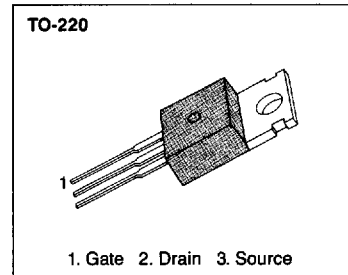


FEATURES

- Lower $R_{DS(on)}$
- Excellent voltage stability
- Fast switching speeds
- Rugged polysilicon gate cell structure
- Lower input capacitance
- Extended safe operating area
- Improved high temperature reliability
- TO-220 Package



PRODUCT SUMMARY

Part Number	V_{DS}	$R_{DS(on)}$	$I_{D(on)}$
IRL620	200V	1.2 Ω	4.0A
IRL621	150V	1.2 Ω	4.0A

ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	IRL620	IRL621	Unit
Drain-Source Voltage (1)	V_{DS}	200	150	Vdc
Drain-Gate Voltage ($R_{GS}=1M\Omega$)(1)	V_{DGR}	200	150	Vdc
Gate-Source Voltage	V_{GS}	± 15		Adc
Continuous Drain Current $T_c=25^\circ C$	I_D	4.0		Adc
Continuous Drain Current $T_c=100^\circ C$	I_D	2.5		Adc
Drain Current - Pulsed (3)	I_{DM}	16		Adc
Total Power Dissipation @ $T_c=25^\circ C$	P_D	42		Watts
Derate Above $25^\circ C$		0.33		
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 width limited by junction temperature

ELECTRICAL CHARACTERISTICS (T_C=25°C unless otherwise specified)

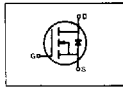
Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV _{DSS}	Drain-Source Breakdown Voltage					
	IRL620	200	-	-	V	V _{GS} =0V, I _D =250μA
	IRL621	150	-	-	V	
V _{GS(th)}	Gate Threshold Voltage	1.0	-	2.0	V	V _{DS} =V _{GS} , I _D =1mA
I _{GSS}	Gate-Source Leakage Forward	-	-	100	nA	V _{GS} =15V
I _{GSS}	Gate-Source Leakage Reverse	-	-	-100	nA	V _{GS} =-15V
I _{DSS}	Zero Gate Voltage Drain Current	-	-	250	μA	V _{DS} =Max. Rating, V _{GS} =0V
		-	-	1000	μA	V _{DS} =0.8 Max. Rating, V _{GS} =0V, T _C =125°C
R _{DS(on)}	Static Drain-Source On-Resistance(2)	-	-	1.2	Ω	V _{GS} =5.0V, I _D =2.0A
g _{fs}	Forward Transconductance (2)	3.0	-	-	Ω	V _{DS} ≥ 25V, I _D =2.0A
C _{iss}	Input Capacitance	-	450	-	pF	V _{GS} =0V, V _{DS} =25V, f=1.0MHz
C _{oss}	Output Capacitance	-	14	-	pF	
C _{rss}	Reverse Transfer Capacitance	-	60	-	pF	
t _{d(on)}	Turn-On Delay Time	-	-	40	ns	V _{DD} =0.5 BV _{DSS} , I _D =4.0A, Z _O =24Ω (MOSFET switching times are essentially independent of operating temperature)
t _r	Rise Time	-	-	60	ns	
t _{d(off)}	Turn-Off Delay Time	-	-	100	ns	
t _f	Fall Time	-	-	60	ns	
Q _g	Total Gate Charge (Gate-Source Plus Gate-Drain)	-	-	17	nC	
Q _{gs}	Gate-Source Charge	-	8.5	-	nC	V _{GS} =5V, I _D =4.0A, V _{DS} =0.8 Max. Rating (Gate charge is essentially independent of operating temperature)
Q _{gd}	Gate-Drain Charge	-	63	-	nC	

