

2N4296  
2N4298  
2N4299

**SILICON  
NPN POWER TRANSISTORS**



**TO-66 CASE**



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

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 2N4296, 2N4298, and 2N4299 devices are silicon NPN power transistors designed for power amplifier and switching applications.

**MARKING: FULL PART NUMBER**

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

Collector-Base Voltage  
Collector-Emitter Voltage  
Emitter-Base Voltage  
Continuous Collector Current  
Continuous Base Current  
Power Dissipation  
Operating and Storage Junction Temperature  
Thermal Resistance

SYMBOL	2N4296	2N4298	2N4299	UNITS
$V_{\text{CBO}}$	350	500	350	V
$V_{\text{CEO}}$	250	350	250	V
$V_{\text{EBO}}$		4.0		V
$I_{\text{C}}$		1.0		A
$I_{\text{B}}$		250		mA
$P_{\text{D}}$		20		W
$T_{\text{J}}, T_{\text{stg}}$		-65 to +175		$^{\circ}\text{C}$
$\Theta_{\text{JC}}$		7.5		$^{\circ}\text{C/W}$

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

SYMBOL	TEST CONDITIONS	2N4296		2N4298		2N4299		UNITS
		MIN	MAX	MIN	MAX	MIN	MAX	
$I_{\text{CEV}}$	$V_{\text{CE}}=150\text{V}, V_{\text{BE}}=1.5\text{V}, T_C=135^{\circ}\text{C}$	-	600	-	600	-	600	$\mu\text{A}$
$I_{\text{CBO}}$	$V_{\text{CB}}=350\text{V}$	-	100	-	-	-	100	$\mu\text{A}$
$I_{\text{CBO}}$	$V_{\text{CB}}=500\text{V}$	-	-	-	100	-	-	$\mu\text{A}$
$I_{\text{EBO}}$	$V_{\text{BE}}=4.0\text{V}$	-	100	-	100	-	100	$\mu\text{A}$
$BV_{\text{CEO}}$	$I_{\text{C}}=50\text{mA}$	200	-	350	-	250	-	V
$V_{\text{CE}}(\text{SAT})$	$I_{\text{C}}=50\text{mA}, I_{\text{B}}=5.0\text{mA}$	-	0.9	-	0.9	-	0.75	V
$V_{\text{BE}}(\text{SAT})$	$I_{\text{C}}=50\text{mA}, I_{\text{B}}=5.0\text{mA}$	-	1.5	-	1.5	-	1.5	V
$V_{\text{BE}}(\text{ON})$	$V_{\text{CE}}=10\text{V}, I_{\text{C}}=100\text{mA}$	-	0.9	-	0.9	-	0.9	V
$h_{\text{FE}}$	$V_{\text{CE}}=10\text{V}, I_{\text{C}}=5.0\text{mA}$	35	-	20	-	35	-	
$h_{\text{FE}}$	$V_{\text{CE}}=10\text{V}, I_{\text{C}}=50\text{mA}$	50	150	25	75	50	150	
$h_{\text{FE}}$	$V_{\text{CE}}=10\text{V}, I_{\text{C}}=100\text{mA}$	35	-	20	-	35	-	
$f_{\text{T}}$	$V_{\text{CE}}=10\text{V}, I_{\text{C}}=20\text{mA}, f=5.0\text{MHz}$	20	-	20	-	20	-	MHz
$C_{\text{cb}}$	$V_{\text{CB}}=100\text{V}, I_{\text{C}}=0, f=0.1$ to $1.0\text{MHz}$	-	6.0	-	6.0	-	6.0	pF
$t_{\text{on}}$	$V_{\text{CC}}=100\text{V}, I_{\text{C}}=100\text{mA}, I_{\text{B}1}=I_{\text{B}2}=10\text{mA}$	-	7.0	-	7.0	-	7.0	$\mu\text{s}$
$t_{\text{off}}$	$V_{\text{CC}}=200\text{V}, I_{\text{C}}=100\text{mA}, I_{\text{B}1}=I_{\text{B}2}=10\text{mA}$	-	10	-	10	-	10	$\mu\text{s}$
$I_{\text{S/b}}$	$V_{\text{CE}}=200\text{V}$	75	-	75	-	75	-	mA

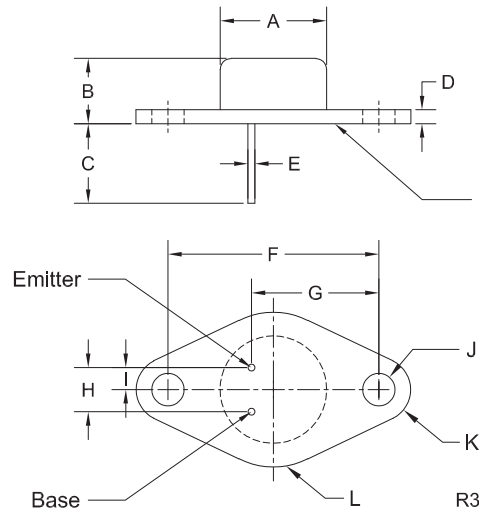
R1 (2-September 2014)

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SILICON  
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#### TO-66 CASE - MECHANICAL OUTLINE



Seating Plane:  
The seating plane must be  
within 0.001" concave to  
0.004" convex within  
0.600" diameter from the  
center of the device.

MARKING:  
FULL PART NUMBER

DIMENSIONS				
SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A (DIA)	0.470	0.500	11.94	12.70
B	0.250	0.340	6.35	8.64
C	0.360	-	9.14	-
D	0.050	0.075	1.27	1.91
E (DIA)	0.028	0.034	0.71	0.86
F	0.956	0.964	24.28	24.48
G	0.570	0.590	14.48	14.99
H	0.190	0.210	4.83	5.33
I	0.093	0.107	2.36	2.72
J (DIA)	0.142	0.152	3.61	3.86
K (RAD)	0.141		3.58	
L (RAD)	0.345		8.76	

TO-66 (REV:R3)

R1 (2-September 2014)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### 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

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### 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

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### 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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### CONTACT US

#### Corporate Headquarters & Customer Support Team

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

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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.centalsemi.com/terms](http://www.centalsemi.com/terms)



<http://www.centrasemi.com>

# Product End of Life Notification

PDN ID:	PDN01247
Notification Date:	9/01/22
Last Buy Date:	3/01/23
Last Shipment Date	9/01/23

Summary: The following transistors are discontinued and now classified as of 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 Portfolio Management. 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	Suggested Replacement
BCY79-VIII	N/A
CEN853	N/A
CZT32C BK	N/A
CZT32C TR	N/A
2N3583	N/A
2N3584	N/A
2N3585	N/A
2N3738	N/A
2N3740	N/A
2N3741	N/A
2N3741A	N/A
2N4299	N/A
2N4900	N/A
2N6107	N/A
2N6317	N/A
2N6318	N/A
2N6467	N/A
2N6468	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. If you would like assistance, please visit <https://my.centrasemi.com/submit-inquiry?type=ER> to submit an online inquiry.

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.