

EVVOSEMI[®]

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

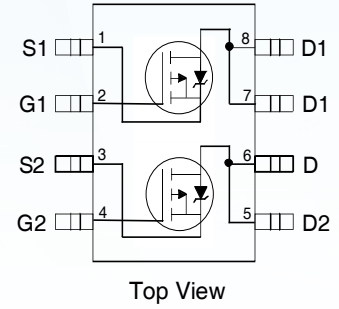
▶ Domestic	Part Number	IRF7316
▶ Overseas	Part Number	IRF7316
▶ Equivalent	Part Number	IRF7316

EV is the abbreviation of name EVVO

Dual P-Channel MOSFET

Features

- $V_{DS} (V) = -30V$
- $R_{DS(ON)} < 58m\Omega$ ($V_{GS} = -10V$)
- $R_{DS(ON)} < 98m\Omega$ ($V_{GS} = -4.5V$)
- Generation V Technology
- Ultra Low On-Resistance
- Surface Mount
- Fully Avalanche Rated
- Lead-Free



Description

The SOP-8 has been modified through a customized eadrame for enhanced thermacharacterstics and multiple die capability making it ideal in a variety of power applications. With these improvements, multiple devices can be used in an application with dramatically reduced board space. The package is designed for vapor phase, infra red, or wave soldering techniques.

Absolute Maximum Ratings ($T_A = 25^\circ C$ Unless Otherwise Noted)

	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^⑤	I_D	$T_A = 25^\circ C$	-4.9
		$T_A = 70^\circ C$	-3.9
Pulsed Drain Current	I_{DM}	-30	A
Continuous Source Current (Diode Conduction)	I_S	-2.5	
Maximum Power Dissipation ^⑤	P_D	$T_A = 25^\circ C$	2.0
		$T_A = 70^\circ C$	1.3
Single Pulse Avalanche Energy	E_{AS}	140	mJ
Avalanche Current	I_{AR}	-2.8	A
Repetitive Avalanche Energy	E_{AR}	0.20	mJ
Peak Diode Recovery dv/dt ^③	dv/dt	-5.0	V/ ns
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to + 150	$^\circ C$

Thermal Resistance Ratings

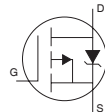
Parameter	Symbol	Limit	Units
Maximum Junction-to-Ambient ^⑤	$R_{\theta JA}$	62.5	$^\circ C/W$

Dual P-Channel MOSFET

Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)DSS}	Drain-to-Source Breakdown Voltage	-30			V	V _{GS} = 0V, I _D = -250μA
ΔV _{(BR)DSS} /ΔT _J	Breakdown Voltage Temp. Coefficient		0.022		V/°C	Reference to 25°C, I _D = -1mA
R _{DS(on)}	Static Drain-to-Source On-Resistance		42 77	60 100	mΩ	V _{GS} = -10V, I _D = -4.9A ④ V _{GS} = -4.5V, I _D = -3.6A ④
V _{GS(th)}	Gate Threshold Voltage	-1.0			V	V _{DS} = V _{GS} , I _D = -250μA
g _{fs}	Forward Transconductance		7.7		S	V _{DS} = -15V, I _D = -4.9A
I _{DSS}	Drain-to-Source Leakage Current			-1.0 -25	μA	V _{DS} = -24V, V _{GS} = 0V V _{DS} = -24V, V _{GS} = 0V, T _J = 55°C
I _{GSS}	Gate-to-Source Forward Leakage			100	nA	V _{GS} = -20V
	Gate-to-Source Reverse Leakage			-100	nA	V _{GS} = 20V
Q _g	Total Gate Charge		23	34	nC	I _D = -4.9A
Q _{gs}	Gate-to-Source Charge		3.8	5.7	nC	V _{DS} = -15V
Q _{gd}	Gate-to-Drain ("Miller") Charge		5.9	8.9	nC	V _{GS} = -10V, See Fig. 10 ④
t _{d(on)}	Turn-On Delay Time		13	19	ns	V _{DD} = -15V
t _r	Rise Time		13	20	ns	I _D = -1.0A
t _{d(off)}	Turn-Off Delay Time		34	51	ns	R _G = 6.0Ω
t _f	Fall Time		32	48	ns	R _D = 15Ω ④
C _{iss}	Input Capacitance		710		pF	V _{GS} = 0V
C _{oss}	Output Capacitance		380		pF	V _{DS} = -25V
C _{rss}	Reverse Transfer Capacitance		180		pF	f = 1.0MHz, See Fig. 5

