

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

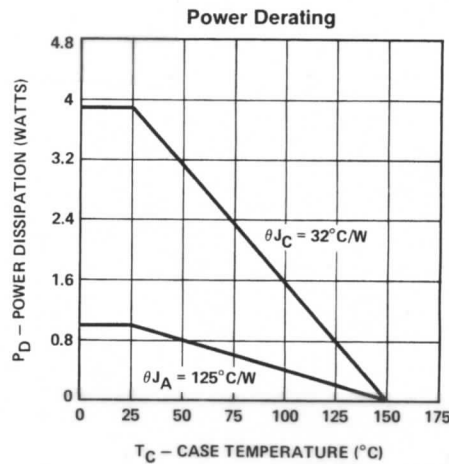
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ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ C$ unless otherwise noted)

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

¹ Pulse Test: Pulsewidth $\leq 300\mu sec$, 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

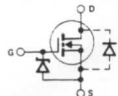
DYNAMIC

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 f = 1 MHz
C _{oss}	Output Capacitance	All		17	25	pF	
C _{rss}	Reverse Transfer Capacitance	All		3	5	pF	
t _{ON}	Turn-On Time t _{ime}	All		7	10	ns	V _{DD} = 15V, I _D ≅ 0.6A R _g = 25Ω, R _L = 23Ω (MOSFET switching times are essentially independent of operating temperature.)
t _{OFF}	Turn-Off Time t _{ime}	All		7	10	ns	
						ns	

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%