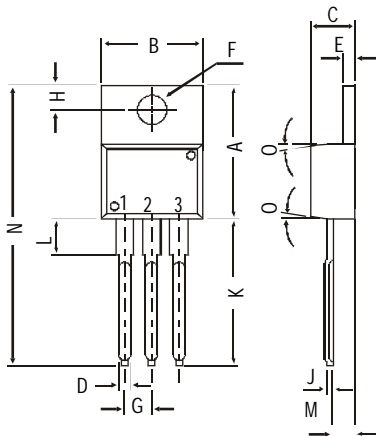
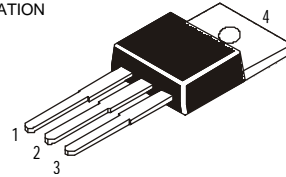


**TO-220 Plastic Package**

**2N5294, 2N5296, 2N5298**

**2N5294, 5296, 5298 NPN PLASTIC POWER TRANSISTORS**  
*Medium Power Switching and Amplifier Applications*

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



All dimensions 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**

		<b>5294 5296 5298</b>		
Collector-base voltage (open emitter)	$V_{CBO}$ max.	80	60	80 V
Collector-emitter voltage (open base)	$V_{CEO}$ max.	70	40	60 V
Collector current	$I_C$ max.		4.0	A
Total power dissipation up to $T_C = 25^\circ C$	$P_{tot}$ max.		36	W
Junction temperature	$T_j$ max.		150	$^\circ C$
Collector-emitter saturation voltage	$V_{CEsat}$ max.	1.0	-	- V
$I_C = 0.5$ A; $I_B = 0.05$ A		-	1.0	- V
$I_C = 1$ A; $I_B = 0.1$ A		-	-	1.0 V
$I_C = 1.5$ A; $I_B = 0.15$ A				
D.C. current gain	$h_{FE}$ min.	30	-	-
$I_C = 0.5$ A; $V_{CE} = 4$ V	$h_{FE}$ max.	120	-	-
	$h_{FE}^*$ min.	-	30	-
$I_C = 1$ A; $V_{CE} = 4$ V	$h_{FE}^*$ max.	-	120	-
	$h_{FE}^*$ min.	-	-	20
$I_C = 1.5$ A; $V_{CE} = 4$ V	$h_{FE}^*$ max.	-	-	80

## 2N5294, 2N5296, 2N5298

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

#### Limiting values

		5294	5296	5298
Collector-base voltage (open emitter)	$V_{CB0}$ max.	80	60	80 V
Collector-emitter voltage (open base)	$V_{CEO}$ max.	70	40	60 V
Collector-emitter voltage ( $V_{BE} = 1.5\text{V}$ )	$V_{CEV}$ max.	80	60	80 V
Collector-emitter voltage ( $R_{BE} = 100\Omega$ )	$V_{CER}$ max.	75	50	70 V
Emitter-base voltage (open base)	$V_{EBO}$ max.	7.0	5.0	5.0 V
Collector current	$I_C$ max.		4.0	A
Base current	$I_B$ max.		2.0	A
Total power dissipation up to $T_C = 25^\circ\text{C}$	$P_{tot}$ max.		36	W
Derate above $25^\circ\text{C}$	max.		0.288	$\text{W}^\circ\text{C}$
Total power dissipation up to $T_A = 25^\circ\text{C}$	$P_{tot}$ max.		1.8	W
Derate above $25^\circ\text{C}$	max.		0.0144	$\text{W}^\circ\text{C}$
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	$R_{th\ j-a}$	70	$^\circ\text{C/W}$
From junction to case	$R_{th\ j-c}$	3.5	$^\circ\text{C/W}$

### CHARACTERISTICS

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

#### Collector cutoff current

		5294	5296	5298
$V_{CE} = 65\text{ V}; V_{BE} = 1.5\text{ V}$	$I_{CEV}$ max.	0.5	-	0.5 mA
$V_{CE} = 35\text{ V}; V_{BE} = 1.5\text{ V}$	$I_{CEV}$ max.	-	2.0	- mA
$V_{CE} = 65\text{ V}; V_{BE} = 1.5\text{ V}; T_C = 150^\circ\text{C}$	$I_{CEV}$ max.	3.0	-	3.0 mA
$V_{CE} = 35\text{ V}; V_{BE} = 1.5\text{ V}; T_C = 150^\circ\text{C}$	$I_{CEV}$ max.	-	5.0	- mA
$V_{CE} = 50\text{ V}; R_{BE} = 100\ \Omega$	$I_{CER}$ max.	0.5	-	0.5 mA
$V_{CE} = 50\text{ V}; R_{BE} = 100\ \Omega; T_C = 150^\circ\text{C}$	$I_{CER}$ max.	2.0	-	2.0 mA

