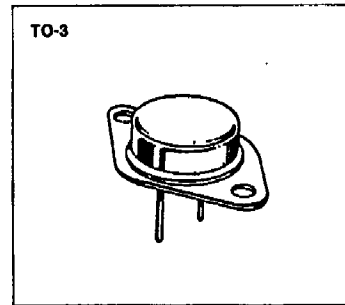


IRF350/351/352/353

**N-CHANNEL
 POWER MOSFETS**

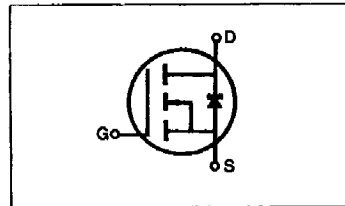
FEATURES

- 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

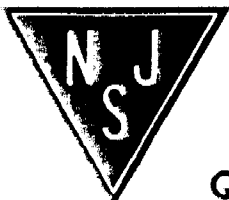
Part Number	V_{DS}	$R_{DS(on)}$	I_D
IRF260	400V	0.3 Ω	15A
IRF251	360V	0.3 Ω	15A
IRF252	400V	0.4 Ω	13A
IRF253	360V	0.4 Ω	13A



MAXIMUM RATINGS

Characteristic	Symbol	IRF350	IRF351	IRF352	IRF353	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	15	15	13	13	Adc
Continuous Drain Current $T_C=100^\circ C$	I_D	9.0	9.0	8.0	8.0	Adc
Drain Current—Pulsed (3)	I_{DM}	60	60	52	52	Adc
Gate Current—Pulsed	I_{GM}	±1.5				Adc
Total Power Dissipation @ $T_C=25^\circ C$ Derate above $25^\circ C$	P_D	150 1.2				Watts W/°C
Operating and Storage Junction Temperature Range	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 width limited by max. junction temperature



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

IRF350/351/352/353

N-CHANNEL POWER MOSFETS

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

Characteristic	Symbol	Type	Min	Typ	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV _{DSS}	IRF350 IRF352	400	—	—	V	V _{GS} =0V
		IRF351 IRF353	350	—	—	V	I _D =250μA
Gate Threshold Voltage	V _{GS(th)}	ALL	2.0	—	4.0	V	V _{DS} =V _{GS} , I _D =250μA
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} =Max. Rating, V _{GS} =0V
		—	—	—	1000	μA	V _{DS} =Max. Rating×0.8, V _{GS} =0V, T _C =125°C
On-State Drain-Source Current (2)	I _{D(on)}	IRF350 IRF351	15	—	—	A	V _{DS} >I _{D(on)} ×R _{DS(on)} max., V _{GS} =10V
		IRF352 IRF353	13	—	—	A	
Static Drain-Source On-State Resistance (2)	R _{DS(on)}	IRF350 IRF351	—	0.25	0.3	Ω	V _{GS} =10V, I _D =8.0A
		IRF352 IRF353	—	0.3	0.4	Ω	
Forward Transconductance (2)	g _{fs}	ALL	8.0	11	—	S	V _{DS} >I _{D(on)} ×R _{DS(on)} max., I _D =8.0A
Input Capacitance	C _{iss}	ALL	—	2630	3000	pF	V _{GS} =0V, V _{DS} =25V, f=1.0MHz
Output Capacitance	C _{oss}	ALL	—	390	600	pF	
Reverse Transfer Capacitance	C _{res}	ALL	—	130	200	pF	
Turn-On Delay Time	t _{d(on)}	ALL	—	—	35	ns	V _{DD} =0.5BV _{DSS} , I _D =8.0A, Z _O =4.7Ω (MOSFET switching times are essentially independent of operating temperature.)
Rise Time	t _r	ALL	—	—	65	ns	
Turn-Off Delay Time	t _{d(off)}	ALL	—	—	150	ns	
Fall Time	t _f	ALL	—	—	75	ns	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q _g	ALL	—	73	120	nC	V _{GS} =10V, I _D =18A, V _{DS} =0.8 Max. Rating (Gate charge is essentially independent of operating temperature.)
Gate-Source Charge	Q _{gs}	ALL	—	14	—	nC	
Gate-Drain ("Miller") Charge	Q _{gd}	ALL	—	59	—	nC	

THERMAL RESISTANCE

Junction-to-Case	R _{thJC}	ALL	—	—	0.83	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°C to 150°C
 (2) Pulse test: Pulse width<300μs, Duty Cycle<2%
 (3) Repetitive rating: Pulse width limited by max. junction temperature