

2N3011

**SILICON
NPN TRANSISTOR**



TO-18 CASE



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR 2N3011 is a silicon epitaxial planar NPN transistor designed for ultra high speed saturated switching applications.

MARKING: FULL PART NUMBER

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

Collector-Base Voltage
Collector-Emitter Voltage
Collector-Emitter Voltage
Emitter-Base Voltage
Continuous Collector Current
Peak Collector Current (tp=10 μ s)
Power Dissipation
Power Dissipation ($T_C=25^\circ\text{C}$)
Operating and Storage Junction Temperature
Thermal Resistance
Thermal Resistance

SYMBOL

V_{CBO}	30
V_{CES}	30
V_{CEO}	12
V_{EBO}	5.0
I_C	200
I_{CM}	500
P_D	360
P_D	1.2
T_J, T_{stg}	-65 to +200
Θ_{JA}	486
Θ_{JC}	146

UNITS

V
V
V
V
mA
mA
mW
W
$^\circ\text{C}$
$^\circ\text{C/W}$
$^\circ\text{C/W}$

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

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
I_{CES}	$V_{CE}=20\text{V}$		400	nA
I_{CES}	$V_{CE}=20\text{V}, T_A=85^\circ\text{C}$		10	μA
BV_{CBO}	$I_C=10\mu\text{A}$	30		V
BV_{CES}	$I_C=10\mu\text{A}$	30		V
BV_{CEO}	$I_C=10\text{mA}$	12		V
BV_{EBO}	$I_E=100\mu\text{A}$	5.0		V
$V_{CE(SAT)}$	$I_C=10\text{mA}, I_B=1.0\text{mA}$		200	mV
$V_{CE(SAT)}$	$I_C=10\text{mA}, I_B=1.0\text{mA}, T_A=85^\circ\text{C}$		300	mV
$V_{CE(SAT)}$	$I_C=30\text{mA}, I_B=3.0\text{mA}$		250	mV
$V_{CE(SAT)}$	$I_C=100\text{mA}, I_B=10\text{mA}$		500	mV
$V_{BE(SAT)}$	$I_C=10\text{mA}, I_B=1.0\text{mA}$	720	870	mV
$V_{BE(SAT)}$	$I_C=30\text{mA}, I_B=3.0\text{mA}$		1.15	V
$V_{BE(SAT)}$	$I_C=100\text{mA}, I_B=10\text{mA}$		1.6	V
h_{FE}	$V_{CE}=0.35\text{V}, I_C=10\text{mA}$	30	120	
h_{FE}	$V_{CE}=0.4\text{V}, I_C=30\text{mA}$	25		
h_{FE}	$V_{CE}=1.0\text{V}, I_C=100\text{mA}$	12		

R0 (25-February 2015)

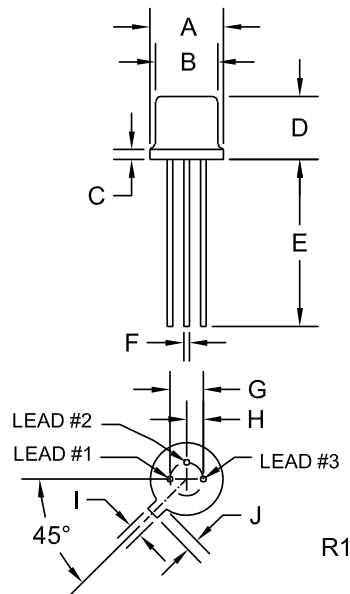
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ELECTRICAL CHARACTERISTICS - Continued: ($T_A=25^\circ\text{C}$ unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
f_T	$V_{CE}=10\text{V}$, $I_C=20\text{mA}$, $f=100\text{MHz}$	400		MHz
C_{ob}	$V_{CB}=5.0\text{V}$, $I_E=0$, $f=140\text{kHz}$		4.0	pF
t_{on}	$V_{CC}=2.0\text{V}$, $I_C=30\text{mA}$, $I_{B1}=3.0\text{mA}$		15	ns
t_{off}	$V_{CC}=2.0\text{V}$, $I_C=30\text{mA}$, $I_{B1}=I_{B2}=3.0\text{mA}$		20	ns
t_s	$I_C=I_{B1}=I_{B2}=10\text{mA}$		13	ns

