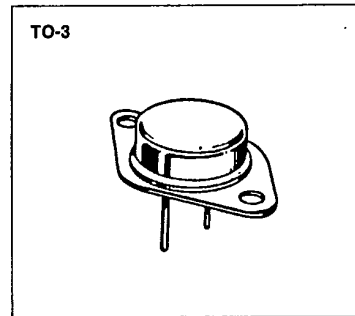


N-CHANNEL POWER MOSFETS

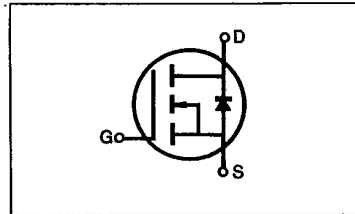
FEATURES

- Low $R_{DS(on)}$
- Improved inductive ruggedness
- Fast switching times
- Rugged polysilicon gate cell structure
- Low input capacitance
- Extended safe operating area
- Improved high temperature reliability
- TO-3 package (Standard)



PRODUCT SUMMARY

Part Number	V_{DS}	$R_{DS(on)}$	I_D
IRF340	400V	0.55 Ω	10A
IRF341	350V	0.55 Ω	10A
IRF342	400V	0.80 Ω	8.0A
IRF343	350V	0.80 Ω	8.0A



MAXIMUM RATINGS

Characteristic	Symbol	IRF340	IRF341	IRF342	IRF343	Unit
Drain-Source Voltage (1)	V_{DS}	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	8.0	8.0	Adc
Continuous Drain Current $T_C=100^\circ C$	I_D	6.0	6.0	5.0	5.0	Adc
Drain Current—Pulsed (3)	I_{DM}	40	40	32	32	Adc
Gate Current—Pulsed	I_{GM}	± 1.5				Adc
Total Power Dissipation @ $T_C=25^\circ C$ Derate above $25^\circ C$	P_D	125 1.0				Watts 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 $150^\circ C$

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

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

IRF340/341/342/343**N-CHANNEL
POWER MOSFETS****ELECTRICAL CHARACTERISTICS** ($T_C=25^\circ\text{C}$ unless otherwise specified)

Characteristic	Symbol	Type	Min	Typ	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	IRF340	400	—	—	V	$V_{GS}=0V$ $I_D=250\mu A$
		IRF342					
		IRF341	350	—	—	V	
IRF343							
Gate Threshold Voltage	$V_{GS(th)}$	ALL	2.0	—	4.0	V	$V_{DS}=V_{GS}$, $I_D=250\mu A$
Gate-Source Leakage Forward	I_{GSS}	ALL	—	—	100	nA	$V_{GS}=20V$
Gate-Source Leakage Reverse	I_{GSS}	ALL	—	—	-100	nA	$V_{GS}=-20V$
Zero Gate Voltage Drain Current	I_{DSS}	ALL	—	—	250	μA	$V_{DS}=\text{Max. Rating}$, $V_{GS}=0V$
			—	—	1000	μA	$V_{DS}=\text{Max. Rating}\times 0.8$, $V_{GS}=0V$, $T_C=125^\circ\text{C}$
On-State Drain-Source Current (2)	$I_{D(on)}$	IRF340	10	—	—	A	$V_{DS}>I_{D(on)}\times R_{DS(on) \text{ max.}}$, $V_{GS}=10V$
		IRF341					
		IRF342	8.0	—	—	A	
IRF343							
Static Drain-Source On-State Resistance (2)	$R_{DS(on)}$	IRF340	—	0.30	0.55	Ω	$V_{GS}=10V$, $I_D=5.0A$
		IRF341					
		IRF342	—	0.60	0.80	Ω	
IRF343							
Forward Transconductance (2)	g_{fs}	ALL	4.0	7.0	—	Ω	$V_{DS}>I_{D(on)}\times R_{DS(on) \text{ max.}}$, $I_D=5.0A$
Input Capacitance	C_{iss}	ALL	—	1300	1600	pF	$V_{GS}=0V$, $V_{DS}=25V$, $f=1.0\text{MHz}$
Output Capacitance	C_{oss}	ALL	—	250	450	pF	
Reverse Transfer Capacitance	C_{rss}	ALL	—	50	150	pF	
Turn-On Delay Time	$t_{d(on)}$	ALL	—	—	35	ns	$V_{DD}=0.5BV_{DSS}$, $I_D=5.0A$, $Z_o=4.7\Omega$ (MOSFET switching times are essentially independent of operating temperature.)
Rise Time	t_r	ALL	—	—	15	ns	
Turn-Off Delay Time	$t_{d(off)}$	ALL	—	—	90	ns	
Fall Time	t_f	ALL	—	—	35	ns	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q_g	ALL	—	41	60	nC	$V_{GS}=10V$, $I_D=12A$, $V_{DS}=0.8 \text{ Max. Rating}$ (Gate charge is essentially independent of operating temperature.)
Gate-Source Charge	Q_{gs}	ALL	—	6.0	—	nC	
Gate-Drain ("Miller") Charge	Q_{gd}	ALL	—	35	—	nC	

