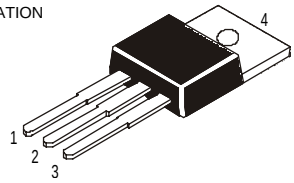
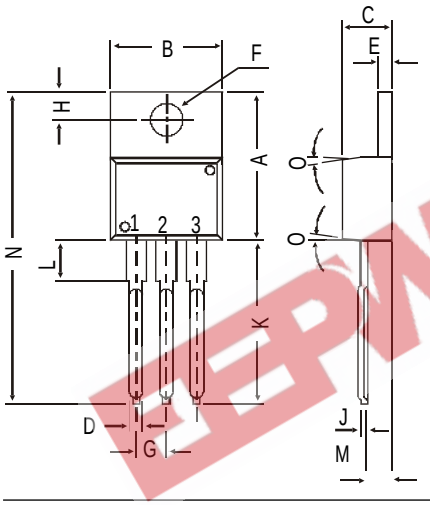
TO-220 Plastic Package

TIP120, TIP121, TIP122
TIP125, TIP126, TIP127

TIP120, 121, 122 NPN PLASTIC POWER TRANSISTORS
TIP125, 126, 127 PNP PLASTIC POWER TRANSISTORS
*Power **Darlingtons** for Linear and Switching Applications*

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





All diminsions in mm.

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	

ABSOLUTE MAXIMUM RATINGS

			120 125	***121 126***	***122 127***	
Collector-base voltage (open emitter)	V_{CBO}	*max.*	*60*	*80*	*100*	*V*
Collector-emitter voltage (open base)	V_{CEO}	*max.*	*60*	*80*	*100*	*V*
Collector current	I_C	*max.*		*5.0*		*A*
Total power dissipation up to T_C = 25°C	P_{tot}	*max.*		*65*		*W*
Junction temperature	T_j	*max.*		*150*		*°C*
Collector-emitter saturation voltage						
I_C = 3 A; I_B = 12 mA	V_{CEsat}	*max.*		*2.0*		*V*
D.C. current gain						
I_C = 0.5 A; V_{CE} = 3 V	h_{FE}	*min.*		*1.0*		

RATINGS *(at T_A=25°C unless otherwise specified)*

			120 125	***121 126***	***122 127***	
Collector-base voltage (open emitter)	V_{CBO}	*max.*	*60*	*80*	*100*	*V*
Collector-emitter voltage (open base)	V_{CEO}	*max.*	*60*	*80*	*100*	*V*
Emitter-base voltage (open collector)	V_{EBO}	*max.*		*5.0*		*V*

Collector current	I_C	*max.*	*5.0*	*A*
Collector current (peak)	I_{CM}	*max.*	*8*	*A*
Base current	I_B	*max.*	*120*	*mA*
Total power dissipation up to T_C = 25°C	P_{tot}	*max.*	*65*	*W*
Derate above 25°C		*max*	*0.52*	*W/°C*
Total power dissipation up to T_A = 25°C	P_{tot}	*max.*	*2*	*W*
Derate above 25°C		*max*	*0.016*	*W/°C*
Junction temperature	T_j	*max.*	*150*	*°C*
Storage temperature	T_{stg}		*–65 to +150*	*°C*

THERMAL RESISTANCE

From junction to ambient	$R_{th\ j-a}$	*62.5*	*°C/W*
From junction to case	$R_{th\ j-c}$	*1.92*	*°C/W*

CHARACTERISTICS

T_{amb} = 25°C unless otherwise specified			***120***	***121***	***122***	
			125	***126***	***127***	
Collector cutoff current						
I_E = 0; V_{CB} = 60 V	I_{CBO}	*max.*	*0.2*	*–*	*–*	*mA*
I_E = 0; V_{CB} = 80 V	I_{CBO}	*max.*	*–*	*0.2*	*–*	*mA*
I_E = 0; V_{CB} = 100 V	I_{CBO}	*max.*	*–*	*–*	*0.2*	*mA*
I_B = 0; V_{CE} = 30V	I_{CEO}	*max.*	*0.5*	*–*	*–*	*mA*
I_B = 0; V_{CE} = 40V	I_{CEO}	*max.*	*–*	*0.5*	*–*	*mA*
I_B = 0; V_{CE} = 50V	I_{CEO}	*max.*	*–*	*–*	*0.5*	*mA*
Emitter cut-off current						
I_C = 0; V_{EB} = 5 V	I_{EBO}	*max.*		*2.0*		*mA*
Breakdown voltages						
I_C = 100 mA; I_B = 0	$V_{CEO(sus)}$*	*min.*	*60*	*80*	*100*	*V*
I_C = 1 mA; I_E = 0	V_{CBO}	*min.*	*60*	*80*	*100*	*V*
I_E = 1 mA; I_C = 0	V_{EBO}	*min.*		*5.0*		*V*
Saturation voltages						
I_C = 3.0 A; I_B = 12 mA	V_{CEsat}*	*max.*		*2.0*		*V*
I_C = 5.0 A; I_B = 20 mA	V_{CEsat}*	*max.*		*4.0*		*V*
Base-emitter on voltage						
I_C = 3A; V_{CE} = 3V	$V_{BE(on)}$*	*max.*		*2.5*		*V*
D.C. current gain						
I_C = 0.5A; V_{CE} = 3V	h_{FE}*	*min.*		*1.0*		
I_C = 3A; V_{CE} = 3V		*min.*		*1.0*		
Small signal current gain						
I_C = 3A; V_{CE} = 4V; f = 1 MHz	$\|h_{fe}\|$	*min.*		*4.0*		
Output capacitance at f = 0.1 MHz						
I_E = 0; V_{CB} = 10V ***PNP***	C_o	*max.*		*300*		*pF*
NPN	C_o	*max.*		*200*		*pF*

** Pulse test: pulse width ≤ 300 µs; duty cycle ≤ 2%.*