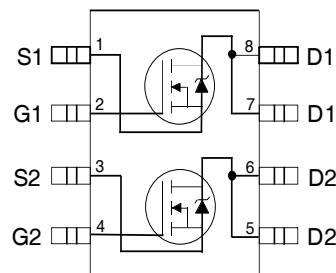


**Features**

- $V_{DS} (V) = 50V$
- $R_{DS(ON)} < 30m \Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 40 m \Omega (V_{GS} = 4.5V)$
- Advanced Process Technology
- Ultra Low On-Resistance
- Surface Mount
- Dynamic  $dv/dt$  Rating
- Fast Switching
- Lead-Free



Top View

**Description**

The SOP-8 has been modified through a customized leadframe for enhanced thermal characteristics and dual-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 Power dissipation of greater than 0.8W is possible in a typical pcB mount application.

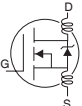
**Absolute Maximum Ratings**

	Parameter	Max.	Units
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	3.0	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	2.3	
$I_{DM}$	Pulsed Drain Current ①	10	
$P_D @ T_A = 25^\circ C$	Power Dissipation	2.0	W
	Linear Derating Factor	0.016	W/°C
$V_{GS}$	Gate-to-Source Voltage	$\pm 20$	V
$dv/dt$	Peak Diode Recovery $dv/dt$ ②	4.5	V/nS
$T_J, T_{STG}$	Junction and Storage Temperature Range	-55 to + 150	°C

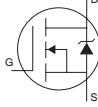
**Thermal Resistance Ratings**

	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient ④			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	50			V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
ΔV <sub>(BR)DSS/ΔT<sub>J</sub></sub>	Breakdown Voltage Temp. Coefficient		0.049		V/°C	Reference to 25°C, I <sub>D</sub> = 1mA
R <sub>DS(ON)</sub>	Static Drain-to-Source On-Resistance		21 32	30 40	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 3.0A ③ V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 1.5A ③
V <sub>GS(th)</sub>	Gate Threshold Voltage	1.0		3.0	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
g <sub>fs</sub>	Forward Transconductance		3.8		S	V <sub>DS</sub> = 15V, I <sub>D</sub> = 3.0A ③
I <sub>DSS</sub>	Drain-to-Source Leakage Current			2.0 25	μA	V <sub>DS</sub> = 40V, V <sub>GS</sub> = 0V V <sub>DS</sub> = 40V, 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	nA	V <sub>GS</sub> = -20V
Q <sub>g</sub>	Total Gate Charge		12	30	nC	I <sub>D</sub> = 2.0A V <sub>DS</sub> = 25V V <sub>GS</sub> = 10V ③
Q <sub>gs</sub>	Gate-to-Source Charge		1.2			
Q <sub>gd</sub>	Gate-to-Drain ("Miller") Charge		3.5			
t <sub>d(on)</sub>	Turn-On Delay Time		9.0	20	ns	V <sub>DD</sub> = 25V I <sub>D</sub> = 1.0A R <sub>G</sub> = 6.0Ω R <sub>D</sub> = 25Ω ③
t <sub>r</sub>	Rise Time		8.0	20		
t <sub>d(off)</sub>	Turn-Off Delay Time		45	70		
t <sub>f</sub>	Fall Time		25	50		
L <sub>D</sub>	Internal Drain Inductance		4.0		nH	Between lead, 6mm (0.25in.) from package and center of die contact 
L <sub>S</sub>	Internal Source Inductance		6.0			
C <sub>iss</sub>	Input Capacitance		290		pF	V <sub>GS</sub> = 0V V <sub>DS</sub> = 25V f = 1.0MHz
C <sub>oss</sub>	Output Capacitance		140			
C <sub>rss</sub>	Reverse Transfer Capacitance		37			

### Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I <sub>S</sub>	Continuous Source Current (Body Diode)			2.0	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I <sub>SM</sub>	Pulsed Source Current (Body Diode) ①			12		
V <sub>SD</sub>	Diode Forward Voltage			1.2	V	T <sub>J</sub> = 25°C, I <sub>S</sub> = 1.5A, V <sub>GS</sub> = 0V ③
t <sub>rr</sub>	Reverse Recovery Time		70	100	ns	T <sub>J</sub> = 25°C, I <sub>F</sub> = 1.5A
Q <sub>rr</sub>	Reverse Recovery Charge		110	170	nC	di/dt = 100A/μs ③
t <sub>on</sub>	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by L <sub>S</sub> +L <sub>D</sub> )				

#### Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② I<sub>SD</sub> ≤ 1.8A, di/dt ≤ 90A/μs, V<sub>DD</sub> ≤ V<sub>(BR)DSS</sub>, T<sub>J</sub> ≤ 150°C
- ③ Pulse width ≤ 300μs; duty cycle ≤ 2%.
- ④ Surface mounted on FR-4 board, t ≤ 10sec.

