

2N4014

SILICON
NPN TRANSISTOR



TO-18 CASE



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR 2N4014 is a silicon NPN transistor designed for general purpose switching applications.

MARKING: FULL PART NUMBER

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

	SYMBOL		UNITS
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6.0	V
Continuous Collector Current	I_C	1.0	A
Peak Collector Current	I_{CM}	2.0	A
Power Dissipation	P_D	0.5	W
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	1.4	W
Operating and Storage Junction Temperature	T_J, T_{stg}	-65 to +200	$^{\circ}\text{C}$
Thermal Resistance	θ_{JA}	350	$^{\circ}\text{C/W}$
Thermal Resistance	θ_{JC}	125	$^{\circ}\text{C/W}$

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

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
I_{CBO}	$V_{CB}=60\text{V}$		1.7	μA
I_{CBO}	$V_{CB}=60\text{V}, T_A=100^{\circ}\text{C}$		120	μA
I_{CES}	$V_{CE}=80\text{V}$		10	μA
BV_{CBO}	$I_C=10\mu\text{A}$	80		V
BV_{CES}	$I_C=10\mu\text{A}$	80		V
BV_{CEO}	$I_C=10\text{mA}$	40		V
BV_{EBO}	$I_E=10\mu\text{A}$	6.0		V
$V_{CE(SAT)}$	$I_C=10\text{mA}, I_B=1.0\text{mA}$		0.25	V
$V_{CE(SAT)}$	$I_C=100\text{mA}, I_B=10\text{mA}$		0.26	V
$V_{CE(SAT)}$	$I_C=300\text{mA}, I_B=30\text{mA}$		0.40	V
$V_{CE(SAT)}$	$I_C=500\text{mA}, I_B=50\text{mA}$		0.52	V
$V_{CE(SAT)}$	$I_C=800\text{mA}, I_B=80\text{mA}$		0.80	V
$V_{CE(SAT)}$	$I_C=1.0\text{A}, I_B=100\text{mA}$		0.95	V
$V_{BE(SAT)}$	$I_C=10\text{mA}, I_B=1.0\text{mA}$		0.76	V
$V_{BE(SAT)}$	$I_C=100\text{mA}, I_B=10\text{mA}$		0.86	V
$V_{BE(SAT)}$	$I_C=300\text{mA}, I_B=30\text{mA}$		1.1	V
$V_{BE(SAT)}$	$I_C=500\text{mA}, I_B=50\text{mA}$	0.80	1.1	V
$V_{BE(SAT)}$	$I_C=800\text{mA}, I_B=80\text{mA}$		1.5	V
$V_{BE(SAT)}$	$I_C=1.0\text{A}, I_B=100\text{mA}$		1.7	V

R0 (3-October 2016)