THERMAL RESISTANCE

Junction-to-Case	R_{thJC}	ALL	—	—	1.0	K/W	
Case-to-Sink	R_{thCS}	ALL	—	0.1	—	K/W	Mounting surface flat, smooth, and greased
Junction-to-Ambient	R_{thJA}	ALL	—	—	30	K/W	Free Air Operation

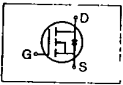
Notes: (1) $T_J=25^\circ\text{C}$ to 150°C (2) Pulse test: Pulse width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

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

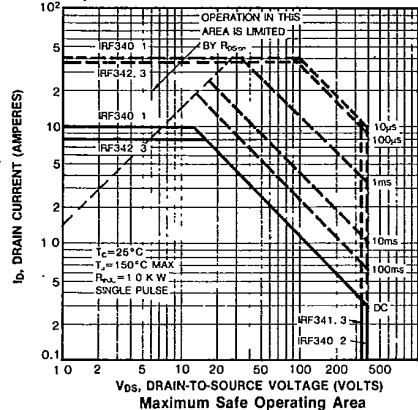
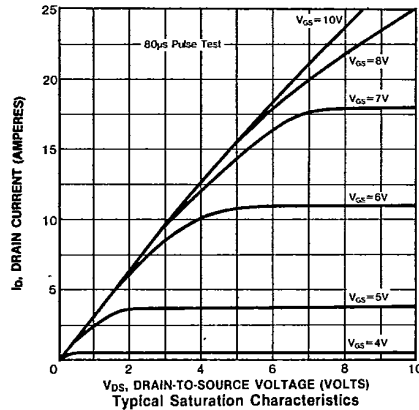
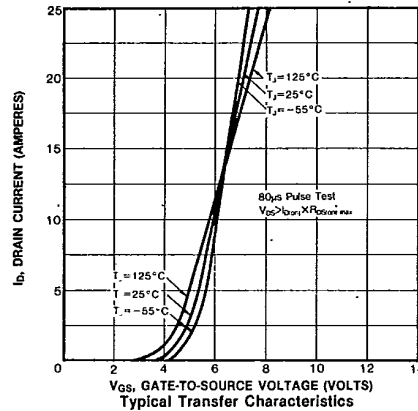
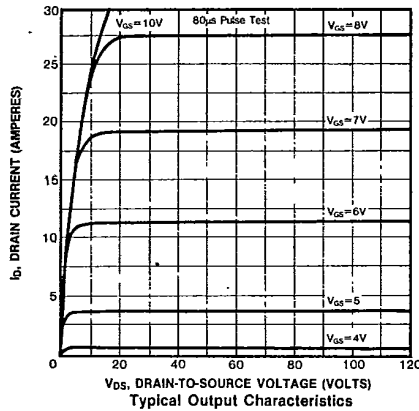
IRF340/341/342/343