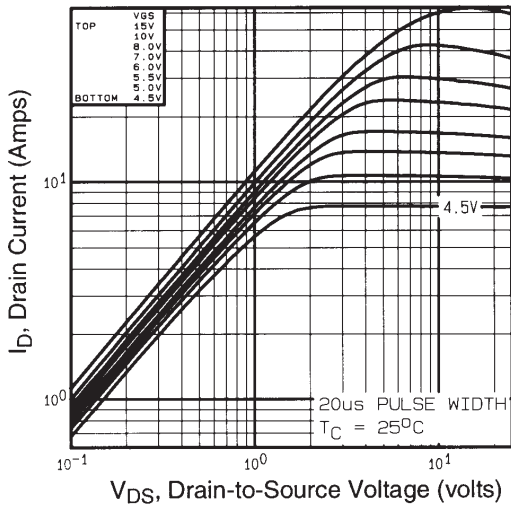


Fig 1. Typical Output Characteristics,

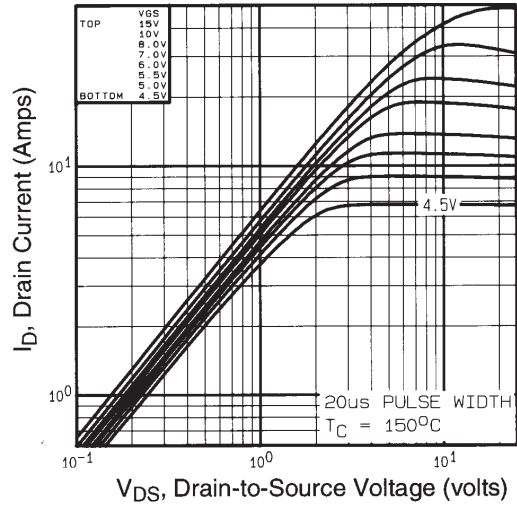


Fig 2. Typical Output Characteristics,

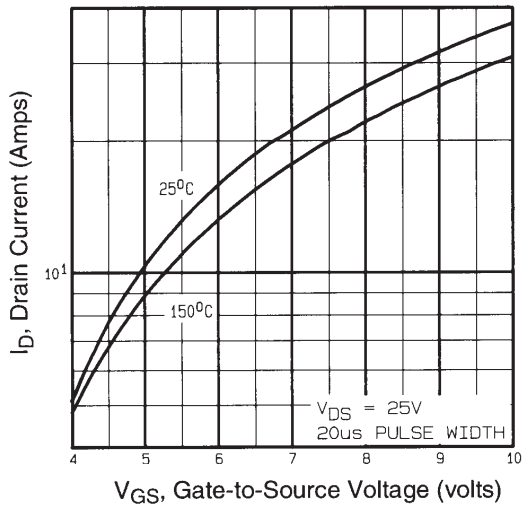


Fig 3. Typical Transfer Characteristics

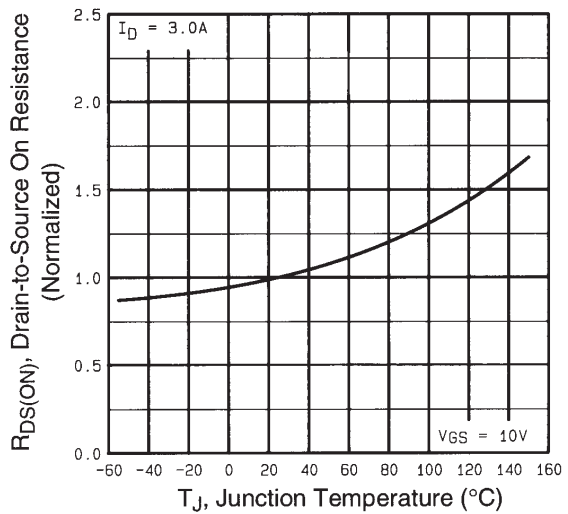
