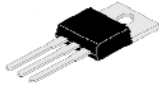


NPN SILICON EPITAXIAL POWER TRANSISTORS

C44C8
C44C11



TO-220

TO-220 Leaded
Plastic Package
RoHS compliant

APPLICATION: Medium Power Switching and Amplifier Applications

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

| PARAMETER | SYMBOL | VALUE | | UNIT |
|--|------------------------|-------------|--------|------|
| | | C44C8 | C44C11 | |
| Collector- Emitter Voltage | V_{CES} | 70 | 90 | V |
| Collector- Emitter Voltage | V_{CEO} | 60 | 80 | V |
| Emitter- Base Voltage | V_{EBO} | 5 | | V |
| Collector Current Continuous | Continuous | I_C | | A |
| | Peak ¹ | I_{CM} | | |
| Base Current Continuous | I_B | 2 | | A |
| Power Dissipation | $T_A=25^\circ\text{C}$ | P_D | | W |
| | $T_C=25^\circ\text{C}$ | 1.67 | | |
| Operating & Storage Junction Temperature Range | T_j, T_{stg} | -55 to +150 | | °C |

Thermal Resistance

| | | | |
|---------------------|---------------|-----|------|
| Junction to Ambient | $R_{th(j-a)}$ | 75 | °C/W |
| Junction to Case | $R_{th(j-c)}$ | 4.2 | °C/W |



Continental Device India Pvt. Limited

An IATF 16949, ISO9001 and ISO 14001 Certified Company



ELECTRICAL CHARACTERISTICS at (Ta = 25 °C Unless otherwise specified)

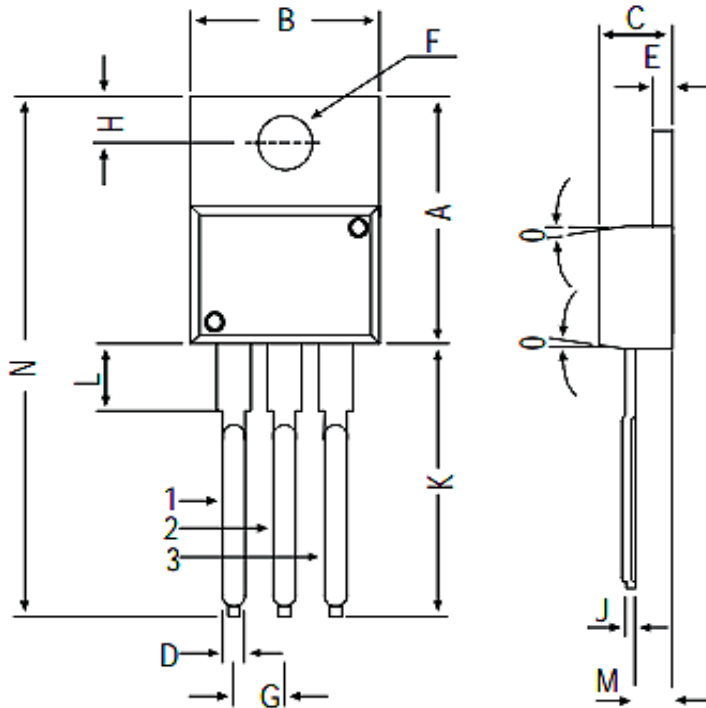
| PARAMETER | SYMBOL | TEST CONDITION | VALUE | | | UNIT |
|--|-----------------|--|-------|-----|-----|---------------|
| | | | MIN | TYP | MAX | |
| Collector- Emitter Suntanning Voltage | C44C8 | $I_C=100\text{mA}, I_B=0$ | 60 | -- | -- | V |
| | C44C11 | | 80 | -- | -- | V |
| Collector Cut Off Current | I_{CES} | $V_{CE}=\text{Rated } V_{CES}$ | -- | -- | 10 | μA |
| Emitter Cut Off Current | I_{EBO} | $V_{EB}=5\text{V}, I_C=0$ | -- | -- | 100 | μA |
| DC Current Gain | h_{FE}^1 | $I_C=0.2\text{A}, V_{CE}=1\text{V}$ | 100 | -- | 220 | |
| | | $I_C=2\text{A}, V_{CE}=1\text{V}$ | 20 | -- | -- | |
| Collector Emitter Saturation Voltage | $V_{CE(sat)}^1$ | $I_C=1\text{A}, I_B=50\text{mA}$ | -- | -- | 0.5 | V |
| Base Emitter Saturation Voltage | $V_{BE(sat)}^1$ | $I_C=1\text{A}, I_B=100\text{mA}$ | -- | -- | 1.3 | V |
| Dynamic Characteristics | | | | | | |
| Collector Capacitance | C_{cbo} | $V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$ | -- | -- | 100 | pF |
| Current Gain Bandwidth Product | f_T | $V_{CE}=4\text{V}, I_C=20\text{mA}$ | -- | 50 | -- | MHz |
| Switching Time | | | | | | |
| Delay Time + Rise Time | $t_d + t_r$ | $I_C=1\text{A}, I_{B1}=I_{B2}=0.1\text{A}$ | -- | 100 | -- | ns |
| Storage Time | t_s | $V_{CC}=30\text{V}, t_p=25\mu\text{s}$ | -- | 500 | -- | ns |
| Fall Time | t_f | | -- | 75 | -- | |

