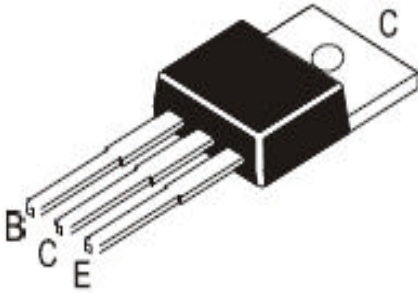


**NPN SILICON POWER TRANSISTOR**

**CDL13009**



**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 (sus) Voltage	$V_{CEO}$	400	V
Emitter Base Voltage	$V_{EBO}$	9.0	V
Collector Current Continuous	$I_C$	12	A
Power Dissipation at $T_c=25\text{ }^\circ\text{C}$	$P_D$	100	W
Operating And Storage Junction Temperature Range	$T_j, T_{stg}$	- 55 to+150	$^\circ\text{C}$

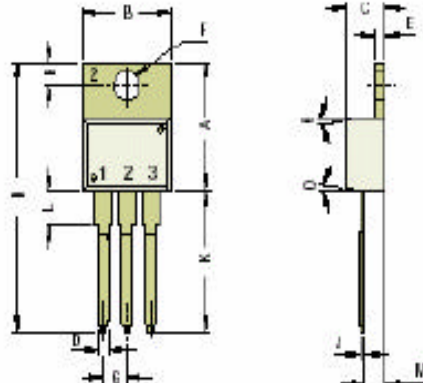
**ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$  unless specified otherwise)**

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector Cut Off Current	$I_{CBO}$	$V_{CB}=700\text{V}, I_E=0$			100	$\mu\text{A}$
Emitter Cut Off Current	$I_{EBO}$	$V_{EB}=9\text{V}, I_C=0$			100	$\mu\text{A}$
Collector Emitter (sus) Voltage	$*V_{CEO(sus)}$	$I_C=1\text{mA}, I_B=0$	400			V
DC Current Gain	$*h_{FE}$	$I_C=5\text{A}, V_{CE}=5\text{V}$	10		30	
Collector Emitter Saturation Voltage	$*V_{CE(sat)}$	$I_C=8\text{A}, I_B=1.6\text{A}$			1.5	V
Base Emitter Saturation Voltage	$*V_{BE(sat)}$	$I_C=8\text{A}, I_B=1.6\text{A}$			1.8	V
Transition Frequency	$f_T$	$I_C=0.5\text{A}, V_{CE}=10\text{V}$	4.0			MHz
Storage Time	$t_s$	$I_C=0.5\text{A}$	3		8	$\mu\text{s}$

\*Pulse Test: PW=300ms, Duty Cycle=2%

**TO-220  
Plastic Package**

**TO-220**  
Leaded Plastic  
Package



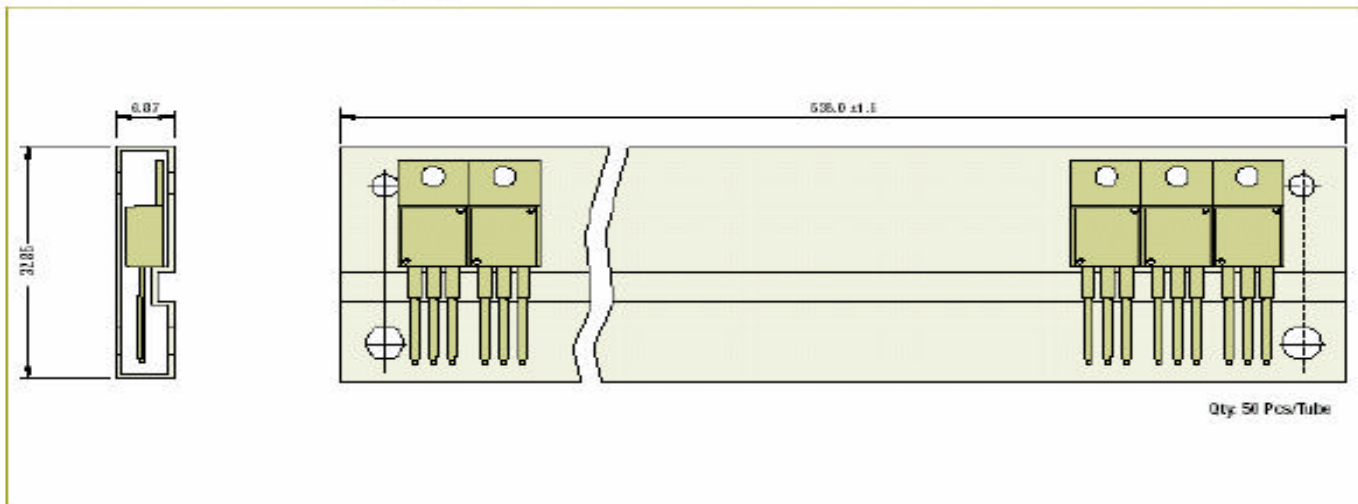
DIM	Min	Max
A	14.42	16.51
B	9.63	10.67
C	3.96	4.83
D	—	0.90
E	1.15	1.50
F	3.53	4.10
G	2.29	2.79

