POWER·MOS FET
FIELD EFFECT POWER TRANSISTOR

VN10KMA

0.5 AMPERES
60 VOLTS
$R_{DS(ON)}$ = 5.0 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.

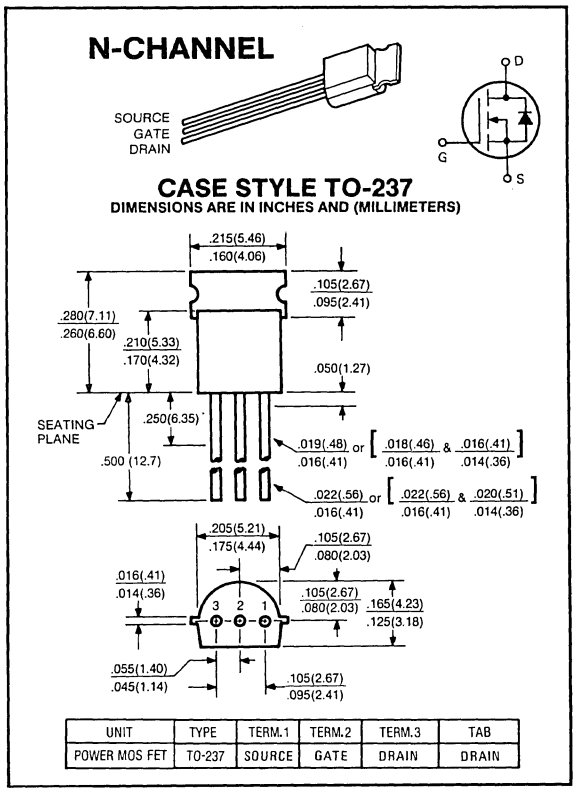
This design has been optimized to give superior performance in most switching applications including: switching power supplies, inverters, converters and solenoid/relay drivers. Also, the extended safe operating area with good linear transfer characteristics makes it well suited for many linear applications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

Applications

- LED and lamp drivers
- TTL and CMOS to high current interface
- High speed switches
- Line drivers
- Relay drivers
- Transformer drivers

Features

- Directly drives inductive loads
- High speed, high peak current switching
- Inherent current sharing capability when paralleled
- Directly interfaces to CMOS, DTL, TTL logic
- Simple straight-forward DC biasing
- Inherently procection from thermal runaway



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	VN10KMA	UNITS
Drain-Source Voltage	V_{DSS}	60	Volts
Drain-Gate Voltage, R_{GS} = 1MΩ	V_{DGR}	60	Volts
Continuous Drain Current @ T_A = 25°C	I_D	0.5	A
Peak Drain Current(1)	I_{DM}	1.0	A
Gate-Source Voltage	V_{GS}	±30	Volts
Total Power Dissipation @ T_A = 25°C Derate Above 25°C	P_D	1.0 8	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to 150	°C

thermal characteristics

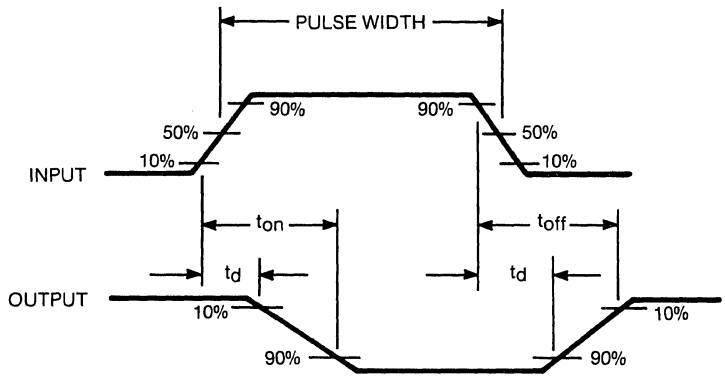
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	20	°C/W
Maximum Lead Temperature for Soldering Purposes: 1/16" from Case for 10 Seconds	T_L	300	°C

(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 = 100 μA)	BV_{DSS}	60	—	—	Volts
Zero Gate Voltage Drain Current (V_{DS} = 40V, V_{GS} = 0V)	I_{DSS}	—	—	10	μA
Gate-Source Leakage Current (V_{GS} = 15V, V_{DS} = 0V)	I_{GSS}	—	—	100	nA
on characteristics*					
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 1 mA)	$V_{GS(TH)}$	0.8	—	2.5	Volts
Drain-Source Saturation Voltage (V_{GS} = 10V, I_D = .5A)	$V_{DS(ON)}$	—	—	2.5	V
On-State Drain Current (V_{DS} = 25V, V_{GS} = 5V) (V_{DS} = 25V, V_{GS} = 10V)	$I_{D(ON)}$	0.25 0.50	— —	— —	A
Forward Transconductance (V_{DS} = 15V, I_D = 0.5A)	g_{fs}	.10	.20	—	mhos
dynamic characteristics					
Input Capacitance	V_{GS} = 0V	C_{iss}	—	48	—	pF
Output Capacitance	V_{DS} = 25V	C_{oss}	—	16	—	pF
Reverse Transfer Capacitance	f = 1 MHz	C_{rss}	—	2	—	pF
switching characteristics*					
Turn-on Delay Time	See switching times waveform below	$t_{d(on)}$	—	5	—	ns
Turn-off Delay Time		$t_{d(off)}$	—	2	—	ns

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



SWITCHING TIME TEST WAVEFORMS