POWER·MOS FET
FIELD EFFECT POWER TRANSISTOR

IVN5000,1 AN Series

.7 AMPERES
40-100 VOLTS
$R_{DS(ON)}$ = 2.5 Ω

This series of N-Channel Enhancement-mode Power MOSFETs utilizes GE's advanced Power DMOS technology to achieve low on-resistance with excellent device ruggedness and reliability.

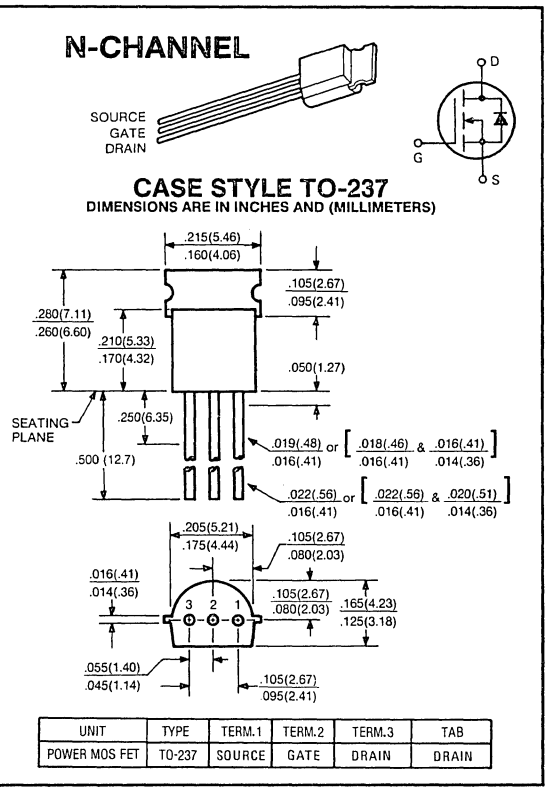
This design has been optimized to give superior performance in most switching applications including: switching power supplies, inverters, converters and solenoid/relay drivers. Also, the extended safe operating area with good linear transfer characteristics makes it well suited for many linear applications such as audio amplifiers and servo motors.

Applications

- LED and lamp drivers
- High gain, wide-band amplifiers
- High speed switches
- Line drivers
- Logic buffers
- Pulse amplifiers

Features

- High speed, high peak current switching
- Inherent current sharing capability when paralleled
- Directly interface to CMOS, DTL, TTL logic
- Simple, straight-forward DC biasing
- Inherent protection from thermal runaway
- Reliable, low cost plastic package



UNIT	TYPE	TERM.1	TERM.2	TERM.3	TAB
POWER MOS FET	TO-237	SOURCE	GATE	DRAIN	DRAIN

maximum ratings (T_A = 25° C) (unless otherwise specified)

RATING	SYMBOL	D	E	F	H	UNITS
Drain-Source Voltage	V_{DSS}	40	60	80	100	Volts
Drain-Gate Voltage, R_{GS} = 1MΩ	V_{DGR}	40	60	80	100	Volts
Continuous Drain Current @ T_A = 25°C	I_D	0.7	0.7	0.7	0.7	A
Peak Drain Current(1)	I_{DM}	2.0	2.0	2.0	2.0	A
Gate-Source Voltage	V_{GS}	±30	±30	±30	±30	Volts
Total Power Dissipation @ T_A = 25°C Derate Above 25°C	P_D	2.0 16	2.0 16	2.0 16	2.0 16	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to 150	-55 to 150	-55 to 150	-55 to 150	°C

(1) Repetitive Rating: Pulse width limited by max. junction temperature.

thermal characteristics

Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	62.5	62.5	62.5	°C/W
Maximum Lead Temperature for Soldering Purposes: 1/16" from Case for 10 Seconds	T_L	300	300	300	300	°C

(1) Repetitive Rating: Pulse width limited by max. junction temperature.

electrical characteristics (T_A = 25°C) (unless otherwise specified)

