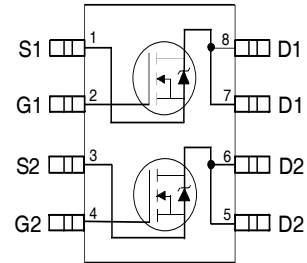


**Features**

- 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



Top View

**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 usedinapplication 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>①</sup>	I <sub>D</sub>	T <sub>A</sub> = 25°C	A
		T <sub>A</sub> = 70°C	
Pulsed Drain Current	I <sub>DM</sub>	30	A
Continuous Source Current (Diode Conduction)	I <sub>S</sub>	2.5	
Maximum Power Dissipation <sup>②</sup>	P <sub>D</sub>	T <sub>A</sub> = 25°C	W
		T <sub>A</sub> = 70°C	
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

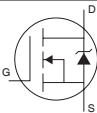
**Thermal Resistance Ratings**

Parameter	Symbol	Limit	Units
Maximum Junction-to-Ambient <sup>①</sup>	R <sub>θJA</sub>	62.5	°C/W

### Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	30			V	$V_{GS} = 0V, I_D = 250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient		0.022		V/ $^\circ\text{C}$	Reference to $25^\circ\text{C}, I_D = 1\text{mA}$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance		23 32	29 46	$m\Omega$	$V_{GS} = 10V, I_D = 5.8A$ ④ $V_{GS} = 4.5V, I_D = 4.7A$ ④
$V_{GS(th)}$	Gate Threshold Voltage	1.0			V	$V_{DS} = V_{GS}, I_D = 250\mu A$
$g_{fs}$	Forward Transconductance		14		S	$V_{DS} = 15V, I_D = 5.8A$
$I_{DSS}$	Drain-to-Source Leakage Current			1.0 25	$\mu A$	$V_{DS} = 24V, V_{GS} = 0V$ $V_{DS} = 24V, V_{GS} = 0V, T_J = 55^\circ\text{C}$
$I_{GSS}$	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		22	33		$I_D = 5.8A$
$Q_{gs}$	Gate-to-Source Charge		2.6	3.9	nC	$V_{DS} = 15V$
$Q_{gd}$	Gate-to-Drain ("Miller") Charge		6.4	9.6	nC	$V_{GS} = 10V$ , See Fig. 10 ④
$t_{d(on)}$	Turn-On Delay Time		8.1	12	ns	$V_{DD} = 15V$
$t_r$	Rise Time		8.9	13	ns	$I_D = 1.0A$
$t_{d(off)}$	Turn-Off Delay Time		26	39	ns	$R_G = 6.0\Omega$
$t_f$	Fall Time		17	26	ns	$R_D = 15\Omega$ ④
$C_{iss}$	Input Capacitance		650		pF	$V_{GS} = 0V$
$C_{oss}$	Output Capacitance		320		pF	$V_{DS} = 25V$
$C_{rsc}$	Reverse Transfer Capacitance		130		pF	$f = 1.0\text{MHz}$ , See Fig. 9

### 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	A	
$V_{SD}$	Diode Forward Voltage		0.78	1.0	V	$T_J = 25^\circ\text{C}, I_S = 1.7A, V_{GS} = 0V$ ③
$t_{rr}$	Reverse Recovery Time		45	68	ns	$T_J = 25^\circ\text{C}, I_F = 1.7A$
$Q_{rr}$	Reverse Recovery Charge		58	87	nC	$di/dt = 100A/\mu s$ ③

#### Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature. ( See fig. 11 )
- ② Starting  $T_J = 25^\circ\text{C}$ ,  $L = 10\text{mH}$   
 $R_G = 25\Omega, I_{AS} = 4.0A$ .
- ③  $I_{SD} \leq 4.0A, di/dt \leq 74A/\mu s, V_{DD} \leq V_{(BR)DSS}, T_J \leq 150^\circ\text{C}$
- ④ Pulse width  $\leq 300\mu s$ ; duty cycle  $\leq 2\%$ .
- ⑤ Surface mounted on FR-4 board,  $t \leq 10\text{sec}$ .