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)			-2.5	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I _{SM}	Pulsed Source Current (Body Diode) ①			-30		
V _{SD}	Diode Forward Voltage	-0.78	-1.0		V	T _J = 25°C, I _S = -1.7A, V _{GS} = 0V ③
t _{rr}	Reverse Recovery Time		44	66	ns	T _J = 25°C, I _F = -1.7A
Q _{rr}	Reverse Recovery Charge		42	63	nC	di/dt = 100A/μs ③

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature. (See fig. 11)
- ② Starting T_J = 25°C, L = 35mH
R_G = 25Ω, I_{AS} = -2.8A.
- ③ I_{SD} ≤ -2.8A, di/dt ≤ 150A/μs, V_{DD} ≤ V_{(BR)DSS},
T_J ≤ 150°C
- ④ Pulse width ≤ 300μs; duty cycle ≤ 2%.
- ⑤ Surface mounted on FR-4 board, t ≤ 10sec.

Dual P-Channel MOSFET

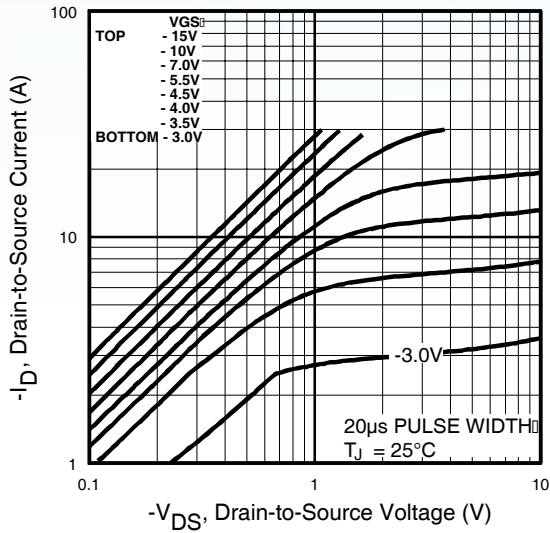


Fig 1. Typical Output Characteristics

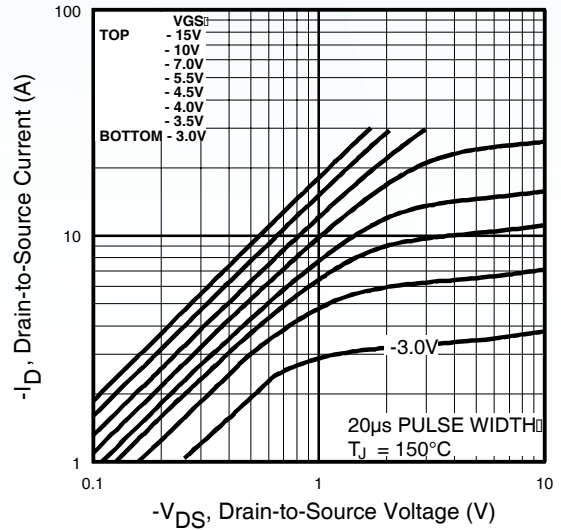


Fig 2. Typical Output Characteristics

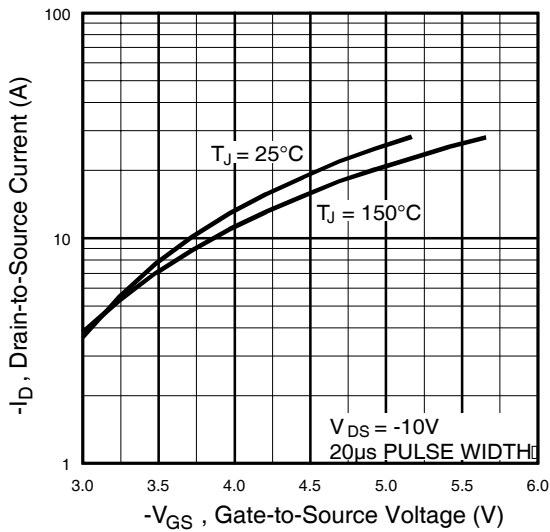


Fig 3. Typical Transfer Characteristics

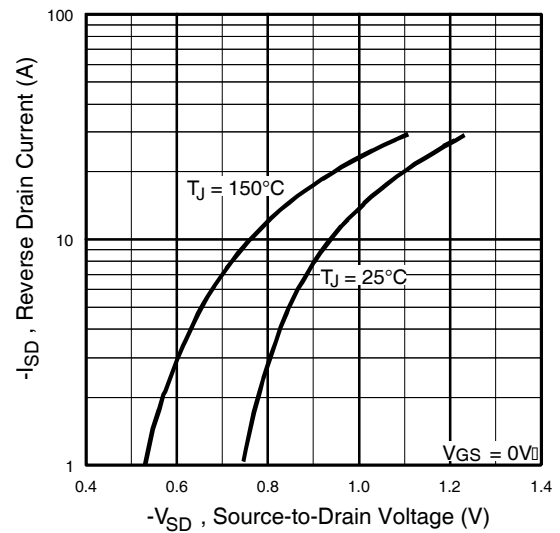


Fig 4. Typical Source-Drain Diode Forward Voltage

Dual P-Channel MOSFET

