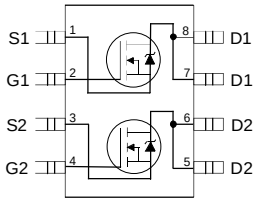
Description

The SOP-8 has been modified through a customizedeadframe for enhanced thermal characteristics anamultiple-die capability making it ideal in a variety ofpowerapplications. With these improvements, multipledevices can be used in an application with dramaticallyreduced board space. The package is designed forvapor phase, infra red, or wave soldering techniques.



Top View

Features

- $V_{DS\ (V)}$ =30V
- I_D = 2.2A (V_{GS} = -10V)
- $R_{DS(ON)}$ < 100mΩ (V_{GS}=-10V)
- $R_{DS(ON)}$ < 200 mΩ (V_{GS}=-4.5V)
- Generation V Technology
- Ultra Low On-Resistance
- Surface Mount
- Very Low Gate Charge and Switching Losses
- Fully Avalanche Rated
- Lead-Free

Absolute Maximum Ratings (TA = 25°C Unless Otherwise Noted)

		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current⑤	T_A = 25°C	I_D	3.5	A
	T_A = 70°C		2.8	
Pulsed Drain Current		I_{DM}	16	
Continuous Source Current (Diode Conduction)		I_S	1.7	
Maximum Power Dissipation ⑤	T_A = 25°C	P_D	2.0	W
	T_A = 70°C		1.3	
Single Pulse Avalanche Energy ②		E_{AS}	44	mJ
Avalanche Current		I_{AR}	2.0	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	°C

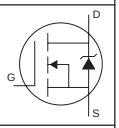
Thermal Resistance Ratings

Parameter	Symbol	Limit	Units
Maximum Junction-to-Ambient⑤	$R_{\theta JA}$	62.5	°C/W

Electrical Characteristics @ T = 25C(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
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient		0.015		V/°C	Reference to 25°C, I_D = 1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance		60	100	mΩ	V_{GS} = 10V, I_D = 2.2A ④
			90	200		V_{GS} = 4.5V, I_D = 1.0A ④
$V_{GS(th)}$	Gate Threshold Voltage	1.0			V	V_{DS} = V_{GS}, I_D = 250μA
g_{fs}	Forward Transconductance		12		S	V_{DS} = 15V, I_D = 3.5A
I_{DSS}	Drain-to-Source Leakage Current			2.0	μA	V_{DS} = 24V, V_{GS} = 0V
				25		V_{DS} = 24V, V_{GS} = 0V, T_J = 125°C
I_{GSS}	Gate-to-Source Forward Leakage			100	nA	V_{GS} = 24V
	Gate-to-Source Reverse Leakage			-100		V_{GS} = -24V
Q_g	Total Gate Charge		6.9	14	nC	I_D = 1.8A
Q_{gs}	Gate-to-Source Charge		1.0	2.0		V_{DS} = 10V
Q_{gd}	Gate-to-Drain ("Miller") Charge		1.8	3.5		V_{GS} = 10V, See Fig. 10 ④
$t_{d(on)}$	Turn-On Delay Time		6.2	12	ns	V_{DD} = 10V
t_r	Rise Time		8.8	18		I_D = 1.0A
$t_{d(off)}$	Turn-Off Delay Time		13	26		R_G = 6.0Ω
t_f	Fall Time		3.0	6.0		R_D = 10Ω ④
C_{iss}	Input Capacitance		190		pF	V_{GS} = 0V
C_{oss}	Output Capacitance		120			V_{DS} = 15V
C_{rss}	Reverse Transfer Capacitance		61			f = 1.0MHz, See Fig. 9

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)			1.7	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①			16		
V_{SD}	Diode Forward Voltage		0.82	1.2	V	T_J = 25°C, I_S = 1.25A, V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time		27	53	ns	T_J = 25°C, I_F = 1.25A
Q_{rr}	Reverse RecoveryCharge		28	57	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 = 22mH R_G = 25Ω, I_{AS} = 2.0A.

③ $I_{SD} \leq$ 2.0A, di/dt ≤ 100A/μs, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq$ 150°C

④ Pulse width ≤ 300μs; duty cycle ≤ 2%.

⑤ Surface mounted on FR-4 board, t ≤ 10sec.

