

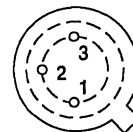
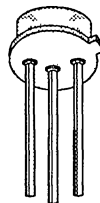
PRODUCT SUMMARY

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)

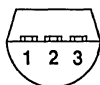
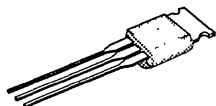
BOTTOM VIEW



1 SOURCE
2 GATE
3 DRAIN

TO-237

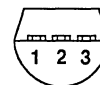
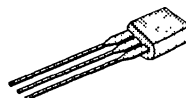
BOTTOM VIEW



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	T _A = 25°C	I _D	0.27	0.17	0.31	A
	T _A = 100°C		0.17	0.11	0.20	
Pulsed Drain Current ¹		I _{DM}	1	1	1	
Power Dissipation	T _A = 25°C	P _D	0.8	0.3	1	W
	T _A = 100°C		0.32	0.12	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	VN0610L	VN10KE	VN10KM	UNITS
Junction-to-Ambient	R_{thJA}	156	400	125	$^\circ\text{C/W}$

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 V, I _D = 100 μA	120	60		V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 1 mA	1.4	0.8	2.5	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = 15 V	1		100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 48 V	0.7		10	μA
		V _{GS} = 0 V T _J = 125°C	3		500	
On-State Drain Current ³	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	4		7.5	Ω
		V _{GS} = 10 V	3		5	
		I _D = 0.5 A T _J = 125°C	5.6		9	
Forward Transconductance ³	g _{FS}	V _{DS} = 10 V, I _D = 0.5 A	300	100		mS
Common Source Output Conductance ³	g _{OS}	V _{DS} = 7.5 V, I _D = 50 mA	200			μS
DYNAMIC						
Input Capacitance	C _{iss}	V _{DS} = 25 V V _{GS} = 0 V f = 1 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 V, R _L = 23 Ω I _D = 0.6 A, V _{GEN} = 10 V R _G = 25 Ω	7		10	ns
Turn-Off Time	t _{OFF}	(Switching time is essentially independent of operating temperature)	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; $PW = 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.