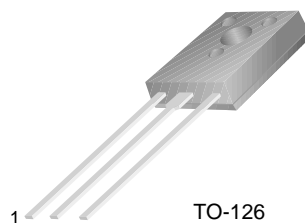


## BD675A/677A/679A/681

### Medium Power Linear and Switching Applications

- Medium Power Darlington TR
- Complement to BD676A, BD678A, BD680A and BD682 respectively

### NPN Epitaxial Silicon Transistor



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

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

Symbol	Parameter	Value	Units
$V_{CB0}$	Collector-Base Voltage : BD675A	45	V
	: BD677A	60	V
	: BD679A	80	V
	: BD681	100	V
$V_{CEO}$	Collector-Emitter Voltage : BD675A	45	V
	: BD677A	60	V
	: BD679A	80	V
	: BD681	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 ( $T_C=25^\circ\text{C}$ )	40	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 : BD675A	$I_C = 50\text{mA}, I_B = 0$	45			V
	: BD677A					V
	: BD679A					V
	: BD681					V
$I_{CBO}$	Collector-Base Voltage : BD675A	$V_{CB} = 45\text{V}, I_E = 0$			200	$\mu\text{A}$
	: BD677A	$V_{CB} = 60\text{V}, I_E = 0$			200	$\mu\text{A}$
	: BD679A	$V_{CB} = 80\text{V}, I_E = 0$			200	$\mu\text{A}$
	: BD681	$V_{CB} = 100\text{V}, V_{BE} = 0$			200	$\mu\text{A}$
$I_{CEO}$	Collector Cut-off Current : BD675A	$V_{CE} = 45\text{V}, V_{BE} = 0$			500	$\mu\text{A}$
	: BD677A	$V_{CE} = 60\text{V}, V_{BE} = 0$			500	$\mu\text{A}$
	: BD679A	$V_{CE} = 80\text{V}, V_{BE} = 0$			500	$\mu\text{A}$
	: BD681	$V_{CE} = 100\text{V}, V_{BE} = 0$			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 : BD675A/677A/679A	$V_{CE} = 3\text{V}, I_C = 2\text{A}$	750			
	: BD681	$V_{CE} = 3\text{V}, I_C = 1.5\text{A}$	750			
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage : BD675A/677A/679A	$I_C = 2\text{A}, I_B = 40\text{mA}$			2.8	V
	: BD681	$I_C = 1.5\text{A}, I_B = 30\text{mA}$			2.5	V
$V_{BE(on)}$	* Base-Emitter ON Voltage : BD675A/677A/679A	$V_{CE} = 3\text{V}, I_C = 2\text{A}$			2.5	V
	: BD681	$V_{CE} = 3\text{V}, I_C = 1.5\text{A}$			2.5	V

