

EVVOSEMI[®]

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

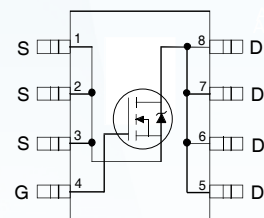
▶ Domestic	Part Number	IRF8736
▶ Overseas	Part Number	IRF8736
▶ Equivalent	Part Number	IRF8736

EV is the abbreviation of name EVVO

30V N-Channel MOSFET

Applications

- Synchronous MOSFET for Notebook Processor Power
- Synchronous Rectifier MOSFET for Isolated DC-DC Converters in Networking Systems



Top View

Benefits

- Very Low $R_{DS(on)}$ at 4.5V V_{GS}
- Low Gate Charge
- Fully Characterized Avalanche Voltage and Current
100% Tested for R_G
- Lead -Free
- $V_{DS(V)} = 30V$
- $I_D = -18A$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 4.8m\Omega$ ($V_{GS}=10V$)
- $R_{DS(ON)} < 6.8m\Omega$ ($V_{GS}=4.5V$)

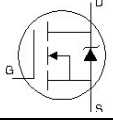
Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain-to-Source Voltage	30	V
V_{GS}	Gate-to-Source Voltage	± 20	
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	18	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	14.4	
I_{DM}	Pulsed Drain Current ①	144	
$P_D @ T_A = 25^\circ C$	Power Dissipation ④	2.5	W
$P_D @ T_A = 70^\circ C$	Power Dissipation ④	1.6	
	Linear Derating Factor	0.02	W/°C
T_J	Operating Junction and	-55 to + 150	°C
T_{STG}	Storage Temperature Range		

Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JL}$	Junction-to-Drain Lead ⑤		20	°C/W
$R_{\theta JA}$	Junction-to-Ambient ④⑤		50	

30V N-Channel MOSFET
Static @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	30			V	$V_{GS} = 0V, I_D = 250\mu A$
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient		0.022		V/ $^\circ\text{C}$	Reference to 25°C , $I_D = 1mA$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance		3.9	4.8	$m\Omega$	$V_{GS} = 10V, I_D = 18A$ ③
			5.5	6.8		$V_{GS} = 4.5V, I_D = 14.4A$ ③
$V_{GS(th)}$	Gate Threshold Voltage	1.35	1.8	2.35	V	$V_{DS} = V_{GS}, I_D = 50\mu A$
$\Delta V_{GS(th)}$	Gate Threshold Voltage Coefficient		-6.1		mV/ $^\circ\text{C}$	
I_{DSS}	Drain-to-Source Leakage Current			1.0	μA	$V_{DS} = 24V, V_{GS} = 0V$
				150		$V_{DS} = 24V, V_{GS} = 0V, T_J = 125^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage			100	nA	$V_{GS} = 20V$
	Gate-to-Source Reverse Leakage			-100		$V_{GS} = -20V$
g_{fs}	Forward Transconductance	52			S	$V_{DS} = 15V, I_D = 14.4A$
Q_g	Total Gate Charge		17	26	nC	$V_{DS} = 15V$ $V_{GS} = 4.5V$ $I_D = 14.4A$ See Fig. 16
Q_{gs1}	Pre-Vth Gate-to-Source Charge		4.4			
Q_{gs2}	Post-Vth Gate-to-Source Charge		1.9			
Q_{gd}	Gate-to-Drain Charge		5.8			
Q_{godr}	Gate Charge Overdrive		4.9			
Q_{sw}	Switch Charge ($Q_{gs2} + Q_{gd}$)		7.7			
Q_{oss}	Output Charge		7.1		nC	$V_{DS} = 10V, V_{GS} = 0V$
R_G	Gate Resistance		1.3	2.2	Ω	
$t_{d(on)}$	Turn-On Delay Time		12		ns	$V_{DD} = 15V, V_{GS} = 4.5V$ ③ $I_D = 14.4A$ $R_G = 1.8\Omega$ See Fig. 14
t_r	Rise Time		15			
$t_{d(off)}$	Turn-Off Delay Time		13			
t_f	Fall Time		7.5			
C_{iss}	Input Capacitance		2315		pF	$V_{GS} = 0V$ $V_{DS} = 15V$ $f = 1.0MHz$
C_{oss}	Output Capacitance		449			
C_{rss}	Reverse Transfer Capacitance		219			
I_S	Continuous Source Current (Body Diode)			3.1	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①			144		
V_{SD}	Diode Forward Voltage			1.0	V	$T_J = 25^\circ\text{C}, I_S = 14.4A, V_{GS} = 0V$ ③
t_{rr}	Reverse Recovery Time		16	24	ns	$T_J = 25^\circ\text{C}, I_F = 14.4A, V_{DD} = 10V$
Q_{rr}	Reverse Recovery Charge		19	29	nC	$di/dt = 300A/\mu s$ ③
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy ②		126	mJ
I_{AR}	Avalanche Current ①		14.4	A