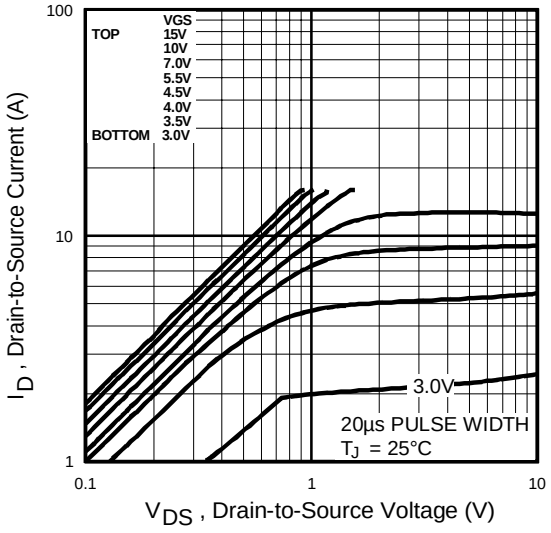


Fig 1. Typical Output Characteristics

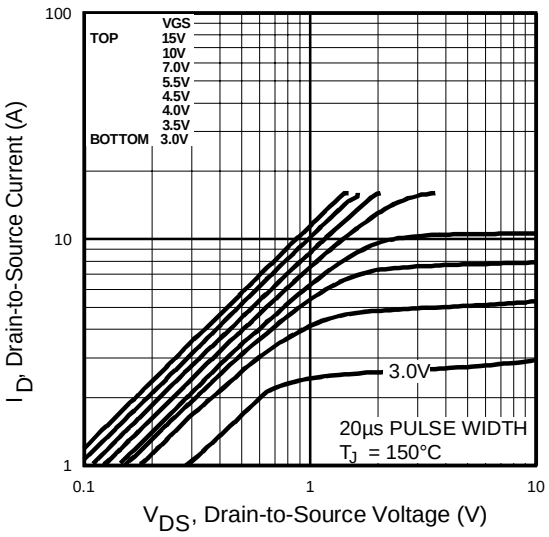


Fig 2. Typical Output Characteristics

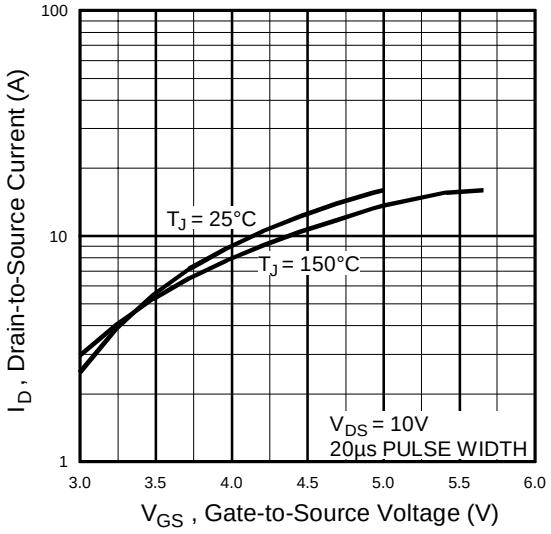


Fig 3. Typical Transfer Characteristics

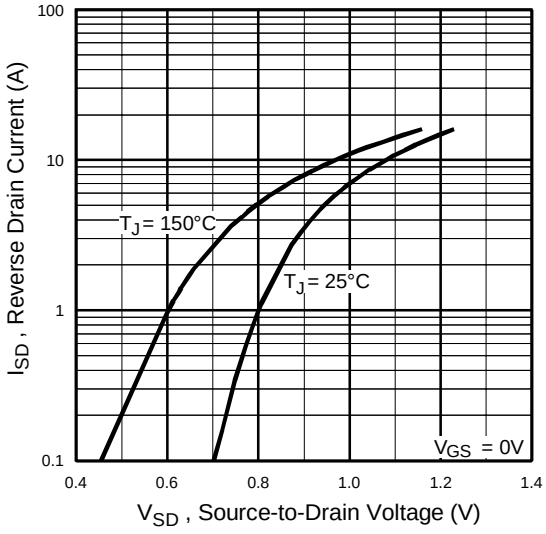


Fig 4. Typical Source-Drain Diode Forward Voltage

