



## PNP BD676/A - BD678/A - BD680/A - BD682/A

### SILICON DARLINGTON POWER TRANSISTORS

The BD676/A-BD678/A-BD680/A-BD682/A are PNP transistors mounted in Jedec TO-126 plastic package.

They are epitaxial-base transistors in monolithic Darlington circuit for audio and video applications.

NPN complements are BD675/A-BD677/A-BD679/A-BD681/A

Compliance to RoHS.

#### ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit
-V <sub>CEO</sub>	Collector-Emitter Voltage	BD676/A	45	V
		BD678/A	60	
		BD680/A	80	
		BD682/A	100	
-V <sub>CBO</sub>	Collector-Base Voltage	BD676/A	45	V
		BD678/A	60	
		BD680/A	80	
		BD682/A	100	
-V <sub>EBO</sub>	Emitter-Base Voltage		5	V
-I <sub>C</sub>	Collector Current	-I <sub>C</sub>	4	A
		-I <sub>CM</sub>	6	
-I <sub>B</sub>	Base current (peak value)	-I <sub>BM</sub>	0.1	A
P <sub>T</sub>	Total power Dissipation	@ T <sub>mb</sub> = 25°C	40	W
T <sub>J</sub>	Junction Temperature		150	°C
T <sub>Stg</sub>	Storage Temperature		-65 to +150	°C

#### THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit	
R <sub>thJ-mb</sub>	Thermal Resistance, Junction to mounting base		3.12	K/W
R <sub>thJ-a</sub>	Thermal Resistance, Junction to ambient in free air		100	K/W

**PNP BD676/A - BD678/A - BD680/A - BD682/A**
**ELECTRICAL CHARACTERISTICS**

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit	
$-I_{CBO}$	Collector cut-off current	$I_E=0, -V_{CB} = -45\text{ V}$	BD676/A	-	-	0,2	mA
		$I_E=0, -V_{CB} = -60\text{ V}$	BD678/A	-	-	0,2	
		$I_E=0, -V_{CB} = -80\text{ V}$	BD680/A	-	-	0,2	
		$I_E=0, -V_{CB} = -100\text{ V}$	BD682/A	-	-	0,2	
		$I_E=0, -V_{CB} = -45\text{ V}, T_j = 150^\circ\text{C}$	BD676/A	-	-	2	
		$I_E=0, -V_{CB} = -60\text{ V}, T_j = 150^\circ\text{C}$	BD678/A	-	-	2	
		$I_E=0, -V_{CB} = -80\text{ V}, T_j = 150^\circ\text{C}$	BD680/A	-	-	2	
		$I_E=0, -V_{CB} = -100\text{ V}, T_j = 150^\circ\text{C}$	BD682/A	-	-	2	
$-I_{CEO}$	Collector cut-off current	$I_B=0, -V_{CE} = -\frac{1}{2}V_{CEOMAX}$	BD676/A	-	-	0,5	mA
			BD678/A	-	-	0,5	
			BD680/A	-	-	0,5	
			BD682/A	-	-	0,5	
$-I_{EBO}$	Emitter cut-off current	$I_C=0, -V_{EB}=5\text{ V}$	-	-	5	mA	
$-V_{CEO(SUS)}$	Collector-Emitter sustaining Voltage	$I_B=0, -I_C=50\text{ mA}$	BD676/A	45	V	-	V
			BD678/A	60		-	
			BD680/A	80		-	
			BD682/A	100		-	
$-V_{CE(SAT)}$	Collector-Emitter saturation Voltage	BD676, BD678, BD680, BD682 $-I_C=1.5\text{ A}, -I_B=30\text{ mA}$	-	-	2,5	V	
		BD676A, BD678A, BD680A, BD682A $-I_C=2\text{ A}, -I_B=40\text{ mA}$	-	-	2.8		
$h_{FE}$	DC Current Gain	BD676, BD678, BD680, BD682 $-V_{CE}=3\text{ V}, -I_C=500\text{ mA}$	-	2200	-		
		BD676, BD678, BD680, BD682 $-V_{CE}=3\text{ V}, -I_C=1,5\text{ A}$	750	-	-		
		BD676, BD678, BD680, BD682 $-V_{CE}=3\text{ V}, -I_C=4\text{ A}$	-	650	-		
		BD676A, BD678A, BD680A, BD682A $-V_{CE}=3\text{ V}, -I_C=2\text{ A}$	750	-	-		
$-V_{BE}$	Base-Emitter Voltage(1&2)	BD676, BD678, BD680, BD682 $-V_{CE}=3\text{ V}, -I_C=1,5\text{ A}$	-	-	2,5	V	
		BD676A, BD678A, BD680A, BD682A $-V_{CE}=3\text{ V}, -I_C=2\text{ A}$	-	-	2.5		
$h_{fe}$	Small signal current gain	$-V_{CE}=3\text{ V}, -I_C=1,5\text{ A}, f=1\text{ MHz}$	10	-	-		
$f_{hfe}$	Ut-off frequency	$-V_{CE}=3\text{ V}, -I_C=1,5\text{ A}$	-	60	-	kHz	
$V_F$	Diode forward voltage	$I_F=1,5\text{ A}$	-	1,5	-	V	
$-I_{(SB)}$	Second-breakdown collector current	$-V_{CE}=50\text{ V}, t_p=20\text{ms, non rep., without heatsink}$	0,8	-	-	A	

