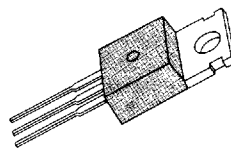


IRF624/625**N-CHANNEL
POWER MOSFETS****FEATURES**

- Lower $R_{DS(on)}$
- Improved inductive ruggedness
- Fast switching times
- Rugged polysilicon gate cell structure
- Lower input capacitance
- Extended safe operating area
- Improved high temperature reliability

TO-220



IRF624/625

PRODUCT SUMMARY

Part Number	V_{DS}	$R_{DS(on)}$	I_D
IRF624	250V	1.1 Ω	3.8A
IRF625	250V	1.5 Ω	3.3A

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MAXIMUM RATINGS

Characteristic	Symbol	IRF624	IRF625	Unit
Drain-Source Voltage (1)	V_{DSS}	250	250	Vdc
Drain-Gate Voltage ($R_{GS}=1.0M\Omega$)(1)	V_{DGR}	250	250	Vdc
Gate-Source Voltage	V_{GS}	± 20		Vdc
Continuous Drain Current $T_C=25^\circ C$	I_D	3.8	3.3	Adc
Continuous Drain Current $T_C=100^\circ C$	I_D	2.4	2.1	Adc
Drain Current—Pulsed (3)	I_{DM}	15	13	Adc
Gate Current—Pulsed	I_{GM}	± 1.5		Adc
Single Pulsed Avalanche Energy (4)	E_{AS}	110		mJ
Avalanche Current	I_{AS}	3.8		A
Total Power Dissipation @ $T_C=25^\circ C$ Derate above $25^\circ C$	P_D	40 0.32		Watts W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to 150		$^\circ C$
Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5 seconds	T_L	300		$^\circ C$

Notes: (1) $T_J=25^\circ C$ to $150^\circ C$ (2) Pulse test: Pulse width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

(3) Repetitive rating: Pulse with limited by max. junction temperature

(4) $L=12$ mH, $V_{dd}=50V$, $R_G=25\Omega$, Starting $T_J=25^\circ C$

IRF624/625**N-CHANNEL
POWER MOSFETS****ELECTRICAL CHARACTERISTICS** ($T_C = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV_{DSS}	Drain-Source Breakdown Voltage	250	—	—	V	$V_{GS}=0V$ $I_D=250\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	2.0	—	4.0	V	$V_{DS}=V_{GS}$, $I_D=250\mu A$
I_{GSS}	Gate-Source Leakage Forward	—	—	100	nA	$V_{GS}=20V$
I_{GSS}	Gate-Source Leakage Reverse	—	—	-100	nA	$V_{GS}=-20V$
I_{DSS}	Zero Gate Voltage Drain Current	—	—	250	μA	$V_{DS}=\text{Max. Rating}$, $V_{GS}=0V$
		—	—	1000	μA	$V_{DS}=\text{Max. Rating} \times 0.8$, $V_{GS}=0V$, $T_C=125^\circ\text{C}$
$I_{D(on)}$	On-State Drain-Source Current (2) IRF624	3.8	—	—	A	$V_{DS} \geq 5.7V$, $V_{GS}=10V$
	IRF625	3.3	—	—	A	
$R_{DS(on)}$	Static Drain-Source On-State Resistance (2) IRF624	—	—	1.1	Ω	$V_{GS}=10V$, $I_D=2.1A$
	IRF625	—	—	1.5	Ω	
g_{fs}	Forward Transconductance (2)	1.4	2.1	—	S	$V_{DS} \geq 50V$, $I_D=1.9A$
C_{iss}	Input Capacitance	—	390	—	pF	$V_{GS}=0V$, $V_{DS}=25V$, $f=1.0\text{MHz}$
C_{oss}	Output Capacitance	—	150	—	pF	
C_{rss}	Reverse Transfer Capacitance	—	50	—	pF	
$t_{d(on)}$	Turn-On Delay Time	—	11	17	ns	$V_{DD}=0.5BV_{DSS}$, $I_D=3.8A$, $Z_\theta=18\Omega$ (MOSFET switching times are essentially independent of operating temperature)
t_r	Rise Time	—	24	36	ns	
$t_{d(off)}$	Turn-Off Delay Time	—	21	32	ns	
t_f	Fall Time	—	13	20	ns	
Q_g	Total Gate Charge (Gate-Source Plus Gate-Drain)	—	15	22	nC	$V_{GS}=10V$, $I_D=3.8A$, $V_{DS}=0.8 \text{ Max. Rating}$ (Gate charge is essentially independent of operating temperature.)
Q_{gs}	Gate-Source Charge	—	4.0	6.0	nC	
Q_{gd}	Gate-Drain ("Miller") Charge	—	7.2	11	nC	