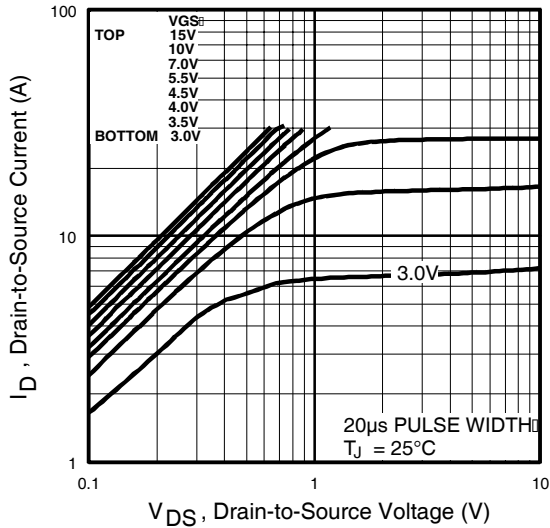


Fig 1. Typical Output Characteristics

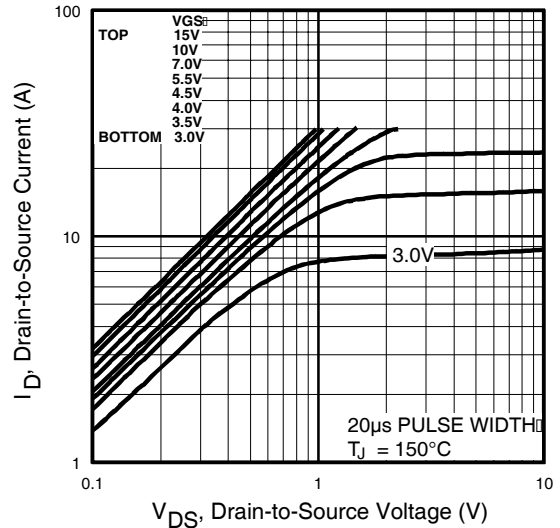


Fig 2. Typical Output Characteristics

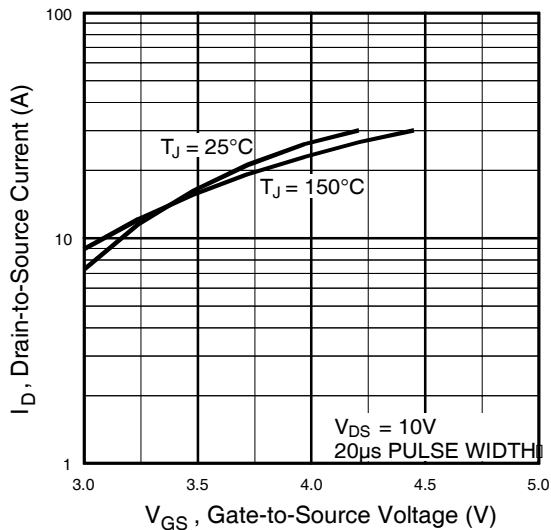


Fig 3. Typical Transfer Characteristics

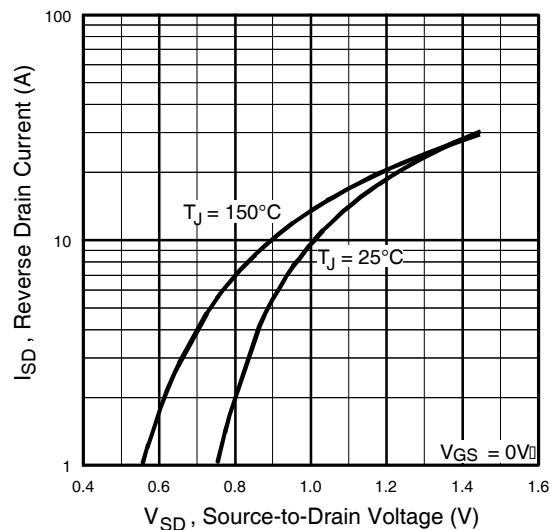


