



POWER-MOS FET

FIELD EFFECT POWER TRANSISTOR

IRFD212,213

0.45 AMPERES
200, 150 VOLTS
 $R_{DS(ON)} = 2.4 \Omega$

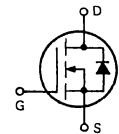
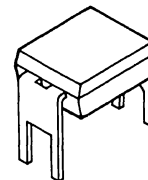
This series of N-Channel Enhancement-mode Power MOSFETs utilizes GE's advanced Power DMOS technology to achieve low on-resistance with excellent device ruggedness and reliability.

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.

Features

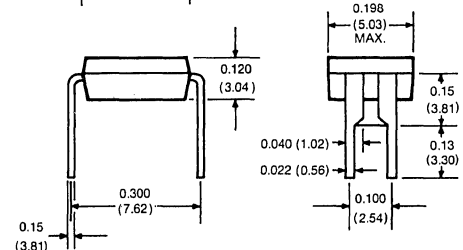
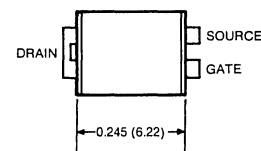
- Polysilicon gate — Improved stability and reliability
- No secondary breakdown — Excellent ruggedness
- Ultra-fast switching — Independent of temperature
- Voltage controlled — High transconductance
- Low input capacitance — Reduced drive requirement
- Excellent thermal stability — Ease of paralleling

N-CHANNEL



CASE STYLE 4-PIN DIP

DIMENSIONS ARE IN INCHES AND (MILLIMETERS)



maximum ratings ($T_A = 25^\circ\text{C}$) (unless otherwise specified)

RATING	SYMBOL	IRFD212	IRFD213	UNITS
Drain-Source Voltage	V_{DSS}	200	150	Volts
Drain-Gate Voltage, $R_{GS} = 1\text{M}\Omega$	V_{DGR}	200	150	Volts
Continuous Drain Current @ $T_A = 25^\circ\text{C}^{(1)}$ @ $T_A = 100^\circ\text{C}^{(1)}$	I_D	0.45 0.30	0.45 0.30	A A
Pulsed Drain Current ⁽²⁾	I_{DM}	1.8	1.8	A
Gate-Source Voltage	V_{GS}	± 20	± 20	Volts
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate Above 25°C	P_D	1.0 8	1.0 8	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to 150	-55 to 150	$^\circ\text{C}$

thermal characteristics

Thermal Resistance, Junction to Ambient ⁽¹⁾	$R_{\theta JA}$	125	125	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes: $\frac{1}{16}$ " from Case for 5 Seconds	T_L	300	300	$^\circ\text{C}$

(1) Device mounted to vertical pc board in free air with drain lead soldered to 0.20 in² minimum copper run area.

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

electrical characteristics ($T_A = 25^\circ\text{C}$) (unless otherwise specified)

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
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off characteristics

Drain-Source Breakdown Voltage ($V_{GS} = 0V$, $I_D = 250\mu A$)	IRFD212 IRFD213	BV_{DSS}	200 150	— —	— —	Volts
Zero Gate Voltage Drain Current ($V_{DS} = \text{Max Rating}$, $V_{GS} = 0V$, $T_A = 25^\circ\text{C}$) ($V_{DS} = \text{Max Rating}$, $\times 0.8$, $V_{GS} = 0V$, $T_A = 125^\circ\text{C}$)		I_{DSS}	— —	— —	250 1000	μA
Gate-Source Leakage Current ($V_{GS} = \pm 20V$)		I_{GSS}	—	—	± 500	nA

on characteristics*

Gate Threshold Voltage ($V_{DS} = V_{GS}$, $I_D = 250\mu A$)	$T_A = 25^\circ\text{C}$	$V_{GS(TH)}$	2.0	—	4.0	Volts
On-State Drain Current ($V_{GS} = 10V$, $V_{DS} = 10V$)		$I_{D(ON)}$	0.45	—	—	A
Static Drain-Source On-State Resistance ($V_{GS} = 10V$, $I_D = 0.3A$)		$R_{DS(ON)}$	—	1.6	2.4	Ohms
Forward Transconductance ($V_{DS} = 10V$, $I_D = 0.3A$)		g_{fs}	0.35	0.4	—	mhos

dynamic characteristics

Input Capacitance	$V_{GS} = 0V$	C_{iss}	—	120	150	pF
Output Capacitance	$V_{DS} = 25V$	C_{oss}	—	40	80	pF
Reverse Transfer Capacitance	$f = 1\text{ MHz}$	C_{rss}	—	10	25	pF

switching characteristics*

Turn-on Delay Time	$V_{DS} = 90V$	$t_{d(on)}$	—	5	—	ns
Rise Time	$I_D = 0.3A$, $V_{GS} = 15V$	t_r	—	15	—	ns
Turn-off Delay Time	$R_{GEN} = 50\Omega$, $R_{GS} = 12.5\Omega$	$t_{d(off)}$	—	10	—	ns
Fall Time	($R_{GS} \text{ (EQUIV.)} = 10\Omega$)	t_f	—	10	—	ns

source-drain diode ratings and characteristics*

Continuous Source Current		I_S	—	—	0.45	A
Pulsed Source Current		I_{SM}	—	—	1.8	A
Diode Forward Voltage ($T_A = 25^\circ\text{C}$, $V_{GS} = 0V$)	$I_S = 0.45A$	V_{SD}	—	0.7	1.8	Volts
Reverse Recovery Time ($I_S = 0.6A$, $di_S/dt = 100A/\mu s$, $T_A = 125^\circ\text{C}$)		t_{rr} Q_{RR}	— —	100 0.75	—	ns μC

*Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

