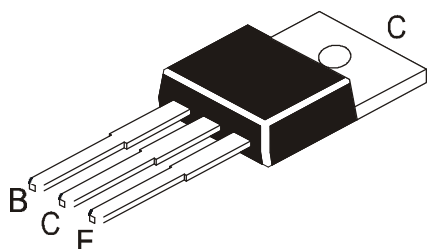


## NPN PLASTIC POWER TRANSISTOR

CDL13007

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                     | $I_C$          | 8            | A                |
| Power Dissipation upto $T_a=25^\circ\text{C}$    | $P_D$          | 2            | W                |
| Power Dissipation upto $T_c=25^\circ\text{C}$    | $P_D$          | 80           | 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  | $I_{CBO}$         | $V_{CB}=700\text{V}, I_E=0$   |      |     | 1.0 | mA   |
| Emitter Cut off Current  | $I_{EBO}$         | $V_{EB}=9\text{V}, I_C=0$   |      |     | 1.0 | mA   |
| DC Current Gain  | $*h_{FE}$         | $I_C=2\text{A}, V_{CE}=5\text{V}$ (Note1)   | 8    |     | 40  |      |
| Ratio Between $h_{FE1}$ of Low Current and $h_{FE2}$ of High Current | $h_{FE1}/h_{FE2}$ | $h_{FE1} I_C=5\text{mA}, V_{CE}=5\text{V}$<br>$h_{FE2} I_C=2\text{A}, V_{CE}=5\text{V}$ | 0.75 |     |     |      |
| Collector Emitter Saturation Voltage                                 | $*V_{CE(sat)}$    | $I_C=5\text{A}, I_B=1\text{A}$  |      |     | 1.5 | V    |
| Base Emitter Saturation Voltage                                      | $*V_{BE(sat)}$    | $I_C=5\text{A}, I_B=1\text{A}$  |      |     | 1.5 | V    |
| Transition Frequency   | $f_T$             | $V_{CE}=10\text{V}, I_C=500\text{mA}, f=1\text{MHz}$                                    | 4    |     |     | MHz  |

### Switching Time

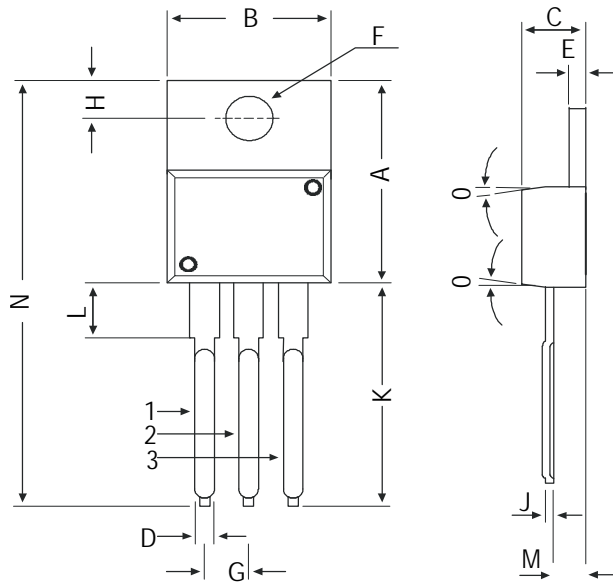
| DESCRIPTION  | SYMBOL | TEST CONDITION                                | MIN | TYP | MAX | UNIT          |
|--------------|--------|---|-----|-----|-----|---------------|
| Fall Time    | $t_f$  | $I_C=2\text{A}, I_{B1} = -I_{B2}=0.4\text{A}$ |     |     | 0.8 | $\mu\text{s}$ |
| Storage Time | $t_s$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

Note 1: Devices are pre-selected in DC Current Gain Groups. CDIL reserves the right to ship any of the group(s) to customers according to production availability.

\*Pulse test  $t_p \leq 300\text{ms}$ , duty cycle  $\leq 2\%$

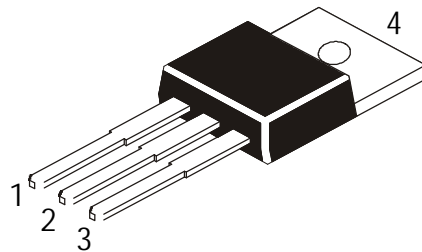
CDL13007Rev\_1 020304E

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 |       |

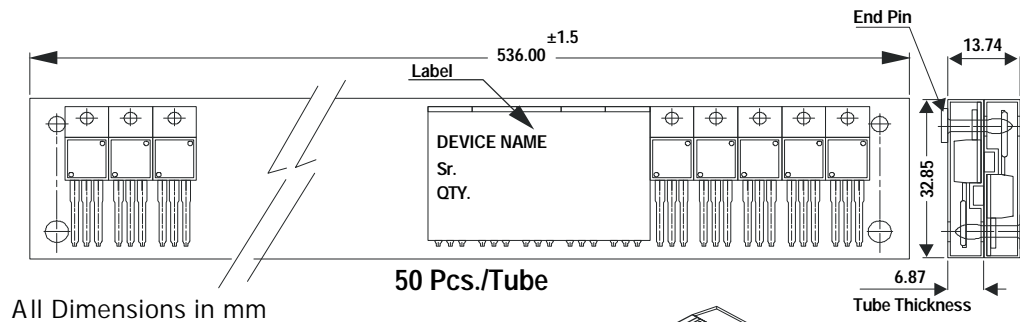
All dimensions in mm.



Pin Configuration

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

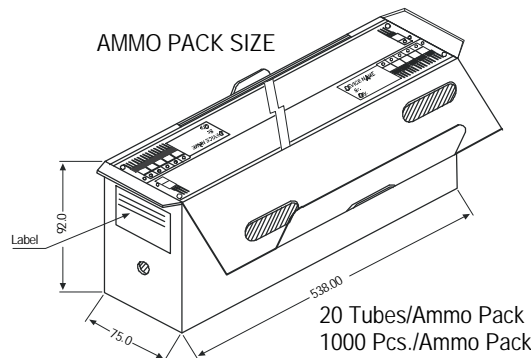
TO-220 Tube Packing



All Dimensions in mm

50 Pcs./Tube

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 |

### **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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