30V N-Channel MOSFET

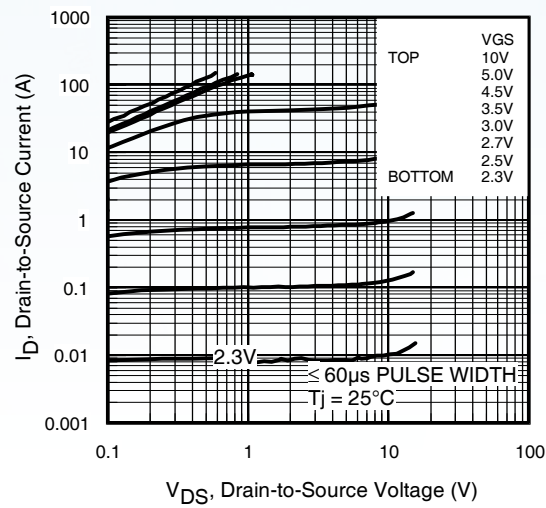


Fig 1. Typical Output Characteristics

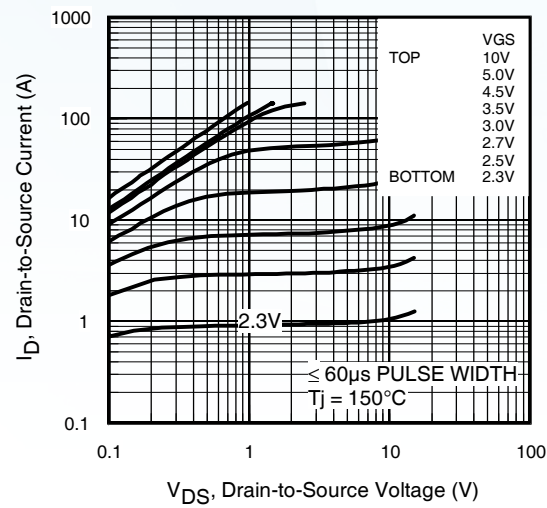


Fig 2. Typical Output Characteristics

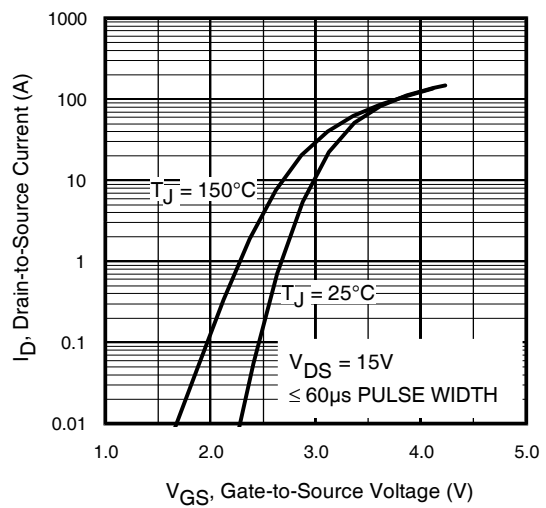


Fig 3. Typical Transfer Characteristics

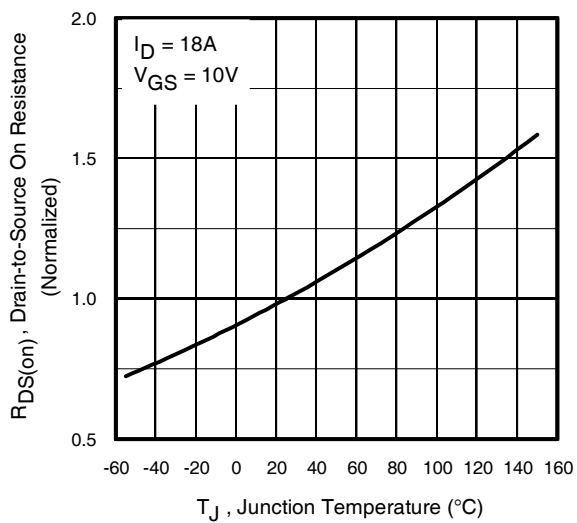


Fig 4. Normalized On-Resistance Vs. Temperature

