

VN10KM ■ VN2222KM



N-Channel Enhancement Mode MOSPOWER

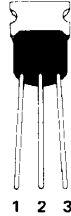
APPLICATIONS

- Switching Regulators
- Converters
- Motor Drivers

PRODUCT SUMMARY

Part Number	BV_{DSS} Volts	$r_{DS(ON)}$ (ohms)	Package
VN10KM	60	5	T0-237
VN2222KM	60	7.5	T0-237

PIN 1 – Source
PIN 2 – Gate
PIN 3 & TAB – Drain



T0-237

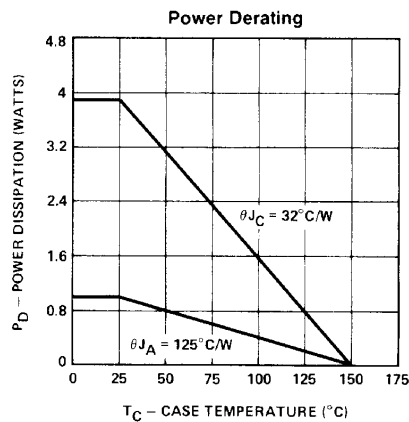
For Additional Curves
See Section 5: VNMK06

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

Parameter	VN10KM	VN2222KM	Units
V_{DS} Drain-Source Voltage	60	60	V
V_{DGR} Drain-Gate Voltage ($R_{GS} = 1\text{ M}\Omega$)	60	60	V
$I_D @ T_C = 25^\circ\text{C}$ Continuous Drain Current	± 0.3	± 0.25	A
$I_D @ T_C = 100^\circ\text{C}$ Continuous Drain Current	± 0.2	± 0.16	A
I_{DM} Pulsed Drain Current ¹	± 1	± 1	A
V_{GS} Gate-Source Voltage	+15, -0.3	+15, -0.3	V
P_D Max Continuous Power Dissipation	1	1	W
P_D Max Pulse ² Power Dissipation	3.9	3.9	W
Junction to Case Linear Derating Factor	0.031	0.031	$W/^\circ\text{C}$
Junction to Ambient Linear Derating Factor	0.008	0.008	$W/^\circ\text{C}$
T_J Operating and Storage Temperature Range	-55 To +150	-55 To +150	$^\circ\text{C}$
Lead Temperature (1/16" from case for 10 secs.)	300	300	$^\circ\text{C}$

¹ Pulse Test: Pulsewidth $\leq 300\mu\text{sec}$, Duty Cycle $\leq 2\%$

² 1 Sec Continuous Power Single Pulse



ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)
STATIC

Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions
BV _{DSS}	Drain-Source Breakdown Voltage	All	60	120		V V _{GS} = 0 I _D = 100 μA
V _{GS(th)}	Gate-Threshold Voltage	VN10KM VN2222KM	0.8 0.6	1.5 1.5	2.5 2.5	V V _{DS} = V _{GS} , I _D = 1 mA
I _{GSSF}	Gate-Body Leakage Forward	All		1	100	nA V _{GS} = 15V, V _{DS} = 0
I _{DSS}	Zero Gate Voltage Drain Current	All		0.1	10	μA V _{DS} = 45V, V _{GS} = 0
I _{D(on)}	On-State Drain Current ¹	All	0.75	1.5		A V _{DS} = 2V _{DS(ON)} , V _{GS} = 10V
V _{DS(on)}	Static Drain-Source On-State Voltage ¹	All		1.2	1.5	V V _{GS} = 5V, I _D = 0.2A
		VN10KM VN2222KM		2 3	2.5 3.75	V V _{GS} = 10V, I _D = 0.5A
R _{DS(on)}	Static Drain-Source On-State Resistance ¹	All		6	7.5	Ω V _{GS} = 5V, I _D = 0.2A
		VN10KM VN2222KM		4 6	5 7.5	Ω V _{GS} = 10V, I _D = 0.5A
R _{DS(on)}	Static Drain-Source On-State Resistance ¹	VN10KM		7.2	9	Ω V _{GS} = 10V, I _D = 0.5A, T _C = 125°C
		VN2222KM		10.8	13.5	Ω V _{GS} = 10V, I _D = 0.5A, T _C = 125°C

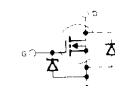
DYNAMIC

g _{fs}	Forward Transconductance ¹	All	100	200		mS V _{DS} ≥ 2V _{DS(ON)} , I _D = 0.5A
C _{iss}	Input Capacitance	All		40	60	pF V _{GS} = 0, V _{DS} = 25V
C _{oss}	Output Capacitance	All		17	25	pF f = 1 MHz
C _{rss}	Reverse Transfer Capacitance	All		3	5	pF
t _{ON}	Turn-On Time	All		7	10	ns V _{DD} = 15V, I _D = 0.6A R _g = 25Ω, R _L = 23Ω
t _{OFF}	Turn-Off Time	All		7	10	ns (MOSFET switching times are essentially independent of operating temperature.)

THERMAL RESISTANCE

R _{thJC}	Junction-to-Case	All		26	32	°C/W
R _{thJA}	Junction-to-Ambient	All			125	°C/W Free Air Operation

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I _S	Continuous Source Current (Body Diode)	VN10KM			-0.3	A	Modified MOSPOWER symbol showing the integral P-N Junction rectifier 
		VN2222KM			-0.25	A	
I _{SM}	Source Current ¹ (Body Diode)	All			-1	A	
V _{SD}	Diode Forward Voltage ¹	VN10KM			-0.85	V	T _C = 25°C, I _S = -0.3A, V _{GS} = 0
		VN2222KM			-0.85	V	T _C = 25°C, I _S = -0.25A, V _{GS} = 0

¹ Pulse Test: Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%

Data Sheet Curves: VNMMK06