

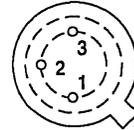
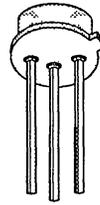
PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)	PACKAGE
VN0610L	60	5	0.27	TO-92
VN10KE	60	5	0.17	TO-206AC
VN10KM	60	5	0.31	TO-237

Performance Curves: VNDP06 (See Section 7)

TO-206AC (TO-52)

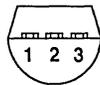
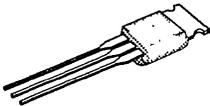
BOTTOM VIEW



- 1 SOURCE
- 2 GATE
- 3 DRAIN

TO-237

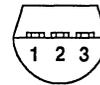
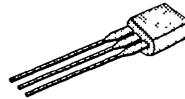
BOTTOM VIEW



- 1 SOURCE
- 2 GATE
- 3 DRAIN & TAB

TO-92

BOTTOM VIEW



- 1 SOURCE
- 2 GATE
- 3 DRAIN

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

PARAMETERS/TEST CONDITIONS	SYMBOL	VN0610L	VN10KE	VN10KM	UNITS	
Drain-Source Voltage	V_{DS}	60	60	60	V	
Gate-Source Voltage ²	V_{GS}	15/-0.3	15/-0.3	15/-0.3		
Continuous Drain Current	I_D	$T_A = 25^\circ\text{C}$	0.27	0.17	0.31	A
		$T_A = 100^\circ\text{C}$	0.17	0.11	0.20	
Pulsed Drain Current ¹	I_{DM}	1	1	1		
Power Dissipation	P_D	$T_A = 25^\circ\text{C}$	0.8	0.3	1	W
		$T_A = 100^\circ\text{C}$	0.32	0.12	0.4	
Operating Junction and Storage Temperature	T_J, T_{stg}	-55 to 150			$^\circ\text{C}$	
Lead Temperature (1/16" from case for 10 seconds)	T_L	300				

THERMAL RESISTANCE

THERMAL RESISTANCE	SYMBOL	VN0610L	VN10KE	VN10KM	UNITS
Junction-to-Ambient	R_{thJA}	156	400	125	$^\circ\text{C}/\text{W}$

¹Pulse width limited by maximum junction temperature

²Features internal gate-source Zener diode

VN0610L, VN10KE, VN10KM



ELECTRICAL CHARACTERISTICS ¹				LIMITS		
PARAMETER	SYMBOL	TEST CONDITIONS	TYP ²	All		UNIT
				MIN	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 100\ \mu\text{A}$	120	60		V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 1\text{ mA}$	1.4	0.8	2.5	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = 15\text{ V}$	1		100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 48\text{ V}$ $V_{GS} = 0\text{ V}$ $T_J = 125^\circ\text{C}$	0.7		10	μA
			3		500	
On-State Drain Current ³	$I_{D(ON)}$	$V_{DS} = 10\text{ V}, V_{GS} = 10\text{ V}$	1000	750		mA
Drain-Source On-Resistance ³	$r_{DS(ON)}$	$V_{GS} = 5\text{ V}, I_D = 0.2\text{ A}$ $V_{GS} = 10\text{ V}$ $I_D = 0.5\text{ A}$ $T_J = 125^\circ\text{C}$	4		7.5	Ω
			3		5	
			5.6		9	
Forward Transconductance ³	g_{FS}	$V_{DS} = 10\text{ V}, I_D = 0.5\text{ A}$	300	100		mS
Common Source Output Conductance ³	g_{OS}	$V_{DS} = 7.5\text{ V}, I_D = 50\text{ mA}$	200			μS
DYNAMIC						
Input Capacitance	C_{iss}	$V_{DS} = 25\text{ V}$ $V_{GS} = 0\text{ V}$ $f = 1\text{ MHz}$	38		60	pF
Output Capacitance	C_{oss}		16		25	
Reverse Transfer Capacitance	C_{rss}		2		5	
SWITCHING						
Turn-On Time	t_{ON}	$V_{DD} = 15\text{ V}, R_L = 23\ \Omega$ $I_D = 0.6\text{ A}, V_{GEN} = 10\text{ V}$ $R_G = 25\ \Omega$ (Switching time is essentially independent of operating temperature)	7		10	ns
Turn-Off Time	t_{OFF}		9		10	

- NOTES: 1. $T_A = 25^\circ\text{C}$ unless otherwise noted.
 2. For design aid only, not subject to production testing.
 3. Pulse test; $PW = 300\ \mu\text{s}$, duty cycle $\leq 2\%$.