#### Emitter cut-off current

$I_C = 0; V_{EB} = 7\text{ V}$	$I_{EBO}$ max.	1.0	-	- mA
$I_C = 0; V_{EB} = 5\text{ V}$	$I_{EBO}$ max.	-	1.0	1.0 mA

#### Breakdown voltages

$I_C = 100\text{ mA}; I_B = 0$	$V_{CEO(sus)}^*$ min.	70	40	60 V
$I_C = 1\text{ mA}; I_E = 0$	$V_{CB0}$ min.	80	60	80 V
$I_E = 1\text{ mA}; I_C = 0$	$V_{EBO}$ min.	7	5	5 V

#### Saturation voltages

$I_C = 0.5\text{ A}; I_B = 0.05\text{ A}$	$V_{CEsat}^*$ max.	1.0	-	- V
$I_C = 1\text{ A}; I_B = 0.1\text{ A}$	$V_{CEsat}^*$ max.	-	1.0	- V
$I_C = 1.5\text{ A}; I_B = 0.15\text{ A}$	$V_{CEsat}^*$ max.	-	-	1.0 V

#### Base-emitter on voltage

$I_C = 0.5\text{ A}; V_{CE} = 4\text{ V}$	$V_{BE(on)}^*$ max.	1.1	-	- V
$I_C = 1\text{ A}; V_{CE} = 4\text{ V}$	$V_{BE(on)}^*$ max.	-	1.3	- V
$I_C = 1.5\text{ A}; V_{CE} = 4\text{ V}$	$V_{BE(on)}^*$ max.	-	-	1.5 V

**2N5294, 2N5296, 2N5298**

		<b>5294 5296 5298</b>			
<i>D.C. current gain</i>					
$I_C = 0.5 \text{ A}; V_{CE} = 4 \text{ V}$	$h_{FE}^*$	<i>min.</i>	30	-	-
		<i>max.</i>	120	-	-
$I_C = 1 \text{ A}; V_{CE} = 4 \text{ V}$	$h_{FE}^*$	<i>min.</i>	-	30	-
		<i>max.</i>	-	120	-
$I_C = 1.5 \text{ A}; V_{CE} = 4 \text{ V}$	$h_{FE}^*$	<i>min.</i>	-	-	20
		<i>max.</i>	-	-	80
<i>Transition frequency</i>					
$I_C = 0.2 \text{ A}; V_{CE} = 4 \text{ V}$	$f_T$	<i>min.</i>	0.8	0.8	0.8 MHz
<b>Switching time</b>					
<i>Turn on time</i>					
$V_{CC} = 30 \text{ V}; I_C = 0.5 \text{ A}; I_{B1} = 0.05 \text{ A}$	$t_{on}$	<i>max.</i>	5	-	- $\mu\text{s}$
$V_{CC} = 30 \text{ V}; I_C = 1 \text{ A}; I_{B1} = 0.1 \text{ A}$	$t_{on}$	<i>max.</i>	-	5	- $\mu\text{s}$
$V_{CC} = 30 \text{ V}; I_C = 1.5 \text{ A}; I_{B1} = 0.15 \text{ A}$	$t_{on}$	<i>max.</i>	-	-	5 $\mu\text{s}$
<i>Turn off time</i>					
$V_{CC} = 30 \text{ V}; I_C = 0.5 \text{ A}; I_{B1} = 0.05 \text{ A}$	$t_{off}$	<i>max.</i>	15	-	- $\mu\text{s}$
$V_{CC} = 30 \text{ V}; I_C = 1 \text{ A}; I_{B2} = 0.1 \text{ A}$	$t_{off}$	<i>max.</i>	-	15	- $\mu\text{s}$
$V_{CC} = 30 \text{ V}; I_C = 1.5 \text{ A}; I_{B2} = 0.15 \text{ A}$	$t_{off}$	<i>max.</i>	-	-	15 $\mu\text{s}$

\* Pulsed pulse duration = 300  $\mu\text{s}$ ; duty factor = 0.018.

## Notes

### Disclaimer

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