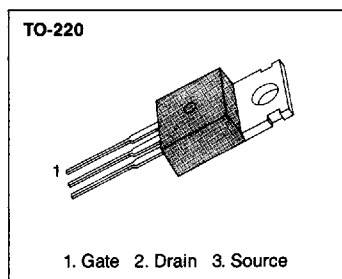


FEATURES

- 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
IRLZ24	60V	0.15Ω	14A
IRLZ20	50V	0.15Ω	14A

ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	IRLZ24	IRLZ20	Unit
Drain-Source Voltage (1)	V_{DS}	60	50	Vdc
Drain-Gate Voltage ($R_{GS}=1M\Omega$) (1)	V_{DGR}	60	50	Vdc
Gate-Source Voltage	V_{GS}	± 15		Vdc
Continuous Drain Current $T_C=25^\circ C$	I_D	14.0		Adc
Continuous Drain Current $T_C=100^\circ C$	I_D	9.8		Adc
Drain Current - Pulsed (3)	I_{DM}	56		Adc
Total Power Dissipation @ $T_C=25^\circ C$	P_D	50		Watts
Derate Above $25^\circ C$		0.33		W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +175		$^\circ C$
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 $175^\circ C$

(2) Pulse test : Pulse width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

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

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

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV _{DSS}	Drain-Source Breakdown Voltage					
	IRLZ24	60	-	-	V	V _{GS} =0V, I _D =250μA
	IRLZ20	50	-	-	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)	-	-	0.15	Ω	V _{GS} =5.0V, I _D =7A
g _{fs}	Forward Transconductance (2)	2.0	-	-	Ω	V _{DS} ≥ 15V, I _D =7A
C _{iss}	Input Capacitance	-	750	-	pF	V _{GS} =0V, V _{DS} =25V, f=1.0MHz
C _{oss}	Output Capacitance	-	250	-	pF	
C _{rss}	Reverse Transfer Capacitance	-	120	-	pF	
t _{d(on)}	Turn-On Delay Time	-	-	40	ns	V _{DD} =0.5 BV _{DSS} , I _D =14A, Z _o =24Ω (MOSFET switching times are essentially independent of operating temperature)
t _r	Rise Time	-	-	260	ns	
t _{d(off)}	Turn-Off Delay Time	-	-	200	ns	
t _f	Fall Time	-	-	200	ns	
Q _g	Total Gate Charge (Gate-Source Plus Gate-Drain)	-	-	22	nC	V _{GS} =5V, I _D =14A, V _{DS} =0.8 Max. Rating (Gate charge is essentially independent of operating temperature)
Q _{gs}	Gate-Source Charge	-	7	-	nC	
Q _{gd}	Gate-Drain Charge	-	7	-	nC	

THERMAL RESISTANCE

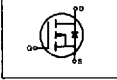
Symbol	Characteristics		All	Units	Remark
R _{thJC}	Junction-to-Case	MAX	3.0	K/W	
R _{thCS}	Case-to-Sink	TYP	0.5	K/W	Mounting surface flat, smooth, and greased
R _{thJA}	Junction-to-Ambient	MAX	62.5	K/W	Free Air Operation

Notes : (1) T_J=25°C to 175°C

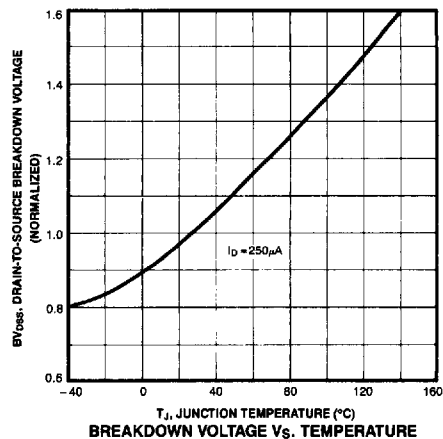
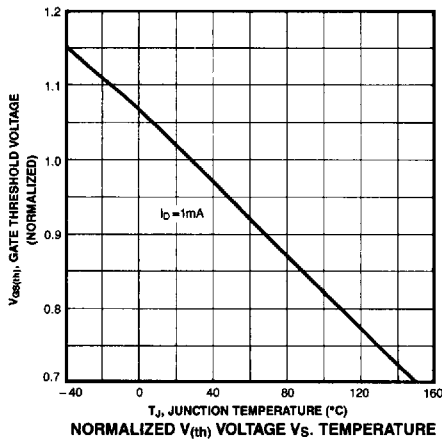
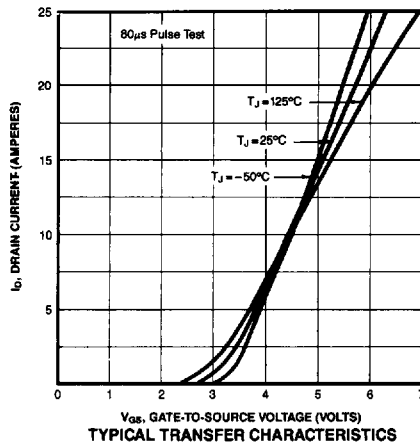
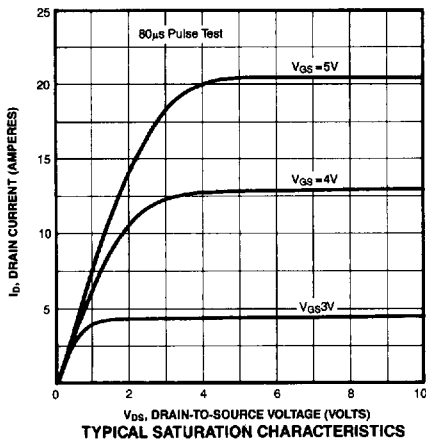
(2) Pulse test : Pulse width ≤ 300μs, Duty Cycle ≤ 2%

