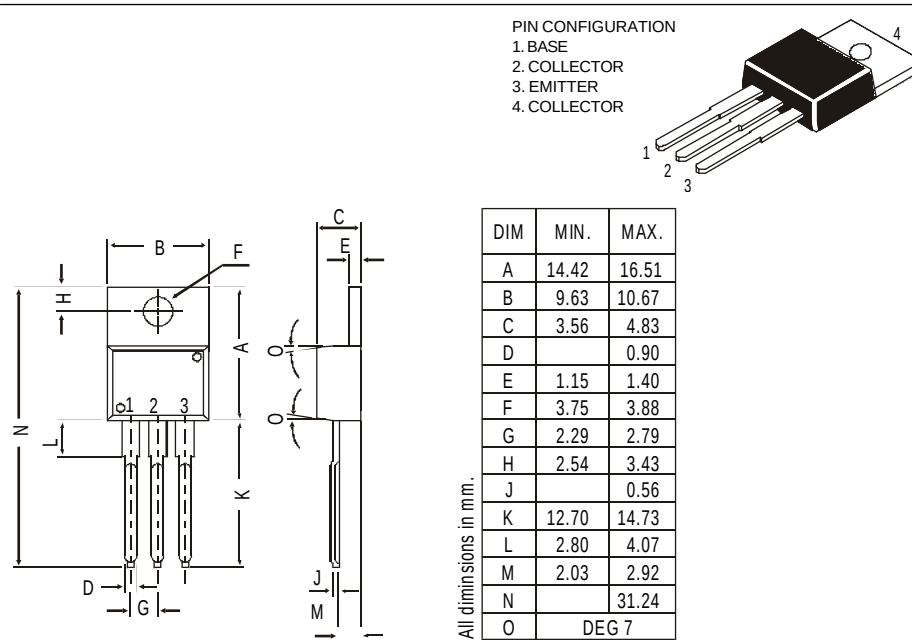




TO-220 Plastic Package

BDX53, BDX53A, BDX53B, BDX53C
BDX54, BDX54A, BDX54B, BDX54C

BDX53, 53A, 53B, 53C *NPN PLASTIC POWER TRANSISTORS*
BDX54, 54A, 54B, 54C *PNP PLASTIC POWER TRANSISTORS*
Power **Darlington** for Linear and Switching Applications



ABSOLUTE MAXIMUM RATINGS

		53	53A	53B	53C	
		54	54A	54B	54C	
Collector-base voltage (open emitter)	V_{CBO}	max. 45	60	80	100	V
Collector-emitter voltage (open base)	V_{CEO}	max. 45	60	80	100	V
Collector current	I_C	max.		8.0		A
Total power dissipation up to $T_C = 25^\circ\text{C}$	P_{tot}	max.		60		W
Junction temperature	T_j	max.		150		$^\circ\text{C}$
Collector-emitter saturation voltage						
$I_C = 3\text{ A}; I_B = 12\text{ mA}$	V_{CEsat}	max.		2.0		V
D.C. current gain						
$I_C = 3\text{ A}; V_{CE} = 3\text{ V}$	h_{FE}	min.		750		

RATINGS (at $T_A = 25^\circ\text{C}$ unless otherwise specified)

		53	53A	53B	53C	
		54	54A	54B	54C	
Collector-base voltage (open emitter)	V_{CBO}	max. 45	60	80	100	V
Collector-emitter voltage (open base)	V_{CEO}	max. 45	60	80	100	V
Emitter-base voltage (open collector)	V_{EBO}	max.		5.0		V

BDX53, BDX53A, BDX53B, BDX53C
BDX54, BDX54A, BDX54B, BDX54C

Collector current	I_C	max.	8.0	A
Collector current (Peak value)	I_{CM}	max.	12	A
Base current	I_B	max.	0.2	A
Total power dissipation upto $T_C=25^\circ\text{C}$	P_{tot}	max.	60	W
Derate above 25°C		max.	0.48	W°C
Junction temperature	T_j	max.	150	$^\circ\text{C}$
Storage temperature	T_{stg}		-65 to +150	$^\circ\text{C}$

THERMAL RESISTANCE

From junction to case	$R_{th\ j-c}$		2.08	$^\circ\text{C/W}$
From junction to ambient	$R_{th\ j-a}$		7.0	$^\circ\text{C/W}$

CHARACTERISTICS

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

			53	53A	53B	53C	
			54	54A	54B	54C	
Collector cutoff current							
$I_B = 0; V_{CB} = 45\text{ V}$	I_{CBO}	max.	0.2	—	—	—	mA
$I_B = 0; V_{CB} = 60\text{ V}$	I_{CBO}	max.	—	0.2	—	—	mA
$I_B = 0; V_{CB} = 80\text{ V}$	I_{CBO}	max.	—	—	0.2	—	mA
$I_B = 0; V_{CB} = 100\text{ V}$	I_{CBO}	max.	—	—	—	0.2	mA
$I_B = 0; V_{CE} = 22\text{ V}$	I_{CEO}	max.	0.5	—	—	—	mA
$I_B = 0; V_{CE} = 30\text{ V}$	I_{CEO}	max.	—	0.5	—	—	mA
$I_B = 0; V_{CE} = 40\text{ V}$	I_{CEO}	max.	—	—	0.5	—	mA
$I_B = 0; V_{CE} = 50\text{ V}$	I_{CEO}	max.	—	—	—	0.5	mA
Emitter cut-off current							
$I_C = 0; V_{EB} = 5\text{ V}$	I_{EBO}	max.		2.0			mA
Breakdown voltages							
$I_C = 100\text{ mA}; I_B = 0$	$V_{CEO(sus)}^*$	min.	45	60	80	100	V
$I_C = 1\text{ mA}; I_E = 0$	V_{CBO}	min.	45	60	80	100	V
$I_E = 1\text{ mA}; I_C = 0$	V_{EBO}	min.		5.0			V
Saturation voltages							
$I_C = 3\text{ A}; I_B = 12\text{ mA}$	V_{CEsat}^*	max.		2.0			V
	V_{BEsat}^*	max.		2.5			V
D.C. current gain							
$I_C = 3\text{ A}; V_{CE} = 3\text{ V}$	h_{FE}^*	min.		750			
Small signal current gain							
$I_C = 3\text{ A}; V_{CE} = 4\text{ V}; f = 1.0\text{ MHz}$	$ h_{fe} $	min.		4.0			
Output capacitance $f = 1.0\text{ MHz}$							
$I_E = 0; V_{CB} = 10\text{ V}$	NPN C_o	max.		300			pF
	PNP C_o	max.		200			pF
Parallel-diode forward voltage							
$I_F = 3\text{ A}$	V_F	max.		2.5			V
$I_F = 8\text{ A}$	V_F	typ.		2.5			V

* Pulse test: pulse width $\leq 300\text{ }\mu\text{s}$; duty cycle $\leq 2\%$