

# VN2222 Series N-Channel Enhancement-Mode MOS Transistors



## VN2222 Series

### FEATURES

- Low  $r_{DS(on)} < 7.5\Omega$

### APPLICATIONS

- Switching
- Amplification

### ORDERING INFORMATION

Part	Package	Temperature Range
VN2222LL	Plastic TO-92	-55°C to +150°C
VN2222LM	Plastic TO-237	-55°C to +150°C

For sorted chips in carriers see 2N7000

### PIN CONNECTIONS

CD5

TO-92  
(TO-226AA)

BOTTOM VIEW

1. SOURCE  
2. GATE  
3. DRAIN

TO-237

BOTTOM VIEW

1. SOURCE  
2. GATE  
3. TAB-DRAIN

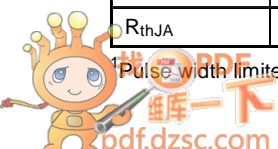
### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETERS/TEST CONDITIONS	LIMITS		UNITS
		VN2222LL	VN2222LM	
$V_{DS}$	Drain-Source Voltage	60	60	V
$V_{GS}$	Gate-Source Voltage	$\pm 30$	$\pm 30$	
$I_D$	Continuous Drain Current	$T_A = 25^\circ\text{C}$	0.23	A
		$T_A = 100^\circ\text{C}$	0.14	
$I_{DM}$	Pulsed Drain Current <sup>1</sup>		1	
$P_D$	Power Dissipation	$T_A = 25^\circ\text{C}$	0.8	W
		$T_A = 100^\circ\text{C}$	0.32	
$T_J, T_{stg}$	Operating Junction & Storage Temperature Range	-55 to 150		$^\circ\text{C}$
$T_L$	Lead Temperature (1/16" from case for 10 sec.)	300		

### THERMAL RESISTANCE RATINGS

SYMBOL	THERMAL RESISTANCE	LIMITS		UNITS
		VN2222LL	VN2222LM	
$R_{thJA}$	Junction-to-Ambient	156	125	K/W

<sup>1</sup>Pulse width limited by maximum junction temperature.



SPECIFICATIONS <sup>a</sup>		LIMITS				UNIT	TEST CONDITIONS
SYMBOL	PARAMETER	TYP <sup>b</sup>	MIN	MAX			
<b>STATIC</b>							
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	70	60			V	I <sub>D</sub> = 100μA, V <sub>GS</sub> = 0V
V <sub>GS(th)</sub>	Gate-Threshold Voltage	2.3	0.6	2.5			V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1mA
I <sub>GSS</sub>	Gate-Body Leakage			±100		nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current			10		μA	V <sub>DS</sub> = 48V, V <sub>GS</sub> = 0V
				500			T <sub>J</sub> = 125°C
I <sub>D(ON)</sub>	On-State Drain Current <sup>c</sup>	1000	750			mA	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 10V
r <sub>DS(ON)</sub>	Drain-Source On-Resistance <sup>c</sup>	5		7.5		Ω	V <sub>GS</sub> = 5V, I <sub>D</sub> = 0.2A
		2.5		7.5			V <sub>GS</sub> = 10V, I <sub>D</sub> = 0.5A
		4.4		13.5			T <sub>J</sub> = 125°C
g <sub>FS</sub>	Forward Transconductance <sup>c</sup>	230	100			mS	V <sub>DS</sub> = 10V, I <sub>D</sub> = 0.5A
g <sub>OS</sub>	Common Source Output Conductance <sup>c</sup>	1200				μS	V <sub>DS</sub> = 10V, I <sub>D</sub> = 0.2A
<b>DYNAMIC</b>							
C <sub>iss</sub>	Input Capacitance	16		60		pF	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1MHz
C <sub>oss</sub>	Output Capacitance	11		25			
C <sub>rss</sub>	Reverse Transfer Capacitance	2		5			
<b>SWITCHING</b>							
t <sub>ON</sub>	Turn-On Time	7		10		ns	V <sub>DD</sub> = 15V, R <sub>L</sub> = 23Ω, I <sub>D</sub> = 0.6A V <sub>GEN</sub> = 10V, R <sub>G</sub> = 25Ω
t <sub>OFF</sub>	Turn-Off Time	7		10			(Switching time is essentially independent of operating temperature)

**Notes:**

- a. T<sub>A</sub> = 25°C unless otherwise noted.
- b. For design aid only, not subject to production testing.
- c. Pulse test; PW = ≤300μS, duty cycle ≤2%.