POWER·MOS FET
FIELD EFFECT POWER TRANSISTOR

VN46AFA Series

1.2 AMPERES
40-80 VOLTS
$R_{DS(ON)}$ = 3.0, 4.0 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.

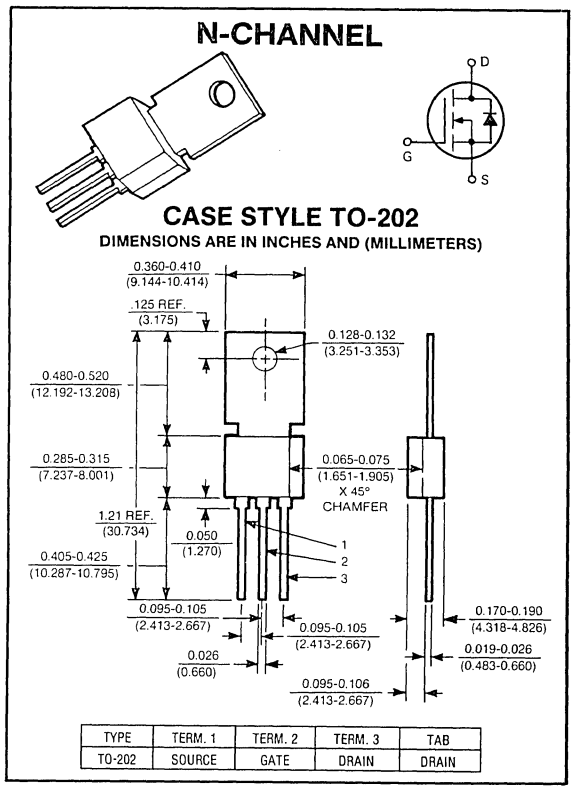
This design has been optimized to give superior performance in most switching applications including: switching power supplies, inverters, converters and solenoid/relay drivers. Also, the extended safe operating area with good linear transfer characteristics makes it well suited for many linear applications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

Applications

- Switching power supplies
- DC to DC inverters
- CMOS and TTL to high current interface
- Line drivers
- Logic buffers
- Pulse amplifiers

Features

- High speed, high current switching
- Current sharing capability when paralleled
- Directly interface to CMOS, DTL, TTL logic
- Simple DC biasing
- Extended safe operating area
- Inherently temperature stable



TYPE	TERM. 1	TERM. 2	TERM. 3	TAB
TO-202	SOURCE	GATE	DRAIN	DRAIN

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

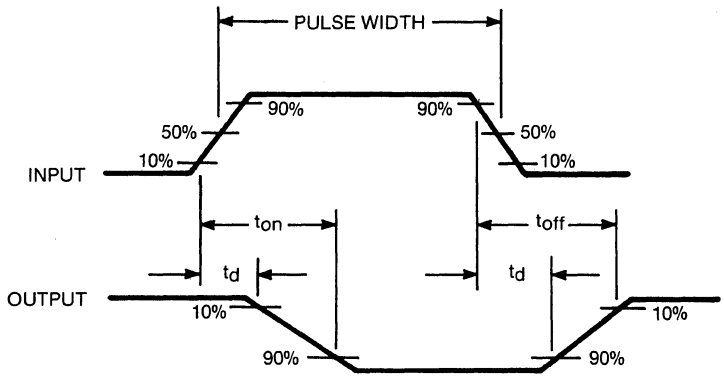
RATING	SYMBOL	VN46AFA	VN66AFA	VN88AFA	UNITS
Drain-Source Voltage	V_{DSS}	40	60	80	Volts
Drain-Gate Voltage, R_{GS} = 1MΩ	V_{DGR}	40	60	80	Volts
Continuous Drain Current @ T_A = 25°C	I_D	1.2	1.2	1.2	A
Peak Drain Current	I_{DM}	3.0	3.0	3.0	A
Gate-Source Voltage	V_{GS}	±30	±30	±30	Volts
Total Power Dissipation @ T_A = 25°C Derate Above 25°C	P_D	12 96	12 96	12 96	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-40 to 150	-40 to 150	-40 to 150	°C

thermal characteristics

Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	10.4	10.4	10.4	°C/W
Maximum Lead Temperature for Soldering Purposes: ⅛" from Case for 5 Seconds	T_L	300	300	300	°C

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)	VN46AFA	BV_{DSS}	40	—	—	Volts
	VN66AFA		60	—	—	
	VN88AFA		80	—	—	
Zero Gate Voltage Drain Current (V_{DS} = Max Rating, V_{GS} = 0V)		I_{DSS}	—	—	10	μA
(V_{GS} = Max Rating, × 0.8, V_{GS} = 0V, T_A = 125°C)			—	—	100	
Gate-Source Leakage Current (V_{GS} = 10V, V_{DS} = 0V)		I_{GSS}	—	0.01	10	μA
(V_{GS} = 10V, V_{DS} = 0V - T_A = 125 °C)			—	—	100	
on characteristics						
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 1 mA)		$V_{GS(TH)}$	0.8	1.7	—	Volts
Drain-Source Saturation Voltage (V_{GS} = 10V, I_D = 1.0A)	VN40AFA;VN66AFA	$V_{DS(ON)}$	—	—	3.0	A
	VN88AFA		—	—	4.0	
Static Drain-Source On-State Resistance (V_{GS} = 10V, I_D = 1.0A)		$R_{DS(ON)}$	—	—	3.0	Ohms
			—	—	4.0	
Forward Transconductance (V_{DS} = 24V, I_D = 0.5A, f = 1 KHz)		g_{fs}	.150	.25	—	mhos
dynamic characteristics						
Input Capacitance	V_{GS} = 0V	C_{iss}	—	—	50	pF
Output Capacitance	V_{DS} = 25V	C_{oss}	—	—	50	pF
Reverse Transfer Capacitance	f = 1 MHz	C_{rss}	—	—	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



SWITCHING TIME TEST WAVEFORMS