UMW BSO615NG

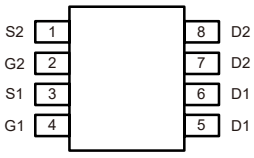
Dual 60V N-Channel MOSFET

1.Features

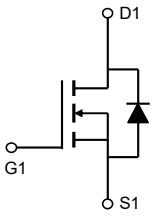
- $V_{DS\ (V)}$=60V
- I_D=7A(V_{GS}=10V)
- $R_{DS(ON)}$<40mΩ(V_{GS}=10V)
- $R_{DS(ON)}$<55mΩ(V_{GS}=4.5V)

2.Pinning information

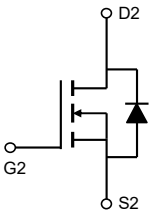
Pin	Symbol	Description
1,3	S2,S1	SOURCE
2,4	G2,G1	GATE
5,6,7,8	D2,D1	DRAIN



SOP-8



N-Channel



N-Channel

3.Absolute Maximum Ratings T_C= 25°C

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C=25°C	I_D	7	A
	T_C=125°C		4	
Continuous Source Current (Diode Conduction) [a]		I_S	3.6	
Pulsed Drain Current [b]		I_{DM}	28	
Single Pulse Avalanche Current	L=0.1mH	I_{AS}	18	
Single Pulse Avalanche Energy		E_{AS}	16.2	mJ
Maximum Power Dissipation [b]	T_C=25°C	P_D	4	W
	T_C=125°C		1.3	W
Storage Temperature		T_J, T_{STG}	-55 to 175	°C

4.Thermal resistance rating

Parameter		Symbol	Typ	Max	Units
Junction-to-Ambient	PCB Mount[c]	R_{thJA}		110	°C/W
Junction-to-Foot (Drain)		R_{thJF}		34	°C/W

Notes

a. Package limited.

b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.

c. When mounted on 1" square PCB (FR4 material).

5.Electrical Characteristic (T_C=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	V_{DS}	V_{GS}=0V, I_D=250μA	60			V
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.5	2	2.5	V
Gate-source leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Zero gate voltage drain current	I_{DSS}	V_{GS}=0V, V_{DS}=60V			1	μA
		V_{GS}=0V,V_{DS}=60V,T_J=125°C			50	μA
		V_{GS}=0V,V_{DS}=60V,T_J=175°C			150	μA
On-State Drain Current [a]	$I_{D(ON)}$	V_{GS}=10V, V_{DS}≥5V	20			A
Drain-Source On-State Resistance [a]	$R_{DS(ON)}$	V_{GS}=10V, I_D=4.5A		28	40	mΩ
		V_{GS}=4.5V, I_D=4A		30	55	mΩ
Forward transconductance [f]	g_{FS}	V_{DS}=15V, I_D=4.5A		15		S
Dynamic [b]						
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1MHz		600	750	pF
Output Capacitance	C_{oss}			110	140	pF
Reverse Transfer Capacitance	C_{rss}			50	62	pF
Total gate charge [c]	Q_g	V_{DS}=30V, V_{GS}=10V, I_D=5.3A		11.7	18	nC
Gate-source charge [c]	Q_{gs}			1.8	2.7	nC
Gate-drain charge [c]	Q_{gd}			2.8	4.2	nC
Gate resistance	R_g	f=1MHz	1.3		6	Ω
Turn-On Delay Time [c]	$t_{D(on)}$	V_{DD}=30V R_L=6.8Ω, I_D≌4.4A V_{GEN}=10V, R_G=1Ω		7	11	ns
Rise Time [c]	t_r			3.3	5	ns
Turn-Off Delay Time [c]	$t_{D(off)}$			22.4	33.5	ns
Fall time [c]	t_f			2.1	3.2	ns
Source-Drain Diode Ratings and Characteristics [b]						
Pulsed Current [a]	I_{SM}				28	A
Forward Voltage	V_{SD}	I_F=2A, V_{GS}=0V		0.75	1.1	V

a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.

b. Guaranteed by design, not subject to production testing.

c. Independent of operating temperature.

