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VN0610LL, VN10LM
N-Channel Enhancement-Mode MOS Transistors

VN0610LL / VN10LM

FEATURES

- Low $r_{DS(on)}$ <5Ω

APPLICATIONS

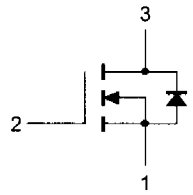
- Switching
- Amplification

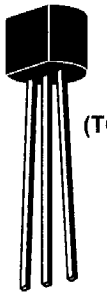
ORDERING INFORMATION

Part	Package	Temperature Range
VN0610LL	Plastic TO-92	-55°C to +150°C
VN10LM	Plastic TO-237	-55°C to +150°C

For sorted chips in carriers see 2N7000

PIN CONNECTIONS





TO-92
(TO-226AA)

BOTTOM VIEW

1. SOURCE
2. GATE
3. DRAIN

TO-237

BOTTOM VIEW

1. SOURCE
2. GATE
3. TAB-DRAIN

CD5

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

SYMBOL	PARAMETERS/TEST CONDITIONS		LIMITS VN0610LL	LIMITS VN10LM	UNITS
V_{DS}	Drain-Source Voltage		60	60	V
V_{GS}	Gate-Source Voltage		±30	±30	V
I_D	Continuous Drain Current	T_A = 25°C	0.28	0.32	A
		T_A = 100°C	0.17	0.2	A
I_{DM}	Pulsed Drain Current[1]		1.3	1.4	A
P_D	Power Dissipation	T_A = 25°C	0.8	1.0	W
		T_A = 100°C	0.32	0.4	W
T_J, T_{stg}	Operating Junction & Storage Temperature Range		-55 to 150		°C
T_L	Lead Temperature (1/16" from case for 10 sec.)		300		°C

THERMAL RESISTANCE RATINGS

SYMBOL	THERMAL RESISTANCE	LIMITS VN0610LL	LIMITS VN10LM	UNITS
R_{thJA}	Junction-to-Ambient	156	125	K/W

[1]Pulse width limited by maximum junction temperature.

Quality Semi-Conductors

SPECIFICATIONS[a]		LIMITS				
SYMBOL	PARAMETER	TYP[b]	MIN	MAX	UNIT	TEST CONDITIONS
STATIC						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	70	60		V	I_D = 100μA, V_{GS} = 0V
$V_{GS(th)}$	Gate-Threshold Voltage	2.3	0.8	2.5		V_{DS} = V_{GS}, I_D = 1mA
I_{GSS}	Gate-Body Leakage			±100	nA	V_{GS} = ±30V, V_{DS} = 0V
I_{DSS}	Zero Gate Voltage Drain Current			10	μA	V_{DS} = 50V, V_{GS} = 0V
				500		T_J = 125°C
$I_{D(ON)}$	On-State Drain Current[d]	1000	750		mA	V_{DS} = 10V, V_{GS} = 10V
$r_{DS(ON)}$	Drain-Source On-Resistance[c]	5		7.5	Ω	V_{GS} = 5V, I_D = 0.2A
		2.5		5		V_{GS} = 10V, I_D = 0.5A
		4.4		9		T_J = 125°C
g_{FS}	Forward Transconductance[c]	230	100		mS	V_{DS} = 10V, I_D = 0.5A
g_{OS}	Common Source Output Conductance[c]	500			μS	V_{DS} = 5V, I_D = 50mA
DYNAMIC						
C_{iss}	Input Capacitance	16		60	pF	V_{DS} = 25V, V_{GS} = 0V, f = 1MHz
C_{oss}	Output Capacitance	11		25		
C_{rss}	Reverse Transfer Capacitance	2		5		
SWITCHING						
t_{ON}	Turn-On Time	7		10	ns	V_{DD} = 15V, R_L = 23Ω, I_D = 0.6A V_{GEN} = 10V, R_G = 25Ω
t_{OFF}	Turn-Off Time	7		10		(Switching time is essentially independent of operating temperature)

Notes:

a. T_A = 25°C unless otherwise noted.
b. For design aid only, not subject to production testing.
c. Pulse test; PW = ≤300μS, duty cycle ≤2%.
d. Pulse width limited by maximum junction temperature.