PD - 94359

International
IOR Rectifier

SMPS MOSFET

IRF6217

HEXFET® Power MOSFET

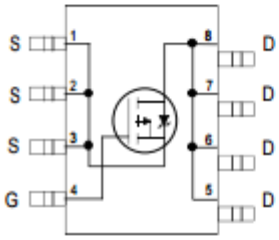
Applications

- Reset Switch for Active Clamp Reset DC to DC converters

V_{DSS}	$R_{DS(on)}$ max	I_D
-150V	2.4Ω@V_{GS} =-10V	-0.7A

Benefits

- Low Gate to Drain Charge to Reduce Switching Losses
- Fully Characterized Capacitance Including Effective C_{OSS} to Simplify Design (See App. Note AN1001)
- Fully Characterized Avalanche Voltage and Current



Top View


SO-8

Absolute Maximum Ratings

	Parameter	Max.	Units
I_D @ T_A = 25°C	Continuous Drain Current, V_{GS} @ 10V	-0.7	A
I_D @ T_A = 70°C	Continuous Drain Current, V_{GS} @ 10V	-0.5	
I_{DM}	Pulsed Drain Current ①	-5.0	
P_D @T_A = 25°C	Power Dissipation④	2.5	W
	Linear Derating Factor	0.02	W/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
dv/dt	Peak Diode Recovery dv/dt	4.5	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	°C
	Soldering Temperature, for 10 seconds	300 (1.6mm from case)	

Thermal Resistance

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JL}$	Junction-to-Drain Lead	—	20	°C/W
$R_{\theta JA}$	Junction-to-Ambient ④	—	50	

Static @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-150	—	—	V	V_{GS} = 0V, I_D = -250µA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	-0.17	—	V/°C	Reference to 25°C, I_D = -1mA ③
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	2.4	Ω	V_{GS} = -10V, I_D = -0.42A ③
$V_{GS(th)}$	Gate Threshold Voltage	-3.0	—	-5.0	V	V_{DS} = V_{GS}, I_D = -250µA
I_{DSS}	Drain-to-Source Leakage Current	—	—	-25	µA	V_{DS} = -150V, V_{GS} = 0V, T_J = 25°C
		—	—	-250		V_{DS} = -120V, V_{GS} = 0V, T_J = 125°C
I_{GSS}	Gate-to-Source Forward Leakage	—	—	-100	nA	V_{GS} = -20V
	Gate-to-Source Reverse Leakage	—	—	100		V_{GS} = 20V

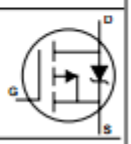
Dynamic @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
g_{fs}	Forward Transconductance	0.55	—	—	S	V_{DS} = -50V, I_D = -0.42A
Q_g	Total Gate Charge	—	6.0	9.0	nC	I_D = -0.42A
Q_{gs}	Gate-to-Source Charge	—	1.6	2.4		V_{DS} = -120V
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	2.8	4.2		V_{GS} = -10V,
$t_{d(on)}$	Turn-On Delay Time	—	12	—	ns	V_{DD} = -75V
t_r	Rise Time	—	7.2	—		I_D = -0.42A
$t_{d(off)}$	Turn-Off Delay Time	—	14	—		R_G = 6.2Ω
t_f	Fall Time	—	16	—		V_{GS} = -10V ③
C_{iss}	Input Capacitance	—	150	—	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	—	30	—		V_{DS} = -25V
C_{rss}	Reverse Transfer Capacitance	—	10	—		f = 1.0KHz
C_{oss}	Output Capacitance	—	150	—		V_{GS} = 0V, V_{DS} = -1.0V, f = 1.0KHz
C_{oss}	Output Capacitance	—	15	—		V_{GS} = 0V, V_{DS} = -120V, f = 1.0KHz
C_{oss} eff.	Effective Output Capacitance	—	45	—		V_{GS} = 0V, V_{DS} = 0V to -120V

Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy②	—	15	mJ
I_{AR}	Avalanche Current①	—	-1.4	A

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-1.8	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	-5.0		
V_{SD}	Diode Forward Voltage	—	—	-1.6	V	T_J = 25°C, I_S = -0.42A, V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time	—	51	77	ns	T_J = 25°C, I_F = -0.42A
Q_{rr}	Reverse RecoveryCharge	—	86	130	nC	di/dt = -100A/μs ③