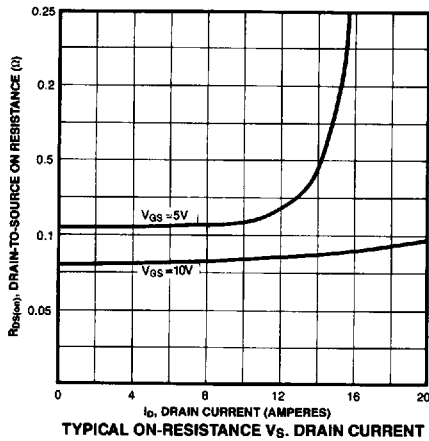
(3) Repetitive rating : Pulse width limited by max. junction temperature

SOURCE-DRAIN DIODE RATING AND CHARACTERISTICS

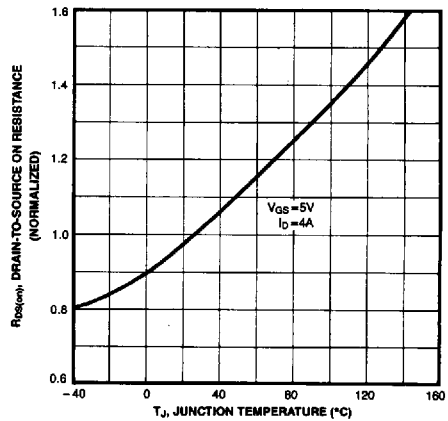
Symbol	Characteristic	Min	Typ	Max	Units	Test Condition
I_S	Continuous Source Current (Body Diode)	—	—	14	A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier 
I_{SM}	Pulse Source Current (Body Diode) (3)	—	—	56	A	
V_{SD}	Diode Forward Voltage (2)	—	—	1.8	V	$T_J = 25^\circ\text{C}$, $I_S = 14.0\text{A}$, $V_{GS} = 0\text{V}$
t_{rr}	Reverse Recovery Time	—	300	—	ns	$T_J = 25^\circ\text{C}$, $I_F = 14.0\text{A}$, $dI_F/dt = 100\text{A}/\mu\text{S}$

- Notes:** (1) $T_J = 25^\circ\text{C}$ to 175°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

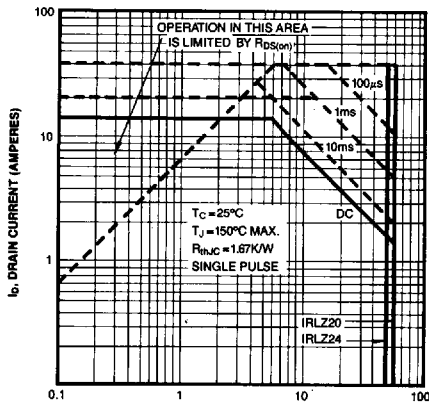




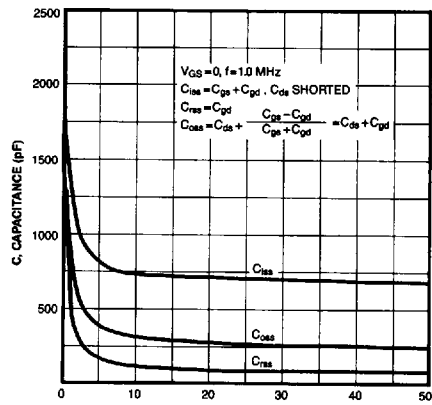
TYPICAL ON-RESISTANCE V_S , DRAIN CURRENT



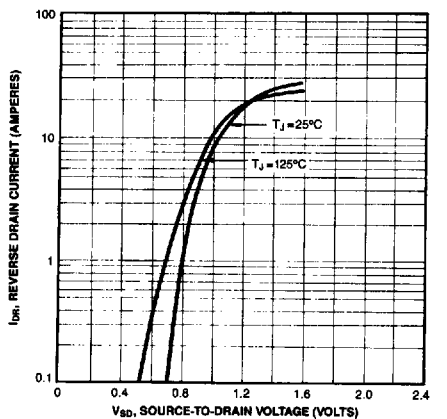
NORMALIZED ON-RESISTANCE V_S , TEMPERATURE



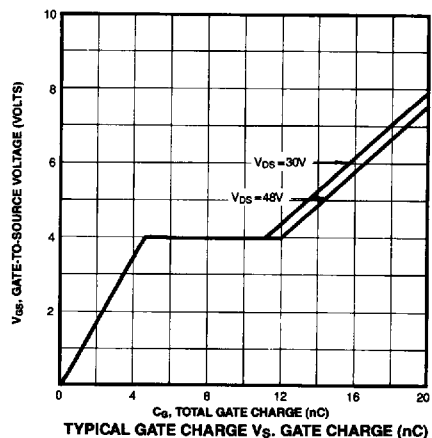
MAXIMUM SAFE OPERATING AREA



TYPICAL CAPACITANCE V_S , DRAIN TO SOURCE VOLTAGE



TYPICAL SOURCE—DRAIN DIODE FORWARD VOLTAGE



TYPICAL GATE CHARGE V_S , GATE CHARGE (nC)