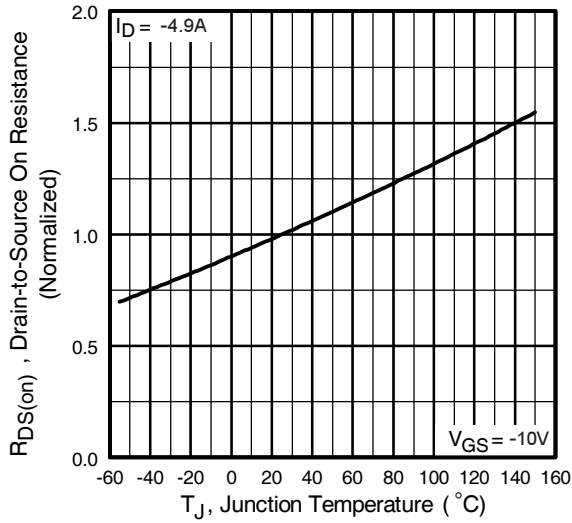


Fig 5. Normalized On-Resistance Vs. Temperature

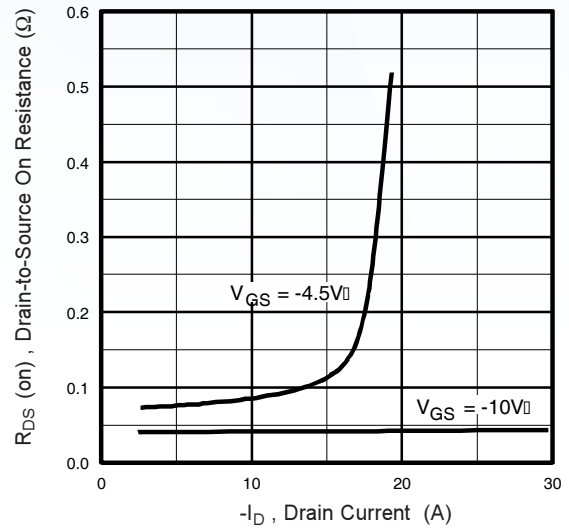


Fig 6. Typical On-Resistance Vs. Drain Current

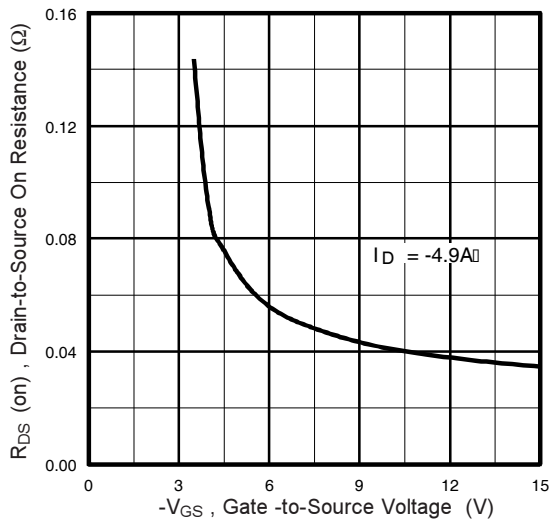


Fig 7. Typical On-Resistance Vs. Gate Voltage

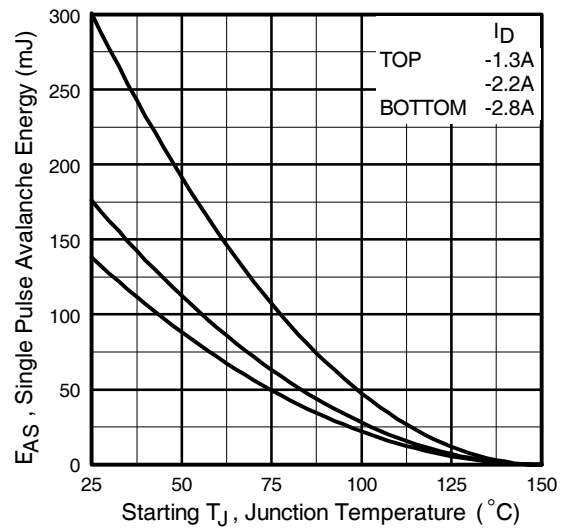


Fig 8. Maximum Avalanche Energy Vs. Drain Current

Dual P-Channel MOSFET

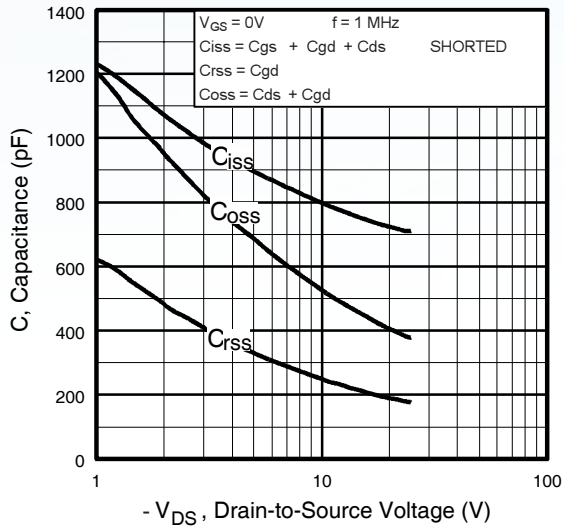


Fig 9. Typical Capacitance Vs. Drain-to-Source Voltage

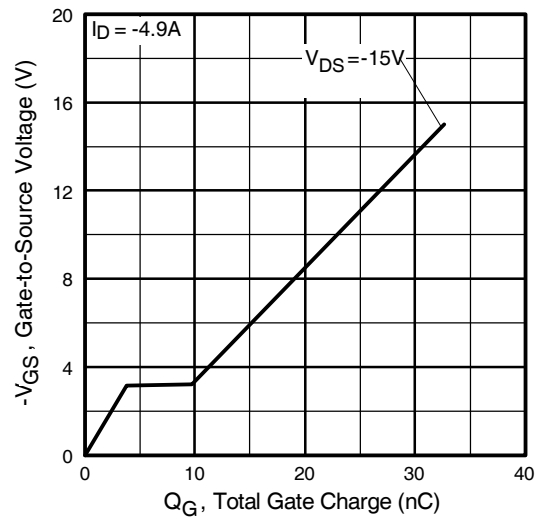


