TELEDYNE COMPONENTS

VN10KN

N-CHANNEL ENHANCEMENT-MODE DMOS POWER FETS

FEATURES

- **High Gate Oxide Breakdown, ±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**

ORDERING INFORMATION

Part No.	Package	Description
VN10KN3	TO-92 Plastic	60V, 5Ω

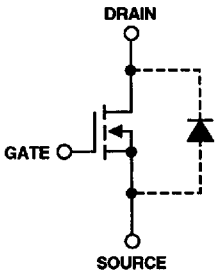
ABSOLUTE MAXIMUM RATINGS

(T_A = +25°C unless otherwise noted)

Drain-Source Voltage	+60V
Drain-Gate Voltage (V_{GS} = 0)	+60V
Gate-Source Voltage	±30V
Continuous Drain Current	
T_A = +25°C	0.24A
T_C = +25°C	0.32A
Peak Pulsed Drain Current	1.0A
Continuous Device Dissipation	
T_A = +25°C	0.30W
T_C = +25°C	1.0W
Linear Derating Factor	
T_A = +25°C	2.4mW/°C
T_C = +25°C	8.0mW/°C
Operating Junction Temperature Range	–55 to +150°C
Storage Temperature Range	–55 to +150°C
Lead Temperature (1/16" from mounting surface for 30 sec)	+260°C

Static-sensitive device. Unused devices must be stored in conductive material. Protect devices from static discharge and static fields. Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operation sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

SCHEMATIC DIAGRAM



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VN10KN

T-35-25

ELECTRICAL CHARACTERISTICS: (T_A = +25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Static						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D = 100µA, V_{GS} = 0	60	100	—	V
$V_{GS(th)}$	Gate-Source Threshold Voltage	I_D = 1.0mA, V_{DS} = V_{GS}	0.8	1.9	2.5	V
I_{GBS}	Gate-Body Source Leakage Current	V_{GS} = ±15V, V_{DS} = 0	—	±10	±100	nA
I_{DSS}	Drain-Source OFF Leakage Current	V_{DS} = 40V, V_{GS} = 0	—	0.1	10	µA
		V_{DS} = 40V, V_{GS} = 0 T_A = 125°C	—	5.0	500	µA
$I_{D(on)}$	ON Drain Current	V_{GS} = 5V, V_{DS} = 10V(1) V_{GS} = 10V, V_{DS} = 10V(1)	0.25 0.75	— —	— —	A
$V_{DS(on)}$	Drain-Source ON Voltage	V_{GS} = 10V, I_D = 0.5A(1)	—	1.5	2.5	V
$r_{DS(on)}$	Drain-Source ON Resistance	V_{GS} = 10V, I_D = 0.5A(1) V_{GS} = 10V, I_D = 0.5A(1) T_A = +125°C	— —	3.0 4.7	5.0 9.0	Ω
Dynamic						
g_{fs}	Common-Source Forward Transcond	V_{DS} = 10V, I_D = 0.5A f = 1KHz(1)	100	400	—	mmhos
c_{iss}	Common-Source Input Capacitance	V_{DS} = 15V, V_{GS} = 0 f = 1MHz	—	80	100	pF
c_{rss}	Common-Source Reverse Transfer Capacitance	V_{DS} = 15V, V_{GS} = 0 f = 1MHz	—	1.3	5.0	pF
c_{oss}	Common-Source Output Capacitance	V_{DS} = 15V, V_{GS} = 0 f = 1MHz	—	10.5	25	pF
t_{on}	Turn-On Time	V_{DD} = $V_{G(on)}$ = 10V R_G = 25Ω, R_L = 25Ω	—	5.0	10	nSec
t_{off}	Turn-Off Time	V_{DD} = $V_{G(on)}$ = 10V R_G = 25Ω, R_L = 25Ω	—	6.0	10	nSec

NOTE: 1. Pulse Test 80µ Sec, 1% Duty Cycle