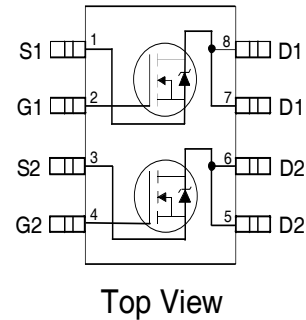


**Features**

- V<sub>DS</sub> (V)=30V
- R<sub>DS(ON)</sub> < 29m Ω (V<sub>GS</sub> = 10V)
- R<sub>DS(ON)</sub> < 46 m Ω (V<sub>GS</sub> = 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 eadframe for enhanced thermal characteristics and multiple-die capability making it ideal in a variety of powerapplications. With theseimprovements.multiple devices can be usedinanappication with dramatica v reduced board space. The package is designed for vapor phase, infra red, or wave sodering techniques.

**Absolute Maximum Ratings ( T<sub>A</sub> = 25°C Unless Otherwise Noted)**

	Symbol	Maximum	Units
Drain-Source Voltage	V <sub>DS</sub>	30	V
Gate-Source Voltage	V <sub>GS</sub>	± 20	
Continuous Drain Current <sup>⑤</sup>	I <sub>D</sub>	T <sub>A</sub> = 25°C	6.5
		T <sub>A</sub> = 70°C	5.2
Pulsed Drain Current	I <sub>DM</sub>	30	A
Continuous Source Current (Diode Conduction)	I <sub>S</sub>	2.5	
Maximum Power Dissipation <sup>⑤</sup>	P <sub>D</sub>	T <sub>A</sub> = 25°C	2.0
		T <sub>A</sub> = 70°C	1.3
Single Pulse Avalanche Energy <sup>②</sup>	E <sub>AS</sub>	82	mJ
Avalanche Current	I <sub>AR</sub>	4.0	A
Repetitive Avalanche Energy	E <sub>AR</sub>	0.20	mJ
Peak Diode Recovery dv/dt <sup>③</sup>	dv/dt	5.8	V/ ns
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to + 150	°C

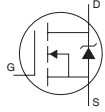
**Thermal Resistance Ratings**

Parameter	Symbol	Limit	Units
Maximum Junction-to-Ambient <sup>⑤</sup>	R <sub>θJA</sub>	62.5	°C/W

**Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise specified)**

	Parameter	Min.	Typ.	Max.	Units	Conditions
V <sub>(BR)DSS</sub>	Drain-to-Source Breakdown Voltage	30			V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
ΔV <sub>(BR)DSS</sub> /ΔT <sub>J</sub>	Breakdown Voltage Temp. Coefficient		0.022		V/°C	Reference to 25°C, I <sub>D</sub> = 1mA
R <sub>DS(on)</sub>	Static Drain-to-Source On-Resistance		23	29	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 5.8A ④
			32	46		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 4.7A ④
V <sub>GS(th)</sub>	Gate Threshold Voltage	1.0			V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
g <sub>fs</sub>	Forward Transconductance		14		S	V <sub>DS</sub> = 15V, I <sub>D</sub> = 5.8A
I <sub>DSS</sub>	Drain-to-Source Leakage Current			1.0	μA	V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V
				25		V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 55°C
I <sub>GSS</sub>	Gate-to-Source Forward Leakage			100	nA	V <sub>GS</sub> = 20V
	Gate-to-Source Reverse Leakage			-100		V <sub>GS</sub> = -20V
Q <sub>g</sub>	Total Gate Charge		22	33	nC	I <sub>D</sub> = 5.8A
Q <sub>gs</sub>	Gate-to-Source Charge		2.6	3.9		V <sub>DS</sub> = 15V
Q <sub>gd</sub>	Gate-to-Drain ("Miller") Charge		6.4	9.6		V <sub>GS</sub> = 10V, See Fig. 10 ④
t <sub>d(on)</sub>	Turn-On Delay Time		8.1	12	ns	V <sub>DD</sub> = 15V
t <sub>r</sub>	Rise Time		8.9	13		I <sub>D</sub> = 1.0A
t <sub>d(off)</sub>	Turn-Off Delay Time		26	39		R <sub>G</sub> = 6.0Ω
t <sub>f</sub>	Fall Time		17	26		R <sub>D</sub> = 15Ω ④
C <sub>iss</sub>	Input Capacitance		650			pF
C <sub>oss</sub>	Output Capacitance		320		V <sub>DS</sub> = 25V	
C <sub>rss</sub>	Reverse Transfer Capacitance		130		f = 1.0MHz, See Fig. 9	

