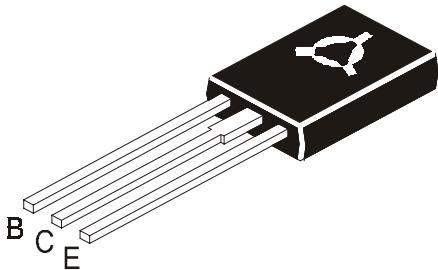


## NPN SILICON POWER TRANSISTOR

C13003



TO126  
Plastic Package

### Applications

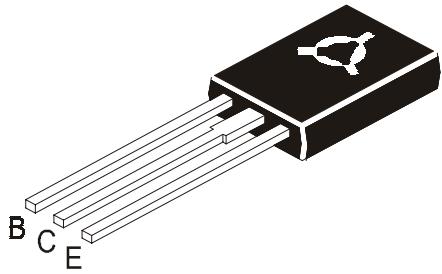
Suitable for Lighting, Switching Regulator and Motor Control

#### ABSOLUTE MAXIMUM RATINGS(Ta=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	VALUE	UNIT
Collector -Base Voltage	$V_{CBO}$	600	V
Collector -Emitter ( sus ) Voltage	$V_{CEO}$	400	V
Emitter -Base Voltage	$V_{EBO}$	9.0	V
Collector Current Continuous	$I_C$	1.5	A
Peak (1)	$I_{CM}$	3.0	A
Base Current Continuous	$I_B$	0.75	A
Peak (1)	$I_{BM}$	1.5	A
Emitter Current Continuous	$I_E$	2.25	A
Peak (1)	$I_{EM}$	4.5	A
Power Dissipation @ Ta=25°C	$P_D$	1.4	W
Derate Above 25°C		11.2	mW/°C
Power Dissipation @ Tc=25°C	$P_D$	40	W
Derate Above 25°C		320	mW/°C
Operating And Storage Junction	$T_j, T_{stg}$	-65 to +150	°C
Temperature Range			
<u> THERMAL RESISTANCE</u>			
Junction to Case	$R_{th(j-c)}$	3.12	°C/W
Junction to Ambient	$R_{th(j-a)}$	89	°C/W
Maximum Lead Temperature for Soldering	TL	275	°C
Purposes: 1/8" from Case for 5 Seconds.			
(1) Pulse Test: Pulse Width= 5ms Duty Cycle =10%			

#### ELECTRICAL CHARACTERISTICS (Ta=25°C Unless Otherwise Specified)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector -Base Voltage	$V_{CBO}$	$I_C=1mA, I_E=0$	600	-	-	V
Collector -Emitter ( sus ) Voltage	$V_{CEO(sus)}$	* $I_C=10mA, I_B=0$	400	-	-	V
Collector-Cutoff Current	$I_{CBO}$	$V_{CB}=600V, I_E=0$	-	-	1.0	mA
		$VCB=600V, IE=0, TC=100°C$	-	-	5.0	mA
Emitter-Cutoff Current	$I_{EBO}$	$V_{EB}=9V, I_C=0$	-	-	1.0	mA



## ELECTRICAL CHARACTERISTICS (Ta=25°C Unless Otherwise Specified)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
DC Current Gain	hFE*	$I_C=0.3A, V_{CE}=2V$ (1) Note	10	-	30	
		$I_C=0.5A, V_{CE}=2V$	8.0	-	40	
		$I_C=1A, V_{CE}=2V$	4.0	-	25	
Collector Emitter Saturation Voltage	$V_{CE(Sat)}$	$I_C=0.5A, I_B=0.1A$	-	-	0.50	V
		$I_C=1A, I_B=0.25A$	-	-	1.0	V
		$I_C=1.5A, I_B=0.5A$	-	-	3.0	V
		$I_C=1A, I_B=0.25A, TC=100^{\circ}C$	-	-	1.0	V
Base Emitter Saturation Voltage	$V_{BE(Sat)}$	$I_C=0.5A, I_B=0.1A$	-	-	1.0	V
		$I_C=1A, I_B=0.25A$	-	-	1.2	V
		$I_C=1A, I_B=0.25A, TC=100^{\circ}C$	-	-	1.1	V

## ELECTRICAL CHARACTERISTICS (Ta=25°C Unless Otherwise Specified)

DYNAMIC CHARACTERISTICS

Current Gain- Bandwidth Product	$f_t$	$I_C=100mA, V_{CE}=10V$ $f=1MHz$	4.0	-	-	MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10V, f=0.1MHz$	-	21	-	pF

