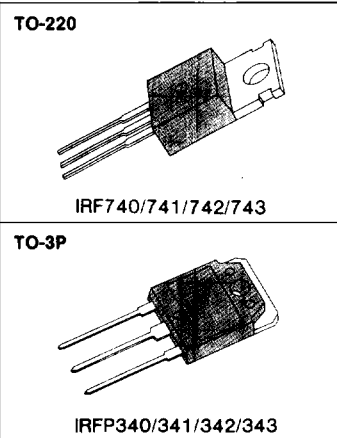


**FEATURES**

- 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	$V_{DS}$	$R_{DS(on)}$	$I_D$
IRF740/IRFP340	400V	0.55Ω	10A
IRF741/IRFP341	350V	0.55Ω	10A
IRF742/IRFP342	400V	0.80Ω	8.3A
IRF743/IRFP343	350V	0.80Ω	8.3A

**MAXIMUM RATINGS**

Characteristics	Symbol	IRF740 IRFP340	IRF741 IRFP341	IRF742 IRFP342	IRF743 IRFP343	Unit
Drain-Source Voltage (1)	$V_{DSS}$	400	350	400	350	Vdc
Drain-Gate Voltage ( $R_{GS}=1.0M\Omega$ )(1)	$V_{DGR}$	400	350	400	350	Vdc
Gate-Source Voltage	$V_{GS}$	±20				Vdc
Continuous Drain Current $T_C=25^\circ C$	$I_D$	10	10	8.3	8.3	Adc
Continuous Drain Current $T_C=100^\circ C$	$I_D$	6.3	6.3	5.2	5.2	Adc
Drain Current—Pulsed (3)	$I_{DM}$	40	40	33	33	Adc
Gate Current—Pulsed	$I_{GM}$	±1.5				Adc
Single Pulsed Avalanche Energy (4)	$E_{AS}$	520				mJ
Avalanche Current	$I_{AS}$	10				A
Total Power Dissipation @ $T_C=25^\circ C$ Derate above $25^\circ C$	$P_D$	125 1.0				Watts W/°C
Operating and Storage Junction to Case	$T_J, T_{stg}$	-55 to 150				°C
Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5 seconds	$T_L$	300				°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)  $L=9.1 mH, V_{dd}=50V, R_G=25\Omega, Starting T_J=25^\circ C$

**ELECTRICAL CHARACTERISTICS** ( $T_C=25^\circ\text{C}$  unless otherwise specified)

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage IRF740/IRFP340 IRF742/IRFP342	400	—	—	V	V <sub>GS</sub> =0V I <sub>D</sub> =250μA
	IRF741/IRFP341 IRF743/IRFP343	350	—	—	V	
V <sub>GS(th)</sub>	Gate Threshold Voltage	2.0	—	4.0	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA
I <sub>GSS</sub>	Gate-Source Leakage Forward	—	—	100	nA	V <sub>GS</sub> =20V
I <sub>GSS</sub>	Gate-Source Leakage Reverse	—	—	-100	nA	V <sub>GS</sub> =-20V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	—	—	250	μA	V <sub>DS</sub> =Max. Rating, V <sub>GS</sub> =0V
		—	—	1000	μA	V <sub>DS</sub> =Max. Rating×0.8, V <sub>GS</sub> =0V, T <sub>C</sub> =125°C
I <sub>D(on)</sub>	On-State Drain-Source Current (2) IRF740/IRFP340 IRF741/IRFP341	10	—	—	A	V <sub>DS</sub> ≥8V, V <sub>GS</sub> =10V
	IRF742/IRFP342 IRF743/IRFP343	8.3	—	—	A	
R <sub>DS(on)</sub>	Static Drain-Source On-State Resistance (2) IRF740/IRFP340 IRF741/IRFP341	—	—	0.55	Ω	V <sub>GS</sub> =10V, I <sub>D</sub> =5.2A
	IRF742/IRFP342 IRF743/IRFP343	—	—	0.80	Ω	
g <sub>fs</sub>	Forward Transconductance (2)	5.8	87	—	Ω	V <sub>DS</sub> ≥50V, I <sub>D</sub> =5.2A
C <sub>iss</sub>	Input Capacitance	—	1500	—	pF	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1.0MHz
C <sub>oss</sub>	Output Capacitance	—	178	—	pF	
C <sub>rss</sub>	Reverse Transfer Capacitance	—	75	—	pF	
t <sub>d(on)</sub>	Turn-On Delay Time	—	14	21	ns	V <sub>DD</sub> =0.5BV <sub>DSS</sub> , I <sub>D</sub> =10A, Z <sub>O</sub> =9.1Ω (MOSFET switching times are essentially independent of operating temperature)
t <sub>r</sub>	Rise Time	—	27	41	ns	
t <sub>d(off)</sub>	Turn-Off Delay Time	—	50	75	ns	
t <sub>f</sub>	Fall Time	—	24	36	ns	
Q <sub>g</sub>	Total Gate Charge (Gate-Source Plus Gate-Drain)	—	42	63	nC	V <sub>GS</sub> =10V, I <sub>D</sub> =10A, V <sub>DS</sub> =0.8 Max. Rating (Gate charge is essentially independent of operating temperature.)
Q <sub>gs</sub>	Gate-Source Charge	—	6.0	9.0	nC	
Q <sub>gd</sub>	Gate-Drain ("Miller") Charge	—	21	32	nC	