**Source-Drain Ratings and Characteristics**

	Parameter	Min.	Typ.	Max.	Units	Conditions
I <sub>S</sub>	Continuous Source Current (Body Diode)			2.5	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I <sub>SM</sub>	Pulsed Source Current (Body Diode) ①			30		
V <sub>SD</sub>	Diode Forward Voltage		0.78	1.0	V	T <sub>J</sub> = 25°C, I <sub>S</sub> = 1.7A, V <sub>GS</sub> = 0V ③
t <sub>rr</sub>	Reverse Recovery Time		45	68	ns	T <sub>J</sub> = 25°C, I <sub>F</sub> = 1.7A
Q <sub>rr</sub>	Reverse Recovery Charge		58	87	nC	di/dt = 100A/μs ③

**Notes:**

- ① Repetitive rating; pulse width limited by max. junction temperature. ( See fig. 11 )
- ② Starting T<sub>J</sub> = 25°C, L = 10mH  
R<sub>G</sub> = 25Ω, I<sub>AS</sub> = 4.0A.
- ③ I<sub>SD</sub> ≤ 4.0A, di/dt ≤ 74A/μs, V<sub>DD</sub> ≤ V<sub>(BR)DSS</sub>,  
T<sub>J</sub> ≤ 150°C
- ④ Pulse width ≤ 300μs; duty cycle ≤ 2%.
- ⑤ Surface mounted on FR-4 board, t ≤ 10sec.

