

# VN2410L

Preferred Device

## Small Signal MOSFET 200 mAmps, 240 Volts N-Channel TO-92

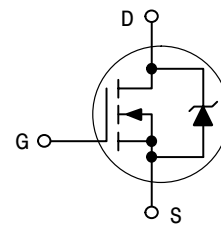


ON Semiconductor

<http://onsemi.com>

**200 mAmps**  
**60 Volts**  
**RDS(on) = 10 Ω**

N-Channel

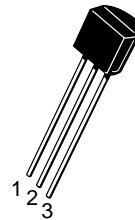


### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DSS</sub>	240	Vdc
Drain-Gate Voltage	V <sub>DGR</sub>	60	Vdc
Gate-Source Voltage	V <sub>GS</sub>	± 20	Vdc
– Continuous	V <sub>GSM</sub>	± 40	Vpk
– Non-repetitive (t <sub>p</sub> ≤ 50 μs)			
Continuous Drain Current	I <sub>D</sub>	200	mA <sub>dc</sub>
Pulsed Drain Current	I <sub>DM</sub>	500	mA <sub>dc</sub>
Power Dissipation @ T <sub>C</sub> = 25°C	P <sub>D</sub>	350	mW
Derate above 25°C		2.8	mW/°C
Operating and Storage Temperature	T <sub>J</sub> , T <sub>stg</sub>	–	°C

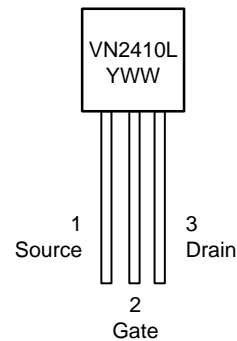
### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	312.5	°C/W
Maximum Lead Temperature for Soldering Purposes, 1/16" from case for 10 seconds	T <sub>L</sub>	300	°C



TO-92  
CASE 29  
Style 22

### MARKING DIAGRAM & PIN ASSIGNMENT



Y = Year  
WW = Work Week

### ORDERING INFORMATION

Device	Package	Shipping
VN2410L	TO-92	1000 Units/Box
VN2410LZL1	TO-92	2000 Ammo Pack

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

# VN2410L

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
<b>STATIC CHARACTERISTICS</b>				
Drain-Source Breakdown Voltage (V <sub>GS</sub> = 0, I <sub>D</sub> = 100 μA)	V <sub>(BR)DSS</sub>	240	–	Vdc
Zero Gate Voltage Drain Current (V <sub>DS</sub> = 120 Vdc, V <sub>GS</sub> = 0) (V <sub>DS</sub> = 120 Vdc, V <sub>GS</sub> = 0, T <sub>A</sub> = 125°C)	I <sub>DSS</sub>	– –	10 500	μAdc
Gate-Body Leakage (V <sub>DS</sub> = 0, V <sub>GS</sub> = ±15 V)	I <sub>GSS</sub>	–	±100	nAdc
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	2.0	Vdc
On-State Drain Current (Note 1.) (V <sub>GS</sub> = 10 V, V <sub>DS</sub> ≥ 2.0 V <sub>DS(on)</sub> )	I <sub>D(on)</sub>	1.0	–	Adc
Drain-Source On Resistance (Note 1.) (V <sub>GS</sub> = 2.5 V, I <sub>D</sub> = 0.1 A) (V <sub>GS</sub> = 10 V, I <sub>D</sub> = 0.5 A)	r <sub>DS(on)</sub>	– –	10 10	Ω
Forward Transconductance (Note 1.) (V <sub>DS</sub> = 10 V, I <sub>D</sub> = 0.5 A)	g <sub>fs</sub>	300	–	mS

## DYNAMIC CHARACTERISTICS

Input Capacitance	(V <sub>DS</sub> = 25 Vdc, V <sub>GS</sub> = 0, f = 1.0 MHz)	C <sub>iss</sub>	–	125	pF
Output Capacitance		C <sub>oss</sub>	–	50	pF
Reverse Transfer Capacitance		C <sub>rss</sub>	–	20	pF

## SWITCHING CHARACTERISTICS

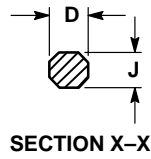
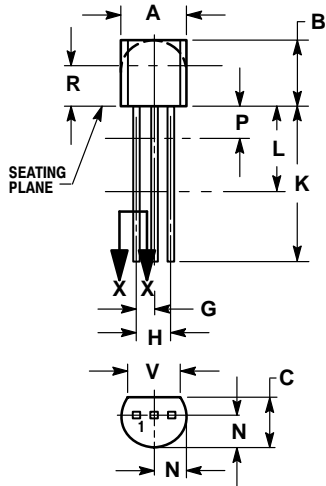
Turn-On Time	(V <sub>DD</sub> = 60 Vdc, I <sub>D</sub> = 0.4 A, R <sub>L</sub> = 150 Ω, R <sub>G</sub> = 25 Ω)	t <sub>(on)</sub>	–	8.0	ns
Turn-Off Time		t <sub>(r)</sub>	–	8.0	ns
		t <sub>(off)</sub>	–	23	ns
		t <sub>(f)</sub>	–	34	ns

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

# VN2410L

## 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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