



**VN10KN**

## N-CHANNEL ENHANCEMENT-MODE D-MOS POWER FETs

### ORDERING INFORMATION

TO-92 Plastic Package	VN10KN3
Description	60V, 5 ohm

### FEATURES

- High Gate Oxide Breakdown,  $\pm 40V$  min.
- Low Output and Transfer Capacitances
- Extended Safe Operating Area

### APPLICATIONS

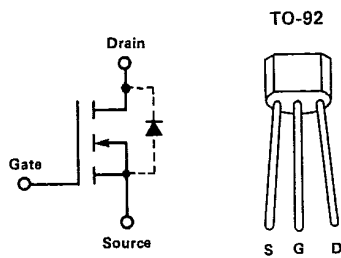
- High-Speed Pulse Amplifiers
- Logic Buffers
- Line Drivers
- Solid-State Relays
- Motor Controls
- Power Supplies

### ABSOLUTE MAXIMUM RATINGS ( $T_A = +25^\circ C$ unless otherwise noted)

Drain-Source Voltage	+60V	
Drain-Gate Voltage ( $V_{GS} = 0$ )	+60V	
Gate-Source Voltage	$\pm 30V$	
Continuous Drain Current	$T_A = 25^\circ C$ .24A	$T_C = 25^\circ C$ .32A
Peak Pulsed Drain Current	1.0A	

Continuous Device Dissipation	$T_A = +25^\circ C$ 0.30	$T_C = +25^\circ C$ 1.0	W
Linear Derating Factor	$T_A = +25^\circ C$ 2.4	$T_C = +25^\circ C$ 8.0	mW/ $^\circ C$
Operating Junction Temperature Range	-55 to +150 $^\circ C$		
Storage Temperature Range	-55 to +150 $^\circ C$		
Lead Temperature (1/16" from mounting surface for 30 Sec)	+260 $^\circ C$		

### SCHEMATIC DIAGRAM/PACKAGE



### PACKAGE DIMENSIONS (TO-92) TO-226AA (See Package 5)



**VN10KN**

**ELECTRICAL CHARACTERISTICS** (T<sub>A</sub> = +25°C unless otherwise noted)

#	CHARACTERISTIC	VN10KN			UNIT	TEST CONDITIONS
		MIN	TYP	MAX		
1	BV <sub>DSS</sub> Drain-Source Breakdown Voltage	60	100		V	I <sub>D</sub> = 100μA, V <sub>GS</sub> = 0
2	V <sub>GS(th)</sub> Gate-Source Threshold Voltage	0.8	1.9	2.5	V	I <sub>D</sub> = 1.0mA, V <sub>DS</sub> = V <sub>GS</sub>
3	I <sub>GSS</sub> Gate-Body Leakage Current		±1.0	±100	nA	V <sub>GS</sub> = ±15V, V <sub>DS</sub> = 0
4	I <sub>DSS</sub> Drain-Source OFF Leakage Current		0.1	10	μA	V <sub>DS</sub> = 40V, V <sub>GS</sub> = 0
5			5.0	500		T <sub>A</sub> = 125°C
6	I <sub>D(on)</sub> ON Drain Current	0.25			A	V <sub>GS</sub> = 5V, V <sub>DS</sub> = 10V
7		0.75				V <sub>GS</sub> = 10V (Note 1)
8	V <sub>DS(on)</sub> Drain-Source ON Voltage		1.5	2.5	V	V <sub>GS</sub> = 10V, I <sub>D</sub> = 0.5A (Note 1)
9			3.0	5.0	ohms	V <sub>GS</sub> = 10V, I <sub>D</sub> = 0.5A (Note 1)
10	r <sub>DS(on)</sub> Drain-Source ON Resistance		4.7	9.0		T <sub>A</sub> = +125°C
11	g <sub>fs</sub> Common-Source Forward Transcond.	100	400		mmhos	V <sub>DS</sub> = 10V, I <sub>D</sub> = 0.5A f = 1KHz (Note 1)
12	C <sub>iss</sub> Common-Source Input Capacitance		80	100		
13	C <sub>ras</sub> Common-Source Reverse Transfer Capacitance		1.3	5.0	pF	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0 f = 1MHz
14	C <sub>oss</sub> Common-Source Output Capacitance		10.5	25		
15	t <sub>on</sub> Turn-On Time		5.0	10	nSec	V <sub>DD</sub> = V <sub>G(on)</sub> = 10V
16	t <sub>off</sub> Turn-Off Time		6.0	10		R <sub>G</sub> = 25Ω, R <sub>L</sub> = 25Ω

Note 1: Pulse Test 80μ Sec, 1% Duty Cycle