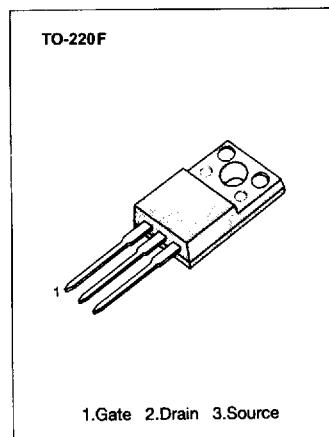


FEATURES

- 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
IRFS740	400V	0.55Ω	5.5A
IRFS741	350V	0.55Ω	5.5A



ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	IRFS740	IRFS741	Unit
Drain-Source Voltage (1)	V _{DSS}	400	350	Vdc
Drain-Gate Voltage (R _{GS} =1.0MΩ)(1)	V _{DGR}	400	350	Vdc
Gate-Source Voltage	V _{GS}	±20		Vdc
Continuous Drain Current T _C =25 °C	I _D	5.5		Adc
Continuous Drain Current T _C =100 °C	I _D	3.9		Adc
Drain Current - Pulsed (3)	I _{DM}	40		Adc
Gate Current - Pulsed	I _{GM}	±1.5		Adc
Single Pulsed Avalanche Energy (4)	E _{AS}	157		mJ
Avalanche Current	I _{AS}	5.5		A
Total Power Dissipation at T _C =25 °C	P _D	40		Watts
Derate above 25 °C		0.32		W/°C
Operating and Storage Junction Temperature Range	T _J , T _{STG}	-55 to +175		°C
Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5 seconds	T _L	300		°C

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

(4) L=9.1mH, V_{sd}=50V, R_G=25Ω, Starting T_J=25°C

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

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV _{DSS}	Drain-Source Breakdown Voltage					
	IRFS740	450	-	-	V	V _{GS} =0V, I _D =250μA
	IRFS741	350	-	-	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 _{OSS}	Zero Gate Voltage Drain Current	-	-	250	μA	V _{DS} =Max. Rating, V _{GS} =0V
		-	-	1000	μA	V _{DS} =0.8 Max. Rating, T _C =125°C
R _{DS(on)}	Static Drain-Source On Resistance(2)	-	-	0.55	Ω	V _{GS} =10V, I _D =5.0A
g _{fs}	Forward Transconductance (2)	5.8	8.7	-	Ω	V _{DS} ≥50V, I _D =5.0A
C _{iss}	Input Capacitance	-	1500	-	pF	V _{GS} =0V, V _{DS} =25V, f=1.0MHz
C _{oss}	Output Capacitance	-	178	-	pF	
C _{rss}	Reverse Transfer Capacitance	-	75	-	pF	
t _{d(on)}	Turn-On Delay Time	-	14	21	ns	V _{DD} =0.5 BV _{DSS} , I _D =10A, Z _o =9.1Ω (MOSFET switching times are essentially independent of operating temperature)
t _r	Rise Time	-	27	41	ns	
t _{d(off)}	Turn-Off Delay Time	-	50	75	ns	
t _f	Fall Time	-	24	36	ns	
Q _g	Total Gate Charge (Gate-Source Plus Gate-Drain)	-	-	79	nC	V _{GS} =10V, I _D =10A, V _{DS} =0.8 Max. Rating (Gate charge is essentially independent of operating temperature)
Q _{gs}	Gate-Source Charge	-	1013	-	nC	
Q _{gd}	Gate-Drain ("Miller") Charge	-	32.3	-	nC	

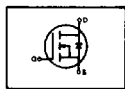
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THERMAL RESISTANCE