30V N-Channel MOSFET

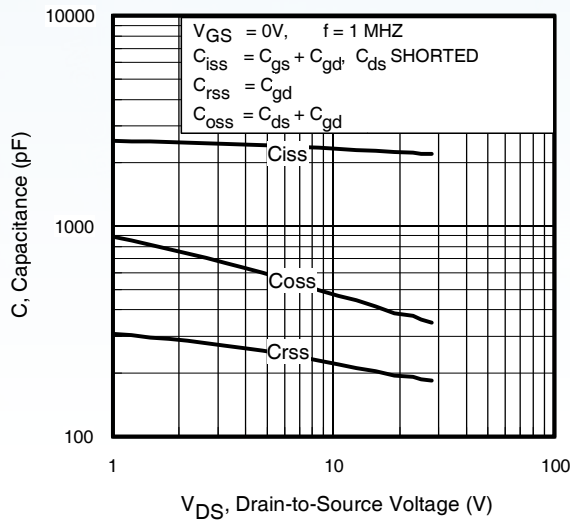


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

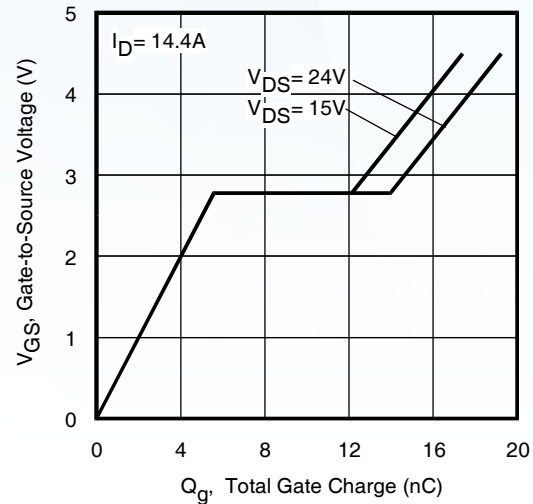


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

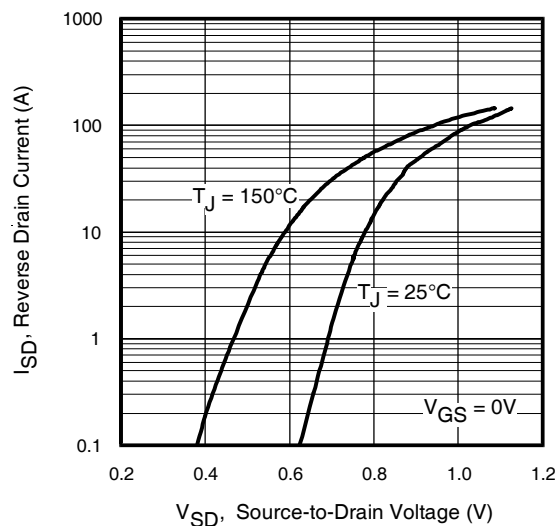


Fig 7. Typical Source-Drain Diode Forward Voltage

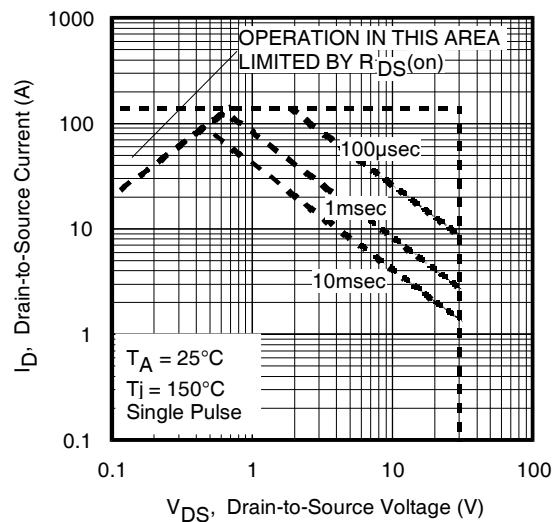


