

40 Watts NPN POWER TRANSISTORS

TIP47 TIP48
TIP49 TIP50



TO-220

TO-220 Leaded
Plastic Package
RoHS compliant

APPLICATION:

Line Operated Audio Output Amplifier, Switch Mode Power Supply Driver and General Purpose Switching Applications.

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

PARAMETER	SYMBOL	VALUE				UNIT
		TIP47	TIP48	TIP49	TIP50	
Collector Emitter Voltage	V_{CEO}	250	300	350	400	V
Collector Base Voltage	V_{CBO}	350	400	450	500	V
Emitter Base Voltage	V_{EBO}	5.0				V
Collector Current Continuous	I_C	1.0				A
Collector Current Peak	I_{CM}	2.0				A
Base Current	I_B	0.6				A
Power Dissipation up to $T_c=25^\circ\text{C}$	P_D	40				W
Power Dissipation upto $T_a=25^\circ\text{C}$ Derate above 25°C	P_D	2.0 16				W mW/°C
Operating and Storage Junction Temperature	T_j, T_{stg}	-65 to +150				°C

THERMAL RESISTANCE

Junction to Case	$R_{th(j-c)}$	3.125	°C/W
Junction to Ambient in free air	$R_{th(j-a)}$	62.5	°C/W

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

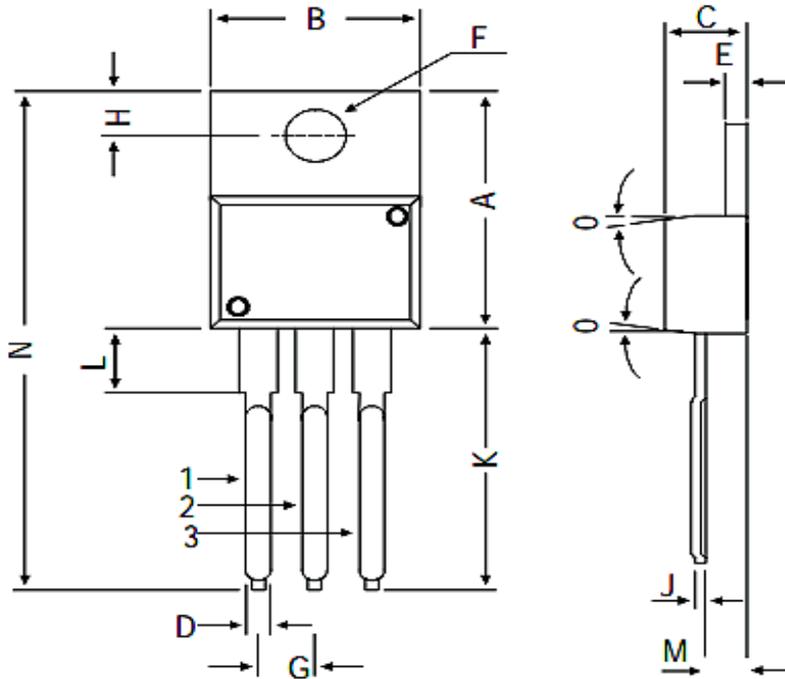
PARAMETER	SYMBOL	TEST CONDITION	VALUE			UNIT	
			MIN	TYP	MAX		
Collector Emitter (sus) Voltage	TIP47	$I_C=30mA, I_B=0$	250	--	--	V	
	TIP48		300	--	--		
	TIP49		350	--	--		
	TIP50		400	--	--		
Collector Cut off Current	TIP47	I_{CEO}	$V_{CE}=150V, I_B=0$	--	--	mA	
	TIP48		$V_{CE}=200V, I_B=0$	--	--		1.0
	TIP49		$V_{CE}=250V, I_B=0$	--	--		1.0
	TIP50		$V_{CE}=300V, I_B=0$	--	--		1.0
Collector Cut off Current	I_{CES}	$V_{CE} = V_{CB(max)}, V_{BE}=0$	--	--	1.0		
Emitter Cut off Current	I_{EBO}	$V_{BE}=5V, I_C=0$	--	--	1.0		
DC Current Gain	h_{FE}^1	$I_C=0.3A, V_{CE}=10V$ $I_C=1A, V_{CE}=10V$	30 10	--	150		
Collector Emitter Saturation Voltage	$V_{CE(sat)}^1$	$I_C=1A, I_B=0.2A$	--	--	1.0	V	
Base Emitter on Voltage	$V_{BE(on)}^1$	$I_C=1A, V_{CE}=10V$	--	--	1.5		
DYNAMIC CHARACTERISTICS							
Small Signal Current Gain	h_{fe}	$I_C=0.2A, V_{CE}=10V, f=1KHz$	25	--	--		
Transition Frequency	f_T	$I_C=0.2A, V_{CE}=10V, f=2MHz$	10	--	--	MHz	

