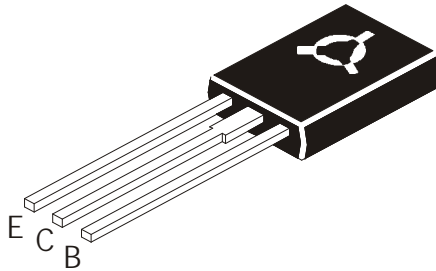


## EPITAXIAL SILICON POWER TRANSISTORS



<b>BD233</b>	<b>BD234</b>
<b>BD235</b>	<b>BD236</b>
<b>BD237</b>	<b>BD238</b>
<b>NPN</b>	<b>PNP</b>

**TO126**  
**Plastic Package**

Intended for use in Medium Power Linear Switching Applications

### ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	BD233 BD234	BD235 BD236	BD237 BD238	UNIT
Collector Base Voltage	$V_{CBO}$	45	60	100	V
Collector Emitter Voltage	$V_{CEO}$	45	60	80	V
Collector Emitter Voltage ( $R_{BE}=1KW$ )	$V_{CER}$	45	60	100	V
Emitter Base Voltage	$V_{EBO}$	5.0			V
Collector Current	$I_C$	2.0			A
Collector Peak Current	$I_{CM}$	6.0			A
Total Dissipation @ $T_C=25^\circ C$	$P_D$	25			W
Total Dissipation @ $T_a=25^\circ C$ Derate above $25^\circ C$	$P_D$	1.25 10			W mW/°C
Operating and Storage Junction Temperature Range	$T_j, T_{stg}$	- 65 to +150			°C

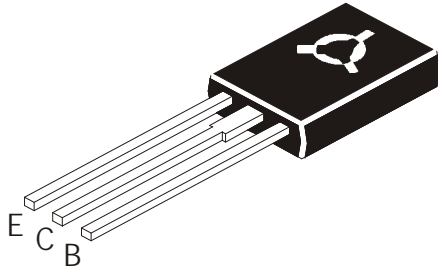
### THERMAL CHARACTERISTICS

Junction to Case	$R_{th(j-c)}$	5.0	°C/W
Junction to Ambient in free air	$R_{th(j-a)}$	100	°C/W

### ELECTRICAL CHARACTERISTICS ( $T_C=25^\circ C$ unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT	
Collector Cut off Current	$I_{CBO}$	$V_{CB}=45V, I_E=0$ <b>BD233/234</b>			100	$\mu A$	
		$V_{CB}=60V, I_E=0$ <b>BD235/236</b>			100	$\mu A$	
		$V_{CB}=100V, I_E=0$ <b>BD237/238</b>			100	$\mu A$	
		$T_C = 150^\circ C$					
		$V_{CB}=45V, I_E=0$ <b>BD233/234</b>			2.0	mA	
		$V_{CB}=60V, I_E=0$ <b>BD235/236</b>			2.0	mA	
$V_{CB}=100V, I_E=0$ <b>BD237/238</b>			2.0	mA			
Emitter Cut off Current	$I_{EBO}$	$V_{EB}=5V, I_C=0$			1.0	mA	
Collector Emitter Sustaining Voltage	$*V_{CEO(sus)}$	$I_C=0.1A, I_B=0$ <b>BD233/234</b>	45			V	
		<b>BD235/236</b>	60			V	
		<b>BD237/238</b>	80			V	
Collector Emitter Saturation Voltage	$*V_{CE(sat)}$	$I_C=1.0A, I_B=0.1A$			0.6	V	
Base Emitter Voltage	$*V_{BE(on)}$	$I_C=1.0A, V_{CE}=2V$			1.3	V	

# EPITAXIAL SILICON POWER TRANSISTORS



BD233	BD234
BD235	BD236
BD237	BD238
NPN	PNP

**TO126**  
**Plastic Package**

## ELECTRICAL CHARACTERISTICS ( $T_C=25^\circ\text{C}$ unless specified otherwise)

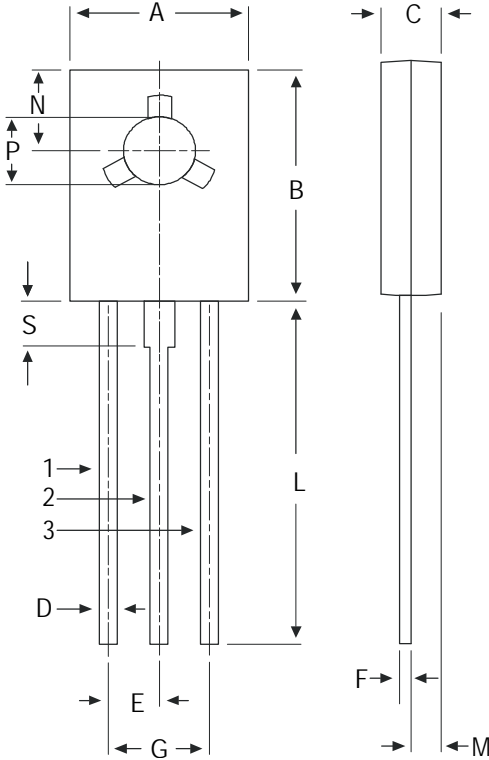
DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
DC Current Gain	$*h_{FE}$	$I_C=150\text{mA}, V_{CE}=2\text{V}$	40			
		$I_C=1.0\text{A}, V_{CE}=2\text{V}$	25			
Current Gain Bandwidth Product	$f_T$	$I_C=250\text{mA}, V_{CE}=10\text{V}$	3			MHz
$*h_{FE1} / h_{FE2}$	Matched Pairs	$I_C=150\text{mA}, V_{CE}=2\text{V}$		1.6		