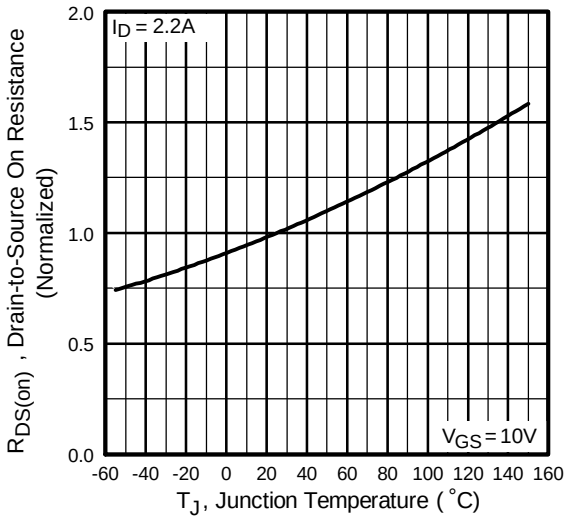


Fig 4. Normalized On-Resistance Vs. Temperature

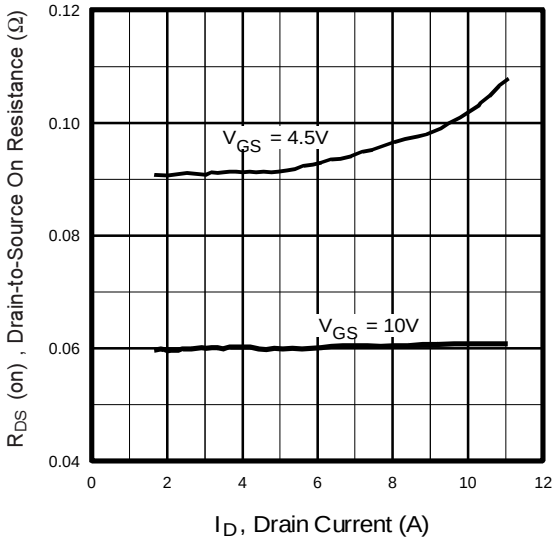


Fig 6. Typical On-Resistance Vs. Drain Current

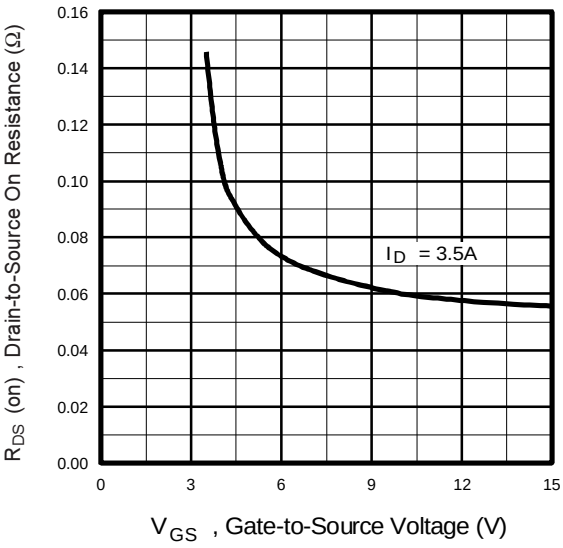


Fig 7. Typical On-Resistance Vs. Gate Voltage

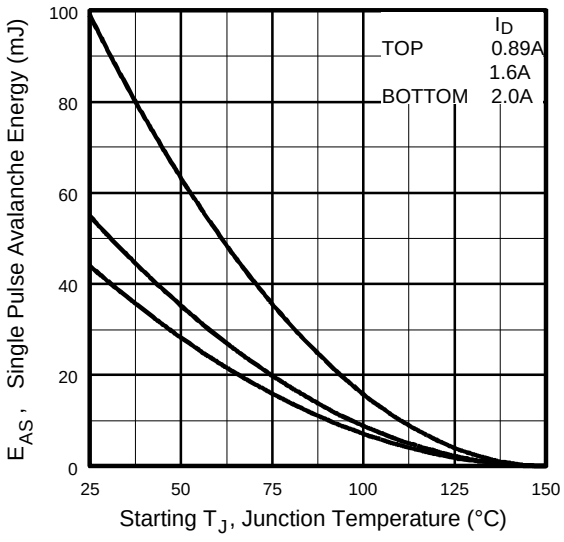