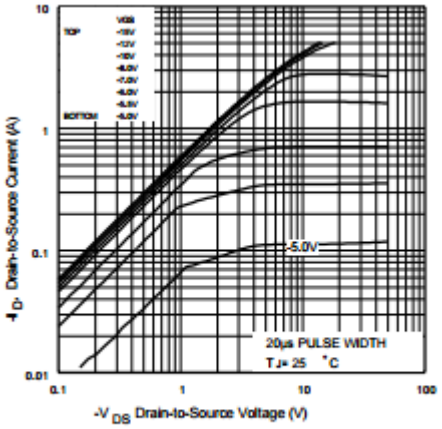


Fig 1. Typical Output Characteristics

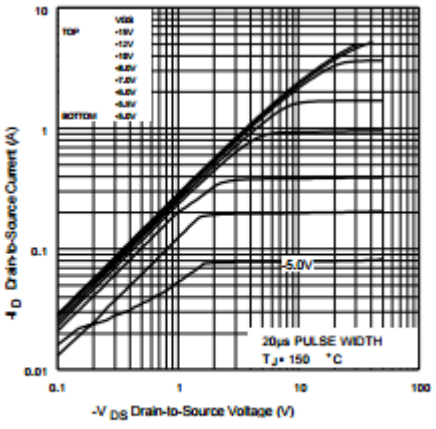


Fig 2. Typical Output Characteristics

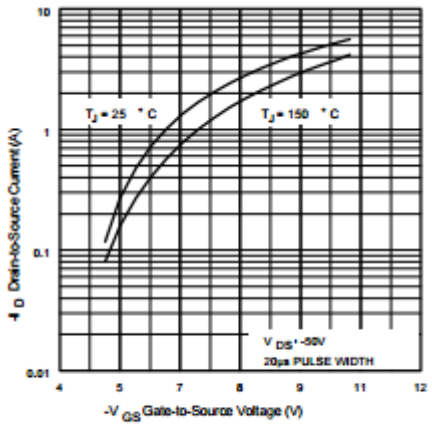


Fig 3. Typical Transfer Characteristics

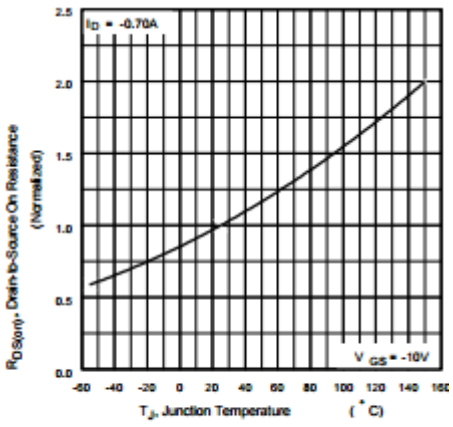


Fig 4. Normalized On-Resistance Vs. Temperature

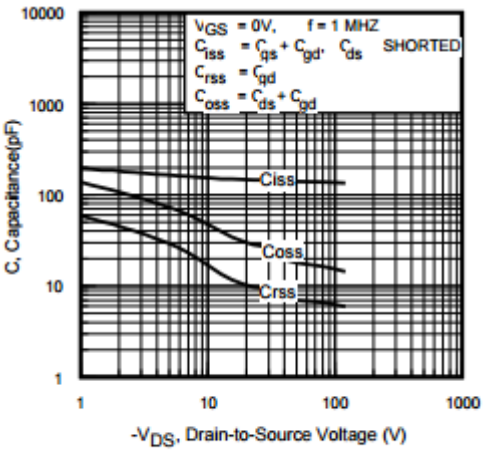


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

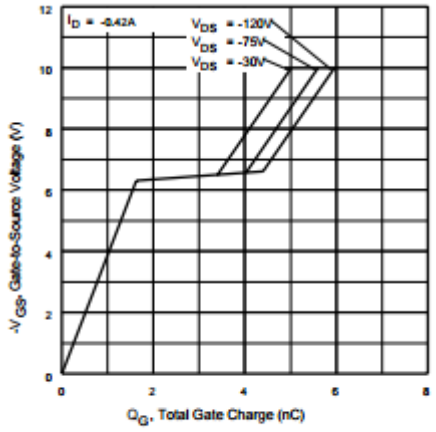


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

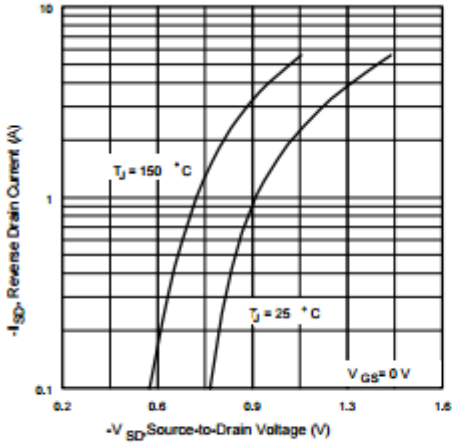


Fig 7. Typical Source-Drain Diode Forward Voltage

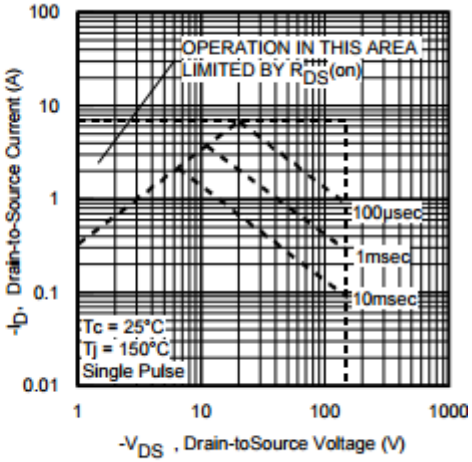


Fig 8. Maximum Safe Operating Area

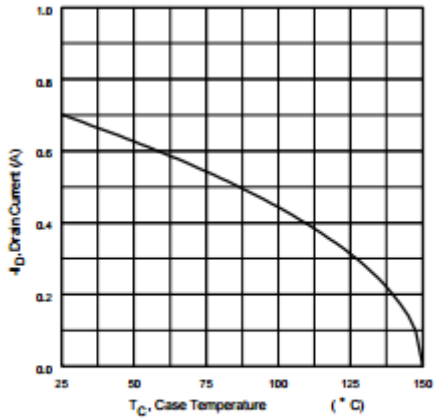


