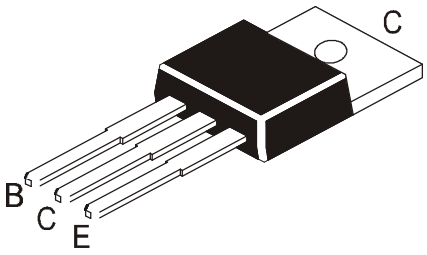
Continental Device India Limited
An ISO/TS 16949, ISO 9001 and ISO 14001 Certified Company

NPN SILICON POWER TRANSISTOR

CDT13003

TO-220
Plastic Package



Applications
Suitable for Lighting, Switching Regulator and Motor Control

ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	VALUE	UNIT
Collector Base Voltage	V_{CBO}	600	V
Collector Emitter (sus) Voltage	V_{CEO}	400	V
Emitter Base Voltage	V_{EBO}	9.0	V
Collector Current Continuous	I_C	1.8	A
Peak (1)	I_{CM}	3.5	A
Base Current Continuous	I_B	0.75	A
Peak (1)	I_{BM}	1.5	A
Emitter Current Continuous	I_E	2.25	A
Peak (1)	I_{EM}	4.5	A
Power Dissipation @ T_a=25 ºC	P_D	1.4	W
Derate Above 25ºC		11.2	mW/ ºC
Power Dissipation @ T_c=25 ºC	P_D	50	W
Derate Above 25ºC		480	mW/ ºC
Operating And Storage Junction Temperature Range	T_j, T_{stg}	- 65 to+150	ºC

THERMAL RESISTANCE

Junction to Case	$R_{th\ (j-c)}$	2.08	ºC/W
Junction to Ambient	$R_{th\ (j-a)}$	89	ºC/W
Maximum Lead Temperature for Soldering Purpose: 1/8" from Case for 5 Seconds	T_L	275	ºC

(1) Pulse Test: Pulse Width=5ms, Duty Cycle=10%

ELECTRICAL CHARACTERISTICS (T_a=25ºC unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector Base Voltage	V_{CBO}	I_C=1mA, I_E=0	600	-	-	V
Collector Emitter (sus) Voltage	*$V_{CEO(sus)}$	I_C=10mA, I_B=0	400	-	-	V
Collector Cut Off Current	I_{CBO}	V_{CB}=600V, I_E=0	-	-	1.0	mA
		V_{CB}=600V, I_E=0, T_c=100ºC			5.0	mA
Emitter Cut Off Current	I_{EBO}	V_{EB}=9V, I_C=0	-	-	1.0	mA

***Pulse Test:- PW=300µs, Duty Cycle=2%**

CDT13003Rev_1 230306D

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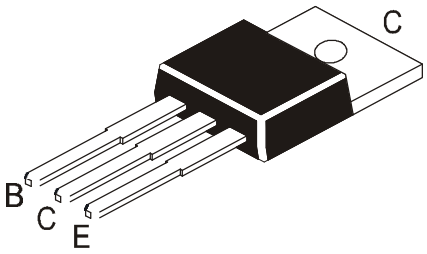

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ELECTRICAL CHARACTERISTICS (T_a=25ºC unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
DC Current Gain	*h_{FE}	**I_C=0.5A, V_{CE}=5V	11	-	30	
		I_C=1.5A, V_{CE}=5V	4	-	25	
Collector Emitter Saturation Voltage	*$V_{CE\ (sat)}$	I_C=0.5A, I_B=0.1A	-	-	0.5	V
		I_C=1A, I_B=0.25A	-	-	1.0	V
		I_C=1.5A, I_B=0.5A	-	-	2.5	V
		I_C=1A, I_B=0.25A,T_c=100ºC	-	-	1.0	V
Base Emitter Saturation Voltage	*$V_{BE\ (sat)}$	I_C=0.5A, I_B=0.1A	-	-	1.0	V
		I_C=1A, I_B=0.25A	-	-	1.2	V
		I_C=1A, I_B=0.25A,T_c=100ºC	-	-	1.1	V

DYNAMIC CHARACTERISTICS

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Current Gain Bandwidth Product	f_T	I_C=100mA, V_{CE}=10V, f=1MHz	4.0	-	-	MHz
Output Capacitance	C_{ob}	V_{CB}=10V, f=0.1MHz	-	21	-	pF