Fig 8. Maximum Avalanche Energy Vs. Drain Current

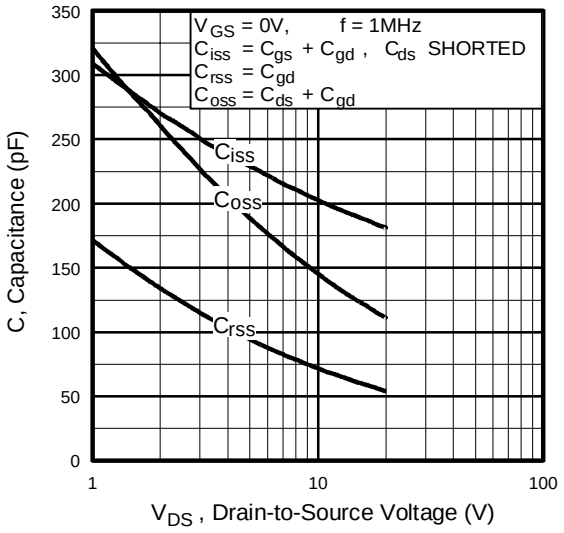


Fig 9. Typical Capacitance Vs. Drain-to-Source Voltage

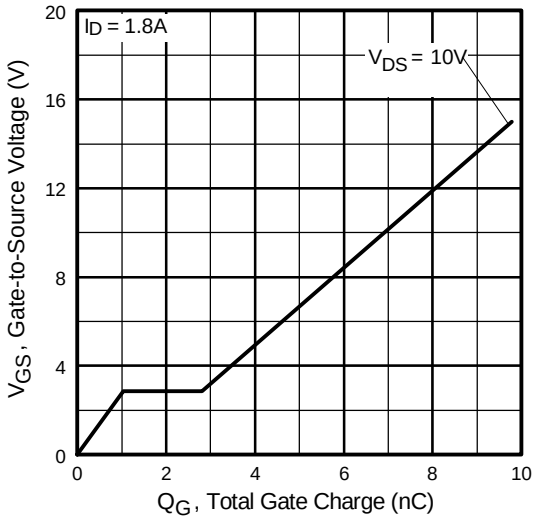


Fig 10. Typical Gate Charge Vs. Gate-to-Source Voltage

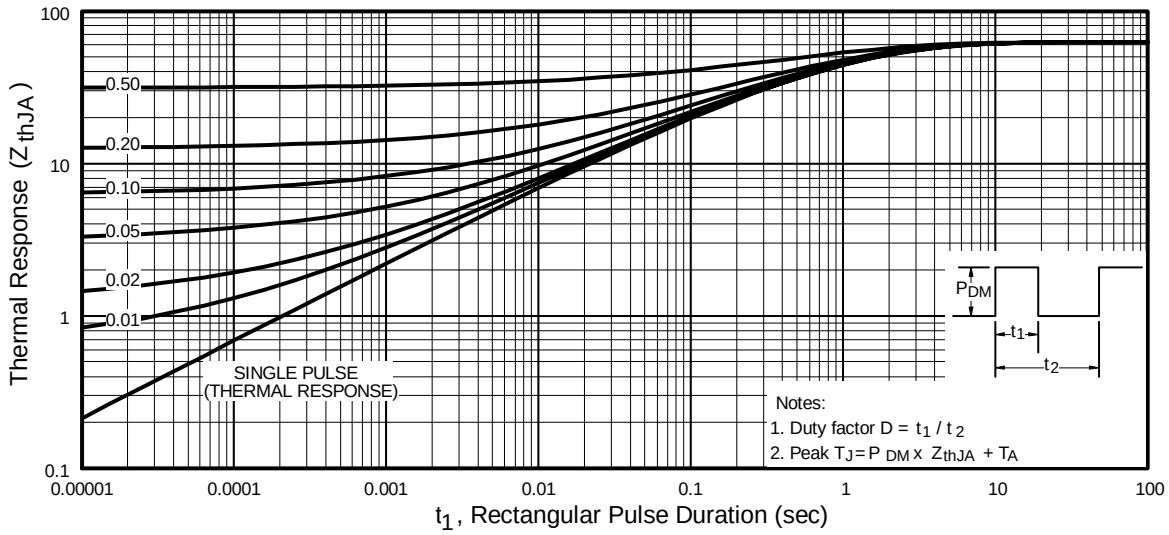
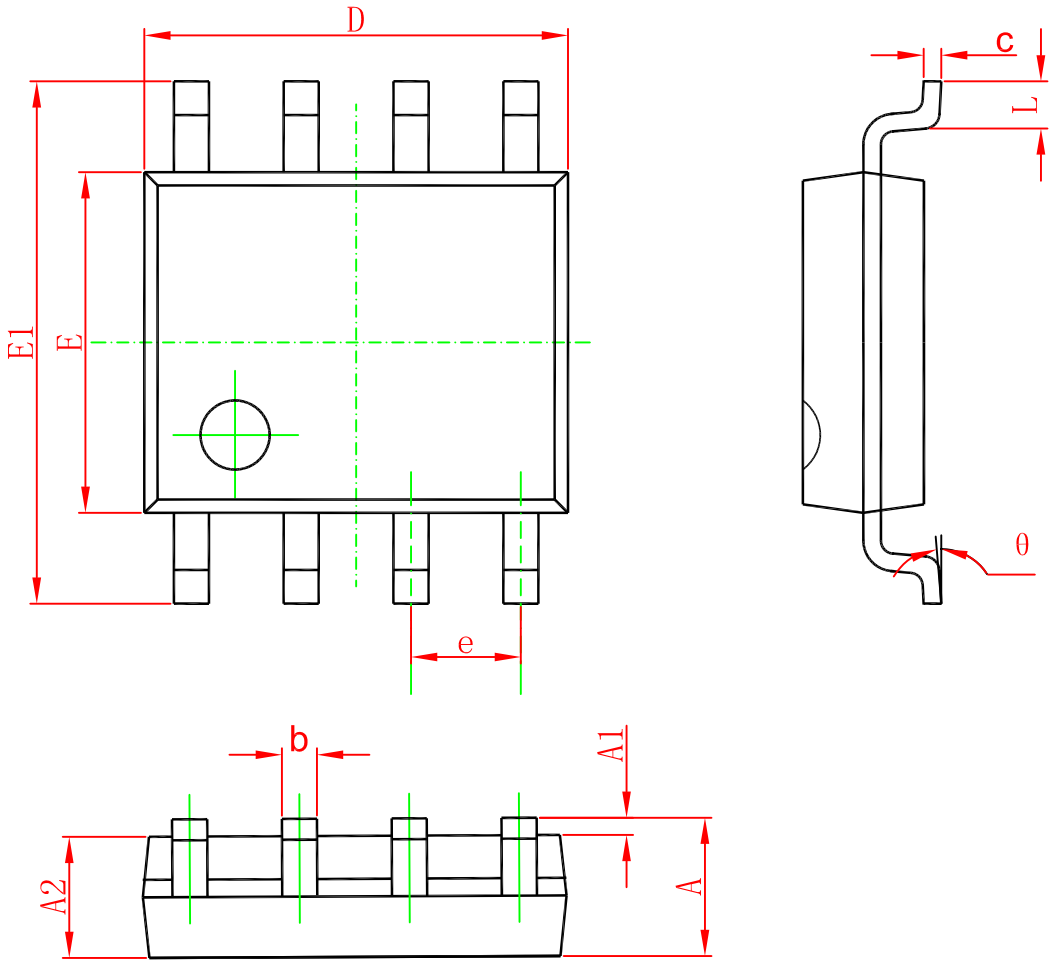