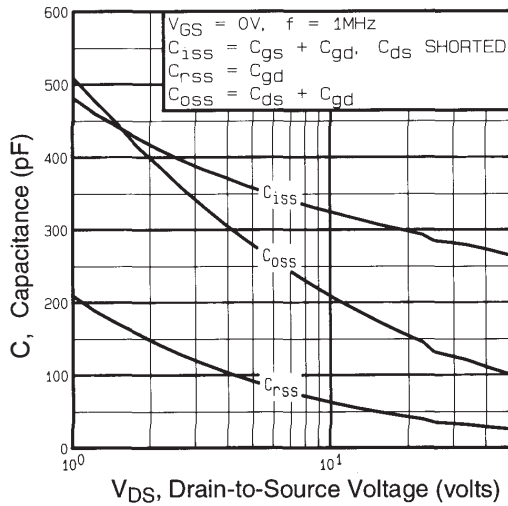
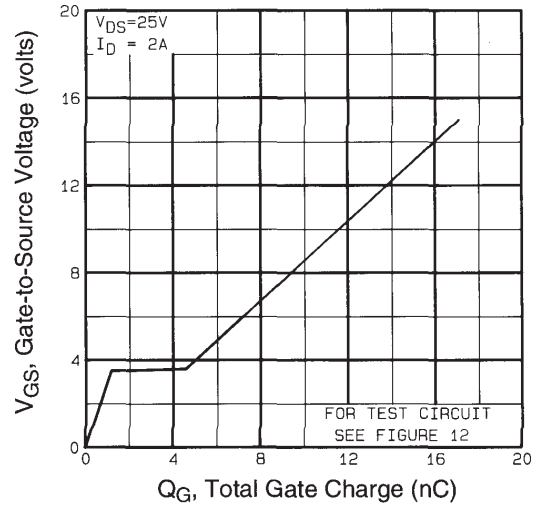


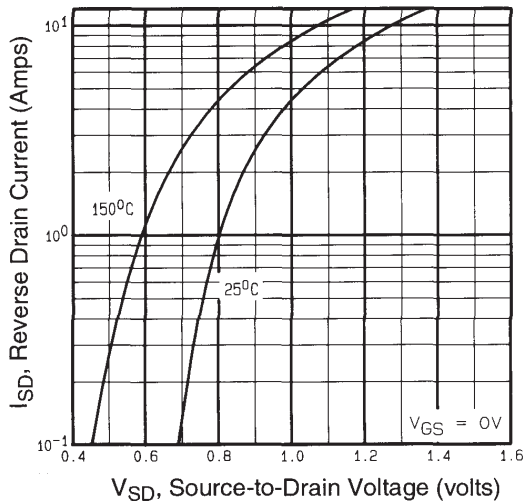
Fig 4. Normalized On-Resistance Vs. Temperature



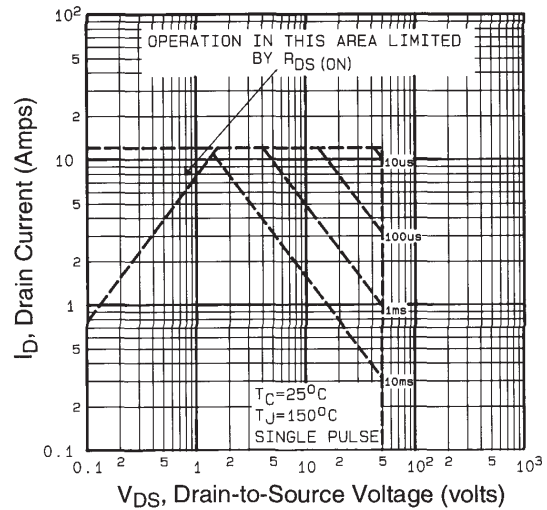
**Fig 5.** Typical Capacitance Vs. Drain-to-Source Voltage