6.1Typical characteristic

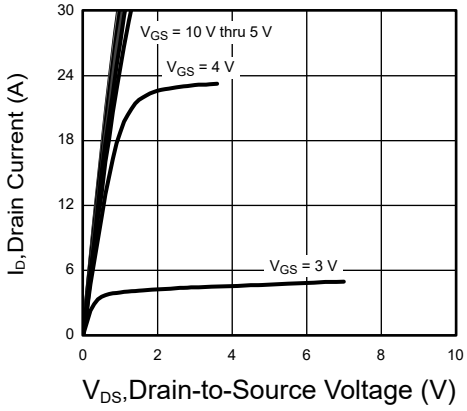


Figure 1: Output Characteristics

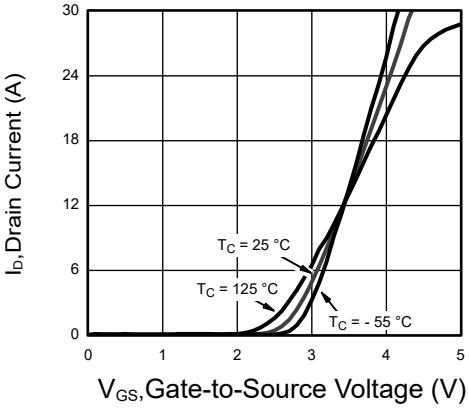


Figure 2: Transfer Characteristics

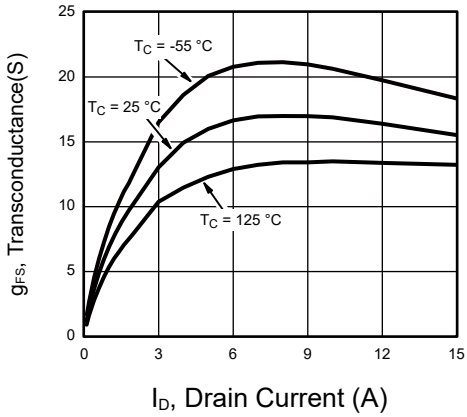


Figure 3: Transconductance

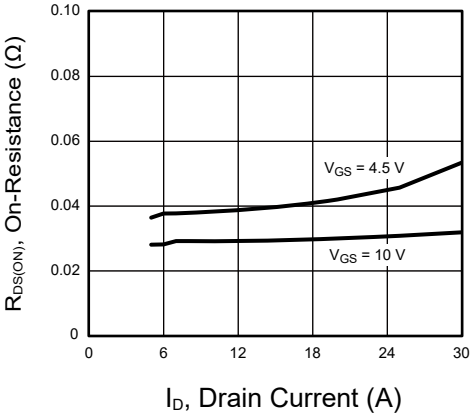


Figure 4: $R_{DS(ON)}$ vs. Drain Current

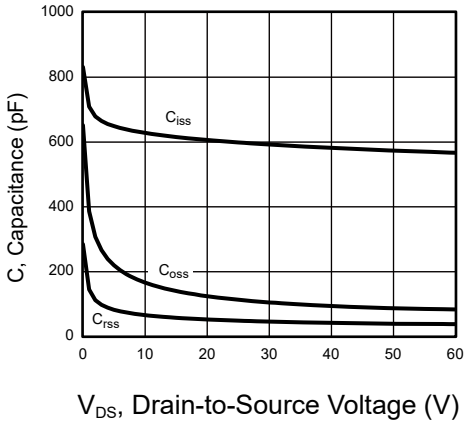


Figure 5: Capacitance

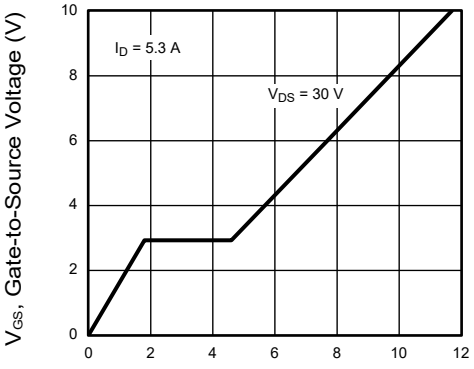


Figure 6: Gate Charge