Fig 8. Maximum Safe Operating Area

30V N-Channel MOSFET

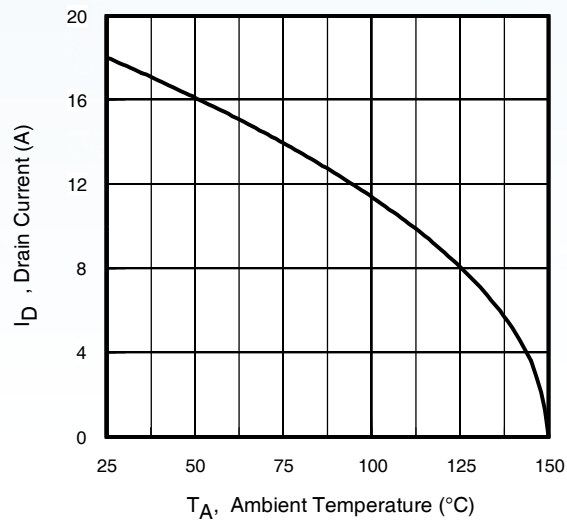


Fig 9. Maximum Drain Current Vs. Ambient Temperature

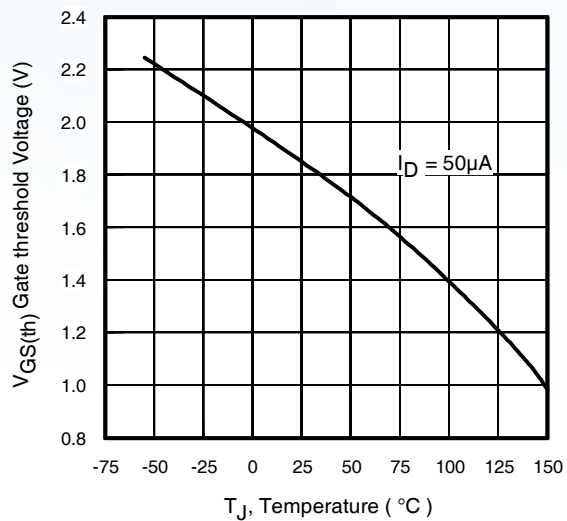


Fig 10. Threshold Voltage Vs. Temperature

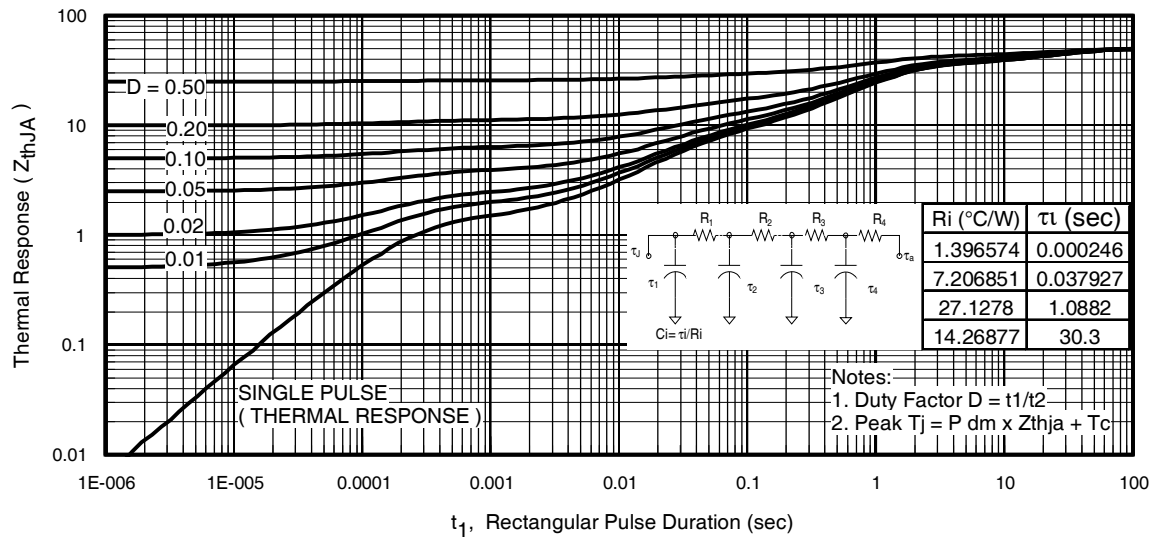
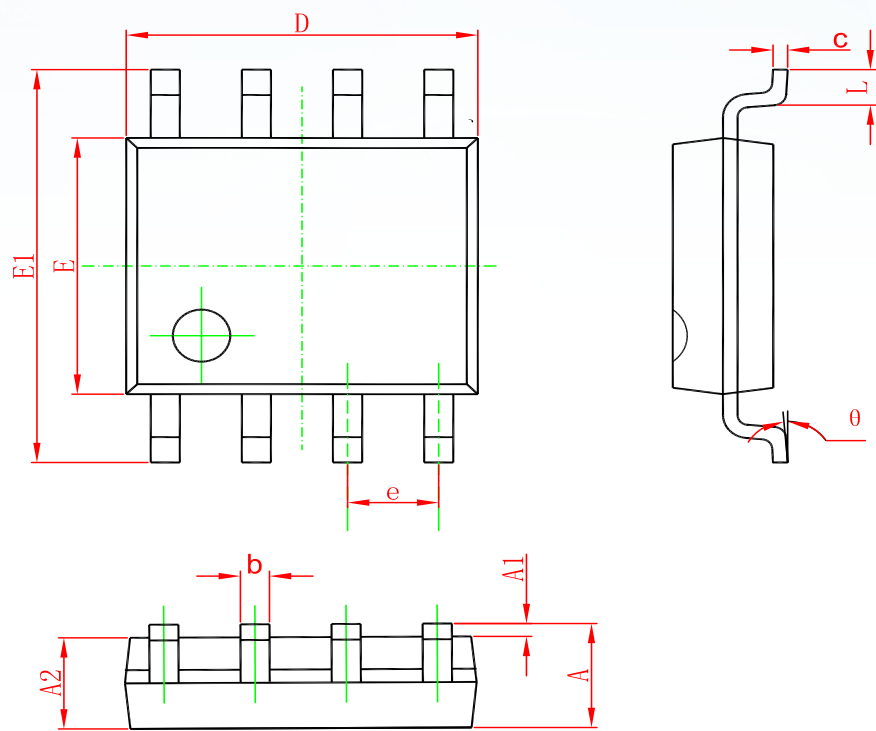


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

30V N-Channel MOSFET

PACKAGE OUTLINE DIMENSIONS

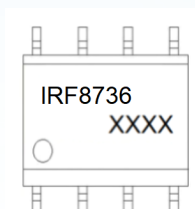
SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

30V N-Channel MOSFET

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
IRF8736	SOP-8	3000	Tape and reel

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