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



**Fig 7.** Typical Source-Drain Diode Forward Voltage



**Fig 8.** Maximum Safe Operating Area

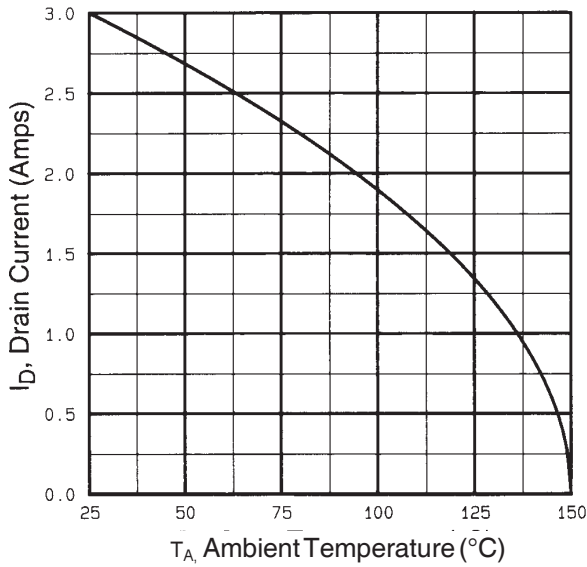


Fig 9. Maximum Drain Current Vs. Ambient Temperature

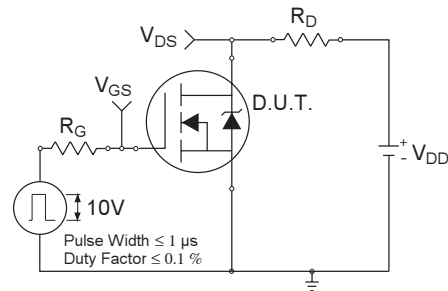


Fig 10a. Switching Time Test Circuit

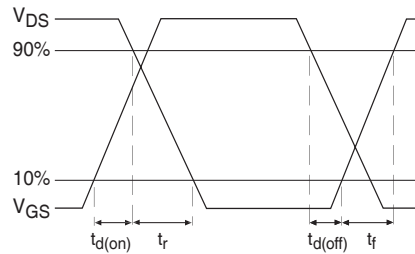


Fig 10b. Switching Time Waveforms

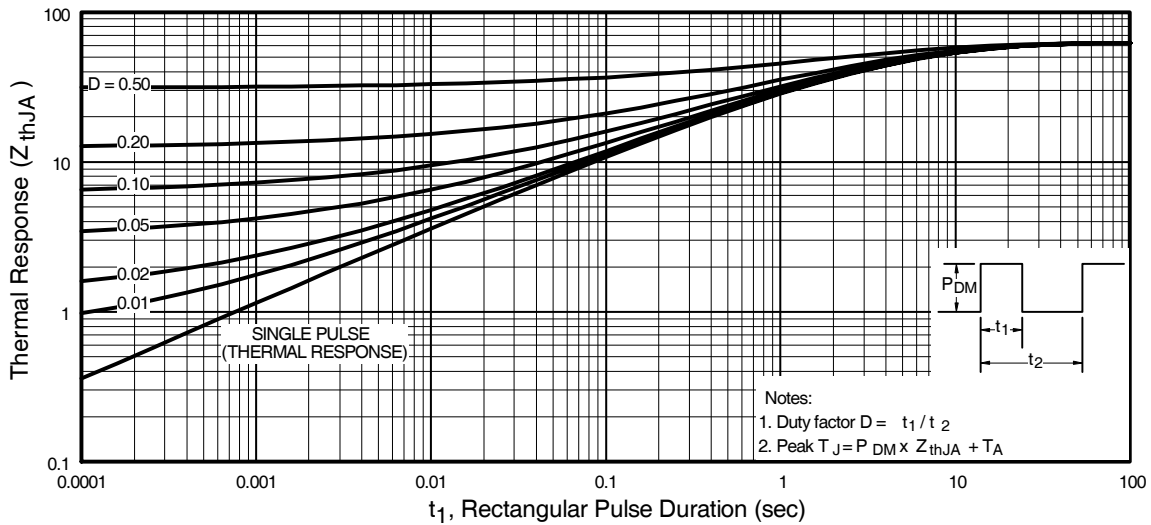