6.2Typical characteristic

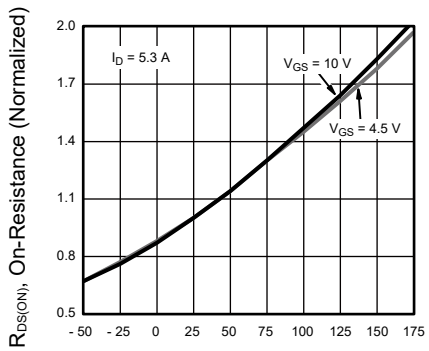


Figure 7: On-Resistance vs. Junction Temperature

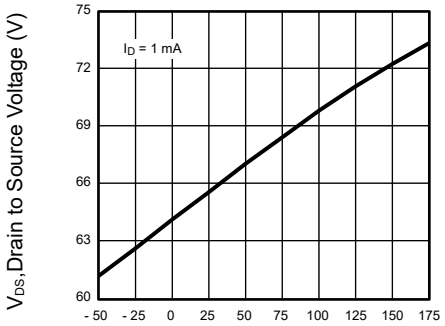


Figure 8: Drain Source Breakdown vs. Junction Temperature

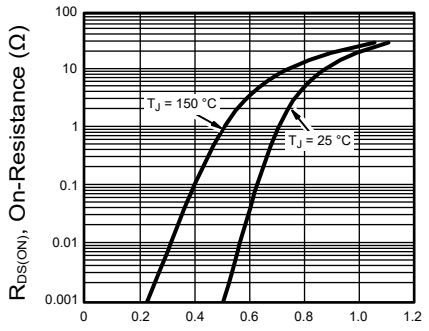


Figure 9: Source Drain Diode Forward Voltag

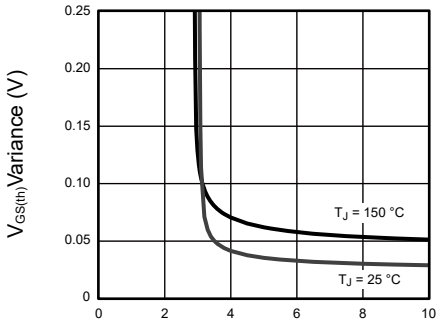


Figure 10: On-Resistance vs. Gate-to-Source Voltage

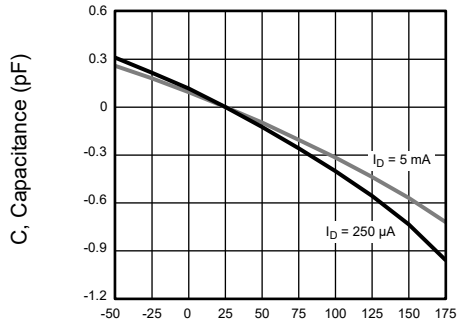
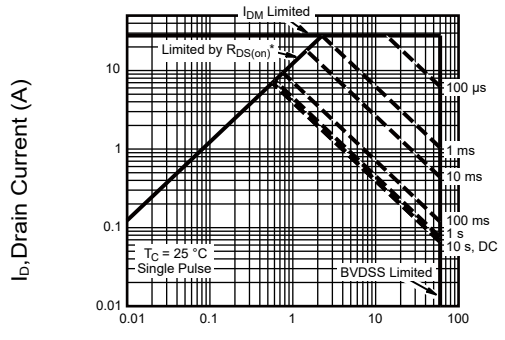


