



**THE DATASHEET OF**  
**2N3866**



2N3866  
2N3866A

**NPN SILICON  
HIGH FREQUENCY TRANSISTOR**



**TO-39 CASE**



[www.centrasemi.com](http://www.centrasemi.com)

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 2N3866 and 2N3866A are Silicon NPN RF Transistors, mounted in a hermetically sealed package, designed for high frequency amplifier and oscillator applications.

**MARKING: FULL PART NUMBER**

**MAXIMUM RATINGS:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

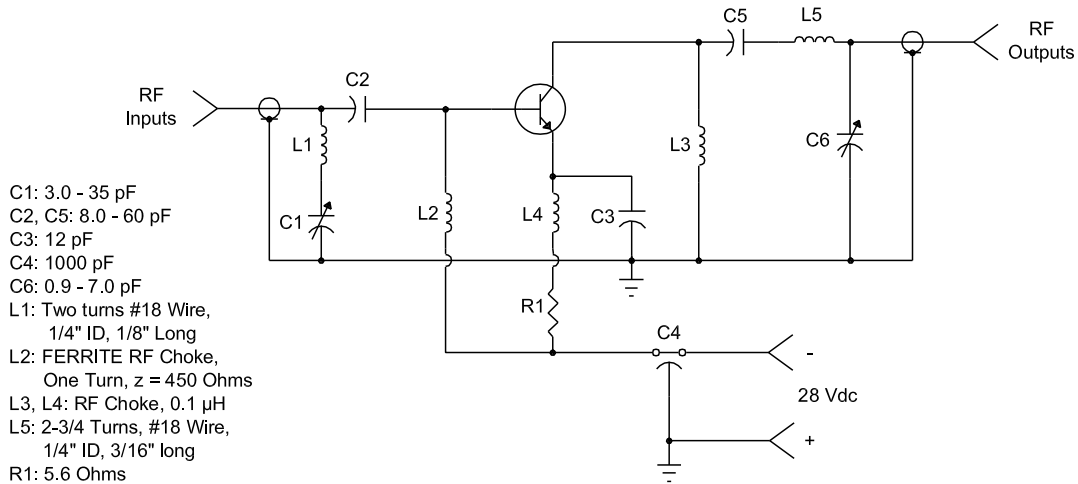
	SYMBOL		UNITS
Collector-Base Voltage	$V_{CBO}$	55	V
Collector-Emitter Voltage	$V_{CEO}$	30	V
Emitter-Base Voltage	$V_{EBO}$	3.5	V
Continuous Collector Current	$I_C$	0.4	A
Continuous Base Current	$I_B$	2.0	A
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	5.0	W
Operating and Storage Junction Temperature	$T_J, T_{stg}$	-65 to +200	$^\circ\text{C}$
Thermal Resistance	$\theta_{JC}$	35	$^\circ\text{C/W}$

**ELECTRICAL CHARACTERISTICS:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
$I_{CEO}$	$V_{CE}=28\text{V}$		20	$\mu\text{A}$
$I_{CEV}$	$V_{CE}=55\text{V}, V_{BE(OFF)}=1.5\text{V}$		0.1	mA
$I_{CEV}$	$V_{CE}=30\text{V}, V_{BE(OFF)}=1.5\text{V}, T_C=200^\circ\text{C}$		5.0	mA
$I_{EBO}$	$V_{EB}=3.5\text{V}$		0.1	mA
$BV_{CER}$	$I_C=5.0\text{mA}, R_{BE}=10\Omega$	55		V
$BV_{CBO}$	$I_C=500\mu\text{A}$	55		V
$BV_{CEO}$	$I_C=5.0\text{mA}$	30		V
$BV_{EBO}$	$I_E=100\mu\text{A}$	3.5		V
$V_{CE(SAT)}$	$I_C=100\text{mA}, I_B=20\text{mA}$		1.0	V
$h_{FE}$	$V_{CE}=5.0\text{V}, I_C=50\text{mA}$ (2N3866)	10	200	
$h_{FE}$	$V_{CE}=5.0\text{V}, I_C=50\text{mA}$ (2N3866A)	25	200	
$h_{FE}$	$V_{CE}=5.0\text{V}, I_C=360\text{mA}$	5.0		
$f_T$	$V_{CE}=15\text{V}, I_C=50\text{mA}, f=200\text{MHz}$ (2N3866)	500		MHz
$f_T$	$V_{CE}=15\text{V}, I_C=50\text{mA}, f=200\text{MHz}$ (2N3866A)	800		MHz
$C_{ob}$	$V_{CB}=28\text{V}, I_E=0, f=1.0\text{MHz}$		3.0	pF
$G_{PE}$	$V_{CC}=28\text{V}, P_{out}=1.0\text{W}, f=400\text{MHz}$ (Figure 1)		10	dB
$\eta$	$V_{CC}=28\text{V}, P_{out}=1.0\text{W}, f=400\text{MHz}$ (Figure 1)		45	%