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

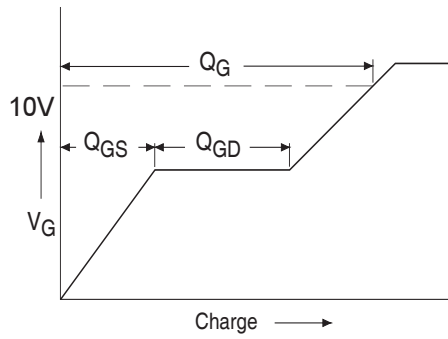


Fig 12a. Basic Gate Charge Waveform

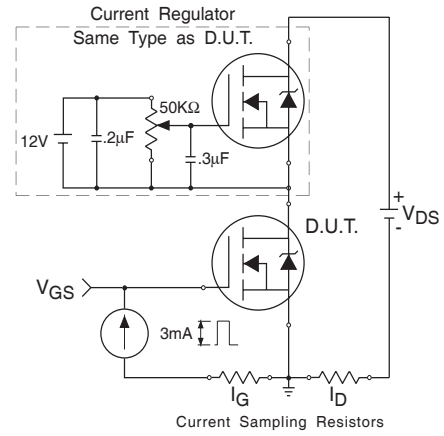
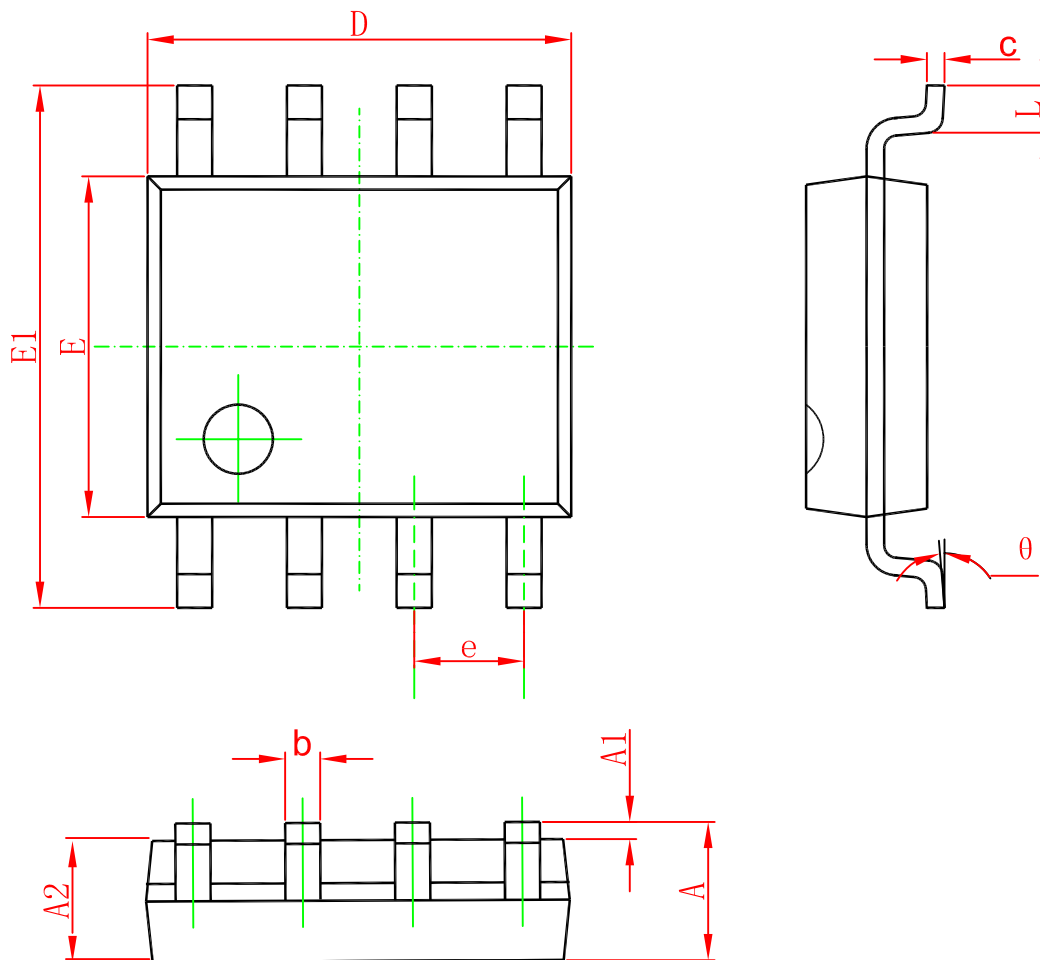
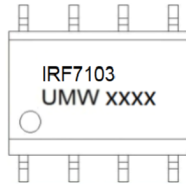


Fig 12b. Gate Charge Test Circuit



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 IRF7103TR	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\(友台半导体\)](#)