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**THERMAL RESISTANCE**

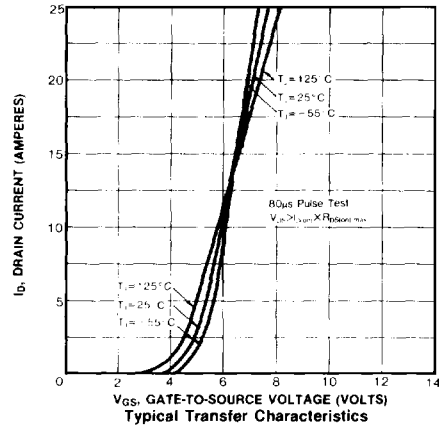
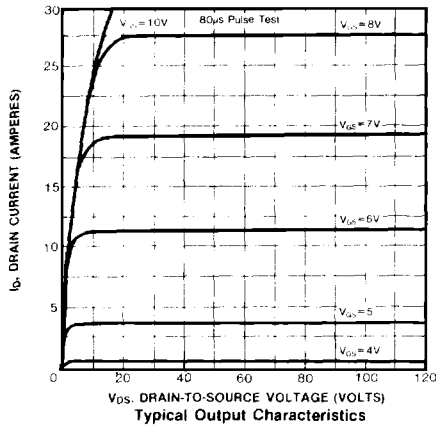
Symbol	Characteristic		IRF740-3	IRFP340-3	Unit	
R <sub>thJC</sub>	Junction-to-Case	MAX	1.0	1.0	K/W	
R <sub>thCS</sub>	Case-to-Sink	TYP	0.5	0.24	K/W	Mounting surface flat, smooth, and greased
R <sub>thJA</sub>	Junction-to-Ambient	MAX	80	40	K/W	Free Air Operation

