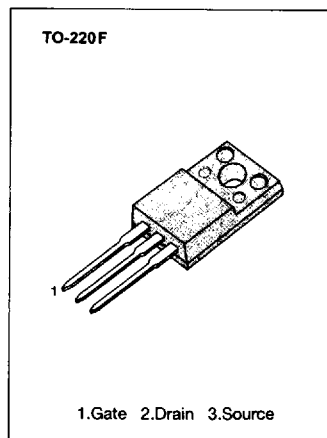


FEATURES

- 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

PRODUCT SUMMARY

Part Number	V_{DS}	$R_{DS(on)}$	I_D
IRFSZ24	60V	0.10 Ω	13.0A
IRFSZ20	50V	0.10 Ω	13.0A



ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	IRFSZ24	IRFSZ20	Unit
Drain-Source Voltage (1)	V_{DS}	60	50	Vdc
Drain-Gate Voltage ($R_{GS}=1.0M\Omega$)	V_{DGR}	60	50	Vdc
Gate-Source Voltage	V_{GS}	± 20		Vdc
Continuous Drain Current $T_c=25^\circ C$	I_D	13.0		Adc
Continuous Drain Current $T_c=100^\circ C$	I_D	9.1		Adc
Drain Current - Pulsed (3)	I_{DM}	60		Adc
Single Pulsed Avalanche Energy (4)	EAS	9.5		mJ
Avalanche Current	I_{AS}	13.0		A
Total Power Dissipation at $T_c=25^\circ C$	P_D	36		Watts
Derate above $25^\circ C$		0.24		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 $175^\circ C$

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

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

(4) $L=100\mu H$, $V_{dd}=25V$, $R_G=25\Omega$, Starting $T_J=25^\circ C$

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

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV _{DSS}	Drain-Source Breakdown Voltage					
	IRFSZ24	60	-	-	V	V _{GS} =0V, I _D =250μA
	IRFSZ20	50	-	-	V	
V _{GS(th)}	Gate Threshold Voltage	2.0	-	4.0	V	V _{DS} =V _{GS} , I _D =250μA
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} =Max. Rating, V _{GS} =0V
		-	-	1000	μA	V _{DS} =0.8 Max. Rating, V _{GS} =0V, T _C =150°C
R _{DS(on)}	Static Drain-Source On-Resistance(2)	-	-	0.1	Ω	V _{GS} =10V, I _D =7.5A
g _{fs}	Forward Transconductance (2)	5.6	6.1	-	Ω	V _{DS} ≥ 50V, I _D =7.5A
C _{iss}	Input Capacitance	-	635	-	pF	V _{GS} =0V, V _{DS} =25V, f=1.0MHz
C _{oss}	Output Capacitance	-	218	-	pF	
C _{rss}	Reverse Transfer Capacitance	-	105	-	pF	
t _{d(on)}	Turn-On Delay Time	-	-	30	ns	V _{DD} =0.5 BV _{DSS} , I _D =15.0A, Z _Θ =24Ω (MOSFET switching times are essentially independent of operating temperature)
t _r	Rise Time	-	-	90	ns	
t _{d(off)}	Turn-Off Delay Time	-	-	40	ns	
t _f	Fall Time	-	-	30	ns	
Q _g	Total Gate Charge (Gate-Source Plus Gate-Drain)	-	-	33	nC	V _{GS} =10V, I _D =15.0A, V _{DS} =0.8Max. Rating (Gate charge is essentially independent of operating temperature)
Q _{gs}	Gate-Source Charge	-	6.3	-	nC	
Q _{gd}	Gate-Drain ("Miller") Charge	-	12.3	-	nC	

THERMAL RESISTANCE

Symbol	Characteristics		All	Units	Remark
R _{thJC}	Junction-to-Case	MAX	4.16	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 RATINGS AND CHARACTERISTICS

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
ISM	Continuous Source Current (Body Diode)	-	-	15	A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier 
	Pulse Source Current (Body Diode) (3)	-	-	0.4	A	
VSD	Diode Forward Voltage (2)	-	-	1.5	V	TJ=25°C, IS=15A, VGS=0V
trr	Reverse Recovery Time	-	-	310	ns	TJ=25°C, IF=15A, dIF/dt=100A/μS

Notes : (1) TJ=25°C to 175°C

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

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

