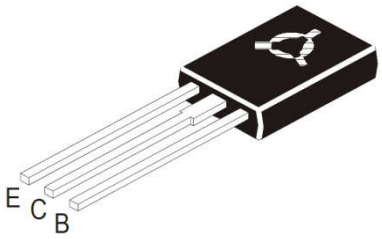
PNP MEDIUM POWER DARLINGTONS TRANSISTOR

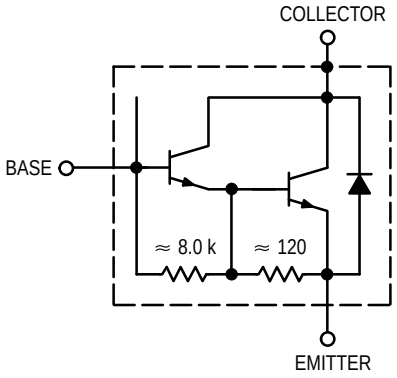
FEATURES

- BD676,676A,678,678A,680,680A,682 are complementary with BD675, 675A, 677,677A, 679,679A,681
- High DC current gain:h_{FE}=750(Min)@I_C=1.5 and 2.0Adc
- BD678, 678A, 680, 680A are equivalent to MJE700, 701, 702, 703



TO-126(TO−225AA)

Equivalent circuit



MECHANICAL DATA

- Case: TO-126 (TO-225AA)
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Terminals: Tin plated,solderable per MIL-STD-202, Method 208
- Weight: 0.5 grams (approximate)

MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

Parameter		Symbol	Value	Unit
Collector-emitter voltage	BD676, BD676A	V_{CEO}	45	Vdc
	BD678, BD678A		60	
	BD680, BD680A		80	
	BD682		100	
Collector-base voltage	BD676, BD676A	V_{CB}	45	
	BD678, BD678A		60	
	BD680, BD680A		80	
	BD682		100	
Emitter-base voltage		V_{EB}	5.0	
Collector current		I_C	4.0	Adc
Base current		I_B	0.1	
Total device dissipation	T_C=25°C	P_D	40	W
	Derate above 25°C		0.32	W/°C
Operating and storage junction temperature range		T_J, T_{STG}	−55 ~ +150	°C
Thermal resistance from junction to case		$R_{\theta JC}$	3.13	°C/W

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Parameter		Symbol	Min	Max	Unit	Conditions
Collector emitter breakdown voltage (note 1)	BD676, BD676A	BV_{CEO}	45		Vdc	I_C=50mAdc,I_B=0
	BD678, BD678A		60			
	BD680, BD680A		80			
	BD682		100			
Collector cutoff current		I_{CEO}		500	μAdc	V_{CE}=Half rate V_{CEO}, I_B=0
Collector cutoff current		I_{CBO}		0.2	mAdc	V_{CB}=rate BV_{CEO}, I_E=0
				2.0		V_{CB}=rate BV_{CEO}, I_E=0,T_C=100°C
Emitter cutoff current		I_{EBO}		2.0		V_{BE}=5.0Vdc,Ic=0
DC current gain (note 1)	BC676,678,680,682	h_{FE}	750			Ic=1.5Adc,V_{CE}=3Vdc
	BC676A,678A,680A		750			Ic=2Adc,V_{CE}=3Vdc
Collector emitter saturation voltage (note 1)	BC678,680,682	$V_{CE(sat)}$		2.5	Vdc	Ic=1.5Adc,I_B=30mAdc
	BC676A,678A,680A			2.8		I_C=2.0Adc,I_B=40mAdc
Base emitter on Voltage (note 1)	BC678,680,682	$V_{BE(on)}$		2.5		Ic=1.5Adc,V_{CE}=3Vdc
	BC676A,678A,680A			2.5		Ic=2Adc,V_{CE}=3Vdc
Small−Signal Current Gain		h_{fe}	1.0			Ic=1.5Adc,V_{CE}=3Vdc, f=1MHz