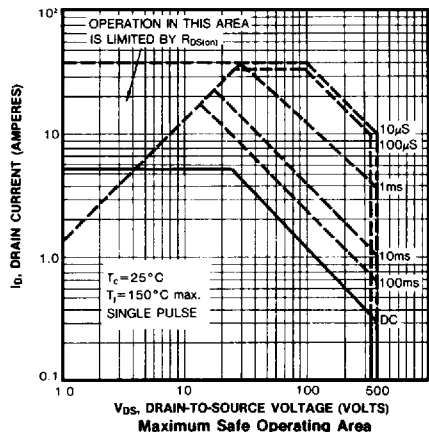
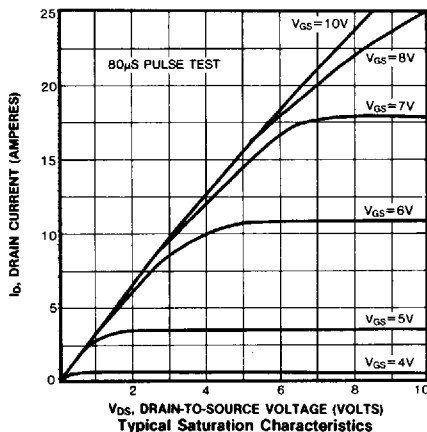
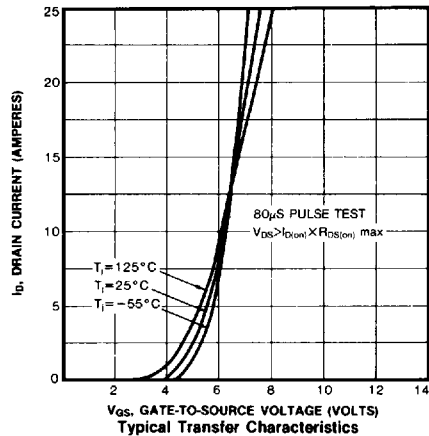
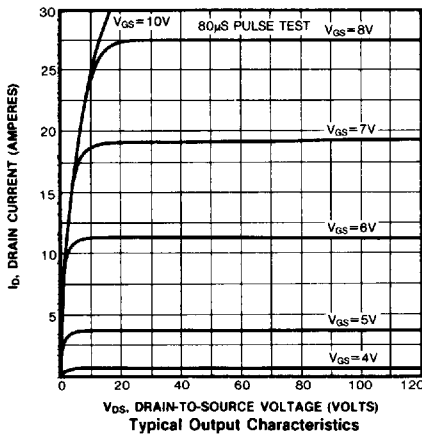
Symbol	Characteristics		All	Units	Remark
R _{thJC}	Junction-to-Case	MAX	3.12	K/W	
R _{thCS}	Case-to-Sink	TYP	0.5	K/W	Mounting surface flat, smooth and greased
R _{thJA}	Junction-to-Ambient	MAX	62.5	K/W	Free Air Operation

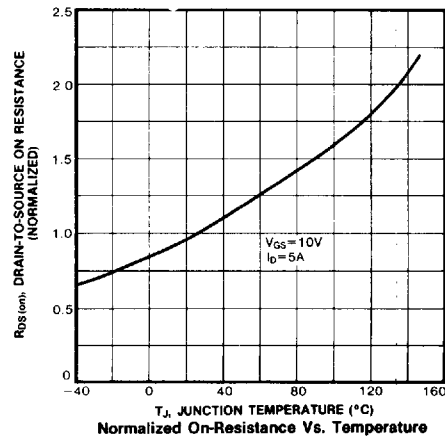
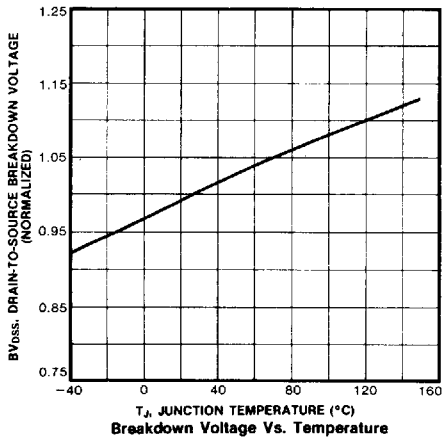
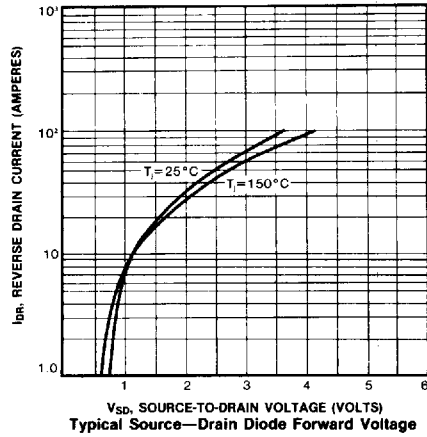
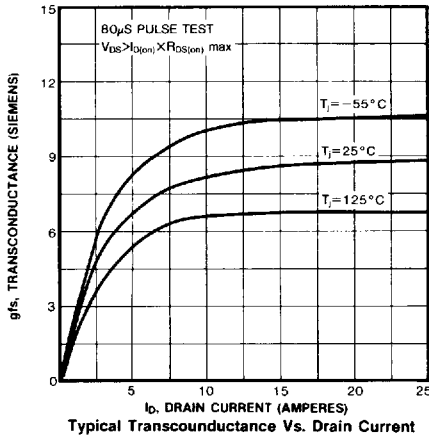
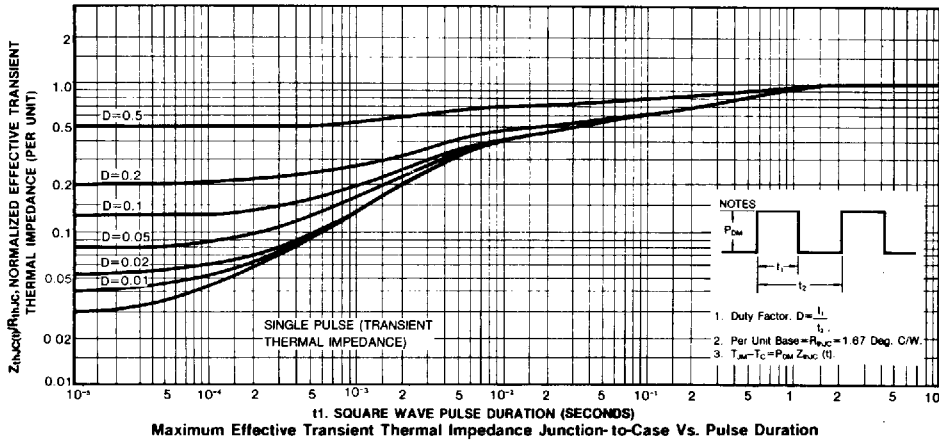
- Notes : (1) T_J=25°C to 150°C
 (2) Pulse test : Pulse width ≤ 300μs, Duty Cycle ≤ 2%
 (3) Repetitive rating : Pulse width limited by max. junction temperature

