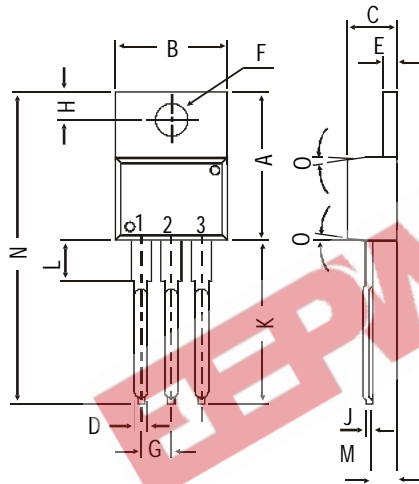
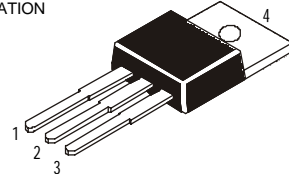


**TO-220 Plastic Package**

**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



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>120</b>	<b>121</b>	<b>122</b>	
		<b>125</b>	<b>126</b>	<b>127</b>	
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 $T_C = 25^\circ C$	$P_{tot}$ max.		65		W
Junction temperature	$T_j$ max.		150		$^\circ C$
Collector-emitter saturation voltage	$V_{CEsat}$ max.		2.0		V
$I_C = 3 A; I_B = 12 mA$					
D.C. current gain	$h_{FE}$ min.		1.0		
$I_C = 0.5 A; V_{CE} = 3 V$					

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

		<b>120</b>	<b>121</b>	<b>122</b>	
		<b>125</b>	<b>126</b>	<b>127</b>	
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

**TIP120, TIP121, TIP122  
TIP125, TIP126, TIP127**

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 $T_C = 25^\circ\text{C}$	$P_{tot}$	max.	65	W
Derate above $25^\circ\text{C}$		max	0.52	W $^\circ\text{C}$
Total power dissipation up to $T_A = 25^\circ\text{C}$	$P_{tot}$	max.	2	W
Derate above $25^\circ\text{C}$		max	0.016	W $^\circ\text{C}$
Junction temperature	$T_j$	max.	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-65 to +150	$^\circ\text{C}$

**THERMAL RESISTANCE**

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

**CHARACTERISTICS**

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

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

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