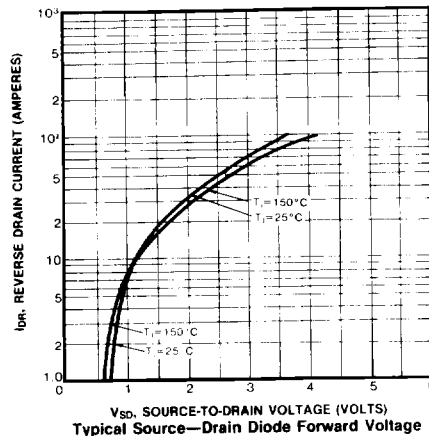
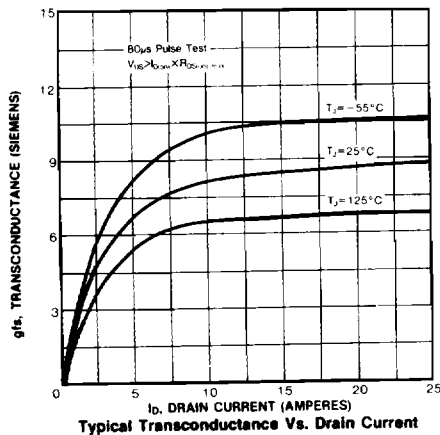
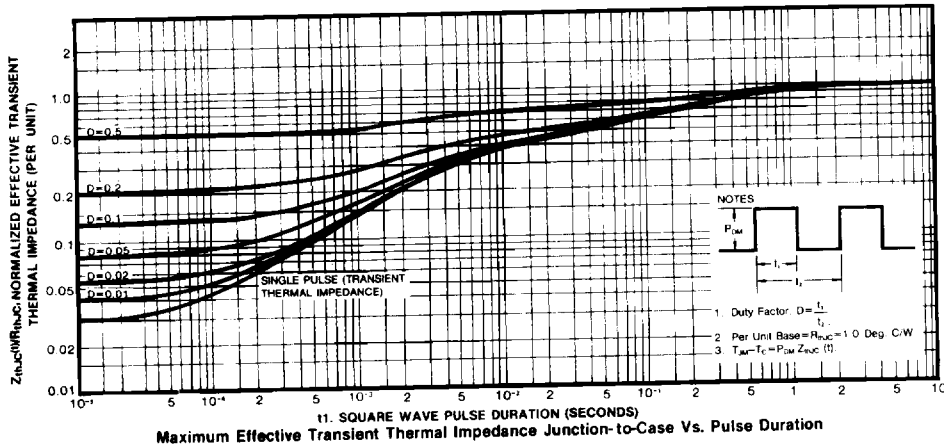
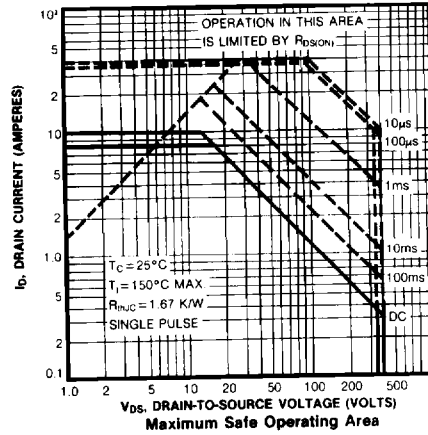
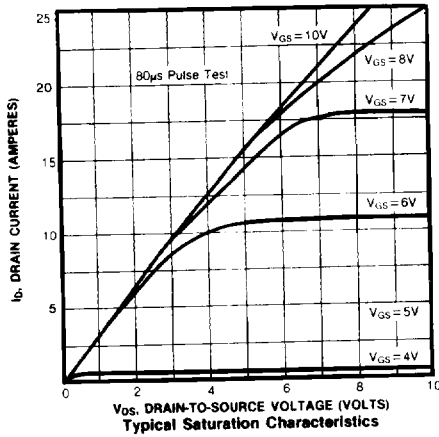
- Notes: (1) T<sub>J</sub>=25°C to 150°C  
 (2) Pulse test: Pulse width<300μs, Duty Cycle<2%  
 (3) Repetitive rating: Pulse width limited by max. junction temperature