Note:

1. Pulse Test : Pulse width $\leq 300ms$, Duty Cycle $\leq 2\%$

PACKAGE DETAIL

TO-220 Plastic Package

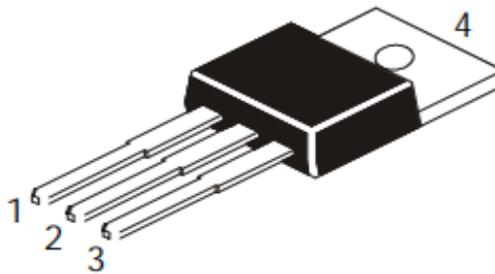


DIM	MIN	MAX
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D	--	0.90
E	1.15	1.40
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J	--	0.56
K	12.70	14.73
L	2.80	4.07
M	2.03	2.92
N	--	31.24
O	7°	

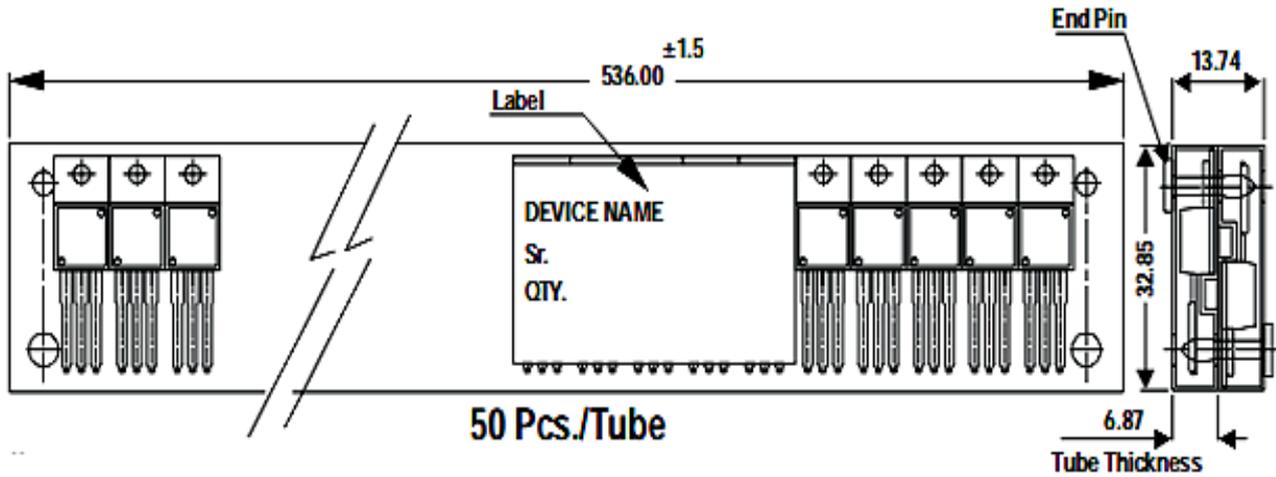
All Dimension are in mm

PIN CONFIGURATION

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

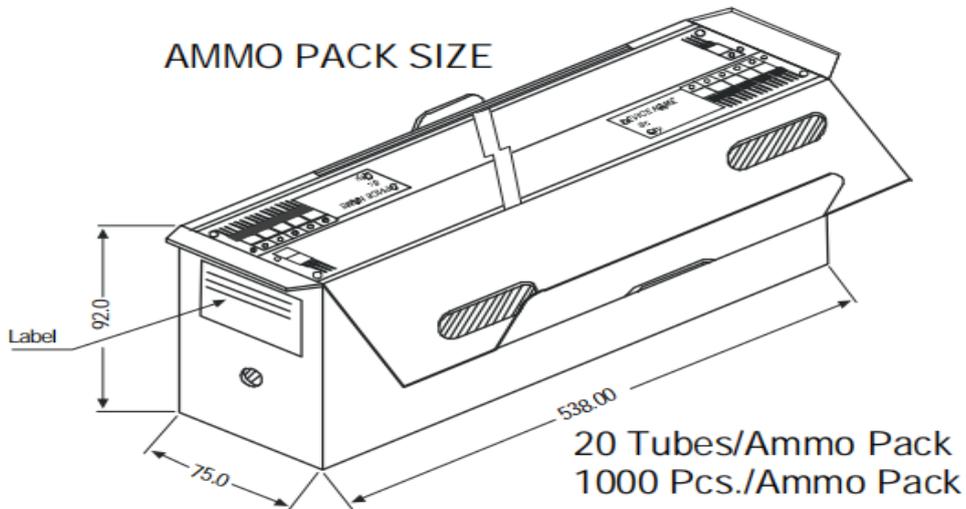


TO-220 Tube Packing



All Dimensions in mm

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	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



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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.



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