THERMAL RESISTANCE

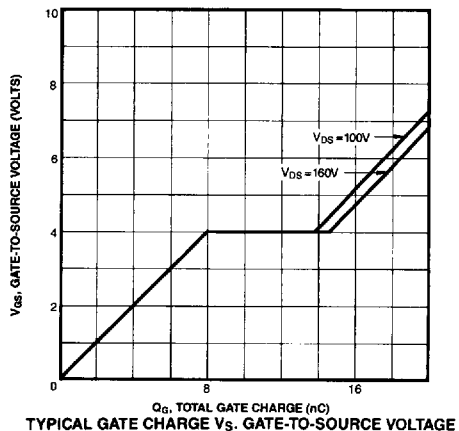
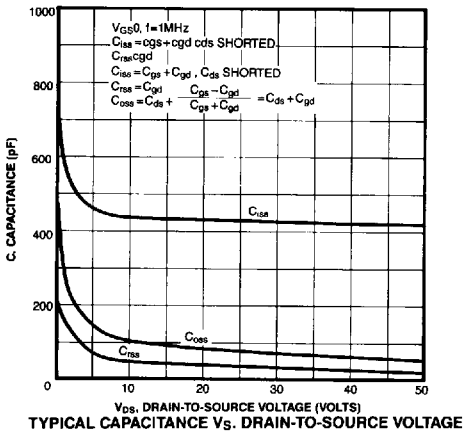
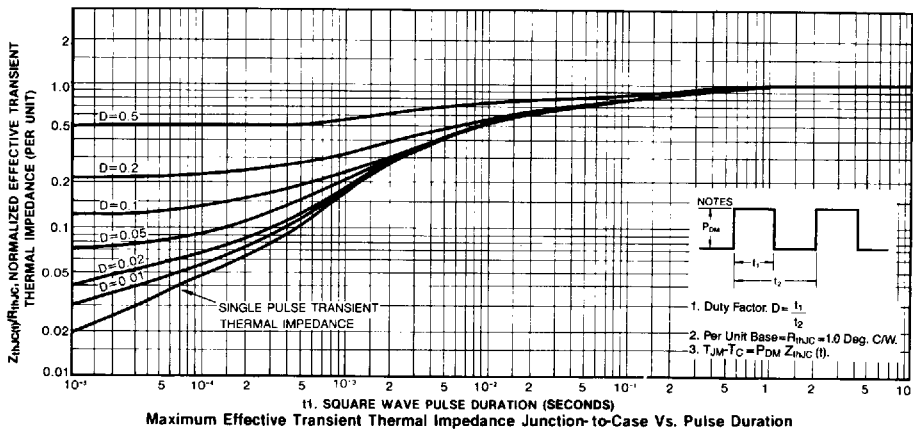
Symbol	Characteristics		All	Units	Remark
R _{thJC}	Junction-to-Case	MAX	3.0	K/W	
R _{thCS}	Case-to-Sink	TYP	0.5	K/W	Mounting surface flat, smooth, and greased
R _{thJA}	Junction-to-Ambient	MAX	62.5	K/W	Free Air Operation

- Notes : (1) T_J=25°C to 150°C
 (2) Pulse test : Pulse width ≤ 300μs, Duty Cycle ≤ 2%
 (3) Repetitive rating : Pulse width limited by max. junction temperature

SOURCE-DRAIN DIODE RATING AND CHARACTERISTICS

Symbol	Characteristic	Min	Typ	Max	Units	Test Condition
I_S	Continuous Source Current (Body Diode)	—	—	4.0	A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier 
I_{SM}	Pulse Source Current (Body Diode) (3)	—	—	16	A	
V_{SD}	Diode Forward Voltage (2)	—	—	1.8	V	$T_J=25^\circ\text{C}$, $I_S=4.0\text{A}$, $V_{GS}=0\text{V}$
t_{rr}	Reverse Recovery Time	—	400	—	ns	$T_J=25^\circ\text{C}$, $I_F=4.0\text{A}$, $dI_F/dt=100\text{A}/\mu\text{S}$

- 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 width limited by max. junction temperature



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