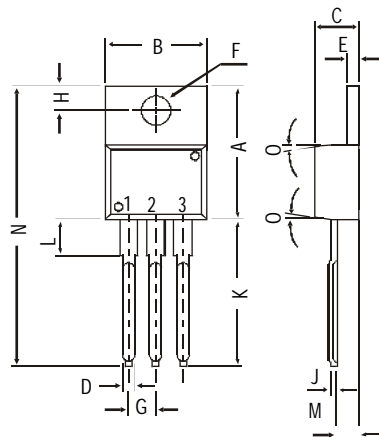
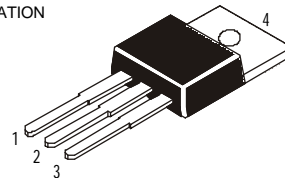


**TO-220 Plastic Package**

**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 $T_{mb} = 25^\circ\text{C}$	$P_{tot}$	max.		40		W
Junction temperature	$T_j$	max.		150		$^\circ\text{C}$
Collector-emitter saturation voltage						
$I_C = 2\text{ A}; I_B = 0.2\text{ A}$	$V_{CEsat}$	max.		1.0		V
D.C. current gain						
$I_C = 2\text{ A}; V_{CE} = 4\text{ V}$	$h_{FE}$	min.		20		

**RATINGS** (at  $T_A=25^\circ\text{C}$  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

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