CHARACTERISTIC		SYMBOL	MIN	TYP	MAX	UNIT
off characteristics						
Drain-Source Breakdown Voltage (V_{GS} = 0V, I_D = 10 μA)	IVN5000,1AND IVN5000,1ANE IVN5000,1ANF IVN5000,1ANH	BV_{DSS}	40 60 80 100	— — — —	— — — —	Volts
Zero Gate Voltage Drain Current (V_{DS} = Max Rating, V_{GS} = 0V) (V_{DS} = Max Rating, × 0.8, V_{GS} = 0V, T_A = 125°C)		I_{DSS}	— —	— —	10 500	μA
Gate-Source Leakage Current (V_{GS} = 15V, V_{DS} = 0V) (V_{GS} = 15V, V_{DS} = 0V - T_A = 125 °C)		I_{GSS}	— —	— —	10 50	nA nA
on characteristics*						
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 1 mA)	IVN5000 IVN5001	$V_{GS(TH)}$	.8 .8	— —	2.0 3.6	Volts Volts
Drain-Source Saturation Voltage (V_{GS} = 10V, I_D = 1.0A) (V_{GS} = 12V, I_D = 1.0A)	 IVN5000 IVN5001	$V_{DS(ON)}$	 — —	 2.0 1.9	 2.5 2.5	 Volts
Static Drain-Source On-State Resistance (V_{GS} = 10V, I_D = 1.0A) (V_{GS} = 12V, I_D = 1.0A)	 IVN5000 IVN5001	$R_{DS(ON)}$	 — —	 2.0 1.9	 2.5 2.5	 Ohms Ohms
On-State Drain Current (V_{DS} = 24V, V_{GS} = 10V) (V_{DS} = 24V, V_{GS} = 12V)	IVN5000 IVN5001	$I_{D(ON)}$	1.0 1.0	— —	— —	Amp Amp
Forward Transconductance (V_{DS} = 24V, I_D = 0.5A, f = 1 KHz)		g_{fs}	.17	.28	—	mhos

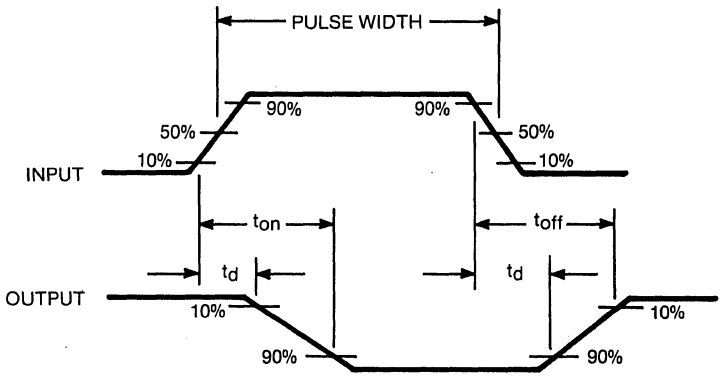
dynamic characteristics

Input Capacitance	V_{GS} = 0V	C_{iss}	—	40	50	pF
Output Capacitance	V_{DS} = 24V	C_{oss}	—	27	40	pF
Reverse Transfer Capacitance	f = 1 MHz	C_{rss}	—	6	10	pF

switching characteristics*

Turn-on Delay Time	See switching times waveform below	$t_{d(on)}$	—	2	5	ns
Rise Time		t_r	—	2	5	ns
Turn-off Delay Time		$t_{d(off)}$	—	2	5	ns
Fall Time		t_f	—	2	5	ns

*Pulse Test: Pulse width ≤ 300 μs, duty cycle ≤ 2%



SWITCHING TIME TEST WAVEFORMS

POWER-MOS FET
FIELD EFFECT POWER TRANSISTOR

IVN5000,1
TN Series

1.2 AMPERES
40-100 VOLTS
$R_{DS(ON)}$ = 2.5 Ω

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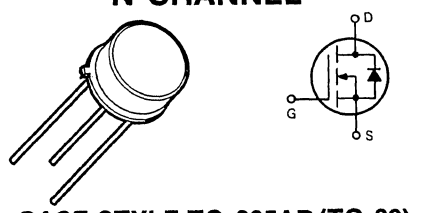
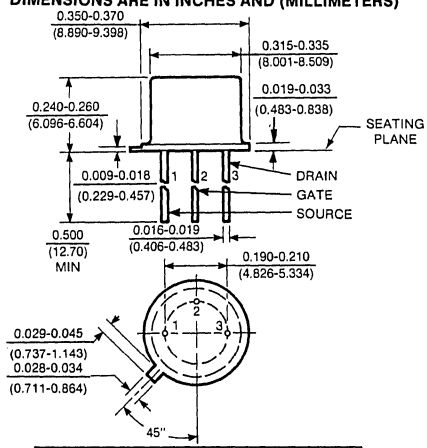
N-CHANNEL



CASE STYLE TO-205AD (TO-39)
DIMENSIONS ARE IN INCHES AND (MILLIMETERS)



TYPE	TERM. 1	TERM. 2	TERM. 3
TO-205AD	SOURCE	GATE	DRAIN

maximum ratings (T_A = 25° C) (unless otherwise specified)