R2 (15-September 2010)

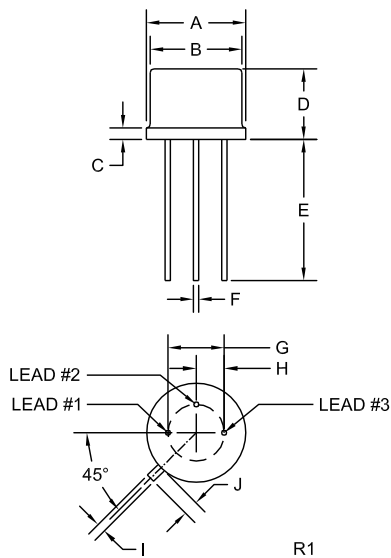
**2N3866**  
**2N3866A**  
  
**NPN SILICON**  
**HIGH FREQUENCY TRANSISTOR**



- C1: 3.0 - 35 pF
- C2, C5: 8.0 - 60 pF
- C3: 12 pF
- C4: 1000 pF
- C6: 0.9 - 7.0 pF
- L1: Two turns #18 Wire,  
1/4" ID, 1/8" Long
- L2: FERRITE RF Choke,  
One Turn, z = 450 Ohms
- L3, L4: RF Choke, 0.1  $\mu$ H
- L5: 2-3/4 Turns, #18 Wire,  
1/4" ID, 3/16" long
- R1: 5.6 Ohms

Figure 1. 400MHz Test Circuit

**TO-39 CASE - MECHANICAL OUTLINE**



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A (DIA)	0.335	0.370	8.51	9.40
B (DIA)	0.315	0.335	8.00	8.51
C	-	0.040	-	1.02
D	0.240	0.260	6.10	6.60
E	0.500	-	12.70	-
F (DIA)	0.016	0.021	0.41	0.53
G (DIA)	0.200		5.08	
H	0.100		2.54	
I	0.028	0.034	0.71	0.86
J	0.029	0.045	0.74	1.14

TO-39 (REV: R1)

**LEAD CODE:**

- 1) Emitter
- 2) Base
- 3) Collector

**MARKING: FULL PART NUMBER**

R2 (15-September 2010)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



---

### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

---

### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2<sup>nd</sup> day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

---

### REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix " TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix " PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

---

### CONTACT US

#### Corporate Headquarters & Customer Support Team

Central Semiconductor Corp.  
145 Adams Avenue  
Hauppauge, NY 11788 USA  
Main Tel: (631) 435-1110  
Main Fax: (631) 435-1824  
Support Team Fax: (631) 435-3388  
[www.centrasemi.com](http://www.centrasemi.com)

**Worldwide Field Representatives:**  
[www.centrasemi.com/wwreps](http://www.centrasemi.com/wwreps)



**Worldwide Distributors:**  
[www.centrasemi.com/wwdistributors](http://www.centrasemi.com/wwdistributors)

---

For the latest version of Central Semiconductor's **LIMITATIONS AND DAMAGES DISCLAIMER**, which is part of Central's Standard Terms and Conditions of sale, visit: [www.centrasemi.com/terms](http://www.centrasemi.com/terms)

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View 2N3866 on WIN SOURCE](#)
-  [Central Semiconductor Corp Information](#)

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management