THERMAL RESISTANCE

R_{thJC}	Junction-to-Case	—	—	3.12	K/W	
R_{thCS}	Case-to-Sink	—	1.0	—	K/W	Mounting surface flat, smooth, and greased
R_{thJA}	Junction-to-Ambient	—	—	80	K/W	Free Air Operation

Notes: (1) $T_J = 25^\circ\text{C}$ to 150°C (2) Pulse test: Pulse width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

(3) Repetitive rating: Pulse width limited by max. junction temperature

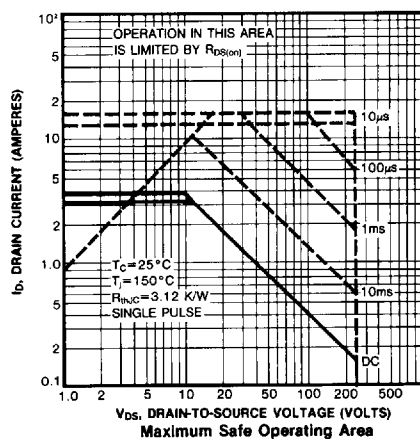
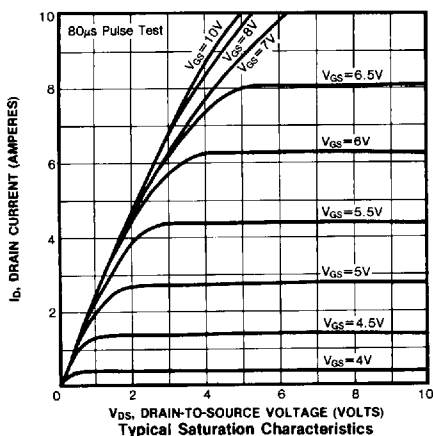
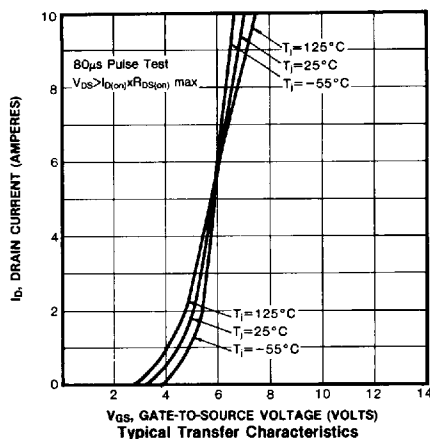
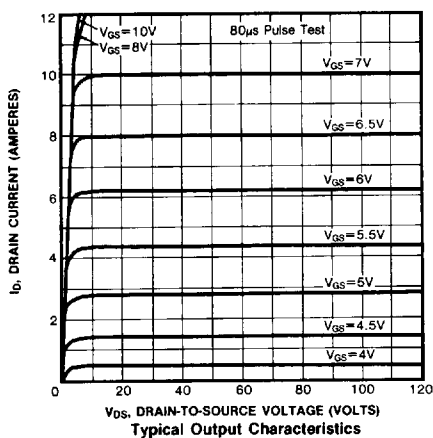
N-CHANNEL POWER MOSFETS

