

VN0300L

Preferred Device

Small Signal MOSFET 200 mAmps, 60 Volts N-Channel TO-92



ON Semiconductor™

<http://onsemi.com>

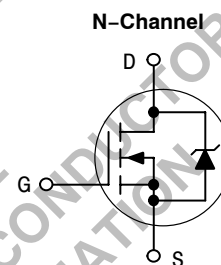
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain – Source Voltage	V_{DSS}	60	V
Drain – Gate Voltage	V_{DGR}	60	V
Gate – Source Voltage – Continuous – Non-repetitive ($t_p \leq 50 \mu s$)	V_{GS} V_{GSM}	± 20 ± 40	Vdc Vpk
Continuous Drain Current	I_D	200	mA
Pulsed Drain Current	I_{DM}	500	mA
Power Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	350 2.8	mW mW/ $^\circ C$
Operating and Storage Temperature	T_J, T_{stg}	–	$^\circ C$

THERMAL CHARACTERISTICS

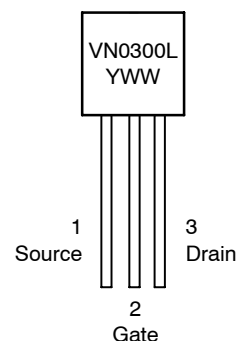
Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	312.5	$^\circ C/W$
Maximum Lead Temperature for Soldering Purposes, 1/16" from case for 10 seconds	T_L	300	$^\circ C$

**200 mAmps
60 Volts**
 $R_{DS(on)} = 1.2 \Omega$



TO-92
CASE 29
Style 22

MARKING DIAGRAM & PIN ASSIGNMENT



Y = Year
WW = Work Week

ORDERING INFORMATION

Device	Package	Shipping
VN0300L	TO-92	1000 Units/Box
VN0300LRLRA	TO-92	2000 Tape & Reel
VN0300LRLRE	TO-92	2000 Tape & Reel

Preferred devices are recommended choices for future use and best overall value.

VN0300L

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
----------------	--------	-----	-----	------

STATIC CHARACTERISTICS

Drain-Source Breakdown Voltage (V _{DS} = 0, I _D = 10 μA)	V _{(BR)DSS}	30	–	V
Zero Gate Voltage Drain Current (V _{DS} = 48 Vdc, V _{GS} = 0) (V _{DS} = 48 Vdc, V _{GS} = 0, T _A = 125°C)	I _{DSS}	– –	10 500	μA
Gate-Body Leakage (V _{DS} = 0, V _{GS} = ±30 V)	I _{GSS}	–	±100	nA
Gate Threshold Voltage (V _{DS} = V _{GS} , I _D = 1.0 mA)	V _{GS(th)}	0.8	2.5	V
On-State Drain Current (Note 1) (V _{DS} = V _{GS} , I _D = 1.0 mA)	I _{D(on)}	1.0	–	A
Drain-Source On Resistance (Note 1) (V _{GS} = 5.0 V, I _D = 0.3 A) (V _{GS} = 10 V, I _D = 1.0 A)	r _{DS(on)}	– –	3.3 1.2	Ω
Forward Transconductance (Note 1) (V _{DS} = 10 V, I _D = 0.5 A)	g _{fs}	200	–	mS

DYNAMIC CHARACTERISTICS

Input Capacitance	(V _{DS} = 15 Vdc, V _{GS} = 0, f = 1.0 MHz)	C _{iss}	–	100	pF
Output Capacitance		C _{oss}	–	95	pF
Reverse Transfer Capacitance		C _{rss}	–	25	pF

SWITCHING CHARACTERISTICS

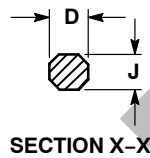
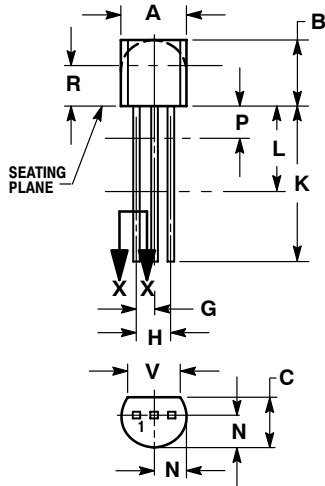
Turn-On Time	(V _{DD} = 25 Vdc, I _D = 1.0 A, R _L = 24 Ω, R _G = 25 Ω)	t _{on}	–	30	ns
Turn-Off Time		t _{off}	–	30	ns

1. Pulse Test; Pulse Width < 300 μs, Duty Cycle ≤ 2.0%.

VN0300L

PACKAGE DIMENSIONS

TO-92
CASE 29-11
ISSUE AL



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
E	0.045	0.055	1.15	1.39
F	0.095	0.105	2.42	2.66
G	0.015	0.020	0.39	0.50
H	0.500	---	12.70	---
I	0.250	---	6.35	---
J	0.080	0.105	2.04	2.66
K	---	0.100	---	2.54
L	0.115	---	2.93	---
M	0.135	---	3.43	---

STYLE 22:

1. SOURCE
2. GATE
3. DRAIN

ON Semiconductor and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). 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: 81-3-5773-3850

ON Semiconductor Website: www.onsemi.com

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local
Sales Representative