VN2410L

Small Signal MOSFET

240 V, 200 mA, N−Channel TO−92

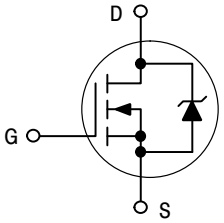
ON Semiconductor®

http://onsemi.com

200 mA, 240 V

$R_{DS(on)}$ = 10 Ω

N−Channel



Features

- Pb−Free Packages are Available*

MAXIMUM RATINGS

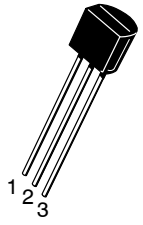
Rating	Symbol	Value	Unit
Drain − Source Voltage	V_{DSS}	240	Vdc
Drain − Gate Voltage	V_{DGR}	240	Vdc
Gate − Source Voltage − Continuous − Non−repetitive ($t_p \le 50$ μs)	 V_{GS} V_{GSM}	 ± 20 ± 40	 Vdc Vpk
Continuous Drain Current	I_D	200	mAdc
Pulsed Drain Current	I_{DM}	500	mAdc
Power Dissipation @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

THERMAL CHARACTERISTICS

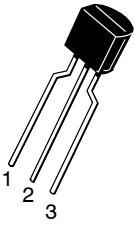
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	312.5	°C/W
Maximum Lead Temperature for Soldering Purposes, 1/16 inch from case for 10 seconds	T_L	300	°C

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.

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



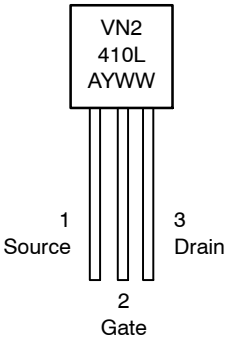
STRAIGHT LEAD
BULK PACK



BENT LEAD
TAPE & REEL
AMMO PACK

TO−92
CASE 29
STYLE 22

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.

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

Characteristic	Symbol	Min	Max	Unit
STATIC CHARACTERISTICS				
Drain−Source Breakdown Voltage (V_{GS} = 0, I_D = 100 μA)	$V_{(BR)DSS}$	240	–	Vdc
Zero Gate Voltage Drain Current (V_{DS} = 120 Vdc, V_{GS} = 0) (V_{DS} = 120 Vdc, V_{GS} = 0, T_A = 125°C)	I_{DSS}	– –	10 500	μAdc
Gate− Body Leakage (V_{DS} = 0, V_{GS} = ±15 V)	I_{GSS}	–	±100	nAdc
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 1.0 mA)	$V_{GS(th)}$	0.8	2.0	Vdc
On−State Drain Current (Note 1) (V_{GS} = 10 V, $V_{DS} \geq 2.0\ V_{DS(on)}$)	$I_{D(on)}$	1.0	–	Adc
Drain−Source On Resistance (Note 1) (V_{GS} = 2.5 V, I_D = 0.1 A) (V_{GS} = 10 V, I_D = 0.5 A)	$r_{DS(on)}$	– –	10 10	Ω
Forward Transconductance (Note 1) (V_{DS} = 10 V, I_D = 0.5 A)	g_{fs}	300	–	mS
DYNAMIC CHARACTERISTICS				
Input Capacitance	C_{iss}	–	125	pF
Output Capacitance	C_{oss}	–	50	pF
Reverse Transfer Capacitance	C_{rss}	–	20	pF
SWITCHING CHARACTERISTICS				
Turn−On Time	$t_{(on)}$	–	8.0	ns
	$t_{(r)}$	–	8.0	ns
Turn−Off Time	$t_{(off)}$	–	23	ns
	$t_{(f)}$	–	34	ns

(V_{DS} = 25 Vdc, V_{GS} = 0, f = 1.0 MHz)

(V_{DD} = 60 Vdc, I_D = 0.4 A, R_L = 150 Ω, R_G = 25 Ω)

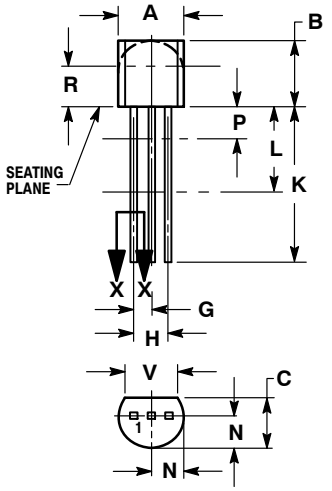
1. Pulse Test; Pulse Width < 300 μs, Duty Cycle ≤ 2.0%.

ORDERING INFORMATION

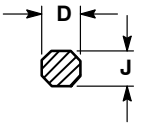
Device	Package	Shipping
VN2410L	TO−92	1000 Units / Box
VN2410LG	TO−92 (Pb−Free)	1000 Units / Box
VN2410LZL1	TO−92	2000 Ammo Pack
VN2410LZL1G	TO−92 (Pb−Free)	2000 Ammo Pack

PACKAGE DIMENSIONS

TO−92
CASE 29−11
ISSUE AM



STRAIGHT LEAD
BULK PACK

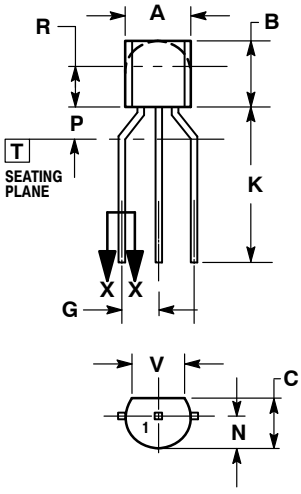


SECTION X−X

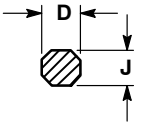
NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

	INCHES		MILLIMETERS	
DIM	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



BENT LEAD
TAPE & REEL
AMMO PACK



SECTION X−X

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.

	MILLIMETERS	
DIM	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	---

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
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