Fig 9. Maximum Drain Current Vs. Ambient Temperature

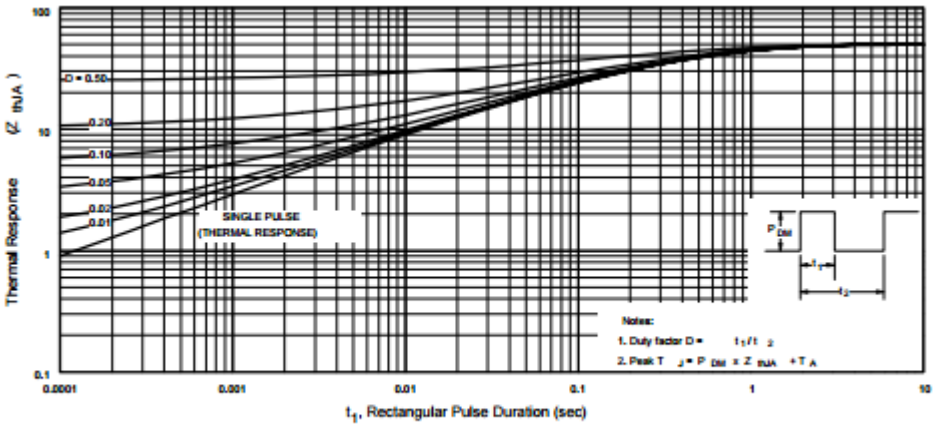


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

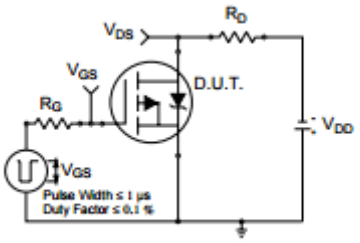


Fig 10a. Switching Time Test Circuit

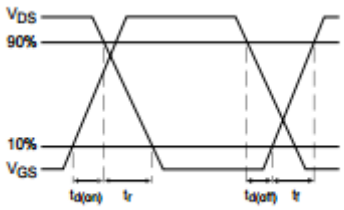


Fig 10b. Switching Time Waveforms

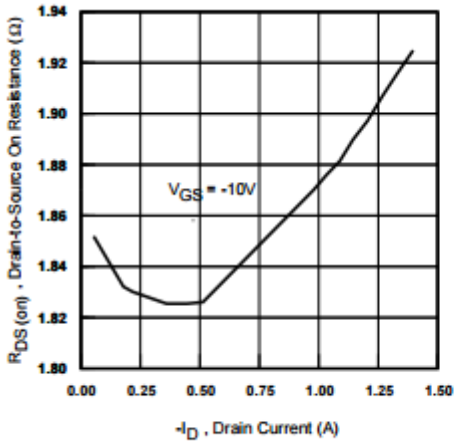


Fig 12. On-Resistance Vs. Drain Current

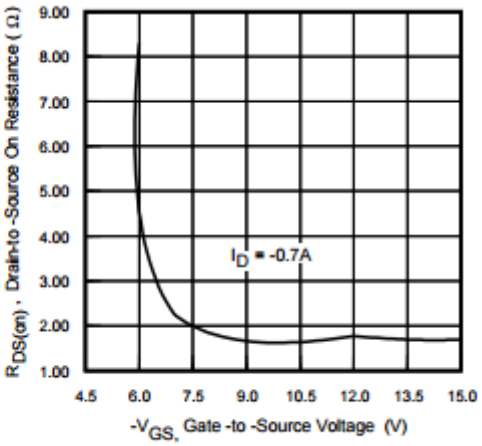


Fig 13. On-Resistance Vs. Gate Voltage

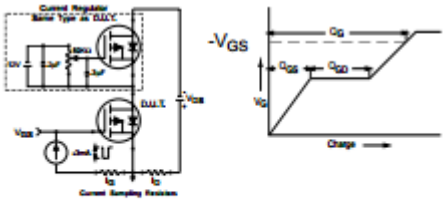


Fig 14a&b. Basic Gate Charge Test Circuit and Waveform

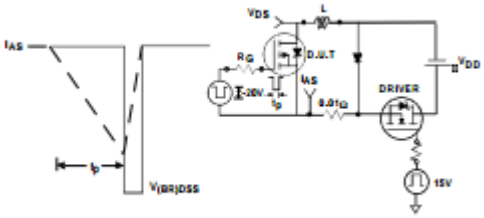


Fig 15a&b. Unclamped Inductive Test circuit and Waveforms

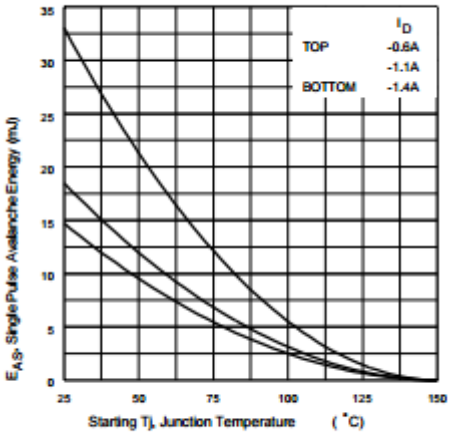
