



Micro Commercial Components

Micro Commercial Components  
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**2N3416**

**NPN General Purpose Amplifier**

**Features**

- This device is designed for use as general purpose amplifiers and switches requiring collector currents to 300mA
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0 and MSL rating 1
- Marking: Type Number
- Lead Free Finish/Rohs Compliant ("P" Suffix designates Compliant. See ordering information)

**Maximum Ratings\***

Symbol	Rating	Rating	Unit
V <sub>CEO</sub>	Collector-Emitter Voltage	50	V
V <sub>CBO</sub>	Collector-Base Voltage	50	V
V <sub>EBO</sub>	Emitter-Base Voltage	5.0	V
I <sub>c</sub>	Collector Current, Continuous	500	mA
T <sub>J</sub>	Operating Junction Temperature	-55 to +150	°C
T <sub>STG</sub>	Storage Temperature	-55 to +150	°C

**Thermal Characteristics**

Symbol	Rating	Max	Unit
P <sub>D</sub>	Total Device Dissipation Derate above 25°C	625 5.0	mW mW/°C
R <sub>JC</sub>	Thermal Resistance, Junction to Case	83.3	°C/W
R <sub>JA</sub>	Thermal Resistance, Junction to Ambient	200	°C/W

**Electrical Characteristics @ 25°C Unless Otherwise Specified**

Symbol	Parameter	Min	Max	Units
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**OFF CHARACTERISTICS**

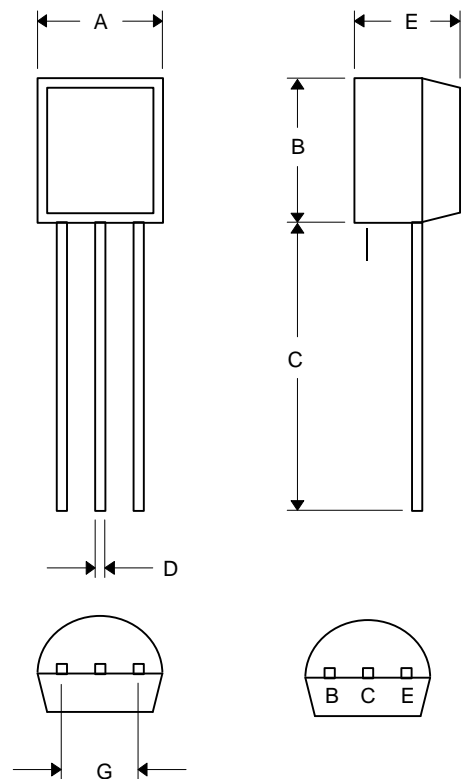
V <sub>(BR)CEO</sub>	Collector-Emitter Breakdown Voltage* (I <sub>c</sub> =10mA, I <sub>B</sub> =0)	50	---	Vdc
V <sub>(BR)CBO</sub>	Collector-Base Breakdown Voltage (I <sub>c</sub> =10mA, I <sub>E</sub> =0)	50	---	Vdc
V <sub>(BR)EBO</sub>	Emitter-Base Breakdown Voltage (I <sub>E</sub> =10mA, I <sub>C</sub> =0)	5.0	---	Vdc
I <sub>CBO</sub>	Collector Cutoff Current (V <sub>CB</sub> =25Vdc, I <sub>E</sub> =0.4Vdc) (V <sub>CB</sub> =18Vdc, I <sub>E</sub> =0, T <sub>A</sub> =100°C)	---	100 15	nAdc uAdc
I <sub>EBO</sub>	Emitter Cutoff Current (V <sub>EB</sub> =5.0Vdc, I <sub>C</sub> =0)	---	100	nAdc

\* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

Notes: 1. These ratings are based on a maximum junction temperature of 150 degrees C.

2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

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DIM	DIMENSIONS				NOTE
	INCHES		MM		
A	.170	.190	4.33	4.83	
B	.170	.190	4.30	4.83	
C	.550	.590	13.97	14.97	
D	.010	.020	0.36	0.56	
E	.130	.160	3.30	3.96	
G	.096	.104	2.44	2.64	

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Symbol	Parameter	Min	Max	Units
<b>ON CHARACTERISTICS*</b>				
$h_{FE}$	DC Current Gain ( $V_{CE}=4.5V_{dc}$ , $I_C=2.0mA_{dc}$ )	75	225	---
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ( $I_C=50mA_{dc}$ , $I_B=3.0mA_{dc}$ )	---	0.3	Vdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ( $I_C=150mA_{dc}$ , $I_B=15mA_{dc}$ )	0.6	1.3	Vdc
<b>SMALL-SIGNAL CHARACTERISTICS</b>				
$h_{fe}$	Small-Signal Current Gain ( $I_C=2.0mA_{dc}$ , $V_{CE}=4.5V_{dc}$ , $f=1.0KHz$ )	75	---	---

\* Pulse Test: Pulse Width<300us, Duty Cycle<2.0%



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## Ordering Information

Device	Packing
(Part Number)-AP	Ammo Packing;2Kpcs/AmmoBox
(Part Number)-BP	Bulk;1Kpcs/Bag

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