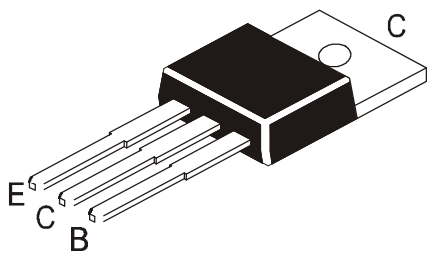


## NPN PLASTIC POWER TRANSISTOR

CDL13005R



TO-220

Plastic Package

For Lead Free Parts, Device Part # will be Prefixed with "T"

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	$t_f$	$I_C=2\text{A}, I_{B1}=-I_{B2}=0.4\text{A}$ $V_{CC}=120\text{V}$			0.8	$\mu\text{s}$
Storage Time	$t_s$				3.6	$\mu\text{s}$

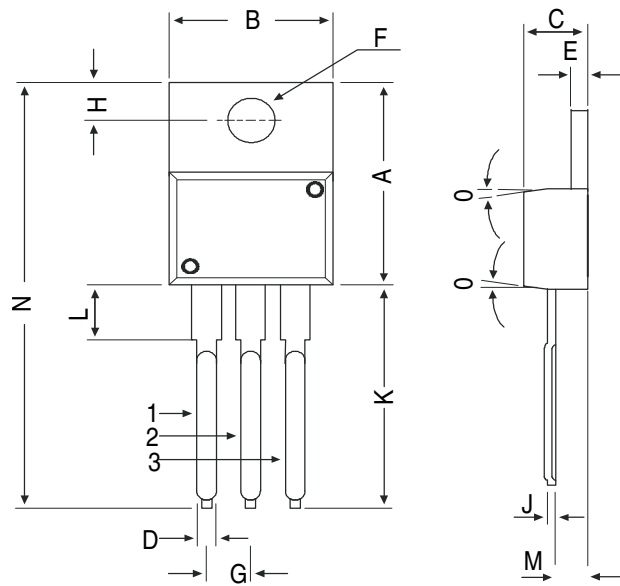
$*h_{FE}$ Classification	A : 10 - 21	B : 20 - 31	C : 30 - 41	E : 40 - 50
Marking	CDL	CDL	CDL	CDL
Product is pre-selected in DC Current	13005R	13005R	13005R	13005R
Gain (Groups A to E). CDIL reserves the right to ship any of the group(s) to customers depending on production availability.	A XX	B XX	C XX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

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

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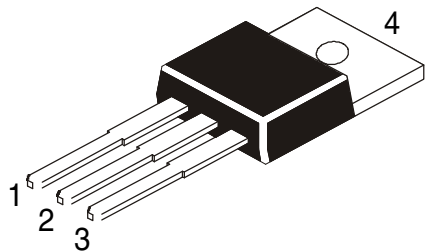
TO-220  
Plastic Package  
For Lead Free Parts, Device  
Part # will be Prefixed with "T"

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	

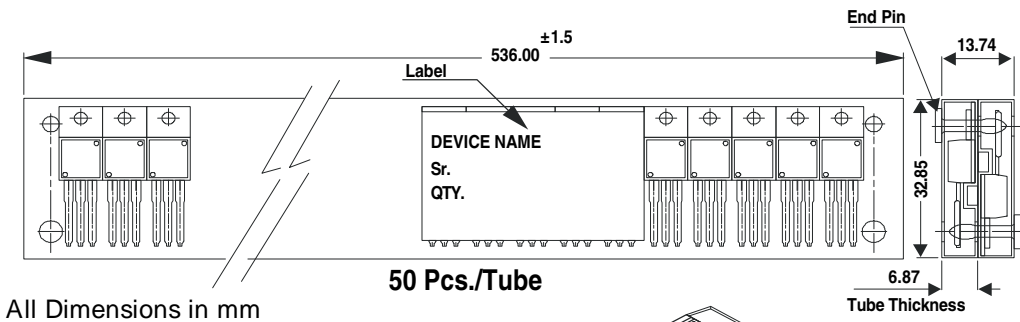
All diminsions in mm.



Pin Configuration

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

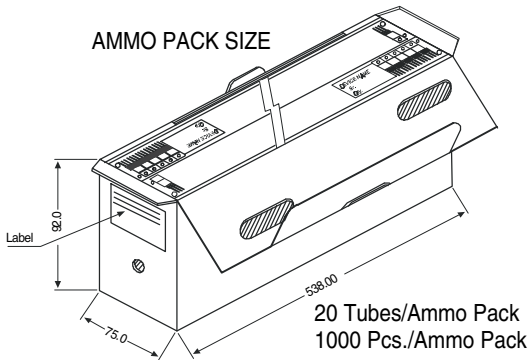
TO-220 Tube Packing



50 Pcs./Tube

All Dimensions in mm

AMMO PACK SIZE



20 Tubes/Ammo Pack  
1000 Pcs./Ammo Pack

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

**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).

**Customer Notes****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 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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