\*Pulsed Pulse Duration=300ms, Duty Cycle=1.5%

<b>BD233</b>	<b>BD234</b>
<b>BD235</b>	<b>BD236</b>
<b>BD237</b>	<b>BD238</b>
<b>NPN</b>	<b>PNP</b>

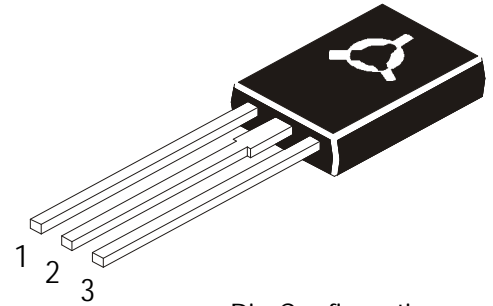
**TO126**  
**Plastic Package**

**TO-126 (SOT-32) Plastic Package**



DIM	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.	

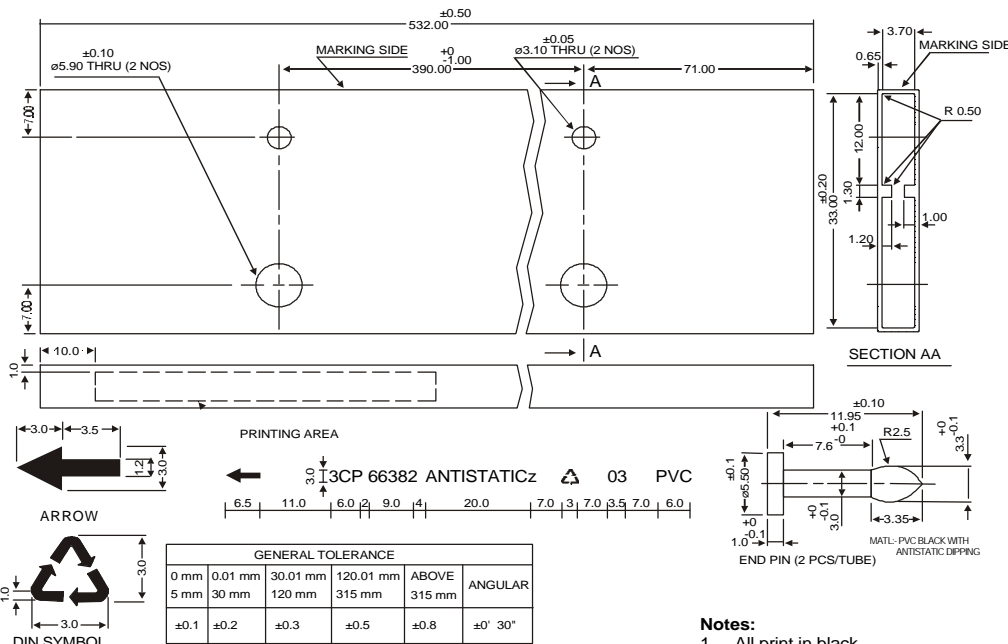
All dimensions in mm.



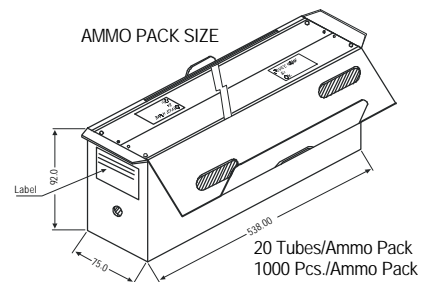
Pin Configuration

1. Emitter
2. Collector
3. Base

**TO-126 TUBE PACKING**



- Notes:**
1. All print in black.
  2. All text in Helvetia medium font.



**Packing Details**

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-126 Bulk	500 pcs/polybag	340 gm/500 pcs	3" x 7.5" x 7.5"	2K	17" x 15" x 13.5"	32K	31 kgs
TO-126 Tube	50 pcs/tube	73 gm/50 pcs	3" x 3.7" x 21.5"	1K	19" x 19" x 19"	10K	15 kgs

## Notes

<b>BD233</b>	<b>BD234</b>
<b>BD235</b>	<b>BD236</b>
<b>BD237</b>	<b>BD238</b>
<b>NPN</b>	<b>PNP</b>

**TO126**  
**Plastic Package**

### Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Discrete 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 Discrete 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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