SWITCHING TIME

Turn On Time	t_{on}	V_{CC}=125V, I_C=1A, I_{B1}=0.2A, I_{B2}=0.2A			1.1	µs
Storage Time	t_{stg}				4.0	µs
Fall Time	t_f				0.7	µs

**** h_{FE} Classification:-**

Note:- Product is pre selected in DC current gain (Groups A to F). CDIL reserves the right to ship any of the groups according to production availability.	A 11-16	B 15-19	C 18-22	E 21-25	F 24-30
MARKING	CDT 13003 A XY	CDT 13003 B XY	CDT 13003 C XY	CDT 13003 E XY	CDT 13003 F XY
X= Year of Manufacturer Code Y= Month Code					

***Pulse Test:- PW=300µs, Duty Cycle=2%**

CDT13003Rev_1 230306D

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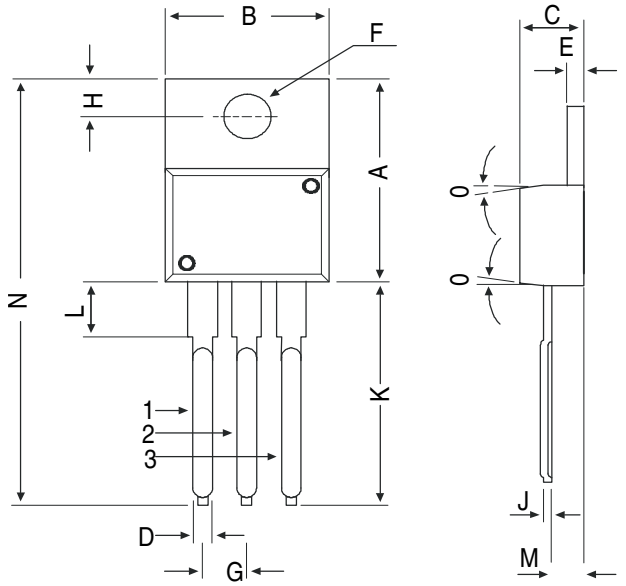
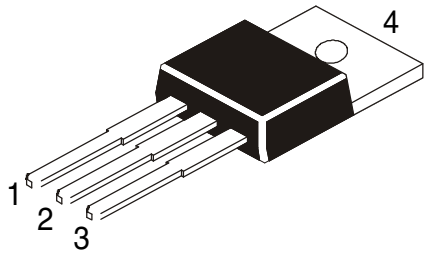


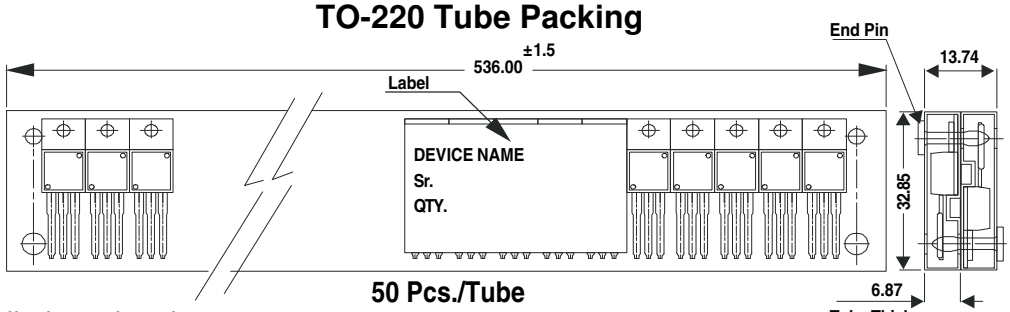
DIM	MIN	MAX
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D	—	0.90
E	1.15	1.40
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J	—	0.56
K	12.70	14.73
L	2.80	4.07
M	2.03	2.92
N	—	31.24
O	7 DEG	

All diminsions in mm.



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

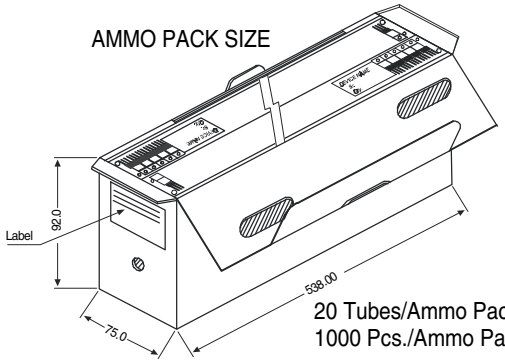
TO-220 Tube Packing



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

CDT13003Rev_1 230306D

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

CDIL is a registered Trademark of
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