Note: 1. Pulse test: pulse width≤300μs,duty cycle≤2.0%

TYPICAL CHARACTERISTICS

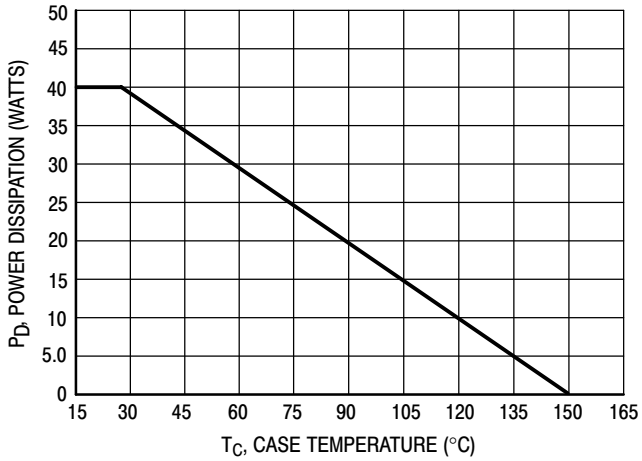

Figure 1. Power Temperature Derating

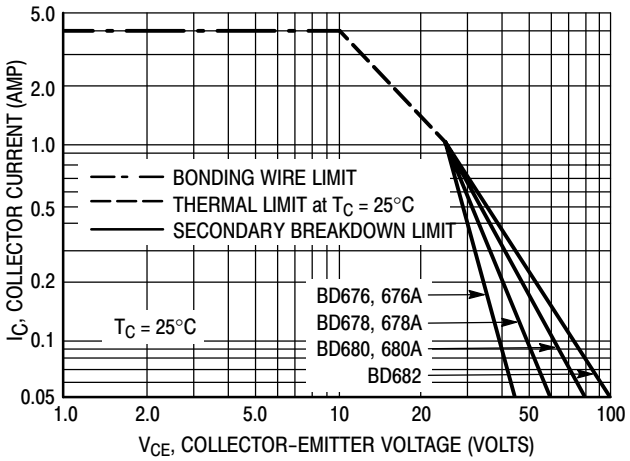

Figure 2. DC Safe Operating Area

There are two limitations on the power handling ability of a transistor average junction temperature and secondary breakdown. Safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation; e.g., the transistor must not be subjected to greater dissipation than the curves indicate.

At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by secondary breakdown.

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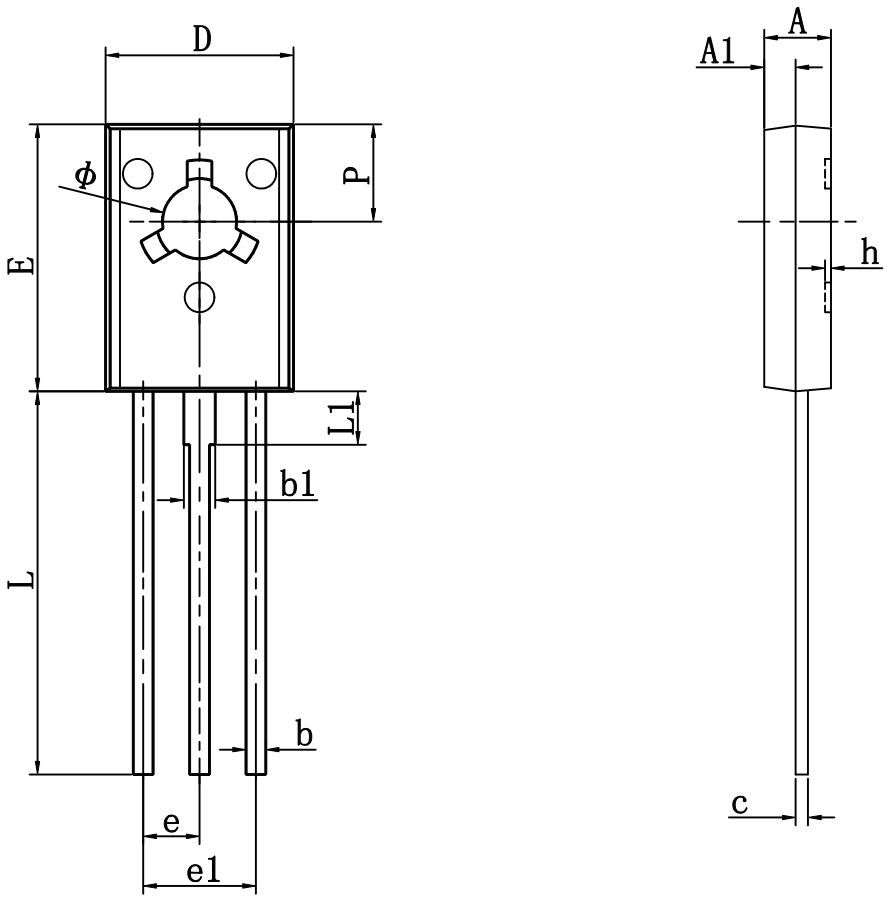
TO-126 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	2.500	2.900	0.098	0.114
A1	1.100	1.500	0.043	0.059
b	0.660	0.860	0.026	0.034
b1	1.170	1.370	0.046	0.054
c	0.450	0.600	0.018	0.024
D	7.400	7.800	0.291	0.307
E	10.600	11.000	0.417	0.433
e	2.290 TYP		0.090 TYP	
e1	4.480	4.680	0.176	0.184
h	0.000	0.300	0.000	0.012
L	15.300	15.700	0.602	0.618
L1	2.100	2.300	0.083	0.091
P	3.900	4.100	0.154	0.161
Φ	3.000	3.200	0.118	0.126