Fig 4. Typical Source-Drain Diode Forward Voltage

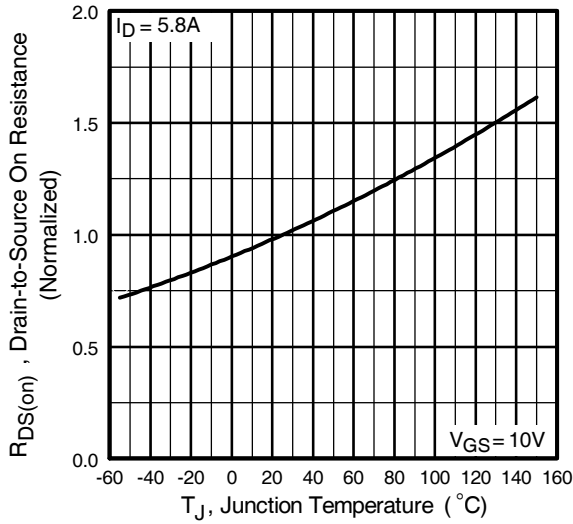


Fig 5. Normalized On-Resistance Vs. Temperature

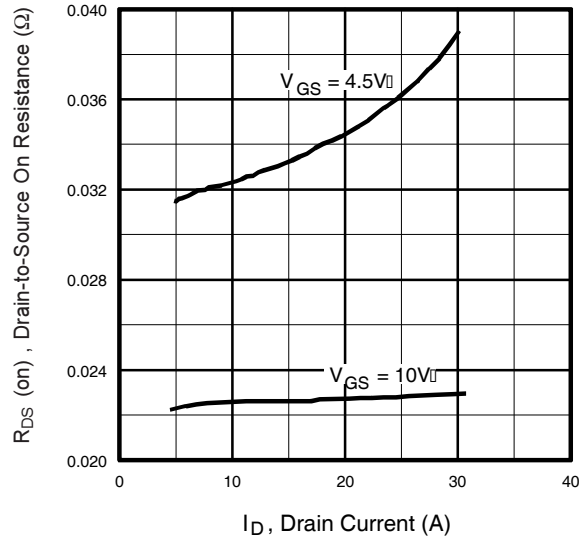


Fig 6. Typical On-Resistance Vs. Drain Current

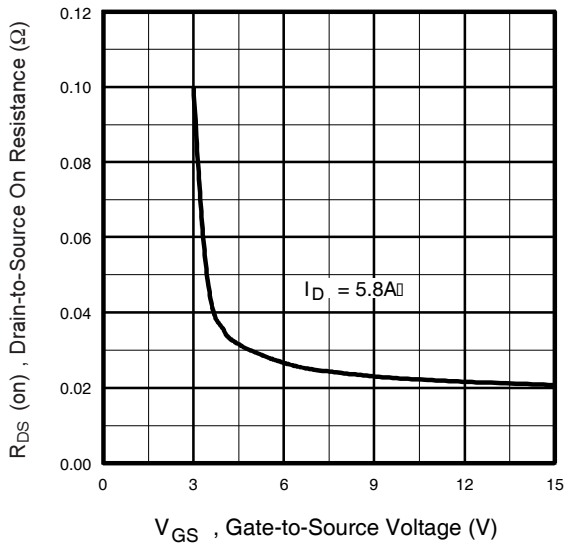


Fig 7. Typical On-Resistance Vs. Gate Voltage

