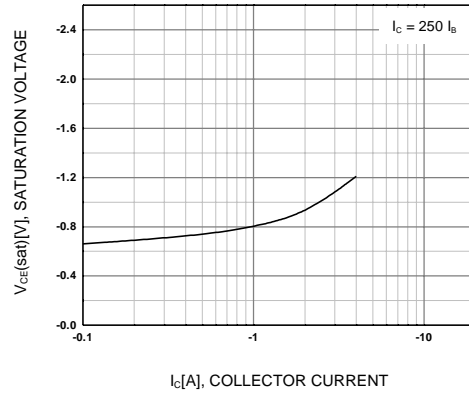


Figure 2. Collector-Emitter Saturation Voltage

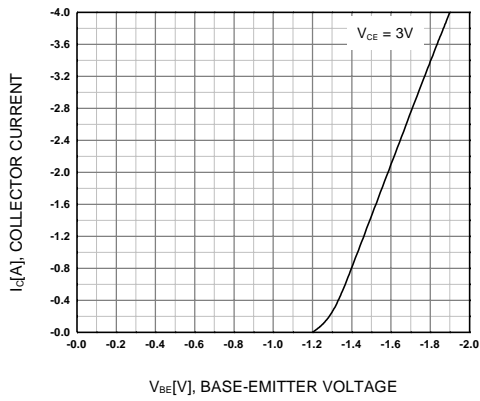


Figure 3. Base-Emitter On Voltage

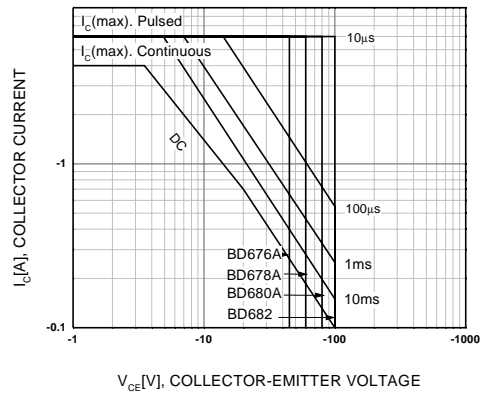


Figure 4. Safe Operating Area

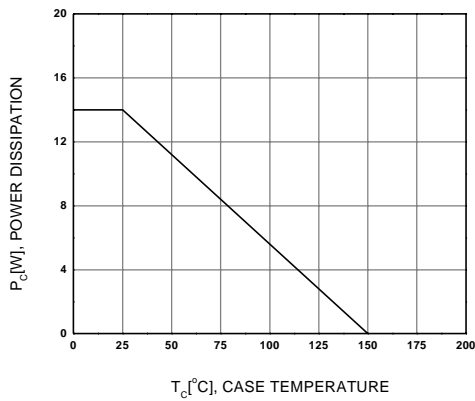


Figure 5. Power Derating

# Package Dimensions

## TO-126



Dimensions in Millimeters

BD676A/678A/680A/682

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