TO-18 CASE - MECHANICAL OUTLINE



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A (DIA)	0.209	0.230	5.31	5.84
B (DIA)	0.178	0.195	4.52	4.95
C	-	0.030	-	0.76
D	0.170	0.210	4.32	5.33
E	0.500	-	12.70	-
F (DIA)	0.016	0.019	0.41	0.48
G (DIA)	0.100		2.54	
H	0.050		1.27	
I	0.036	0.046	0.91	1.17
J	0.028	0.048	0.71	1.22

TO-18 (REV: R1)

LEAD CODE:

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

MARKING: FULL PART NUMBER

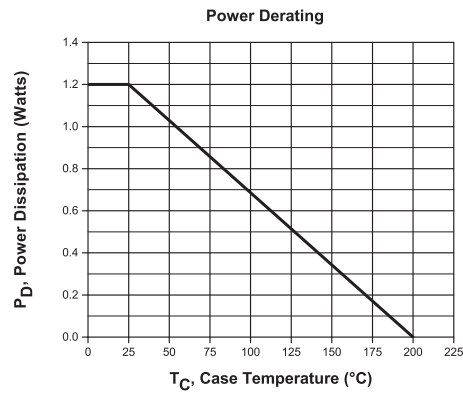
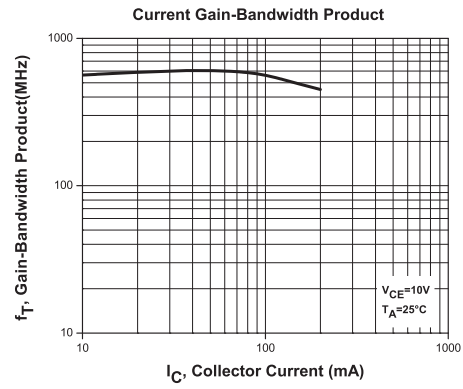
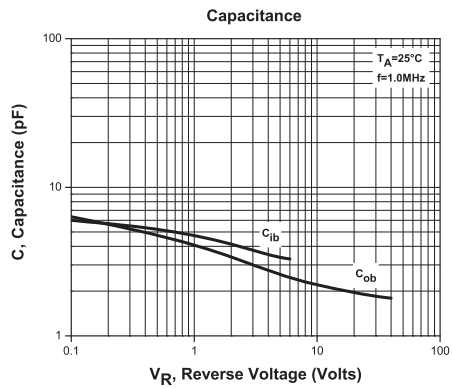
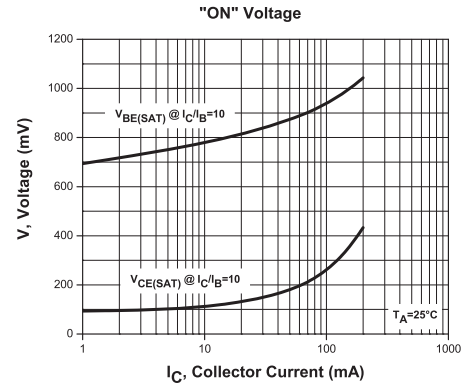
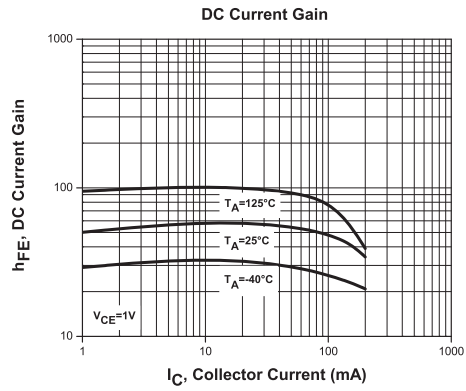
R0 (25-February 2015)

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TYPICAL ELECTRICAL CHARACTERISTICS



R0 (25-February 2015)

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 (2nd 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).

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