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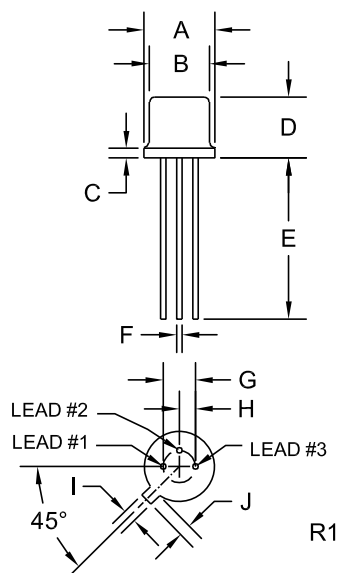
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ELECTRICAL CHARACTERISTICS - Continued: ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
h_{FE}	$V_{CE}=1.0\text{V}$, $I_C=10\text{mA}$	30		
h_{FE}	$V_{CE}=1.0\text{V}$, $I_C=100\text{mA}$	60	150	
h_{FE}	$V_{CE}=1.0\text{V}$, $I_C=100\text{mA}$, $T_A=-55^{\circ}\text{C}$	30		
h_{FE}	$V_{CE}=1.0\text{V}$, $I_C=300\text{mA}$	40		
h_{FE}	$V_{CE}=1.0\text{V}$, $I_C=500\text{mA}$	35		
h_{FE}	$V_{CE}=1.0\text{V}$, $I_C=500\text{mA}$, $T_A=-55^{\circ}\text{C}$	20		
h_{FE}	$V_{CE}=2.0\text{V}$, $I_C=800\text{mA}$	20		
h_{FE}	$V_{CE}=5.0\text{V}$, $I_C=1.0\text{A}$	25		
f_T	$V_{CE}=10\text{V}$, $I_C=50\text{mA}$, $f=100\text{MHz}$	300		MHz
C_{ob}	$V_{CB}=10\text{V}$, $I_E=0$, $f=1.0\text{MHz}$		10	pF
C_{ib}	$V_{EB}=0.5\text{V}$, $I_C=0$, $f=1.0\text{MHz}$		55	pF
t_d	$V_{CC}=30\text{V}$, $I_C=500\text{mA}$, $I_{B1}=50\text{mA}$		10	ns
t_r	$V_{CC}=30\text{V}$, $I_C=500\text{mA}$, $I_{B1}=50\text{mA}$		30	ns
t_{on}	$V_{CC}=30\text{V}$, $I_C=500\text{mA}$, $I_{B1}=50\text{mA}$		35	ns
t_s	$V_{CC}=30\text{V}$, $I_C=500\text{mA}$, $I_{B1}=I_{B2}=50\text{mA}$		50	ns
t_f	$V_{CC}=30\text{V}$, $I_C=500\text{mA}$, $I_{B1}=I_{B2}=50\text{mA}$		25	ns
t_{off}	$V_{CC}=30\text{V}$, $I_C=500\text{mA}$, $I_{B1}=I_{B2}=50\text{mA}$		60	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

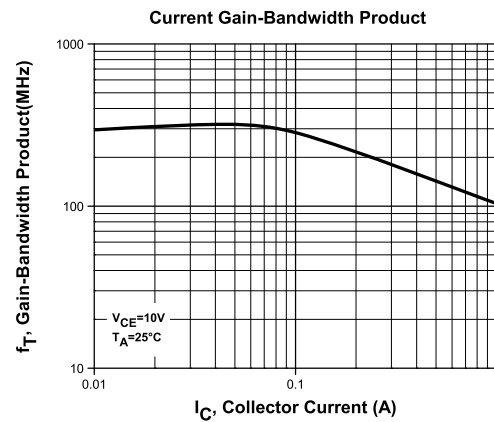
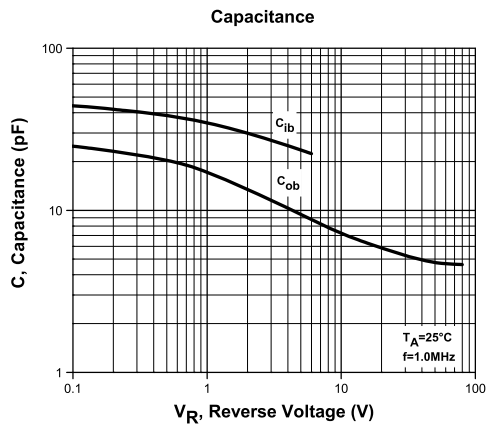
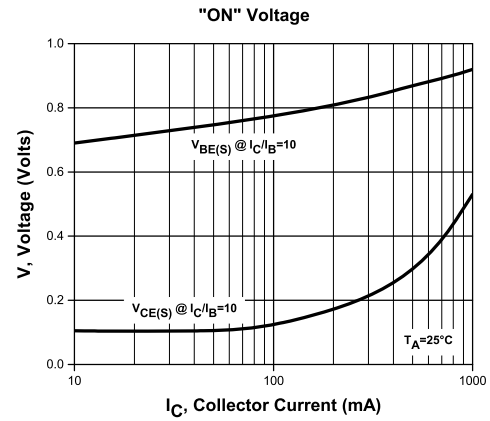
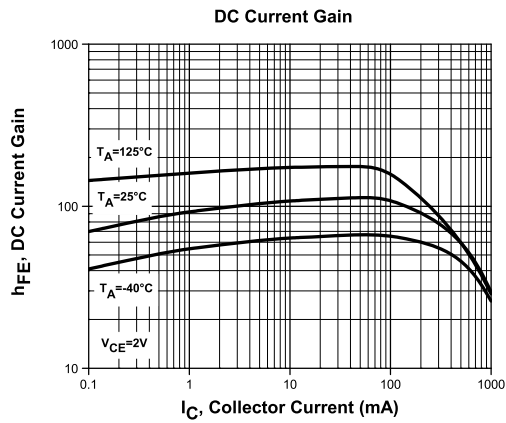
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TYPICAL ELECTRICAL CHARACTERISTICS