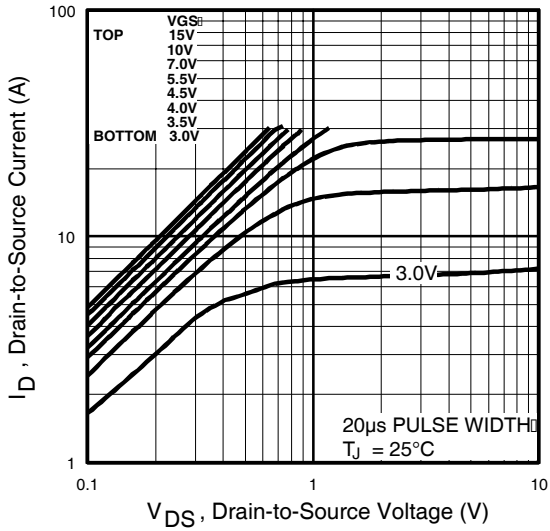


Fig 1. Typical Output Characteristics

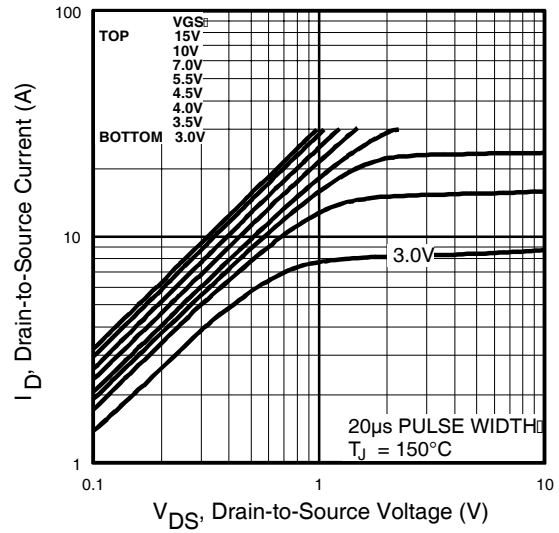


Fig 2. Typical Output Characteristics

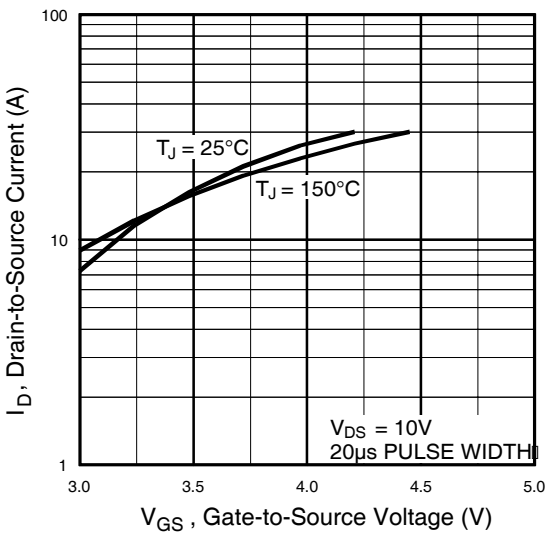


Fig 3. Typical Transfer Characteristics

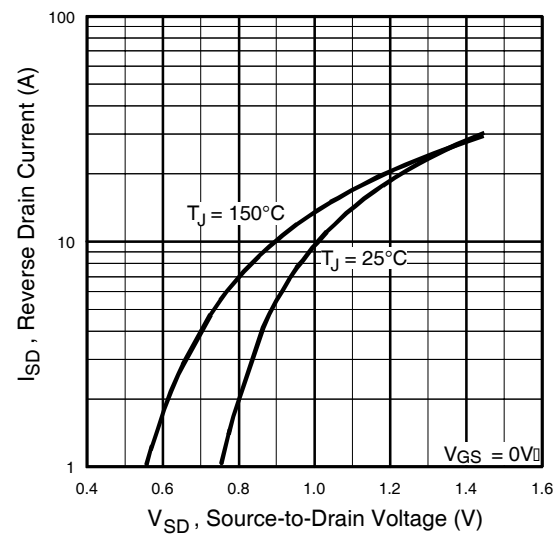


Fig 4. Typical Source-Drain Diode Forward Voltage

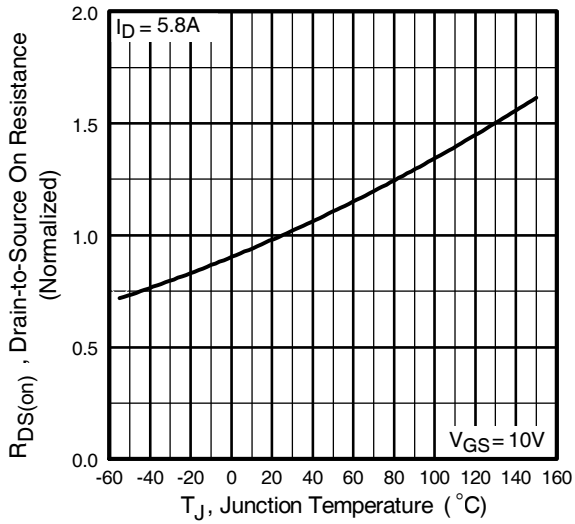


Fig 5. Normalized On-Resistance Vs. Temperature