**N-CHANNEL
POWER MOSFETS**

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

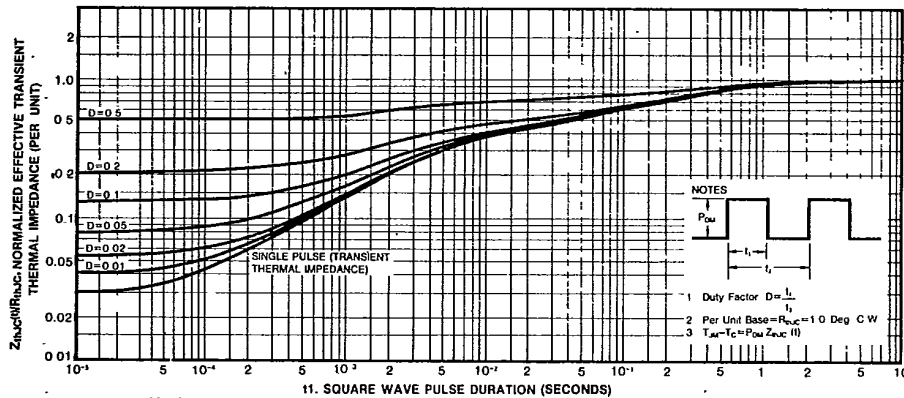
Characteristic	Symbol	Type	Min	Typ	Max	Units	Test Conditions
Continuous Source Current (Body Diode)	I _S	IRF340 IRF341	—	—	10	A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier 
		IRF342 IRF343	—	—	8.0	A	
Pulse Source Current (Body Diode) (3)	I _{SM}	IRF340 IRF341	—	—	40	A	
		IRF342 IRF343	—	—	32	A	
		IRF340 IRF341	—	—	2.0	V	T _C =25°C, I _S =10A, V _{GS} =0V
Diode Forward Voltage (2)	V _{SD}	IRF342 IRF343	—	—	1.9	V	T _C =25°C, I _S =8.0A, V _{GS} =0V
		IRF340 IRF341	—	—	1.9	V	T _C =25°C, I _S =8.0A, V _{GS} =0V
Reverse Recovery Time	t _{rr}	ALL	—	800	—	ns	T _J =150°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

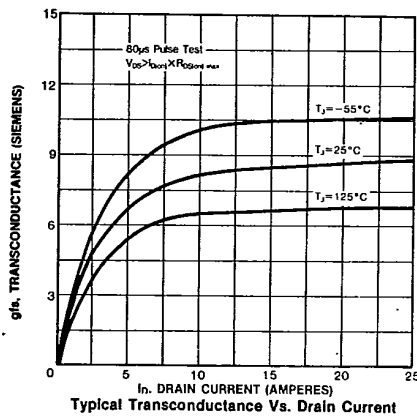


IRF340/341/342/343

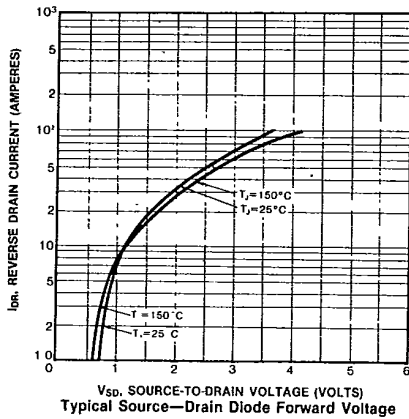
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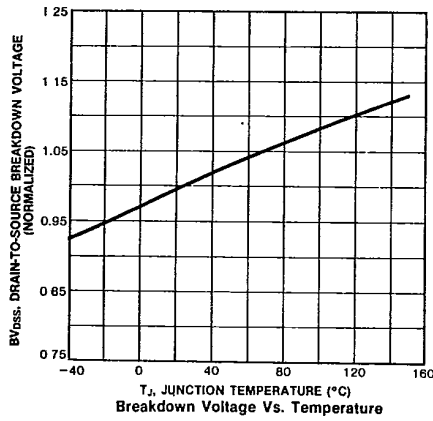
11. SQUARE WAVE PULSE DURATION (SECONDS)
Maximum Effective Transient Thermal Impedance Junction-to-Case Vs. Pulse Duration



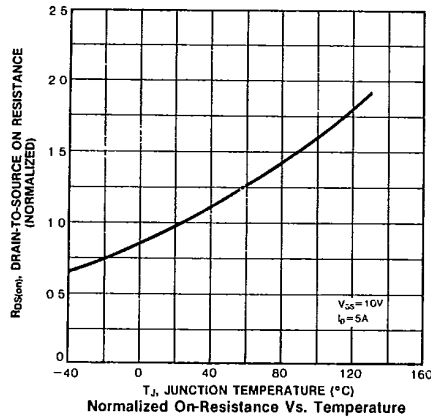
Typical Transconductance Vs. Drain Current



Typical Source-Drain Diode Forward Voltage



Breakdown Voltage Vs. Temperature



Normalized On-Resistance Vs. Temperature

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N-CHANNEL POWER MOSFETS