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

# Typical Characteristics

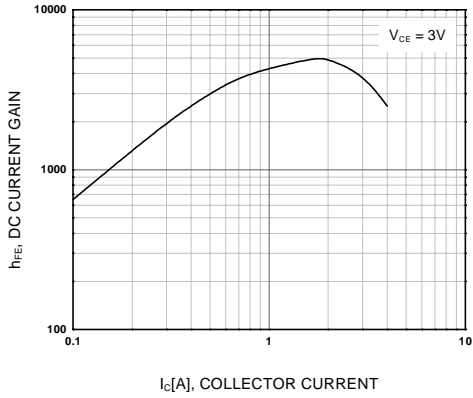


Figure 1. DC current Gain

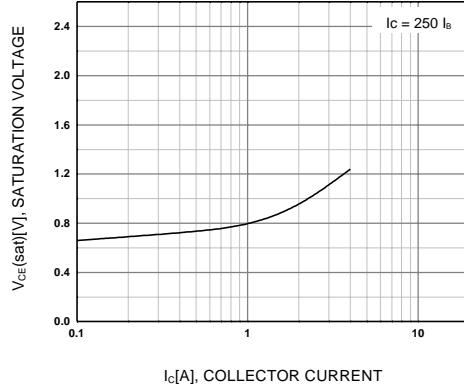


Figure 2. Collector-Emitter Saturation Voltage

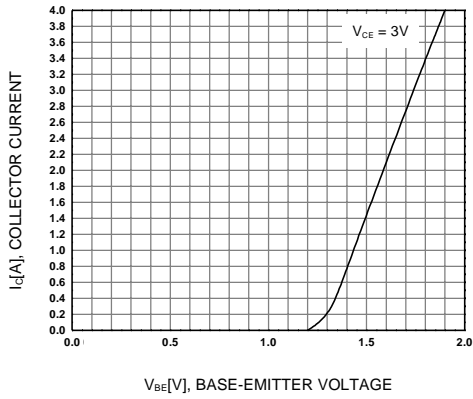


Figure 3. Base-Emitter On Voltage

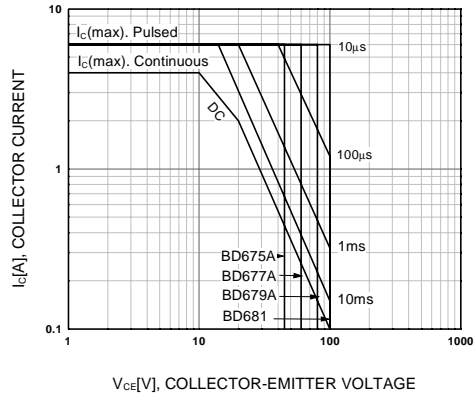


Figure 4. Safe Operating Area

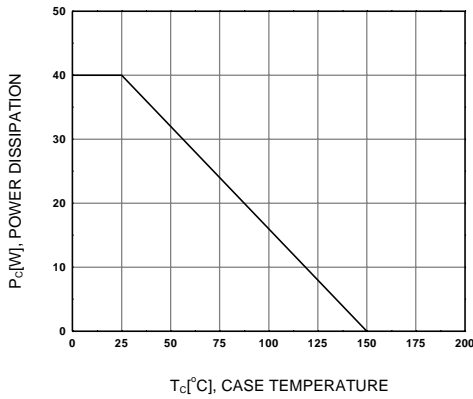
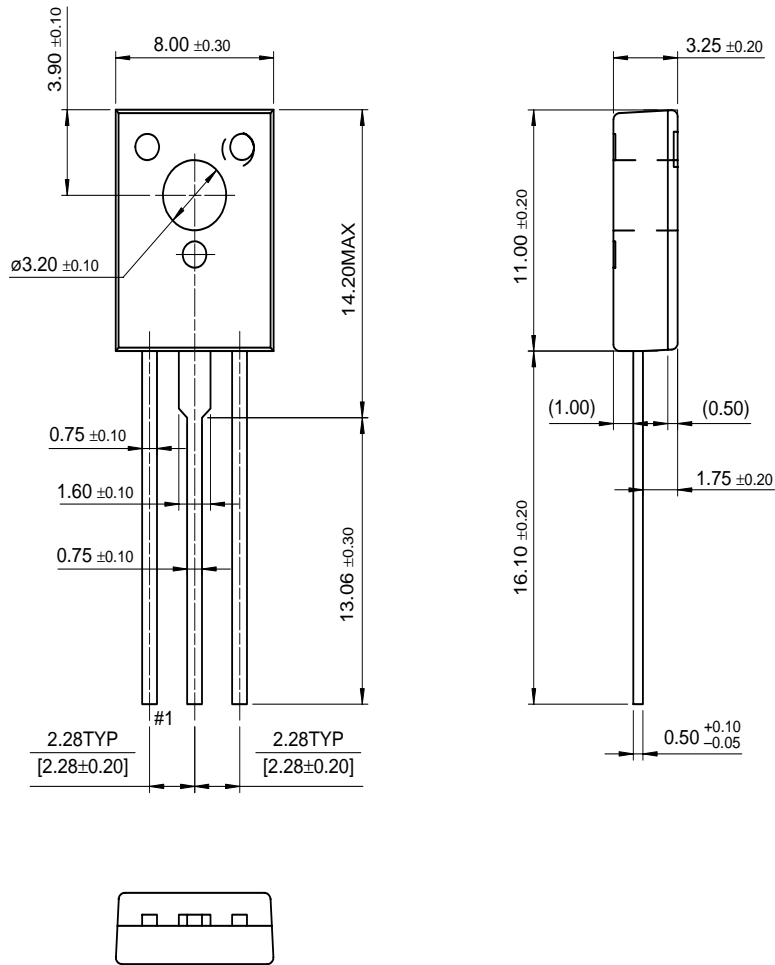


Figure 5. Power Derating

# Package Dimensions

## TO-126



BD675A/677A/679A/681

Dimensions in Millimeters

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