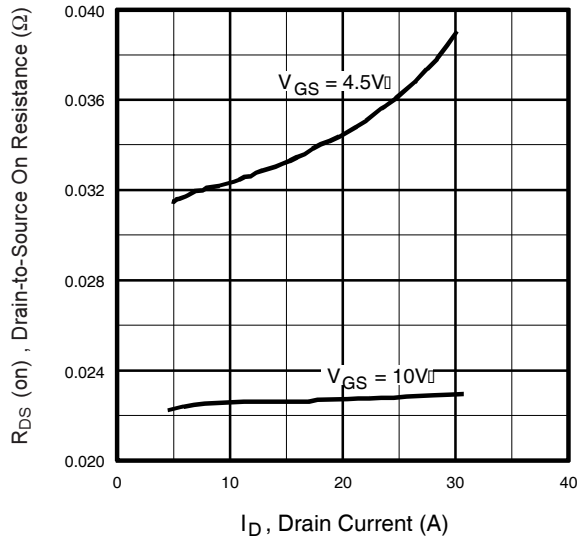


Fig 6. Typical On-Resistance Vs. Drain Current

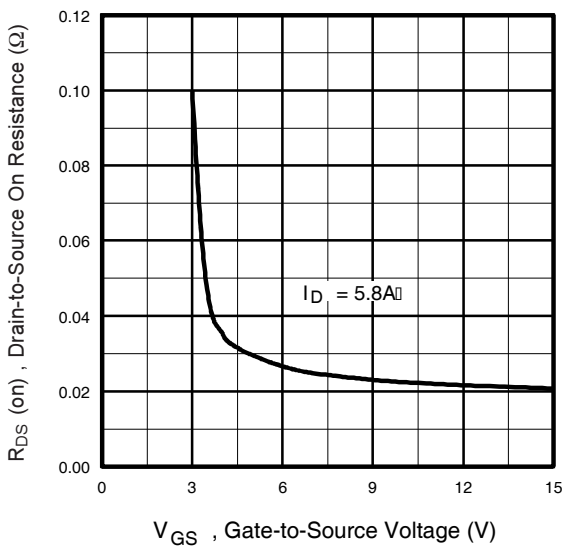


Fig 7. Typical On-Resistance Vs. Gate Voltage

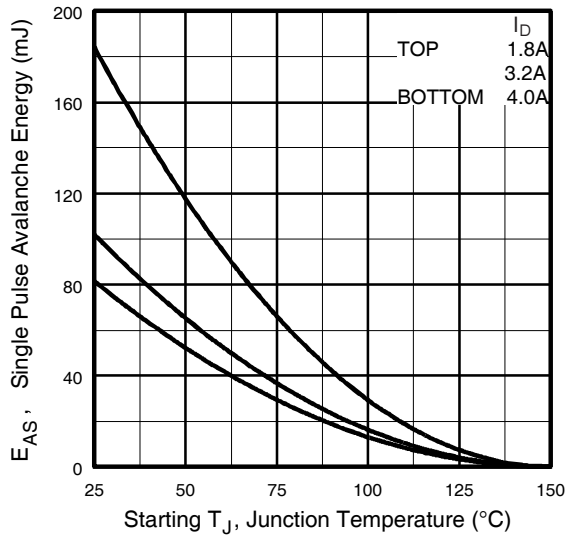


Fig 8. Maximum Avalanche Energy Vs. Drain Current

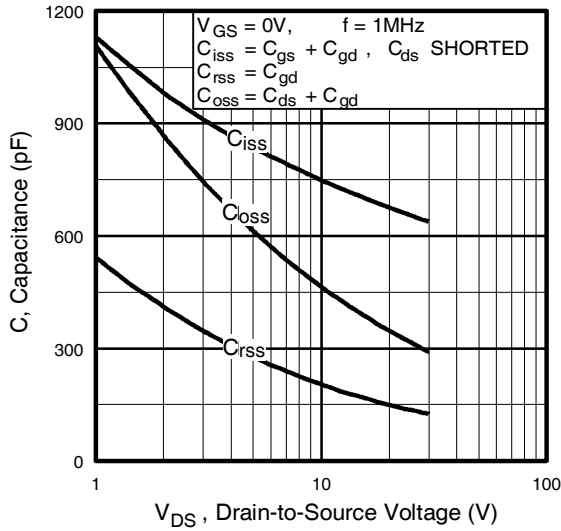


Fig 9. Typical Capacitance Vs. Drain-to-Source Voltage

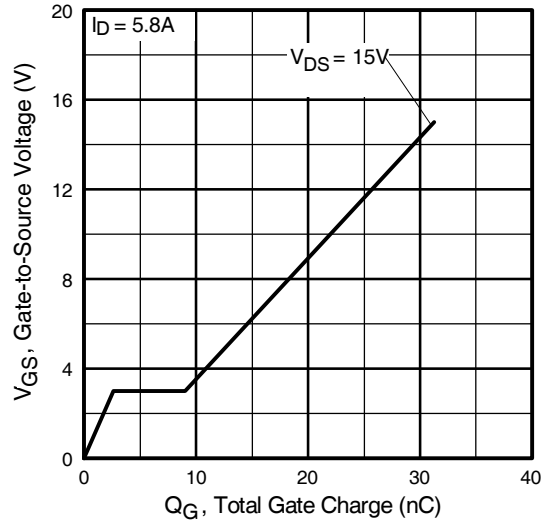


