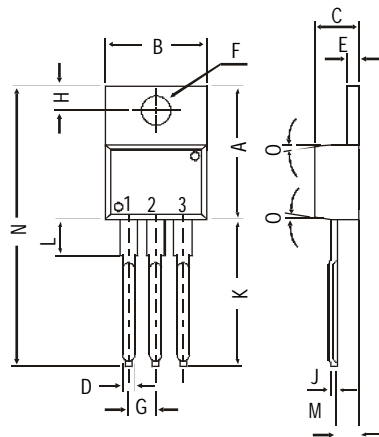
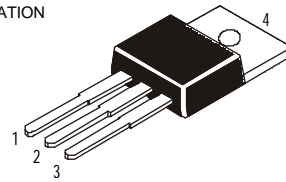


**TO-220 Plastic Package**

**BD949, BD951, BD953, BD955  
BD950, BD952, BD954, BD956**

*BD949, 951, 953, 955 NPN PLASTIC POWER TRANSISTORS*  
*BD950, 952, 954, 956 PNP PLASTIC POWER TRANSISTORS*  
*Power Amplifier and Switching Applications*

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



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	DEG 7	

All dimensions in mm.

**ABSOLUTE MAXIMUM RATINGS**

		<b>949</b>	<b>951</b>	<b>953</b>	<b>955</b>	
		<b>950</b>	<b>952</b>	<b>954</b>	<b>956</b>	
Collector-base voltage (open emitter)	$V_{CBO}$	max. 60	80	100	120	V
Collector-emitter voltage (open base)	$V_{CEO}$	max. 60	80	100	120	V
Collector current	$I_C$	max.		5.0		A
Total power dissipation up to $T_{mb} = 25^\circ C$	$P_{tot}$	max.		40		W
Junction temperature	$T_j$	max.		150		$^\circ C$
Collector-emitter saturation voltage						
$I_C = 2 A; I_B = 0.2 A$	$V_{CEsat}$	max.		1.0		V
D.C. current gain						
$I_C = 2 A; V_{CE} = 4 V$	$h_{FE}$	min.		20		

**RATINGS** (at  $T_A=25^\circ C$  unless otherwise specified)

		<b>949</b>	<b>951</b>	<b>953</b>	<b>955</b>	
		<b>950</b>	<b>952</b>	<b>954</b>	<b>956</b>	
Limiting values						
Collector-base voltage (open emitter)	$V_{CBO}$	max. 60	80	100	120	V
Collector-emitter voltage (open base)	$V_{CEO}$	max. 60	80	100	120	V
Emitter-base voltage (open collector)	$V_{EBO}$	max.		5.0		V
Collector current	$I_C$	max.		5.0		A

**BD949, BD951, BD953, BD955  
BD950, BD952, BD954, BD956**

Collector current (Peak value)	$I_{CM}$	max.	8.0	A
Total power dissipation upto $T_{mb}=25^{\circ}C$	$P_{tot}$	max.	40	W
Junction temperature	$T_j$	max.	150	$^{\circ}C$
Storage temperature	$T_{stg}$		-65 to +150	$^{\circ}C$

**THERMAL RESISTANCE**

From junction to ambient	$R_{th\ j-a}$		70	K/W
From junction to mounting base	$R_{th\ j-mb}$		3.12	K/W

**CHARACTERISTICS**

$T_{amb} = 25^{\circ}C$  unless otherwise specified

			<b>949</b>	<b>951</b>	<b>953</b>	<b>955</b>	
			<b>950</b>	<b>952</b>	<b>954</b>	<b>956</b>	
Collector cutoff current							
$I_E = 0; V_{CB} = V_{CBO}$	$I_{CBO}$	max.		50			$\mu A$
$I_E = 0; V_{CB} = \frac{1}{2} V_{CBO}; T_j = 150^{\circ}C$	$I_{CBO}$	max.		1.0			mA
$I_B = 0; V_{CE} = \frac{1}{2} V_{CEO}$	$I_{CEO}$	max.		0.1			mA
Emitter cut-off current							
$I_C = 0; V_{EB} = 5\ V$	$I_{EBO}$	max.		0.2			mA
Breakdown voltages							
$I_C = 1\ mA; I_B = 0$	$V_{CEO}$	min.	60	80	100	120	V
$I_C = 1\ mA; I_E = 0$	$V_{CBO}$	min.	60	80	100	120	V
$I_E = 1\ mA; I_C = 0$	$V_{EBO}$	min.		5.0			V
Saturation voltage							
$I_C = 2\ A; I_B = 0.2\ A$	$V_{CEsat}^*$	max.		1.0			V
Base emitter on voltage							
$I_C = 2\ A; V_{CE} = 4\ V$	$V_{BE(on)}^*$	max.		1.4			V
D.C. current gain							
$I_C = 0.5\ A; V_{CE} = 4\ V$	$h_{FE}^*$	min.		40			
$I_C = 2\ A; V_{CE} = 4\ V$	$h_{FE}^*$	min.		20			
Transition frequency							
$I_C = 0.5\ A; V_{CE} = 4\ V; f = 1\ MHz$	$f_T$	min.		3			MHz

**Switching time**

$V_{CC} = 20\ V; I_C = 1\ A$   
 $I_{con} = 1A; I_{Bon} = -I_{Boff} = 0.1A$   
 $R_L = 20\ \Omega$

Turn on time	<b>NPN</b>	$t_{on}$	typ.	0.3	$\mu s$
Turn off time	<b>NPN</b>	$t_{off}$	typ.	1.5	$\mu s$
	<b>PNP</b>	$t_{on}$	typ.	0.1	$\mu s$
	<b>PNP</b>	$t_{off}$	typ.	0.4	$\mu s$

\* Measured under pulse conditions:  $t_p \leq 300\ \mu s$ ; duty cycle  $\leq 2\%$

## Notes

### 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 on the CDIL Web Site/ CD is 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).

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 Limited**

C-120 Naraina Industrial Area, New Delhi 110 028, India.  
Telephone + 91-11-579 6150 Fax + 91-11-579 9569, 579 5290  
e-mail sales@cdil.com www.cdil.com