

# VN2410L

## Small Signal MOSFET

240 V, 200 mA, N-Channel TO-92

### Features

- Pb-Free Packages are Available\*

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	240	Vdc
Drain-Gate Voltage	$V_{DGR}$	240	Vdc
Gate-Source Voltage	$V_{GS}$	$\pm 20$	Vdc
- Continuous	$V_{GSM}$	$\pm 40$	Vpk
- Non-repetitive ( $t_p \leq 50 \mu s$ )			
Continuous Drain Current	$I_D$	200	mAdc
Pulsed Drain Current	$I_{DM}$	500	mAdc
Power Dissipation @ $T_C = 25^\circ C$	$P_D$	350	mW
Derate above $25^\circ C$		2.8	mW/ $^\circ C$
Operating and Storage Temperature	$T_J, T_{stg}$	-55 to 150	$^\circ C$

### THERMAL CHARACTERISTICS

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

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.

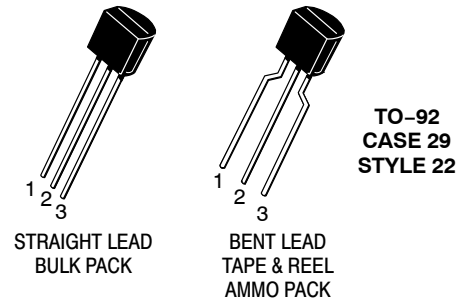
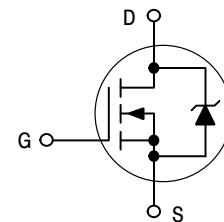


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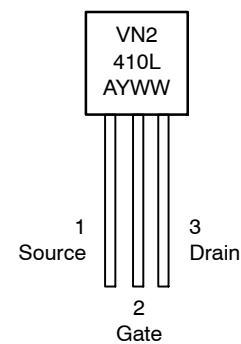
<http://onsemi.com>

200 mA, 240 V  
 $R_{DS(on)} = 10 \Omega$

N-Channel



### MARKING DIAGRAM & PIN ASSIGNMENT



A = Assembly Location  
Y = Year  
WW = Work Week

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# 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%.

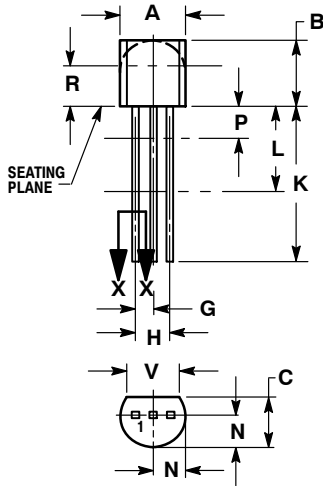
## ORDERING INFORMATION

Device	Package	Shipping
VN2410L	TO-92	1000 Units / Box
VN2410LG	TO-92 (Pb-Free)	1000 Units / Box
VN2410LZL1	TO-92	2000 Ammo Pack
VN2410LZL1G	TO-92 (Pb-Free)	2000 Ammo Pack

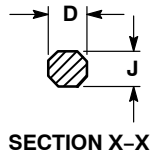
# VN2410L

## PACKAGE DIMENSIONS

TO-92  
CASE 29-11  
ISSUE AM



STRAIGHT LEAD  
BULK PACK



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	---

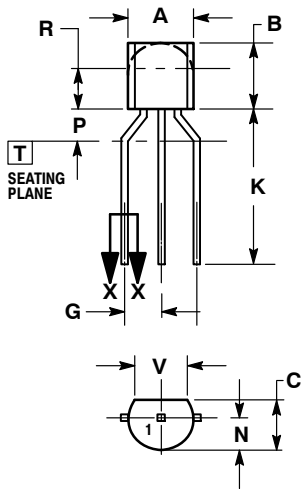
STYLE 22:

1. SOURCE
2. GATE
3. DRAIN

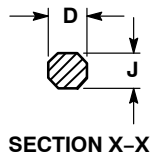
NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	MILLIMETERS	
	MIN	MAX
A	4.45	5.20
B	4.32	5.33
C	3.18	4.19
D	0.40	0.54
G	2.40	2.80
J	0.39	0.50
K	12.70	---
N	2.04	2.66
P	1.50	4.00
R	2.93	---
V	3.43	---



BENT LEAD  
TAPE & REEL  
AMMO PACK



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