Note:

1. Pulse Test Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

PACKAGE DETAILS

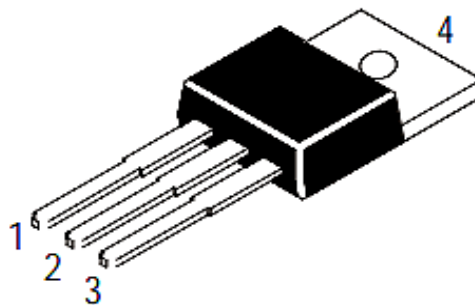
TO-220 Plastic Package



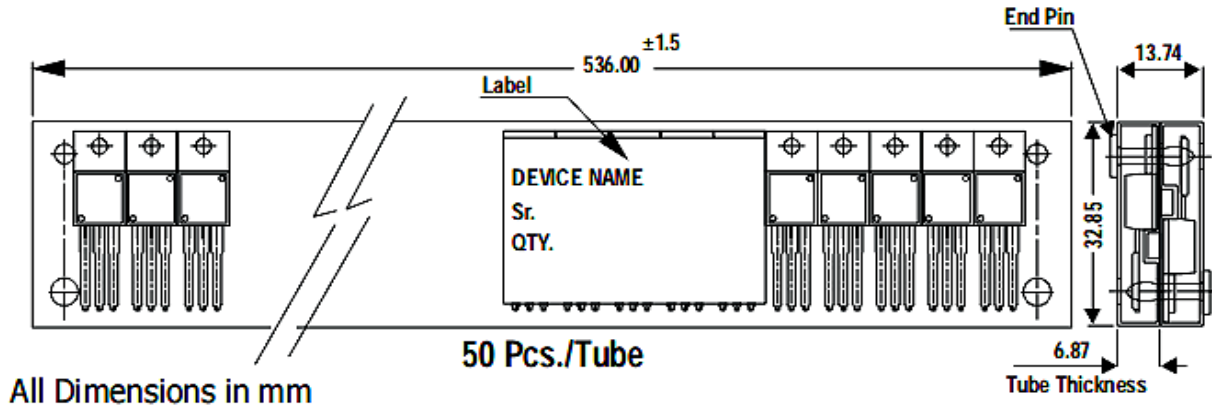
| DIM | MIN | MAX |
|-----|-------|-------|
| A | 14.42 | 16.51 |
| B | 9.63 | 10.67 |
| C | 3.56 | 4.83 |
| D | | 0.90 |
| E | 1.15 | 1.40 |
| F | 3.75 | 3.88 |
| G | 2.29 | 2.79 |
| H | 2.54 | 3.43 |
| J | | 0.56 |
| K | 12.70 | 14.73 |
| L | 2.80 | 4.07 |
| M | 2.03 | 2.92 |
| N | | 31.24 |
| O |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