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

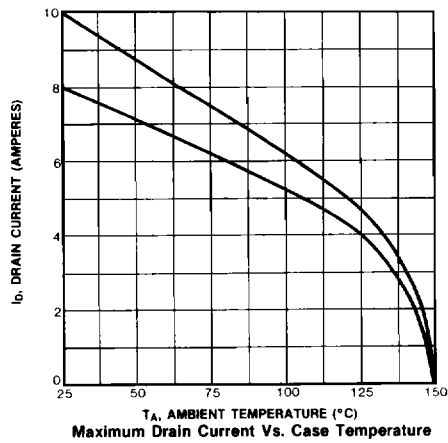
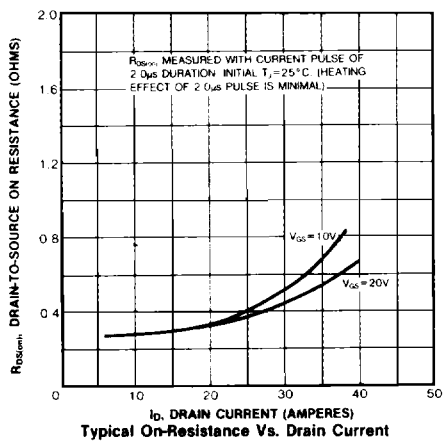
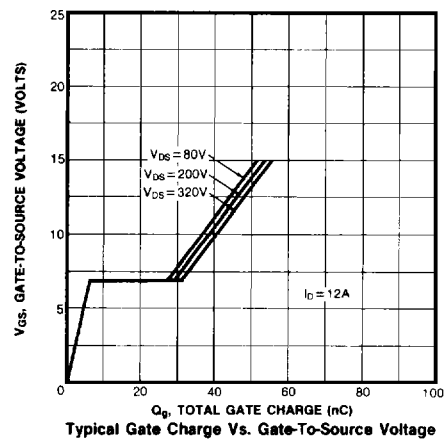
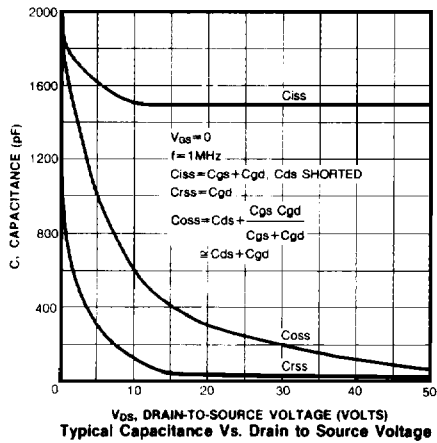
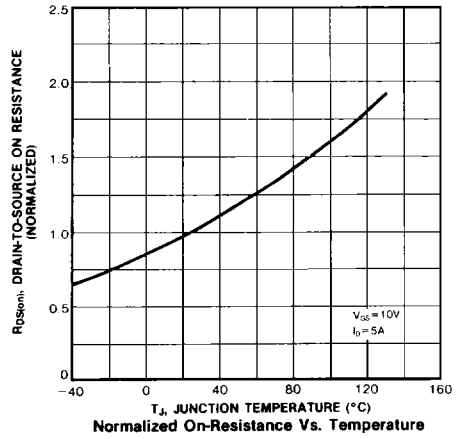
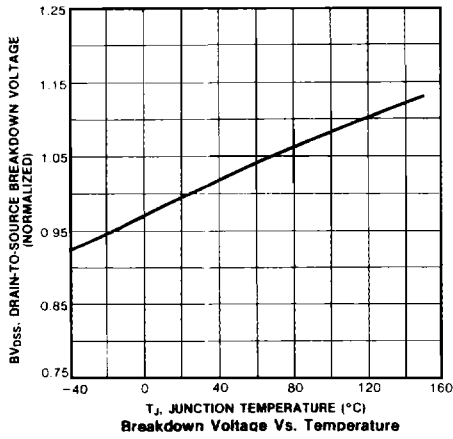
Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
I <sub>S</sub>	Continuous Source Current (Body Diode) IRF740/IRFP340 IRF741/IRFP341	—	—	10	A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier 
	IRF742/IRFP342 IRF743/IRFP343	—	—	8.0	A	
I <sub>SM</sub>	Pulse Source Current(Body Diode)(3) IRF740/IRFP340 IRF741/IRFP341	—	—	40	A	
	IRF742/IRFP342 IRF743/IRFP343	—	—	32	A	
V <sub>SD</sub>	Diode Forward Voltage (2) IRF740/IRFP340 IRF741/IRFP341	—	—	2.0	V	T <sub>C</sub> =25°C, I <sub>S</sub> =10A, V <sub>GS</sub> =0V
	IRF742/IRFP342 IRF743/IRFP343	—	—	1.9	V	T <sub>C</sub> =25°C, I <sub>S</sub> =8.0A, V <sub>GS</sub> =0V
t <sub>rr</sub>	Reverse Recovery Time	—	370		ns	T <sub>J</sub> =25°C, I <sub>F</sub> =10A, dI <sub>F</sub> /dt=100A/μS

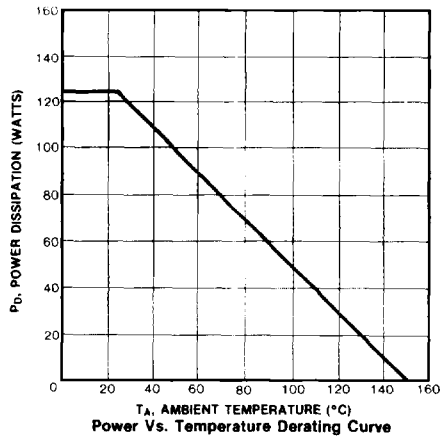
- Notes: (1) T<sub>J</sub>=25°C to 150°C (2) Pulse test: Pulse width<300μs, Duty Cycle<2%  
(3) Repetitive rating: Pulse with limited by max. junction temperature





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