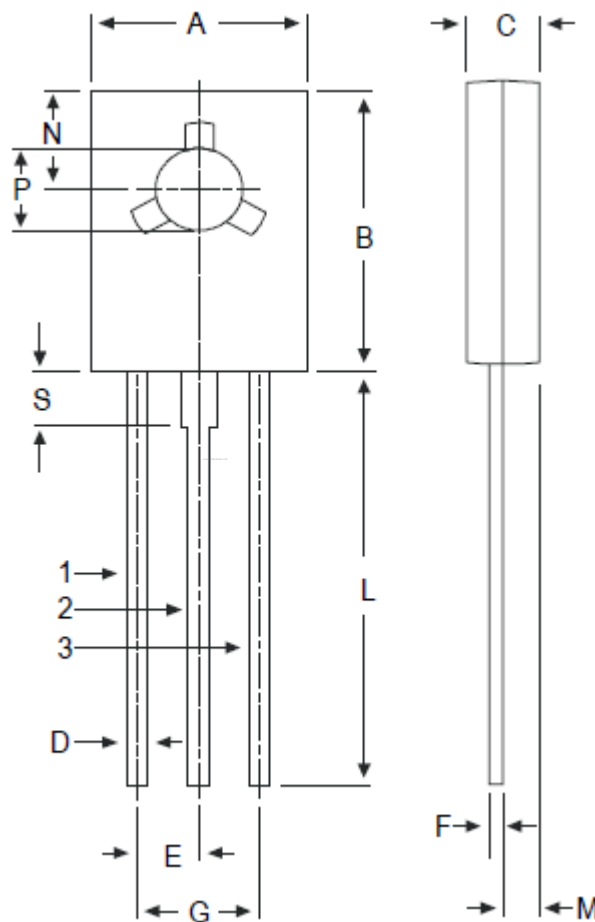
**PNP BD676/A - BD678/A - BD680/A - BD682/A**

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit
$t_{on}$	Turn-on time	$-I_{con} = 1,5A, -I_{bon} = I_{boff} = 6mA,$	-	0,3	1.5	$\mu s$
$t_{off}$	Turn-off time		-	1,5	5	

1. Measured under pulse conditions :  $t_p < 300\mu s, \delta < 2\%$ .
2.  $V_{BE}$  decreases by about 3,6 mV/K with increasing temperature.

**MECHANICAL DATA CASE TO-126**

	DIMENSIONS	
	min	max
A	7.4	7.8
B	10.5	10.8
C	2.4	2.7
D	0.7	0.9
E	2.25 typ.	
F	0.49	0.75
G	4.4 typ.	
L	15.7 typ.	
M	1.27 typ.	
N	3.75 typ.	
P	3.0	3.2
S	2.54 typ.	



Pin 1 :	Emitter
Pin 2 :	Collector
Pin 3 :	Base

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