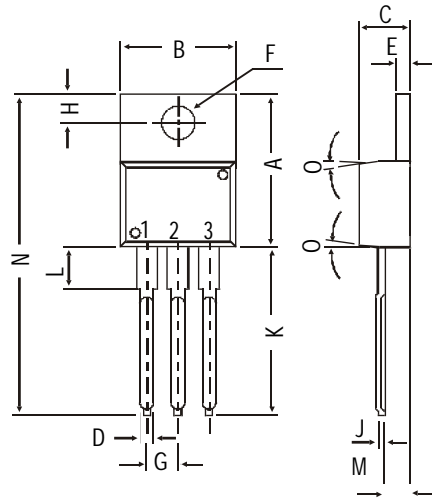
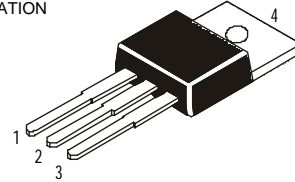


TO-220 Plastic Package

**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							
$I_B = 0; V_{CE} = 30V$	I_{CEO}	max.	0.3	0.3	-	-	mA
$I_B = 0; V_{CE} = 60V$	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							
$I_C = 0; V_{EB} = 5V$	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) $f_T = |h_{fe}| \cdot f_{test}$.