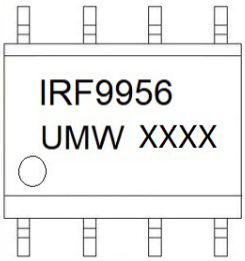
Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

Package Mechanical Data 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 IRF9956TR	SOP-8	3000	Tape and reel

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for MOSFET ***category:***

Click to view products by Youtai ***manufacturer:***

Other Similar products are found below :

IRFD120 JANTX2N5237 2SK2267(Q) BUK455-60A/B TK100A10N1,S4X(S MIC4420CM-TR VN1206L NDP4060 SI4482DY IRS2092STRPBF-EL IPS70R2K0CEAKMA1 TK31J60W5,S1VQ(O TK31J60W,S1VQ(O TK16J60W,S1VQ(O 2SK2614(TE16L1,Q) DMN1017UCP3-7 EFC2J004NUZTDG P85W28HP2F-7071 DMN1053UCP4-7 NTE2384 DMC2700UDMQ-7 DMN2080UCB4-7 DMN61D9UWQ-13 US6M2GTR DMN31D5UDJ-7 DMP22D4UFO-7B IPS60R3K4CEAKMA1 DMN1006UCA6-7 DMN16M9UCA6-7 STF5N65M6 IRF40H233XTMA1 STU5N65M6 DMN6022SSD-13 DMN13M9UCA6-7 DMTH10H4M6SPS-13 IPS60R360PFD7SAKMA1 DMN2990UFB-7B SSM3K35CT,L3F IPLK60R1K0PFD7ATMA1 2N7002W-G MCAC30N06Y-TP IPWS65R035CFD7AXKSA1 MCQ7328-TP SSM3J143TU,LXHF DMN12M3UCA6-7 PJMF280N65E1_T0_00201 PJMF380N65E1_T0_00201 PJMF280N60E1_T0_00201 PJMF600N65E1_T0_00201 PJMF900N65E1_T0_00201