VN0610LL, VN10LE, VN10LM

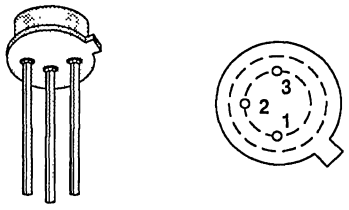
N-Channel Enhancement-Mode MOS Transistors

PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)	PACKAGE
VN0610LL	60	5	0.28	TO-92
VN10LE	60	5	0.38	TO-206AC
VN10LM	60	5	0.32	TO-237

Performance Curves: **VNDS06** (See Section 7)

TO-206AC (TO-52) BOTTOM VIEW



1 SOURCE
2 GATE
3 DRAIN & CASE

TO-237 BOTTOM VIEW

1 SOURCE
2 GATE
3 & TAB – DRAIN

TO-92 BOTTOM VIEW

1 SOURCE
2 GATE
3 DRAIN

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

PARAMETERS/TEST CONDITIONS		SYMBOL	VN0610LL	VN10LE[2]	VN10LM	UNITS
Drain-Source Voltage		V_{DS}	60	60	60	V
Gate-Source Voltage		V_{GS}	±30	±20	±30	V
Continuous Drain Current	T_A = 25°C	I_D	0.28	0.38	0.32	A
	T_A = 100°C		0.17	0.24	0.2	A
Pulsed Drain Current[1]		I_{DM}	1.3	1	1.4	A
Power Dissipation	T_A = 25°C	P_D	0.8	1.5	1.0	W
	T_A = 100°C		0.32	0.6	0.4	W
Operating Junction and Storage Temperature		T_j, T_{stg}	–55 to 150			°C
Lead Temperature (1/16" from case for 10 seconds)		T_L	300			°C

THERMAL RESISTANCE

THERMAL RESISTANCE	SYMBOL	VN0610LL	VN10LE	VN10LM	UNITS
Junction-to-Ambient	R_{thJA}	156	400	125	°C/W

[1] Pulse width limited by maximum junction temperature
[2] Reference case for all temperature testing

Siliconix incorporated

ELECTRICAL CHARACTERISTICS[1]			LIMITS			
				ALL		
PARAMETER	SYMBOL	TEST CONDITIONS	TYP[2]	MIN	MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 100 µA	70	60		V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 1 mA	2.3	0.8	2.5	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±30 V[5]	±1		±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 50 V, V_{GS} = 0 V	0.02		10	µA
		V_{DS} = 50 V, V_{GS} = 0 V, T_J = 125°C	1		500	
On-State Drain Current[4]	$I_{D(ON)}$	V_{DS} = 10 V, V_{GS} = 10 V	1000	750		mA
Drain-Source On-Resistance[3]	$r_{DS(ON)}$	V_{GS} = 5 V, I_D = 0.2 A	5		7.5	Ω
		V_{GS} = 10 V, I_D = 0.5 A	2.5		5	Ω
		V_{GS} = 10 V, I_D = 0.5 A, T_J = 125°C	4.4		9	Ω
Forward Transconductance[3]	g_{FS}	V_{DS} = 10 V, I_D = 0.5 A	230	100		mS
Common Source Output Conductance[3]	g_{OS}	V_{DS} = 5 V, I_D = 50 mA	500			µS
DYNAMIC						
Input Capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	16		60	pF
Output Capacitance	C_{oss}		11		25	pF
Reverse Transfer Capacitance	C_{rss}		2		5	pF
SWITCHING						
Turn-On Time	t_{ON}	V_{DD} = 15 V, R_L = 23 Ω, I_D = 0.6 A, V_{GEN} = 10 V, R_G = 25 Ω (Switching time is essentially independent of operating temperature)	7		10	ns
Turn-Off Time	t_{OFF}		7		10	ns

NOTES:
1. T_A = 25 °C unless otherwise noted, T_C = 25 °C for VN10LE.
2. For design aid only, not subject to production testing.
3. Pulse test; PW = 300 µs, duty cycle ≤ 2%.
4. Pulse width limited by maximum junction temperature.
5. V_{GS} = ±20 V for VN10LE.