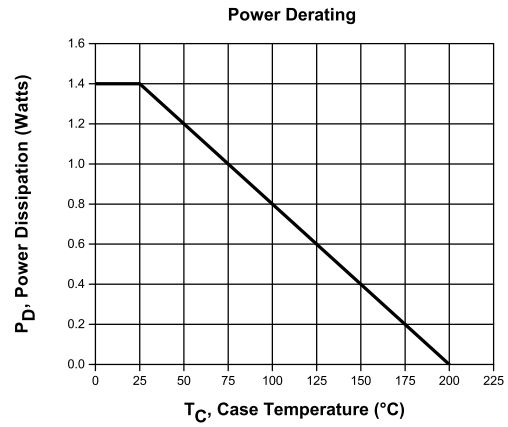
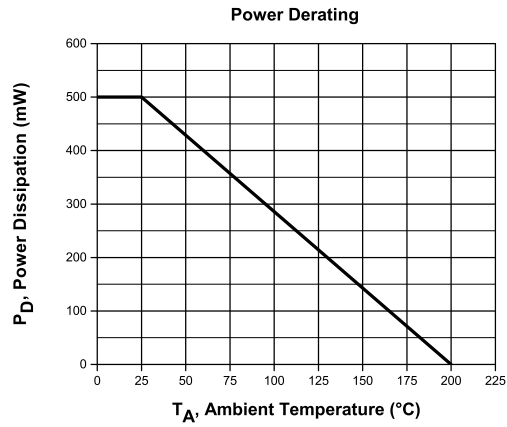
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TYPICAL ELECTRICAL CHARACTERISTICS



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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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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

Product End of Life Notification

PDN ID:	PDN01166
Notification Date:	3/11/21
Last Buy Date:	9/11/21
Last Shipment Date	3/11/22

Summary: The CP337V wafer process is discontinued and now classified as End of Life (EOL).

Although Central Semiconductor Corp. makes every effort to continue to produce devices that have been proclaimed EOL (End of Life) by other manufacturers, it is an accepted industry practice to discontinue certain devices when customer demand falls below a minimum level of sustainability. Accordingly, the following product(s) have been transitioned to End of Life status as part of Central's ongoing Product Management Process. Any replacement products are noted below. The effective date for placing last purchase orders will be six (6) months from the date of this notice and twelve (12) months from the notice date for final shipments, and minimum order quantities may apply. The last purchase and shipment dates may be extended if inventory is available.

*** All Plating types (PBFREE, TIN/LEAD) for each item listed are included in this notice.**

Central Part Number	Replacement
CP337V-2N3725-CT	N/A
CP337V-2N3725-CT20	N/A
CP337V-2N4013-CT20	N/A
MPQ3725	N/A
MPQ3725A	N/A
2N3725	N/A
2N3725A	N/A
2N4013	N/A
2N4014	N/A

Central would be happy to assist you by providing additional information or technical data to help locate an alternate source if we have no replacement available. Please email your requests to engineering@centrasemi.com.

DISCLAIMER: This End of Life (EOL) notification is in accordance with JEDEC standard JESD48 - Product Discontinuance. Central Semiconductor Corp. will make every effort to offer life-time buy (LTB) opportunities and/or offer replacement devices to existing customers for discontinued devices, however, one or both may not be possible for all devices. Please contact your local Central Semiconductor sales representative for LTB opportunities/additional information.