

# VN0300L

Preferred Device

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

### 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 ( $t_p \leq 50 \mu s$ )	$V_{GS}$ $V_{GSM}$	$\pm 20$ $\pm 40$	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	$^\circ C$

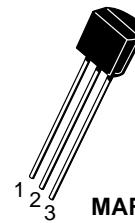
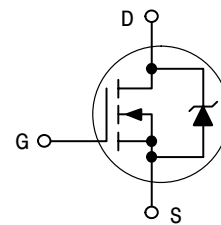


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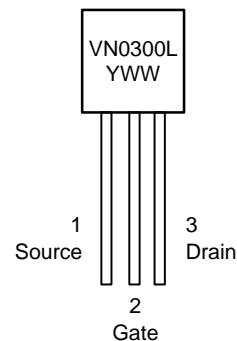
**200 mAmps**  
**60 VOLTS**  
 **$R_{DS(on)} = 1.2 \Omega$**

N-Channel



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<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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### STATIC CHARACTERISTICS

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

### DYNAMIC CHARACTERISTICS

Input Capacitance	(V <sub>DS</sub> = 15 Vdc, V <sub>GS</sub> = 0, f = 1.0 MHz)	C <sub>iss</sub>	–	100	pF
Output Capacitance		C <sub>oss</sub>	–	95	pF
Reverse Transfer Capacitance		C <sub>rss</sub>	–	25	pF

### SWITCHING CHARACTERISTICS

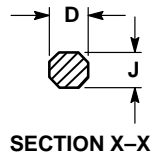
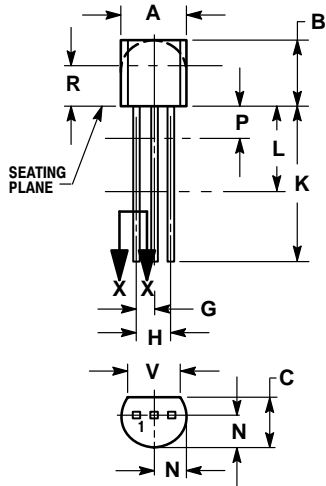
Turn–On Time	(V <sub>DD</sub> = 25 Vdc, I <sub>D</sub> = 1.0 A, R <sub>L</sub> = 24 Ω, R <sub>G</sub> = 25 Ω)	t <sub>on</sub>	–	30	ns
Turn–Off Time		t <sub>off</sub>	–	30	ns

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
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---

### STYLE 22:

- PIN 1. SOURCE
2. GATE
3. DRAIN

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