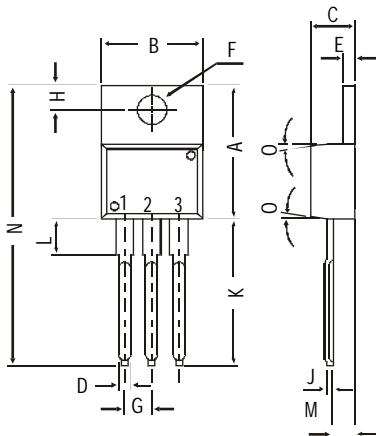
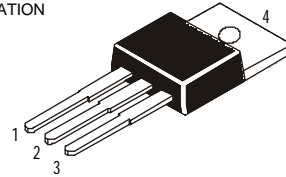


TO-220 Plastic Package

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

		5294	5296	5298	
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	-	-	
$I_C = 1 A; V_{CE} = 4 V$	h_{FE}^* min.	-	30	-	
$I_C = 1.5 A; V_{CE} = 4 V$	h_{FE}^* max.	-	120	-	
	h_{FE}^* min.	-	-	20	
	h_{FE}^* max.	-	-	80	

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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°C		max.	0.288		W°C
Total power dissipation up to $T_A = 25^\circ\text{C}$	P_{tot}	max.	1.8		W
Derate above 25°C		max.	0.0144		W°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

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		5294 5296 5298			
<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
Switching time					
<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	-	- μs
$V_{CC} = 30 \text{ V}; I_C = 1 \text{ A}; I_{B1} = 0.1 \text{ A}$	t_{on}	<i>max.</i>	-	5	- μs
$V_{CC} = 30 \text{ V}; I_C = 1.5 \text{ A}; I_{B1} = 0.15 \text{ A}$	t_{on}	<i>max.</i>	-	-	5 μs
<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	-	- μs
$V_{CC} = 30 \text{ V}; I_C = 1 \text{ A}; I_{B2} = 0.1 \text{ A}$	t_{off}	<i>max.</i>	-	15	- μs
$V_{CC} = 30 \text{ V}; I_C = 1.5 \text{ A}; I_{B2} = 0.15 \text{ A}$	t_{off}	<i>max.</i>	-	-	15 μs

* Pulsed pulse duration = 300 μs ; duty factor = 0.018.

Notes

Disclaimer

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