Fig 10. Typical Gate Charge Vs. Gate-to-Source Voltage

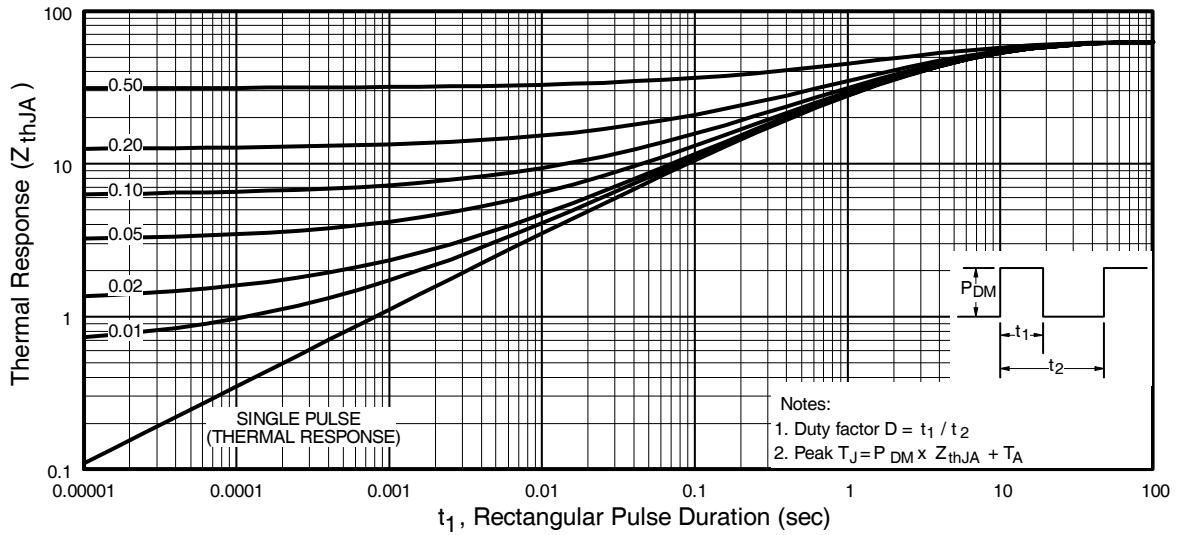
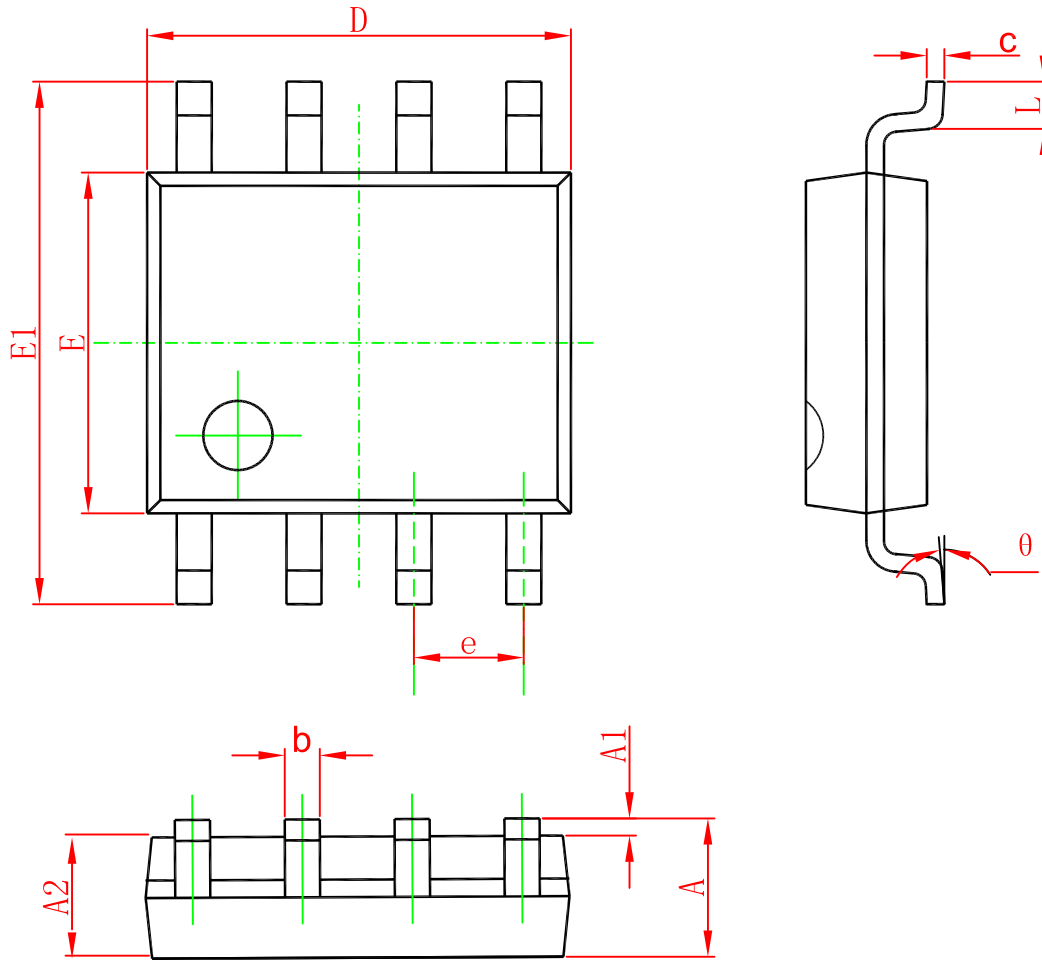


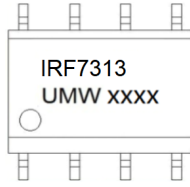
Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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



### Ordering information

Order code	Package	Baseqty	Deliverymode
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