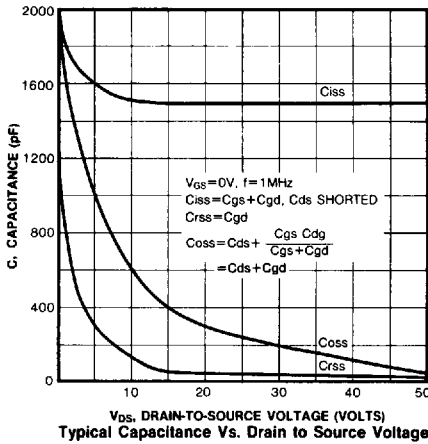
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
I _S	Continuous Source Current (Body Diode)	-	-	10	A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier 
I _{SM}	Pulse Source Current (Body Diode) (3)	-	-	40	A	
V _{SD}	Diode Forward Voltage (2)	-	-	2.0	V	T _J =25°C, I _S =10A, V _{GS} =0V
t _r	Reverse Recovery Time	-	370	-	ns	T _J =25°C, I _F =10A, dI _F /dt=100A/μS

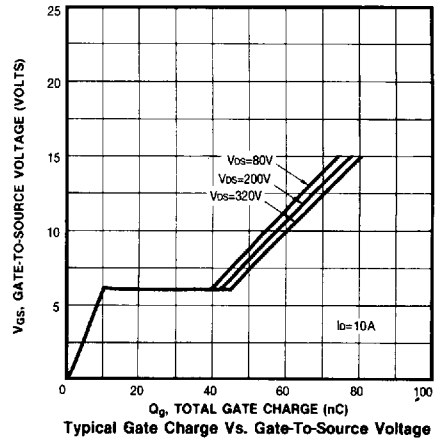
- Notes : (1) T_J=25°C to 150°C
 (2) Pulse test : Pulse width ≤ 300μs, Duty Cycle ≤ 2%
 (3) Repetitive rating : Pulse width limited by max. junction temperature



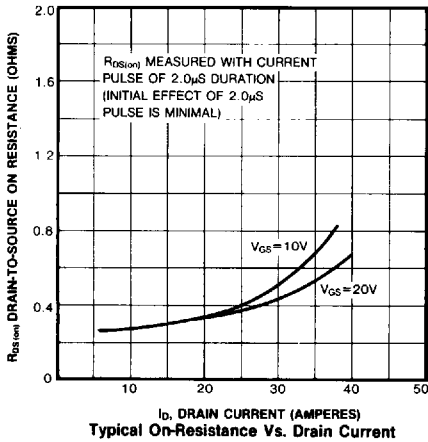




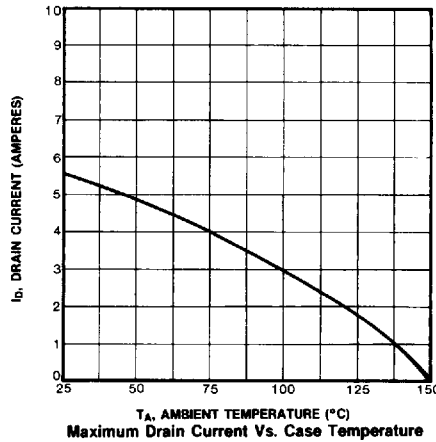
Typical Capacitance Vs. Drain to Source Voltage



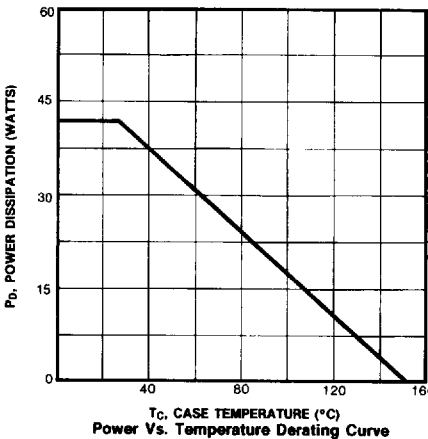
Typical Gate Charge Vs. Gate-To-Source Voltage



Typical On-Resistance Vs. Drain Current



Maximum Drain Current Vs. Case Temperature



Power Vs. Temperature Derating Curve