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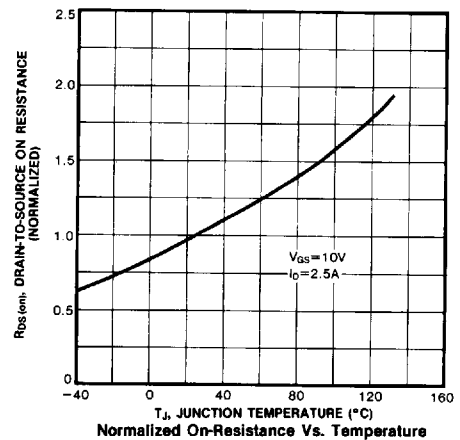
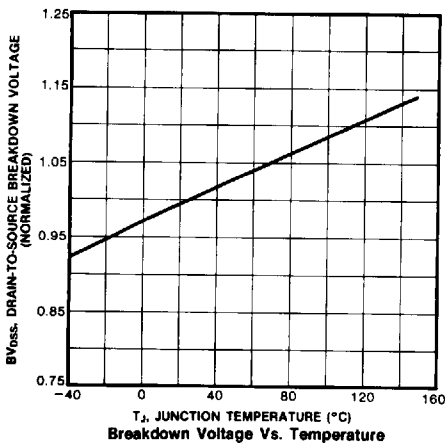
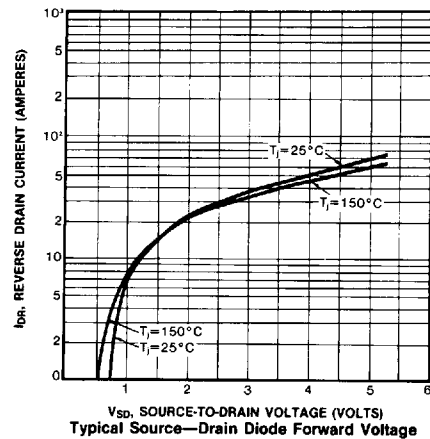
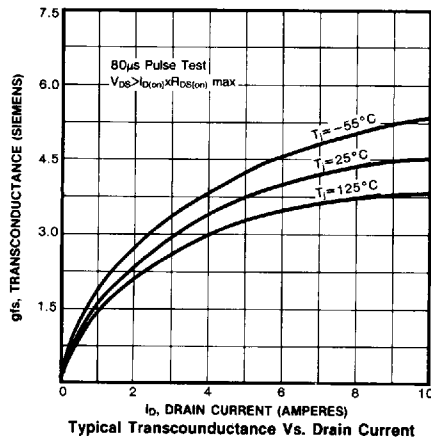
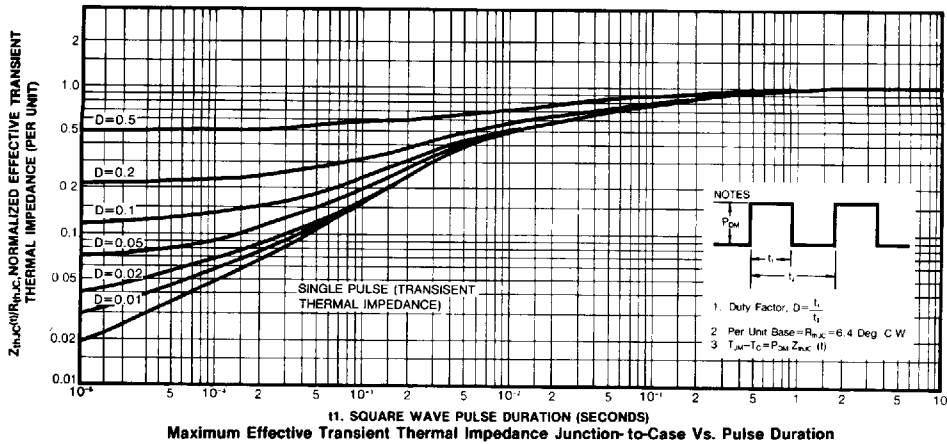
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic	Type	Min	Typ	Max	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	IRF624	—	—	3.8	A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier 
		IRF625	—	—	3.3	V	
I_{SM}	Pulse Source Current (Body Diode) (3)	IRF624	—	—	15	A	
		IRF625	—	—	13	V	
V_{SD}	Diode Forward Voltage (2)		—	—	1.8	V	$T_C = 25^\circ\text{C}$, $I_S = 3.8\text{A}$, $V_{GS} = 0\text{V}$
t_{rr}	Reverse Recovery Time		—	180	—	ns	$T_J = 25^\circ\text{C}$, $I_F = 3.8\text{A}$, $dI_F/dt = 100\text{A}/\mu\text{s}$

Notes: (1) $T_J = 25^\circ\text{C}$ to 150°C (2) Pulse test: Pulse width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$
 (3) Repetitive rating: Pulse with limited by max. junction temperature



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N-CHANNEL
POWER MOSFETS

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