SWITCHING CHARACTERISTICS

Delay Time	$t_d$		-	-	0.1	$\mu s$
Rise Time	$t_r$	$V_{CC}=125V, I_C=1A,$ $IB1=IB2=0.2A,$	-	-	1.0	$\mu s$
Storage Time	$t_s$	$tp=25\mu s,$	-	-	4.0	$\mu s$
Fall Time	$t_f$	Duty Cycle=1%	-	-	0.7	$\mu s$
Storage Time	$t_{sv}$	$I_C=1A, V_{clamp}=300V,$ $IB1=0.2A,$	-	-	4.0	$\mu s$
Crossover Time	$t_c$	$V_{BE(off)}=5V,$	-	-	0.75	$\mu s$
Fall Time	$t_{fi}$	$TC=100^{\circ}C$	-	0.15	-	$\mu s$

(1) hFE Classifications:-

A      B      C      E      F

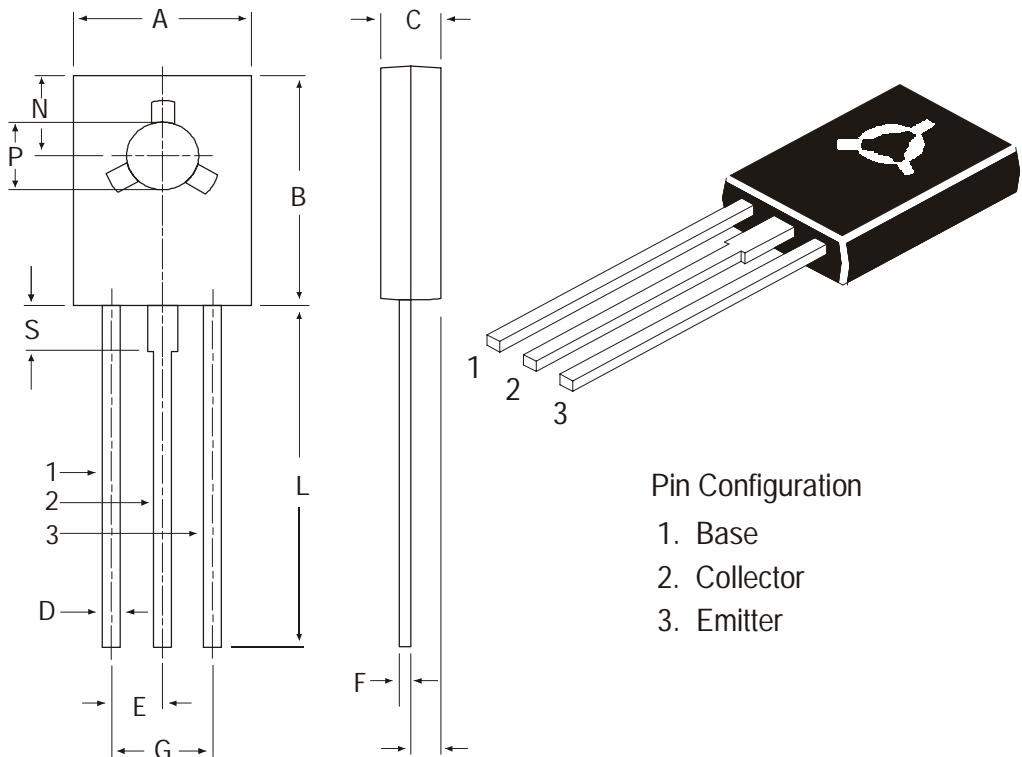
Note:- Product is pre selected in DC current    11 -16    15 -19    18-22    21-25    24-30

gain (Groups A to F). CDIL reserves the right  
to ship any of the groups according to  
production availability.

MARKING	C A	C B	C C	C E	C F
	13003	13003	13003	13003	13003

\*Pulse Test:- PW=300 $\mu s$ , Duty Cycle=2%

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



## Pin Configuration

1. Base
2. Collector
3. Emitter

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.

## Packing Detail

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

### 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 is 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).

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Continental Device India Limited

C-120 Naraina Industrial Area, New Delhi 110 028, India.

Telephone + 91-11-2579 6150, 5141 1112 Fax + 91-11-2579 5290, 5141 1119  
email@cdil.com www.cdilsemi.com