

2N4029, 2N4033

Product Preview Small Signal Switching Transistor

PNP Silicon

Features

- MIL-PRF-19500/512 Qualified
- Available as JAN, JANTX, and JANTXV

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	-80	Vdc
Collector-Base Voltage	V_{CBO}	-80	Vdc
Emitter-Base Voltage	V_{EBO}	-5.0	Vdc
Collector Current - Continuous	I_C	1	Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ 2N4029 2N4033	P_T	0.5 0.8	W
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ 2N4029 2N4033	P_T	1.0 4.0	W
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	$^\circ\text{C}$

THERMAL CHARACTERISTICS

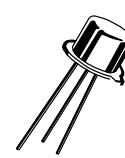
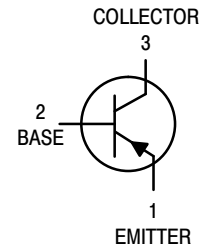
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient 2N4029 2N4033	$R_{\theta JA}$	325 195	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case 2N4029 2N4033	$R_{\theta JC}$	150 40	$^\circ\text{C}/\text{W}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

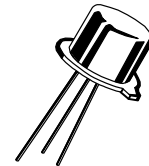


ON Semiconductor®

<http://onsemi.com>



TO-18
CASE 206AA
STYLE 1
2N4029



TO-39
CASE 205AB
STYLE 1
2N4033

ORDERING INFORMATION

Level	Device	Package	Shipping
JAN	2N4029	TO-18	Bulk
JANTX	2N4033	TO-39	Bulk
JANTXV			

This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.

2N4029, 2N4033

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

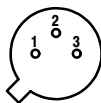
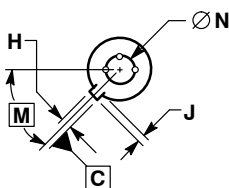
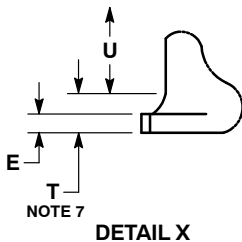
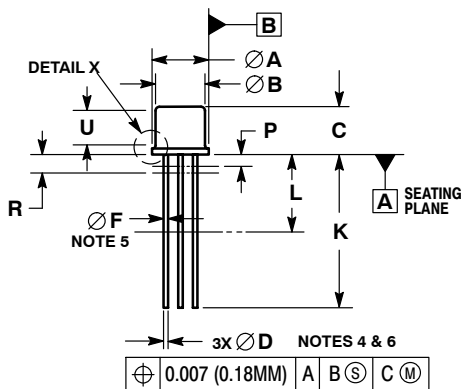
Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector - Emitter Breakdown Voltage ($I_C = -10 \text{ mAdc}$)	$V_{(BR)CEO}$	-80	-	Vdc
Collector - Emitter Cutoff Current ($V_{CE} = -60 \text{ Vdc}$)	I_{CES}	-	-25	nAdc
Collector - Base Cutoff Current ($V_{CB} = -80 \text{ Vdc}, I_E = 0$) ($V_{CB} = -60 \text{ Vdc}, I_E = 0$)	I_{CBO}	- -	-10 -10	μA nA
Emitter - Base Cutoff Current ($V_{EB} = -5 \text{ Vdc}$) ($V_{EB} = -3 \text{ Vdc}$)	I_{EBO}	- -	-10 -25	μA nA
ON CHARACTERISTICS (Note 1)				
DC Current Gain ($I_C = -0.1 \text{ mAdc}, V_{CE} = -5 \text{ Vdc}$) ($I_C = -100 \text{ mAdc}, V_{CE} = -5 \text{ Vdc}$) ($I_C = -500 \text{ mAdc}, V_{CE} = -5 \text{ Vdc}$) ($I_C = -1 \text{ Adc}, V_{CE} = -5 \text{ Vdc}$)	h_{FE}	50 100 70 25	- 300 - -	-
Collector - Emitter Saturation Voltage ($I_C = -150 \text{ mAdc}, I_B = -15 \text{ mAdc}$) ($I_C = -500 \text{ mAdc}, I_B = -50 \text{ mAdc}$) ($I_C = -1 \text{ Adc}, I_B = -100 \text{ mAdc}$)	$V_{CE(sat)}$	- - -	-0.15 -0.5 -1.0	Vdc
Base - Emitter Saturation Voltage ($I_C = -150 \text{ mAdc}, I_B = -15 \text{ mAdc}$) ($I_C = -500 \text{ mAdc}, I_B = -50 \text{ mAdc}$)	$V_{BE(sat)}$	- -	-0.9 -1.2	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Magnitude of Small-Signal Current Gain ($I_C = -50 \text{ mAdc}, V_{CE} = -10 \text{ Vdc}, f = 100 \text{ MHz}$)	$ h_{fe} $	1.5	6.0	-
Output Capacitance ($V_{CB} = -10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$)	C_{obo}	-	20	pF
Input Capacitance ($V_{EB} = -0.5 \text{ Vdc}, I_C = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$)	C_{ibo}	-	80	pF
SWITCHING CHARACTERISTICS				
Delay Time (Reference Figure in MIL-PRF-19500/512)	t_d	-	15	ns
Rise Time (Reference Figure in MIL-PRF-19500/512)	t_r	-	25	ns
Storage Time (Reference Figure in MIL-PRF-19500/512)	t_s	-	175	ns
Fall Time (Reference Figure in MIL-PRF-19500/512)	t_f	-	35	ns

1. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

2N4029, 2N4033

PACKAGE DIMENSIONS

TO-18 3
CASE 206AA
ISSUE A



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
 2. CONTROLLING DIMENSION: INCHES.
 3. DIMENSION J MEASURED FROM DIAMETER A TO EDGE.
 4. LEAD TRUE POSITION TO BE DETERMINED AT THE GAUGE PLANE DEFINED BY DIMENSION R.
 5. DIMENSION F APPLIES BETWEEN DIMENSION P AND L.
 6. DIMENSION D APPLIES BETWEEN DIMENSION L AND K.
 7. BODY CONTOUR OPTIONAL WITHIN ZONE DEFINED BY DIMENSIONS A, B, AND T.

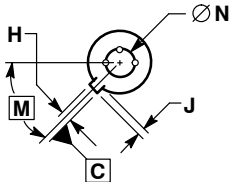
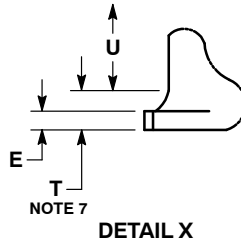
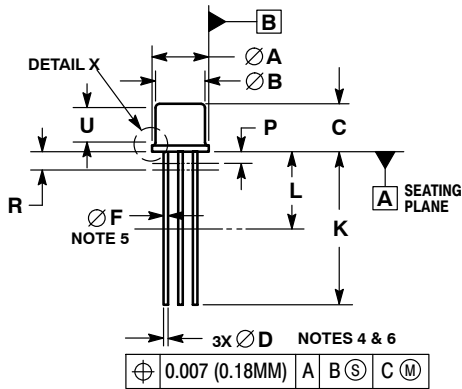
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	5.31	5.84	0.209	0.230
B	4.52	4.95	0.178	0.195
C	4.32	5.33	0.170	0.210
D	0.41	0.53	0.016	0.021
E	---	0.76	---	0.030
F	0.41	0.48	0.016	0.019
H	0.91	1.17	0.036	0.046
J	0.71	1.22	0.028	0.048
K	12.70	19.05	0.500	0.750
L	6.35	---	0.250	---
M	45° BSC		45° BSC	
N	2.54 BSC		0.100 BSC	
P	---	1.27	---	0.050
R	1.37 BSC		0.054 BSC	
T	---	0.76	---	0.030
U	2.54	---	0.100	---

- STYLE 1:
1. EMITTER
 2. BASE
 3. COLLECTOR

2N4029, 2N4033

PACKAGE DIMENSIONS

TO-39 3-Lead CASE 205AB ISSUE A



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. DIMENSION J MEASURED FROM DIAMETER A TO EDGE.
4. LEAD TRUE POSITION TO BE DETERMINED AT THE GAUGE PLANE DEFINED BY DIMENSION R.
5. DIMENSION F APPLIES BETWEEN DIMENSION P AND L.
6. DIMENSION D APPLIES BETWEEN DIMENSION L AND K.
7. BODY CONTOUR OPTIONAL WITHIN ZONE DEFINED BY DIMENSIONS A, B, AND T.
8. DIMENSION B SHALL NOT VARY MORE THAN 0.010 IN ZONE P.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.89	9.40	0.350	0.370
B	8.00	8.51	0.315	0.335
C	6.10	6.60	0.240	0.260
D	0.41	0.48	0.016	0.019
E	0.23	3.18	0.009	0.125
F	0.41	0.48	0.016	0.019
H	0.71	0.86	0.028	0.034
J	0.73	1.02	0.029	0.040
K	12.70	14.73	0.500	0.580
L	6.35	---	0.250	---
M	45° BSC	---	45° BSC	---
N	5.08 BSC	---	0.200 BSC	---
P	---	1.27	---	0.050
R	1.37 BSC	---	0.054 BSC	---
T	---	0.76	---	0.030
U	2.54	---	0.100	---

STYLE 1:

1. PIN 1. EMITTER
2. BASE
3. COLLECTOR

ON Semiconductor and **ON** are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5817-1050

ON Semiconductor Website: www.onsemi.com
Order Literature: <http://www.onsemi.com/orderlit>
For additional information, please contact your local Sales Representative



Стандарт Электрон Связь

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!

Наши контакты:

Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург,
Промышленная ул, дом № 19, литера Н,
помещение 100-Н Офис 331