Figure 11: Threshold Voltage



* V_{GS} > minimum V_{GS} at which $R_{DS(ON)}$ is specified

Figure 12: Safe Operating Area

6.3Typical characteristic

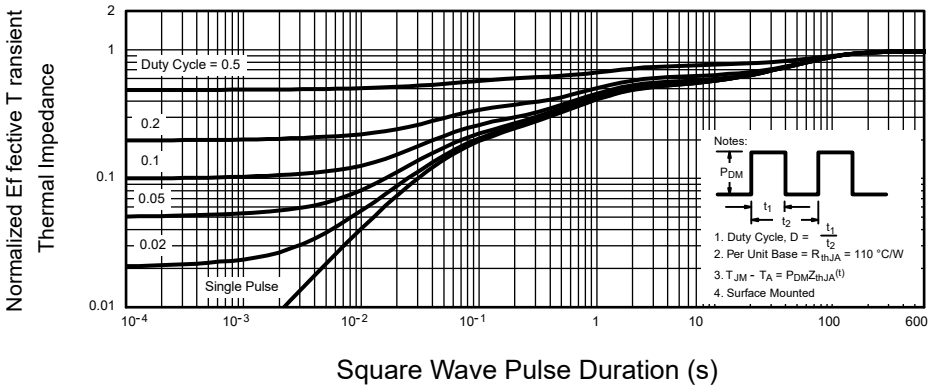


Figure 13: Normalized Thermal Transient Impedance, Junction-to-Ambient

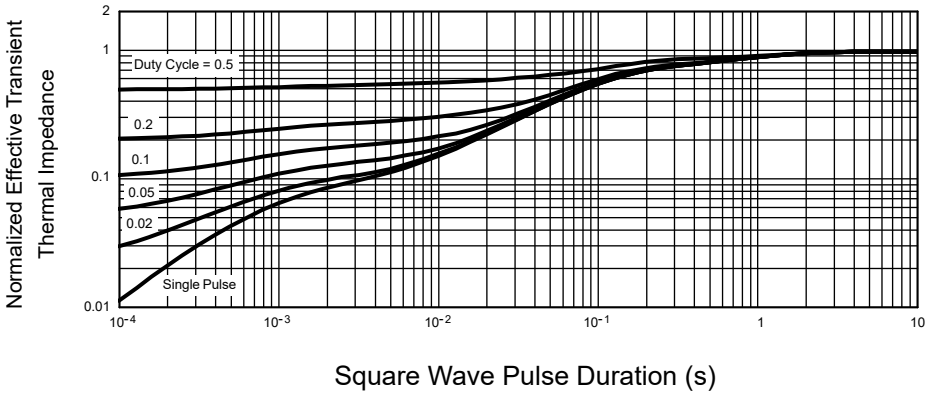
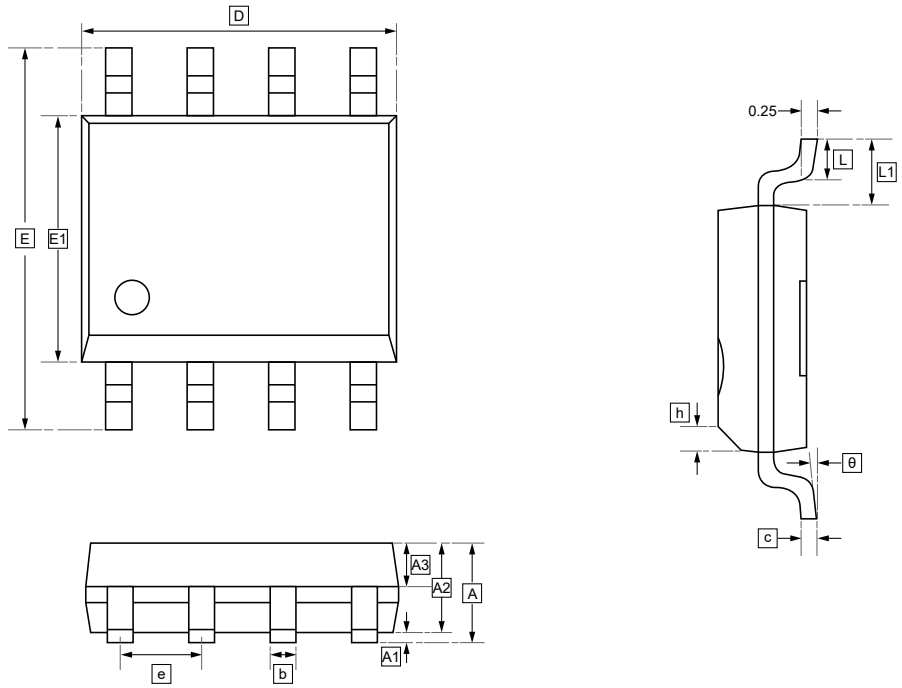


Figure 14: Normalized Thermal Transient Impedance, Junction-to-Foot

7.SOP-8 Package Outline Dimensions

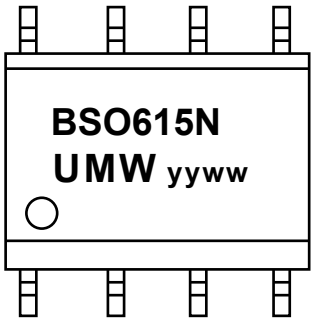


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	b	c	D	E	E1	e	h	L
Min	-	0.05	1.30	0.60	0.39	0.20	4.70	5.80	3.80	1.24	0.30	0.50
Max	1.75	0.20	1.50	0.70	0.47	0.24	5.10	6.20	4.00	1.30	0.50	0.80

Symbol	L1	θ
Min	1.00	0°
Max	1.10	8°

8.Ordering Information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW BSO615NG	SOP-8	3000	Tape and reel

9.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

When applying our products, please do not exceed the maximum rated values, as this may affect the reliability of the entire system. Under certain conditions, any semiconductor product may experience faults or failures. Buyers are responsible for adhering to safety standards and implementing safety measures during system design, prototyping, and manufacturing when using our products to prevent potential failure risks that could lead to personal injury or property damage.

Unless explicitly stated in writing, UMW products are not intended for use in medical, life-saving, or life-sustaining applications, nor for any other applications where product failure could result in personal injury or death. If customers use or sell the product for such applications without explicit authorization, they assume all associated risks.

When reselling, applying, or exporting, please comply with export control laws and regulations of China, the United States, the United Kingdom, the European Union, and other relevant countries, regions, and international organizations.

This document and any actions by UMW do not grant any intellectual property rights, whether express or implied, by estoppel or otherwise. The product names and marks mentioned herein may be trademarks of their respective owners.