DIM	Min	Max
H	2.54	3.43
J	0.36	0.81
K	12.00	14.73
L	2.80	6.35
M	2.00	2.92
N	—	31.24
O	r	

**Pin Configurations**

Transistors Pin 1: Base Pin 2: Collector Pin 3: Emitter

**TO-220 Series Packaging Tube**



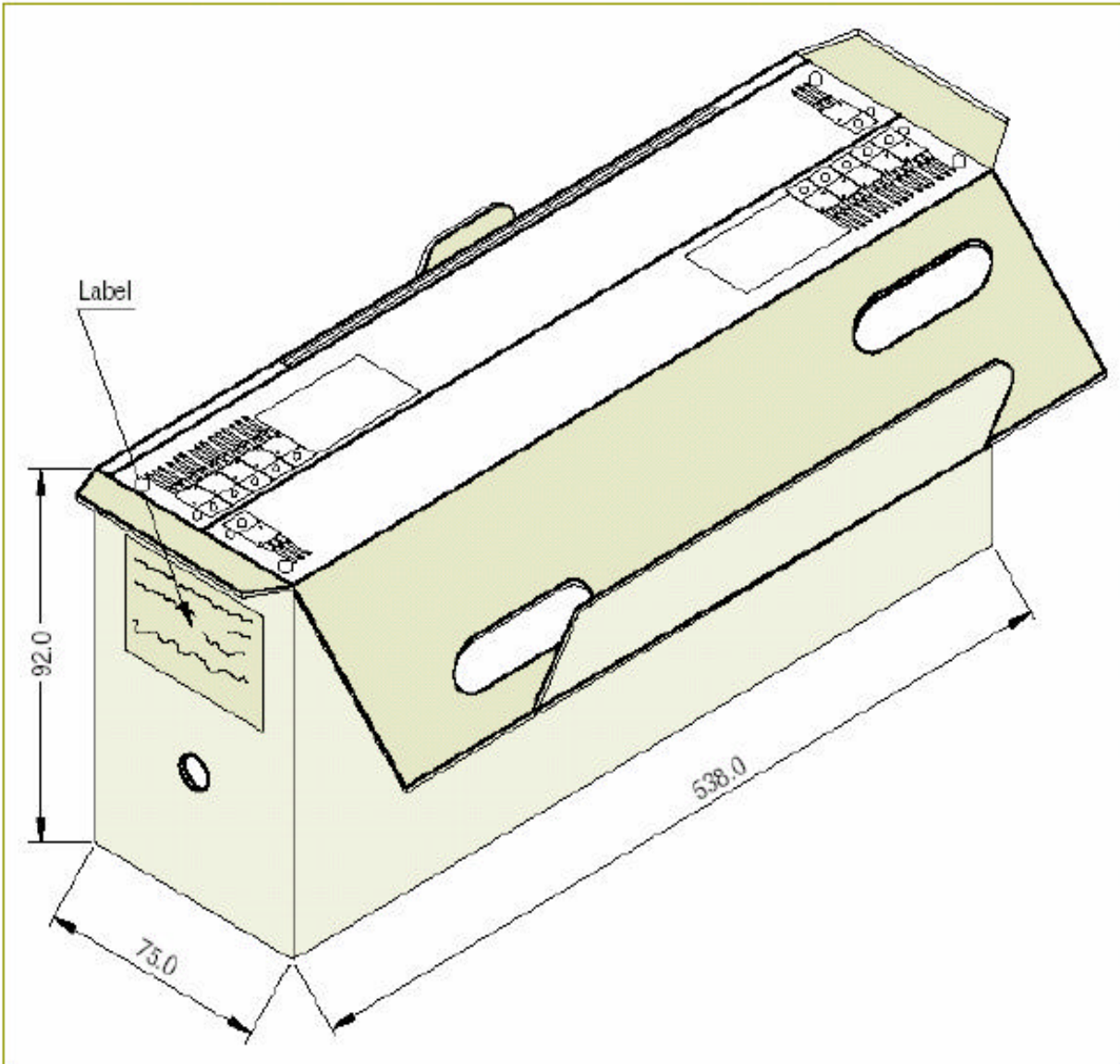
Packaging dimensions, tube dimensions and quantity/tube are approximate and subject to change.

**... Packaging Specifications**

T & A: Tape and Ammo Pack; T & R: Tape and Reel; Bulk: Loose in Poly Bags; Tube: Tube and Carton; K: 1,000

Package / Case Type	Packaging Type	Inner Carton			Outer Carton			
		Std. Packing Qty	Qty	Size L x W x H (cm)	Gross Weight (Kg)	Qty	Size L x W x H (cm)	Gross Weight (Kg)
TO-220	Bulk	1,000	1K	19 x 19 x 8	2.0	10K	46 x 38 x 22	21.6
	Tube	1,000 (50 pcs/tube)	1K	55 x 8 x 10	2.8	10K	55 x 35 x 27	28.3

### Packaging for Tubes



Packaging dimensions/carton dimensions are approximate. Illustration shows packaging box for TO-220 Series.  
For dimensions of other tube packaging, please refer to Packaging Specifications page.

**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).

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