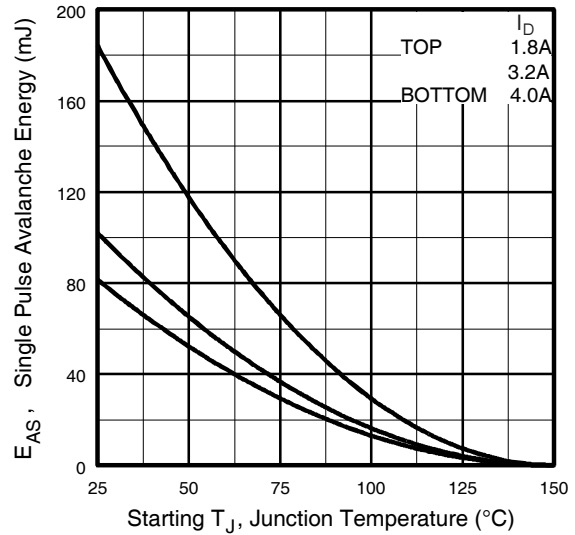


Fig 8. Maximum Avalanche Energy Vs. Drain Current

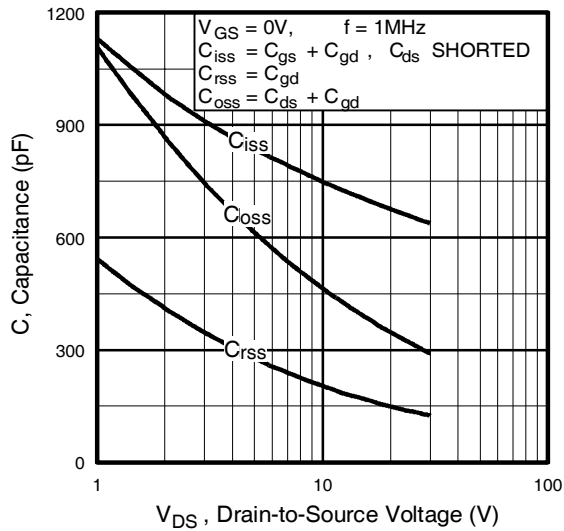


Fig 9. Typical Capacitance Vs. Drain-to-Source Voltage

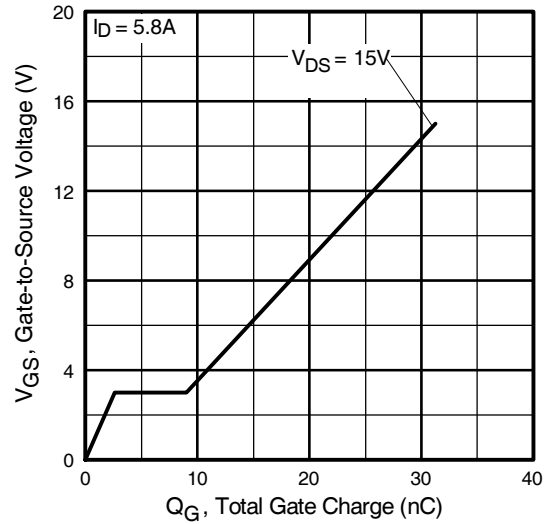


Fig 10. Typical Gate Charge Vs. Gate-to-Source Voltage