PIN CONFIGURATION

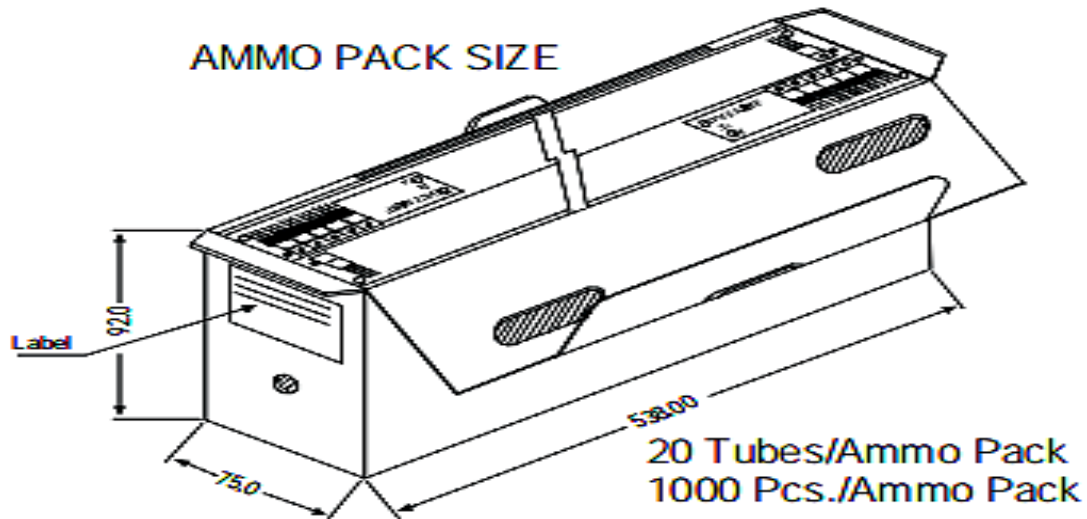
1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR



TO-220 Tube Packing



Ammo Pack Size



Packing Detail

| PACKAGE | STANDARD PACK | | INNER CARTON BOX | | OUTER CARTON BOX | | |
|------------|-----------------|----------------|---------------------|------|-------------------|-------|--------|
| | Details | Net Weight/Qty | Size | Qty | Size | Qty | G-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 |



Continental Device India Pvt. Limited

An IATF 16949, ISO9001 and ISO 14001 Certified Company



Recommended Product Storage Environment for Discrete Semiconductor Devices

This storage environment assumes that the Diodes and transistors are packed properly inside the original packing supplied by CDIL.

- Temperature 5 °C to 30 °C
- Humidity between 40 to 70 %RH
- Air should be clean.
- Avoid harmful gas or dust.
- Avoid outdoor exposure or storage in areas subject to rain or water spraying .
- Avoid storage in areas subject to corrosive gas or dust. Product shall not be stored in areas exposed to direct sunlight.
- Avoid rapid change of temperature.
- Avoid condensation.
- Mechanical stress such as vibration and impact shall be avoided.
- The product shall not be placed directly on the floor.
- The product shall be stored on a plane area. They should not be turned upside down.
- They should not be placed against the wall.

Shelf Life of CDIL Products

The shelf life of products is the period from product manufacture to shipment to customers. The product can be unconditionally shipped within this period. The period is defined as 2 years.

If products are stored longer than the shelf life of 2 years the products shall be subjected to quality check as per CDIL quality procedure.

The products are further warranted for another one year after the date of shipment subject to the above conditions in CDIL original packing.

Floor Life of CDIL Products and MSL Level

When the products are opened from the original packing, the floor life will start.

For this, the following JEDEC table may be referred:

| JEDEC MSL Level | | |
|-----------------|--------------------|-----------------|
| Level | Time | Condition |
| 1 | Unlimited | ≤30 °C / 85% RH |
| 2 | 1 Year | ≤30 °C / 60% RH |
| 2a | 4 Weeks | ≤30 °C / 60% RH |
| 3 | 168 Hours | ≤30 °C / 60% RH |
| 4 | 72 Hours | ≤30 °C / 60% RH |
| 5 | 48 Hours | ≤30 °C / 60% RH |
| 5a | 24 Hours | ≤30 °C / 60% RH |
| 6 | Time on Label(TOL) | ≤30 °C / 60% RH |



Continental Device India Pvt. Limited

An IATF 16949, ISO9001 and ISO 14001 Certified Company



Customer Notes

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).

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 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.



CDIL is a registered trademark of

Continental Device India Pvt. Limited

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

Telephone +91-11-2579 6150, 4141 1112 Fax +91-11-2579 5290, 4141 1119

email@cdil.com www.cdil.com

CIN No. U32109DL1964PTC004291