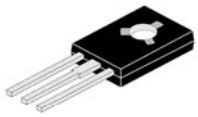
NPN PLASTIC POWER TRANSISTORS

BD165 BD167 BD169



TO-126

TO-126 Leaded Plastic Package RoHS compliant

Complementary **PNP BD166, 168, 170**

APPLICATION: Audio Amplifier and Driver Circuit Applications

ABSOLUTE MAXIMUM RATINGS (Ta = 25 ℃ Unless otherwise specified)

PARAMETER	SYMBOL	VALUE				UNIT
			BD165	BD167	BD169	
Collector-base voltage (open emitter)	V_{CBO}	Max	45	60	80	V
Collector-emitter voltage (open base)	V_{CEO}	Max	45	60	80	V
Collector current	I_C	Max	1.5			A
Total power dissipation up to TC = 25°C	P_{tot}	Max	20			W
Junction temperature	T_j	Max	150			°C
Collector-emitter saturation voltage I_C = 0.5A; I_B = 0.05A	V_{CEsat}	Max	0.5			V
D.C. current gain I_C = 0.15A; V_{CE} = 2V	h_{FE}	Min	40			
Collector-base voltage (open emitter)	V_{CBO}	Max	45	60	80	V
Collector-emitter voltage (open base)	V_{CEO}	Max	45	60	80	V
Emitter-base voltage (open collector)	V_{EBO}	Max	5.0			V
Collector current	I_C	Max	1.5			A
Base current	I_B	Max	0.5			A
Total power dissipation up to TA = 25°C	P_{tot}	Max	1.25			W
Derate above 25°C		Max	8			mW/°C
Total power dissipation up to TC = 25°C	P_{tot}	Max	20			W
Derate above 25°C		Max	160			mW/°C
Junction temperature	T_j	Max	150			°C
Storage temperature	T_{stg}	Max	-65 to +150			°C

THERMAL RESISTANCE

From junction to case	$R_{th\ j-c}$	6.25	°C/W
From junction to ambient	$R_{th\ j-a}$	100	°C/W

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Rev01 10072020E

ELECTRICAL CHARACTERISTICS at (Ta = 25 ℃ Unless otherwise specified)

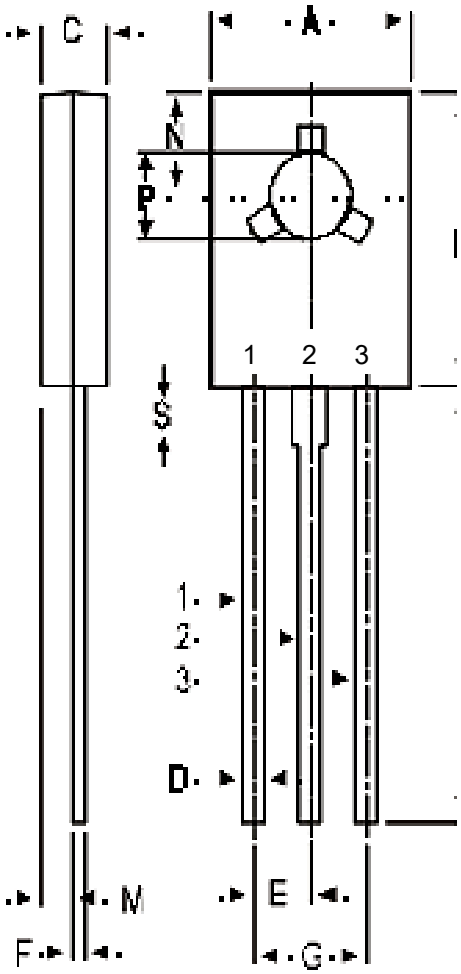
PARAMETER	SYMBOL	TEST CONDITION		VALUE			UNIT
				BD165	BD167	BD169	
Collector cutoff current	I_{CBO}	I_E = 0; V_{CB} = 45V	Max	0.1	--	--	mA
	I_{CBO}	I_E = 0; V_{CB} = 60V	Max	--	0.1	--	mA
	I_{CBO}	I_E = 0; V_{CB} = 80V	Max	--	--	0.1	mA
Emitter cut-off current	I_{EBO}	I_C = 0; V_{EB} = 5V	Max	--	1.0	--	mA
Breakdown voltages	$V_{CEO(sus)}$ [1]	I_C = 0.1A; I_B = 0	Min	45	60	80	V
	V_{CBO}	I_C = 1mA; I_E = 0	Min	45	60	80	V
	V_{EBO}	I_E = 1mA; I_C = 0	Min	5.0			V
DC current gain	h_{FE} [1]	I_C = 0.15A; V_{CE} = 2V	Min	40			
		I_C = 0.5A; V_{CE} = 2V	Min	15			
Saturation voltage	$V_{CE(sat)}$ [1]	I_C = 0.5A; I_B = 0.05A	Max	0.5			V
Base-emitter on voltage	$VB_{E(on)}$ [1]	I_C = 0.5 A; V_{CE} = 2V	Max	0.95			V
Transition frequency f = 1 MHz	f_T	I_C = 500 mA; V_{CE} = 2V	Min	6.0			MHz

Note:

1. Pulse test: pulse width ≤ 300 μs; duty cycle ≤ 2%

PACKAGE DETAILS

Package



DIN	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	4.5 TYP.	
L	15.7 TYP.	
M	1.27 TYP.	
N	3.75 TYP.	
P	3.0	3.2
S	2.5 TYP.	

All dimensions are in mm

Pin Configuration

1. EMITTER
2. COLLECTOR
3. BASE

Recommended Product Storage Environment for Discrete Semiconductor Devices

This storage environment assumes that the Diodes and transistors are packed properly inside the original packing supplied by CDIL.

- Temperature 5 °C to 30 °C
- Humidity between 40 to 70 %RH
- Air should be clean.
- Avoid harmful gas or dust.
- Avoid outdoor exposure or storage in areas subject to rain or water spraying .
- Avoid storage in areas subject to corrosive gas or dust. Product shall not be stored in areas exposed to direct sunlight.
- Avoid rapid change of temperature.
- Avoid condensation.
- Mechanical stress such as vibration and impact shall be avoided.
- The product shall not be placed directly on the floor.
- The product shall be stored on a plane area. They should not be turned upside down. They should not be placed against the wall.

Shelf Life of CDIL Products

The shelf life of products is the period from product manufacture to shipment to customers. The product can be unconditionally shipped within this period. The period is defined as 2 years.

If products are stored longer than the shelf life of 2 years the products shall be subjected to quality check as per CDIL quality procedure.

The products are further warranted for another one year after the date of shipment subject to the above conditions in CDIL original packing.

Floor Life of CDIL Products and MSL Level

When the products are opened from the original packing, the floor life will start.
For this, the following JEDEC table may be referred:

JEDEC MSL Level		
Level	**Time**	**Condition**
1	Unlimited	≤30 °C / 85% RH
2	1 Year	≤30 °C / 60% RH
2a	4 Weeks	≤30 °C / 60% RH
3	168 Hours	≤30 °C / 60% RH
4	72 Hours	≤30 °C / 60% RH
5	48 Hours	≤30 °C / 60% RH
5a	24 Hours	≤30 °C / 60% RH
6	Time on Label(TOL)	≤30 °C / 60% RH

Customer Notes

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).
CDIL strives for continuous improvement and reserves the right to change the specifications of its products without prior notice.

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