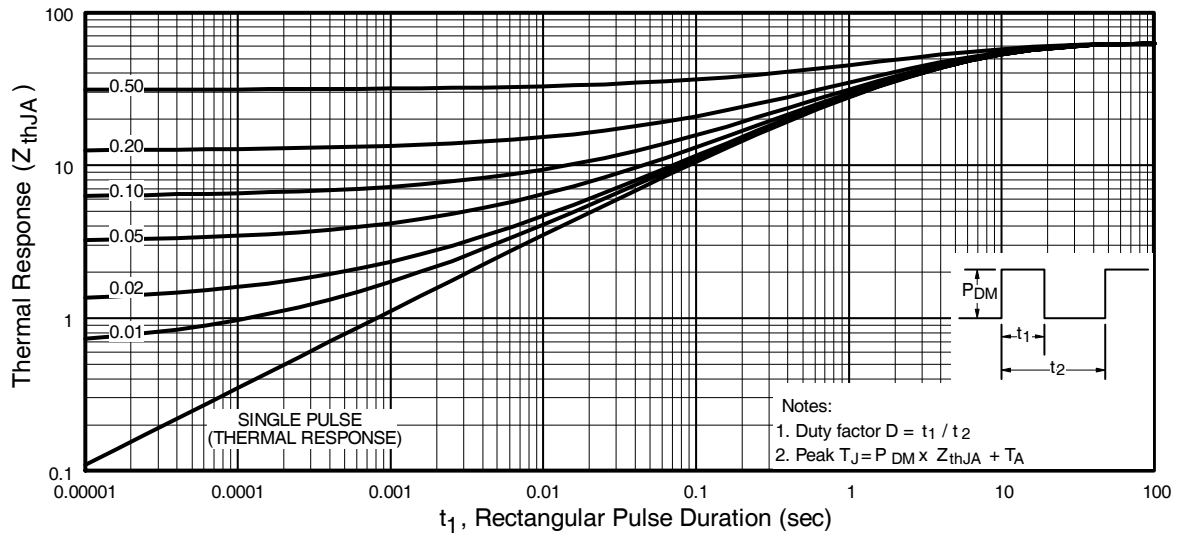
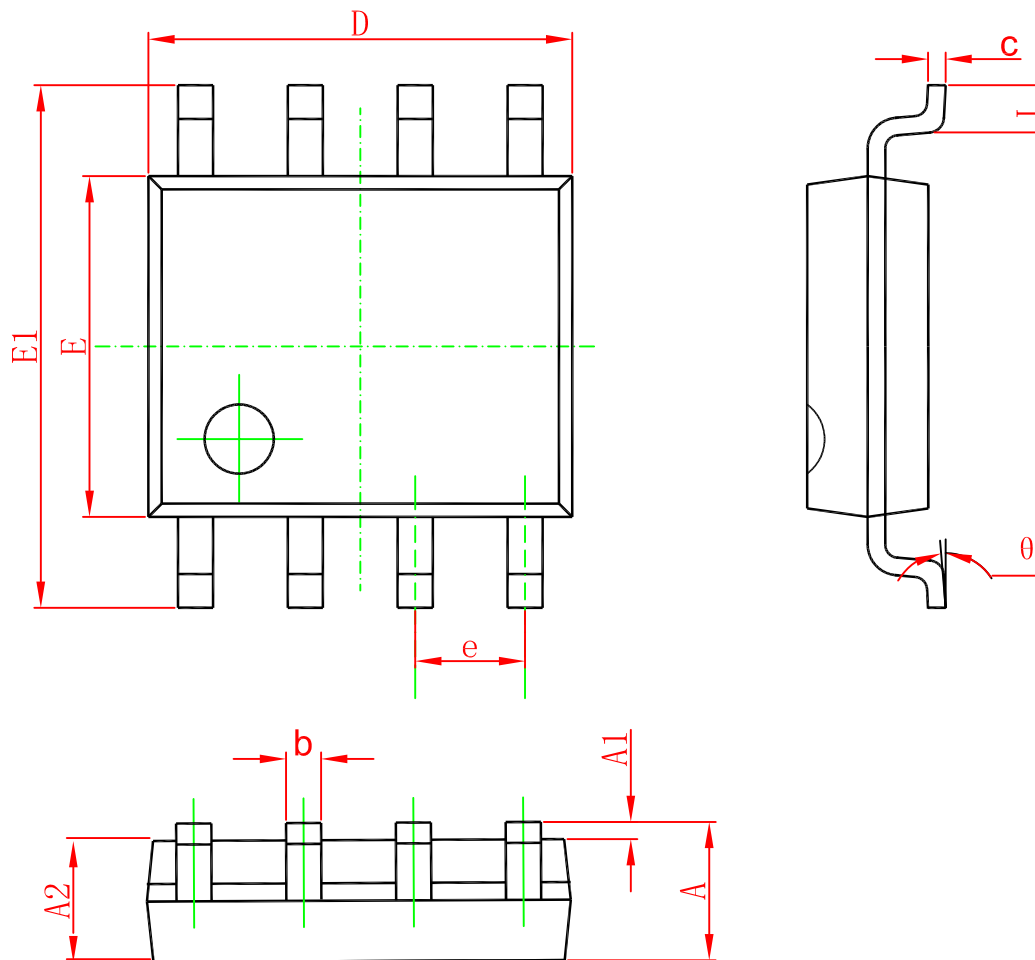


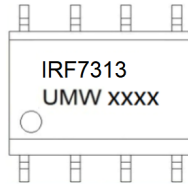
Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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
UMW IRF7313TR	SOP-8	3000	Tape and reel

单击下面可查看定价，库存，交付和生命周期等信息

[>>UMW\(友台半导体\)](#)