Fig 10. Typical Gate Charge Vs. Gate-to-Source Voltage

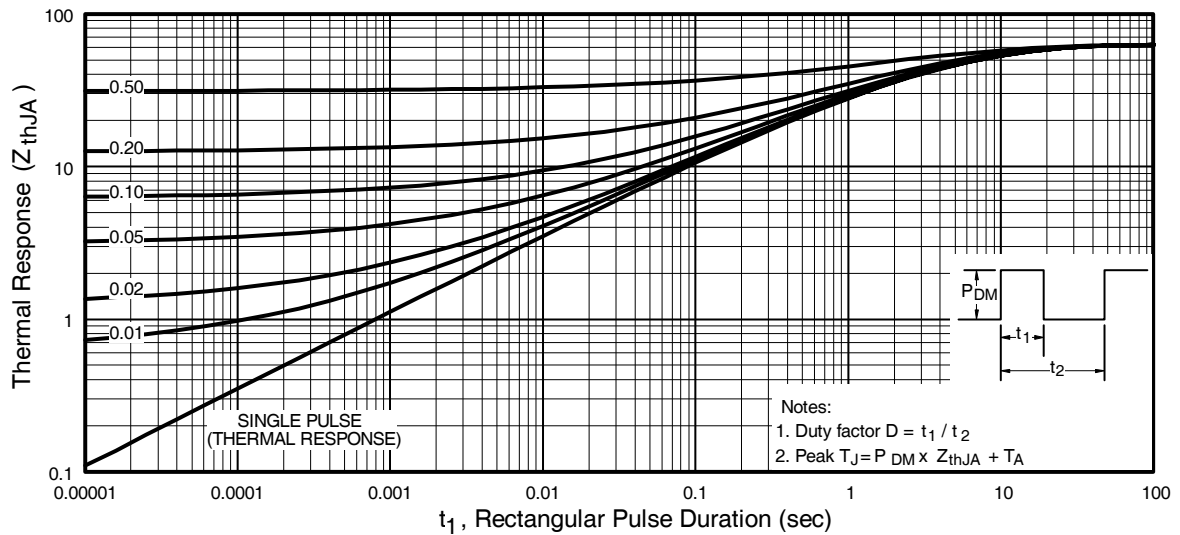
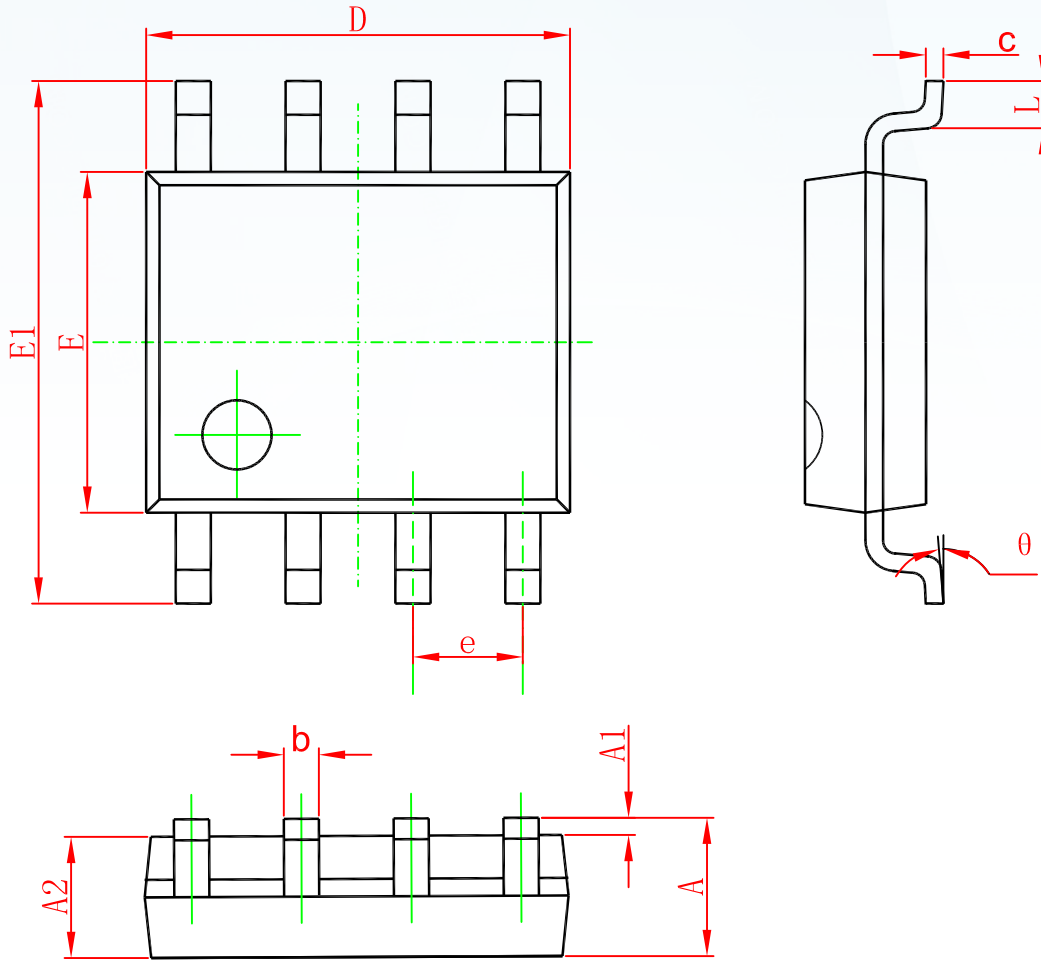


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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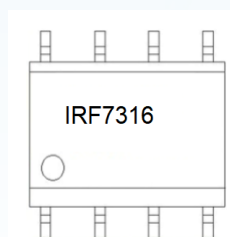
SOP-8



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°

Marking

Dual P-Channel MOSFET

**Ordering information**

Order code	Package	Baseqty	Deliverymode
IRF7316	SOP-8	3000	Tape and reel

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