RATING	SYMBOL	D	E	F	H	UNITS
Drain-Source Voltage	V_{DSS}	40	60	80	100	Volts
Drain-Gate Voltage, R_{GS} = 1MΩ	V_{DGR}	40	60	80	100	Volts
Continuous Drain Current @ T_A = 25° C	I_D	1.2	1.2	1.2	1.2	A
Peak Drain Current(1)	I_{DM}	3.0	3.0	3.0	3.0	A
Gate-Source Voltage	V_{GS}	±30	±30	±30	±30	Volts
Total Power Dissipation @ T_A = 25° C Derate Above 25° C	P_D	6.25 50	6.25 50	6.25 50	6.25 50	Watts mW/° C
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to 150	-55 to 150	-55 to 150	-55 to 150	°C

thermal characteristics

Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	20	20	20	20	°C/W
Maximum Lead Temperature for Soldering Purposes: 1/16" from Case for 10 Seconds	T_L	300	300	300	300	°C

(1) Repetitive Rating: Pulse width limited by max. junction temperature.

electrical characteristics (T_A = 25°C) (unless otherwise specified)

CHARACTERISTIC		SYMBOL	MIN	TYP	MAX	UNIT
off characteristics						
Drain-Source Breakdown Voltage (V_{GS} = 0V, I_D = 10 μA)	D E F H	BV_{DSS}	40 60 80 100	— — — —	— — — —	Volts
Zero Gate Voltage Drain Current (V_{DS} = Max Rating, V_{GS} = 0V) (V_{DS} = Max Rating, × 0.8, V_{GS} = 0V, T_A = 125°C)		I_{DSS}	— —	— —	10 500	μA
Gate-Source Leakage Current (V_{GS} = 15V, V_{DS} = 0V) (V_{GS} = 15V, V_{DS} = 0V - T_A = 125 °C)		I_{GSS}	— —	— —	10 50	nA nA
on characteristics*						
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 1 mA)	IVN5000 IVN5001	$V_{GS(TH)}$	.8 .8	— —	2.0 3.6	Volts Volts
Drain-Source Saturation Voltage (V_{GS} = 10V, I_D = 1.0A) (V_{GS} = 12V, I_D = 1.0A)	 IVN5000 IVN5001	$V_{DS(ON)}$	 — —	 2.0 1.9	 2.5 2.5	 Volts
Static Drain-Source On-State Resistance (V_{GS} = 10V, I_D = 1.0A) (V_{GS} = 12V, I_D = 1.0A)	 IVN5000 IVN5001	$R_{DS(ON)}$	 — —	 2.0 1.9	 2.5 2.5	 Ohms Ohms
On-State Drain Current (V_{DS} = 24V, V_{GS} = 10V) (V_{DS} = 24V, V_{GS} = 12V)	IVN5000 IVN5001	$I_{D(ON)}$	1.0 1.0	— —	— —	Amp Amp
Forward Transconductance (V_{DS} = 24V, I_D = 0.5A, f = 1 KHz)		g_{fs}	.17	.28	—	mhos
dynamic characteristics						
Input Capacitance	V_{GS} = 0V	C_{iss}	—	40	50	pF
Output Capacitance	V_{DS} = 24V	C_{oss}	—	27	40	pF
Reverse Transfer Capacitance	f = 1 MHz	C_{rss}	—	6	10	pF
switching characteristics*						
Turn-on Delay Time	See switching times waveform below	$t_{d(on)}$	—	2	5	ns
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Turn-off Delay Time		$t_{d(off)}$	—	2	5	ns
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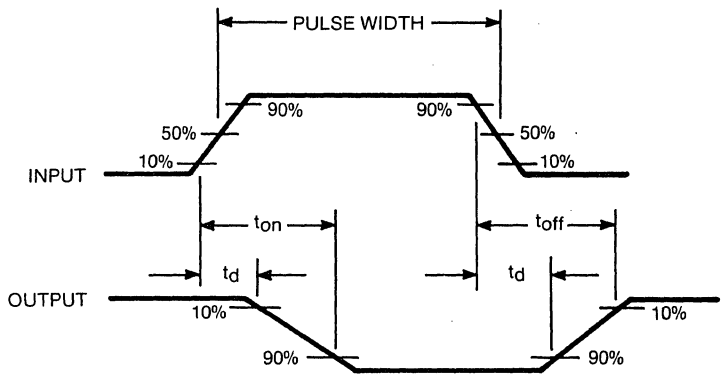

SWITCHING TIME TEST WAVEFORMS