VN1706L, VN1706M

N-Channel Enhancement-Mode MOS Transistors

PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)	PACKAGE
VN1706L	170	6	0.22	TO-92
VN1706M	170	6	0.25	TO-237

Performance Curves: **VNDB24** (See Section 7)

TO-92 BOTTOM VIEW

1 SOURCE
2 GATE
3 DRAIN

TO-237 BOTTOM VIEW

1 SOURCE
2 GATE
3 DRAIN

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

PARAMETERS/TEST CONDITIONS		SYMBOL	VN1706L	VN1706M	UNITS
Drain-Source Voltage		V_{DS}	170	170	V
Gate-Source Voltage		V_{GS}	±30	±30	
Continuous Drain Current	T_A = 25°C	I_D	0.22	0.25	A
	T_A = 100°C		0.14	0.16	
Pulsed Drain Current[1]		I_{DM}	2.3	2.5	
Power Dissipation	T_A = 25°C	P_D	0.8	1.0	W
	T_A = 100°C		0.32	0.4	
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		

THERMAL RESISTANCE

THERMAL RESISTANCE	SYMBOL	VN1706L	VN1706M	UNITS
Junction-to-Ambient	R_{thJA}	156	125	°C/W

[1]Pulse width limited by maximum junction temperature

ELECTRICAL CHARACTERISTICS[1]			LIMITS			
				VN1706		
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	230	170		V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 1 mA	1.4	0.8	2.0	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±15 V	± 1		±100	nA
		T_J = 125°C	± 5		±500	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 120 V, V_{GS} = 0 V	0.01		10	µA
		T_J = 125°C	1		500	µA
On-State Drain Current[3]	$I_{D(ON)}$	V_{DS} = 10 V, V_{GS} = 10 V	1.2	1		A
Drain-Source On-Resistance[3]	$r_{DS(ON)}$	V_{GS} = 2.5 V, I_D = 0.1 A	7.5		10	Ω
		V_{GS} = 10 V, I_D = 0.5 V	5		6	Ω
		T_J = 125°C	10.8		14.8	Ω
Forward Transconductance[3]	g_{FS}	V_{DS} = 10 V, I_D = 0.5 A	530	300		mS
Common Source Output Conductance[3]	g_{OS}	V_{DS} = 7.5 V, I_D = 0.5 A	475			µS
DYNAMIC						
Input Capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	105		125	pF
Output Capacitance	C_{oss}		25		50	pF
Reverse Transfer Capacitance	C_{rss}		5		20	pF
SWITCHING						
Turn-On Time	$t_{d(ON)}$	V_{DD} = 60 V, R_L = 150 Ω, I_D = 0.1 A, V_{GEN} = 10 V, R_G = 25 Ω (Switching time is essentially independent of operating temperature)	3		8	ns
	t_r		2		8	ns
Turn-Off Time	$t_{d(OFF)}$		13		18	ns
	t_f		9		12	ns

NOTES: 1. T_A = 25°C unless otherwise noted.
2. For design aid only, not subject to production testing.
3. Pulse test; PW = 300 µs, duty cycle ≤ 2%.