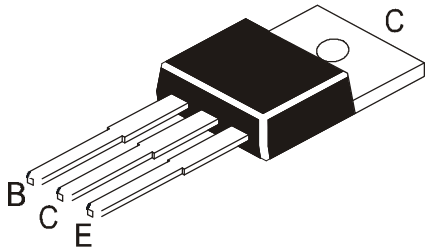


## NPN PLASTIC POWER TRANSISTOR

CDL13005



TO-220  
Plastic Package

Used in Energy Saving Lights and Power Switch Circuits

### ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	VALUE	UNIT
Collector Base Voltage	$V_{CBO}$	700	V
Collector Emitter Voltage	$V_{CEO}$	400	V
Emitter Base Voltage	$V_{EBO}$	9	V
Collector Current Continuous	$I_C$	4	A
Power Dissipation upto $T_a=25^\circ\text{C}$	$P_D$	2	W
Power Dissipation upto $T_c=25^\circ\text{C}$	$P_D$	75	W
Operating And Storage Junction Temperature Range	$T_j, T_{stg}$	- 55 to +150	$^\circ\text{C}$

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

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector Cut Off Current	$I_{CBO}$	$V_{CB}=700\text{V}, I_E=0$			0.1	mA
Emitter Cut Off Current	$I_{EBO}$	$V_{EB}=9\text{V}, I_C=0$			0.1	mA
DC Current Gain	$*h_{FE}$	$I_C=1\text{A}, V_{CE}=5\text{V}$	10		50	
Ratio Between $h_{FE1}$ of Low Current and $h_{FE2}$ of High Current	$h_{FE1}/h_{FE2}$	$h_{FE1} I_C=5\text{mA}, V_{CE}=5\text{V}$ $h_{FE2} I_C=1\text{A}, V_{CE}=5\text{V}$	0.75			
Collector Emitter Saturation Voltage	$*V_{CE(sat)}$	$I_C=2\text{A}, I_B=0.5\text{A}$			0.6	V
Base Emitter Saturation Voltage	$*V_{BE(sat)}$	$I_C=2\text{A}, I_B=0.5\text{A}$			1.5	V
Transition Frequency	$f_T$	$V_{CE}=10\text{V}, I_C=500\text{mA}, f=1\text{MHz}$	5			MHz

### Switching Time

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Fall Time	$t_f$	$I_C=2\text{A}, I_{B1}=-I_{B2}=0.4\text{A}$			0.8	$\mu\text{s}$
Storage Time	$t_s$	$V_{CC}=120\text{V}$			3.6	$\mu\text{s}$

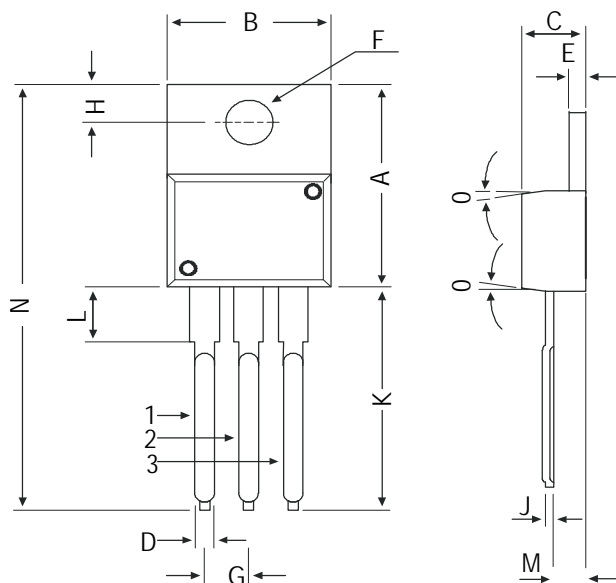
$*h_{FE}$ Classification	A : 10 - 21	B : 20 - 31	C : 30 - 41	E : 40 - 50
Marking	CDL	CDL	CDL	CDL
Product is pre-selected in DC Current Gain (Groups A to E). CDIL reserves the right to ship any of the group(s) to customers depending on production availability.	13005 A XX	13005 B XX	13005 C XX	13005 E XX
XX=date code				

\*Pulse Test  $t_p \leq 300\text{ms}$ , Duty Cycle  $\leq 2\%$

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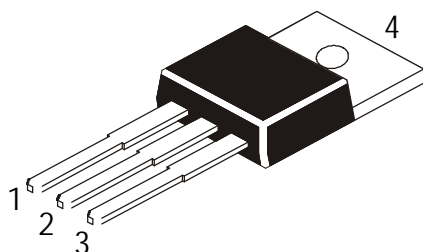
**CDL13005**  
**TO-220**  
**Plastic Package**

**TO-220 Plastic Package**



DIM	MIN	MAX
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D	—	0.90
E	1.15	1.40
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J	—	0.56
K	12.70	14.73
L	2.80	4.07
M	2.03	2.92
N	—	31.24
O	7 DEG	

All dimensions in mm.

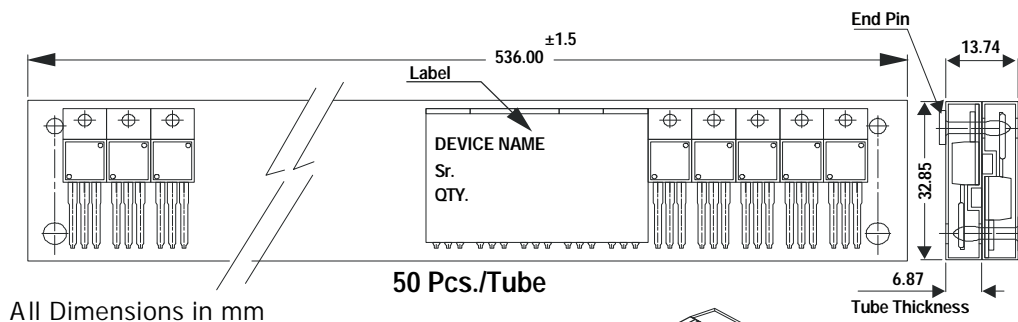


**Pin Configuration**

1. Base
2. Collector
3. Emitter
4. Collector

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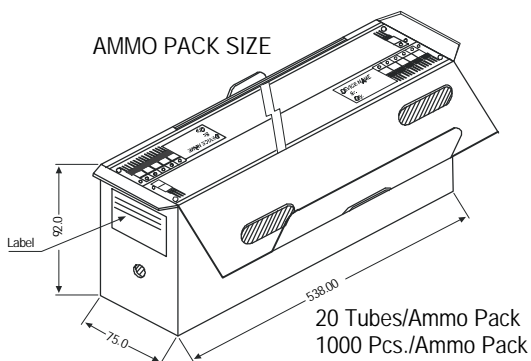
**TO-220 Tube Packing**



All Dimensions in mm

50 Pcs./Tube

AMMO PACK SIZE



**Packing Detail**

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-220 /FP	200 pcs/polybag	396 gm/200 pcs	3" x 7.5" x 7.5"	1.0K	17" x 15" x 13.5"	16.0K	36 kgs
	50 pcs/tube	120 gm/50 pcs	3.5" x 3.7" x 21.5"	1.0K	19" x 19" x 19"	10.0K	29 kgs

[www.DataSheet4U.com](http://www.DataSheet4U.com)

### **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).

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