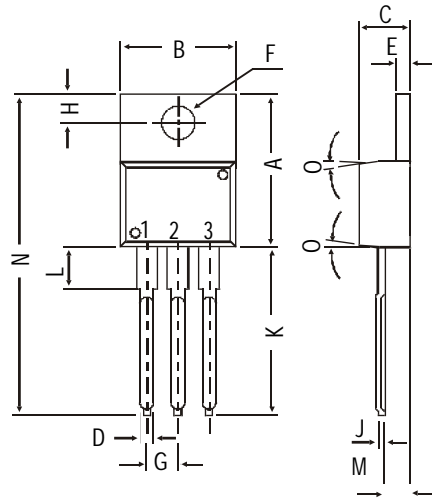
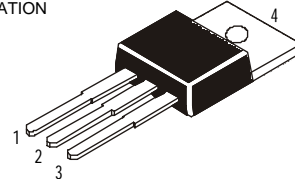


TO-220 Plastic Package

**TIP29, TIP29A, TIP29B, TIP29C
TIP30, TIP30A, TIP30B, TIP30C**

*TIP29, 29A, 29B, 29C NPN PLASTIC POWER TRANSISTORS
TIP30, 30A, 30B, 30C PNP PLASTIC POWER TRANSISTORS
General Purpose 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

		29	29A	29B	29C	
		30	30A	30B	30C	
Collector-base voltage (open emitter)	V_{CBO}	max. 40	60	80	100	V
Collector-emitter voltage (open base)	V_{CEO}	max. 40	60	80	100	V
Collector current	I_C	max.	1.0			A
Total power dissipation up to $T_C = 25^\circ C$	P_{tot}	max.	30			W
Junction temperature	T_j	max.	150			$^\circ C$
Collector-emitter saturation voltage						
$I_C = 1 A; I_B = 125 mA$	V_{CEsat}	max.	0.7			V
D.C. current gain						
$I_C = 1 A; V_{CE} = 4 V$	h_{FE}	min.	15			
		max.	75			

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

		29	29A	29B	29C	
		30	30A	30B	30C	
Collector-base voltage (open emitter)	V_{CBO}	max. 40	60	80	100	V
Collector-emitter voltage (open base)	V_{CEO}	max. 40	60	80	100	V

**TIP29, TIP29A, TIP29B, TIP29C
TIP30, TIP30A, TIP30B, TIP30C**

Emitter-base voltage (open collector)	V_{EBO}	max.	5.0	V
Collector current	I_C	max.	1.0	A
Collector current (Peak)	I_{CM}	max.	3.0	A
Base current	I_B	max.	0.4	A
Total power dissipation upto $T_C=25^\circ\text{C}$	P_{tot}	max.	30	W
Derate above 25°C		max.	0.24	$W^\circ\text{C}$
Total power dissipation upto $T_A=25^\circ\text{C}$	P_{tot}	max.	2	W
Derate above 25°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	$R_{th\ j-c}$		4.167	$^\circ\text{C/W}$

CHARACTERISTICS

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

			29	29A	29B	29C	
			30	30A	30B	30C	
Collector cutoff current							
$I_B = 0; V_{CE} = 30\text{V}$	I_{CEO}	max.	0.3	0.3	-	-	mA
$I_B = 0; V_{CE} = 60\text{V}$	I_{CEO}	max.	-	-	0.3	0.3	mA
$V_{EB} = 0; V_{CE} = V_{CEO}$	I_{CES}	max.			0.2		mA
Emitter cut-off current							
$I_C = 0; V_{EB} = 5\text{V}$	I_{EBO}	max.			1.0		mA
Breakdown voltages							
$I_C = 30\text{mA}; I_B = 0$	$V_{CEO(sus)}^*$	min.	40	60	80	100	V
$I_C = 1\text{mA}; I_E = 0$	V_{CBO}	min.	40	60	80	100	V
$I_E = 1\text{mA}; I_C = 0$	V_{EBO}	min.			5.0		V
Saturation voltages							
$I_C = 1\text{A}; I_B = 125\text{mA}$	V_{CEsat}^*	max.			0.7		V
Base emitter on voltage							
$I_C = 1\text{A}; V_{CE} = 4\text{V}$	$V_{BE(on)}^*$	max.			1.3		V
D.C. current gain							
$I_C = 0.2\text{A}; V_{CE} = 4\text{V}$	h_{FE}^*	min.			40		
$I_C = 1\text{A}; V_{CE} = 4\text{V}$	h_{FE}^*	min.			15		
		max.			75		
Small-signal current gain							
$I_C = 0.2\text{A}; V_{CE} = 10\text{V}; f = 1\text{KHz}$	h_{fe}	min.			20		
Transition frequency							
$I_C = 0.2\text{A}; V_{CE} = 10\text{V}; f = 1\text{MHz}$	$f_T(2)$	min.			3		MHz

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

(2) $f_T = |h_{fe}| \cdot f_{test}$.