

**VN0104N2 – VN0109ND**



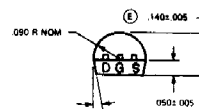
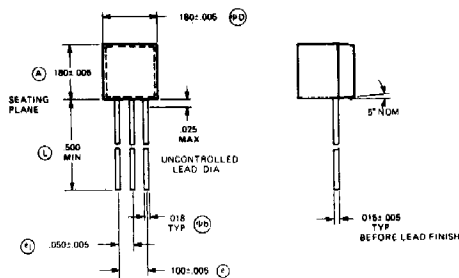
**N-Channel Enhancement-Mode  
Vertical DMOS Power FET's**

**Product Summary**

BVDSS / BVDGS	RDS(ON) (max)	ID(ON) (min)	Order Number/Package						
			TO-39	TO-92	TO-52	TO-220	Quad P-DIP	Quad C-DIP	Dice
40V	3Ω	2.0A	VN0104N2	VN0104N3	VN0104N9	VN0104N5	VN0104N6	VN0104N7	VN0104ND
60V	3Ω	2.0A	VN0106N2	VN0106N3	VN0106N9	VN0106N5	VN0106N6	VN0106N7	VN0106ND
90V	3Ω	2.0A	VN0109N2	VN0109N3	VN0109N9	VN0109N5	—	—	VN0109ND

**Electrical Characteristics (@ 25°C unless otherwise specified)**

Symbol	Parameter	Min	Typ	Max	Unit	Conditions
BVDSS	Drain-to-Source Breakdown Voltage	90			V	ID = 1mA, VGS = 0
		60				
		40				
VGS(th)	Gate Threshold Voltage	0.8		2.4	V	VGS = VDS, ID = 1mA
ΔVGS(th)	Change in VGS(th) with Temperature		-3.8	-5.5	mV/°C	ID = 1mA, VGS = VDS
IGSS	Gate Body Leakage		0.1	100	nA	VGS = ±20V, VDS = 0
IDSS	Zero Gate Voltage Drain Current			1	μA	VGS = 0, VDS = Max Rating
				100		VGS = 0, VDS = 0.8 Max Rating TA = 125°C
ID(ON)	ON-State Drain Current	0.75	1.0		A	VGS = 5V, VDS = 25V
		2	2.50			VGS = 10V, VDS = 25V
RDS(ON)	Static Drain-to-Source ON-State Resistance	3	4.50	5	Ω	VGS = 5V, ID = 250mA
		2.3	2	3		VGS = 10V, ID = 1A
ΔRDS(ON)	Change in RDS(ON) with Temperature		0.70	1	%/°C	ID = 1A, VGS = 10V
GFS	Forward Transconductance	300	400		mS	VDS = 25V, ID = 0.5A
Ciss	Input Capacitance		45	60	pF	VGS = 0, VDS = 25V f = 1MHz
Coss	Common Source Output Capacitance		20	25		
Crss	Reverse Transfer Capacitance		2	5		
td(ON)	Turn-ON Delay Time		3	5	ns	VDD = 25V, ID = 1A, RS = RL = 50Ω
tr	Rise Time		5	8		
td(OFF)	Turn-OFF Delay Time		6	9		
tf	Fall Time		5	8		
VSD	Diode Forward Voltage Drop		1.2	1.8	V	ISD = 2.5A, VGS = 0
trr	Reverse Recovery Time		400		ns	ISD = 1A, VGS = 0



**TO-92 Plastic Package  
3-Lead**

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

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