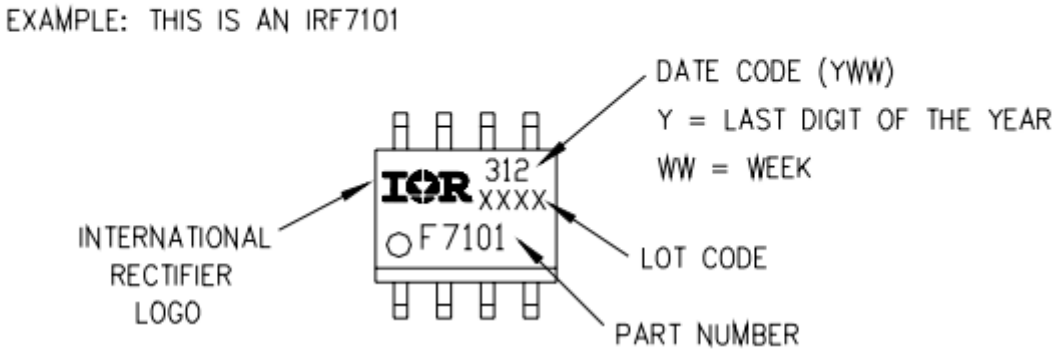
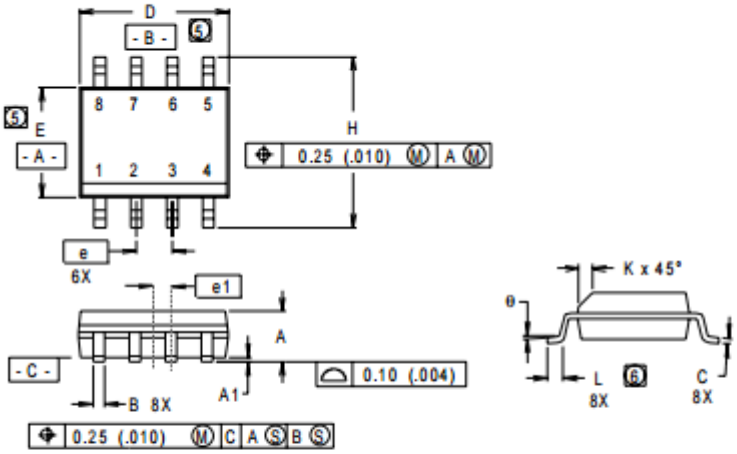


Fig 15c. Maximum Avalanche Energy Vs. Drain Current

SO-8 Part Marking



SO-8 Package Details



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
B	.014	.018	0.36	0.46
C	.0075	.0098	0.19	0.25
D	.189	.196	4.80	4.98
E	.150	.157	3.81	3.99
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.011	.019	0.28	0.48
L	0.16	.050	0.41	1.27
θ	0°	8°	0°	8°

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
2. CONTROLLING DIMENSION : INCH.
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS
   MOLD PROTRUSIONS NOT TO EXCEED 0.25 (.006).
6. DIMENSIONS IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE..

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