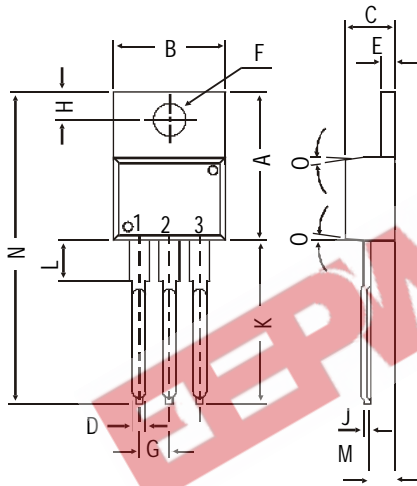
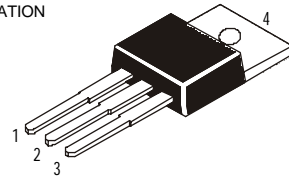


**TO-220 Plastic Package**

**TIP100, TIP101, TIP102  
TIP105, TIP106, TIP107**

*TIP100, 101, 102 NPN PLASTIC POWER TRANSISTORS*  
*TIP105, 106, 107 PNP PLASTIC POWER TRANSISTORS*  
*Power Darlington 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>100</b>	<b>101</b>	<b>102</b>	
		<b>105</b>	<b>106</b>	<b>107</b>	
Collector-base voltage (open emitter)	$V_{CB0}$ max.	60	80	100	V
Collector-emitter voltage (open base)	$V_{CE0}$ max.	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.		80		W
Junction temperature	$T_j$ max.		150		$^\circ\text{C}$
Collector-emitter saturation voltage $I_C = 3\text{ A}; I_B = 6\text{ mA}$	$V_{CEsat}$ max.		2.0		V
D.C. current gain $I_C = 3\text{ A}; V_{CE} = 4\text{ V}$	$h_{FE}$ min.		1.0		K
			max.	20	K

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

		<b>100</b>	<b>101</b>	<b>102</b>	
		<b>105</b>	<b>106</b>	<b>107</b>	
Limiting values					
Collector-base voltage (open emitter)	$V_{CB0}$ max.	60	80	100	V
Collector-emitter voltage (open base)	$V_{CE0}$ max.	60	80	100	V
Emitter-base voltage (open collector)	$V_{EBO}$ max.		5.0		V

**TIP100, TIP101, TIP102  
TIP105, TIP106, TIP107**

Collector current	$I_C$	max.	8.0	A
Collector peak current	$I_{CM}$	max.	15	A
Base current	$I_B$	max.	1.0	A
Total power dissipation up to $T_C = 25^\circ\text{C}$	$P_{tot}$	max.	80	W
Derate above $25^\circ\text{C}$		max	0.64	$\text{W}^\circ\text{C}$
Total power dissipation up to $T_A = 25^\circ\text{C}$	$P_{tot}$	max.	2.0	W
Derate above $25^\circ\text{C}$		max	0.016	$\text{W}^\circ\text{C}$
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	$R_{th\ j-c}$		1.56	$^\circ\text{C/W}$

**CHARACTERISTICS**

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

			100	101	102	
			105	106	107	
Collector cutoff current						
$I_B = 0; V_{CE} = 30\text{ V}$	$I_{CEO}$	max.	50	-	-	$\mu\text{A}$
$I_B = 0; V_{CE} = 40\text{ V}$	$I_{CEO}$	max.	-	50	-	$\mu\text{A}$
$I_B = 0; V_{CE} = 50\text{ V}$	$I_{CEO}$	max.	-	-	50	$\mu\text{A}$
$I_E = 0; V_{CB} = 60\text{V}$	$I_{CBO}$	max.	50	-	-	$\mu\text{A}$
$I_E = 0; V_{CB} = 80\text{V}$	$I_{CBO}$	max.	-	50	-	$\mu\text{A}$
$I_E = 0; V_{CB} = 100\text{V}$	$I_{CBO}$	max.	-	-	50	$\mu\text{A}$
Emitter cut-off current						
$I_C = 0; V_{EB} = 5\text{ V}$	$I_{EBO}$	max.		8		mA
Breakdown voltages						
$I_C = 30\text{ mA}; I_B = 0$	$V_{CEO(sus)}^*$	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
Saturation voltages						
$I_C = 3\text{ A}; I_B = 6\text{ mA}$	$V_{CEsat}^*$	max.		2.0		V
$I_C = 8\text{ A}; I_B = 80\text{ mA}$	$V_{CEsat}^*$	max.		2.5		V
Base-emitter on voltage						
$I_C = 8\text{ A}; V_{CE} = 4\text{ V}$	$V_{BE(on)}^*$	max.		2.8		V
D.C. current gain						
$I_C = 3\text{ A}; V_{CE} = 4\text{ V}$	$h_{FE}^*$	min.		1.0		K
		max.		20		K
$I_C = 8\text{ A}; V_{CE} = 4\text{ V}$	$h_{FE}^*$	min.		200		
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 $f = 0.1\text{ MHz}$						
$I_E = 0; V_{CB} = 10\text{V}$ , <b>PNP</b>	$C_o$	max.		300		pF
<b>NPN</b>		max.		200		pF
Forward voltage of commutation diode						
$I_F = -I_C = 10\text{A}; I_B = 0$	$V_F^*$	max.		2.8		V

\* Pulsed: pulse duration = 300  $\mu\text{s}$ ; duty cycle  $\leq 2\%$ .