

1.Features

- $I_D=7.5A$
- $R_{DS(ON)}=23m\Omega(V_{GS}=10V)$
- $Q_g(tot) = 28nC(Typ.), V_{GS}=10V$
- Low Miller Charge
- Low Q_{rr} Body Diode
- Optimized efficiency at high frequencies
- UIS Capability (Single Pulse and Repetitive Pulse)

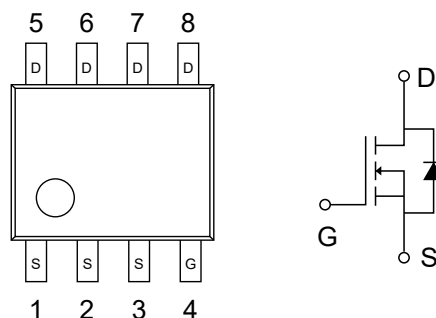
2.Applications

- DC/DC converters and Off-Line UPS
- Distributed Power Architectures and VRMs
- Primary Switch for 24V and 48V Systems
- High Voltage Synchronous Rectifier

3.Pinning information

Pin	Symbol	Description
4	G	GATE
1,2,3	S	SOURCE
5,6,7,8	D	DRAIN

SOP-8



4.Absolute Maximum Ratings $T_A=25^{\circ}C$ unless otherwise noted

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DSS}	100	V
Gate-Source Voltage	V_{GS}	± 20	
Drain Current Continuous ($T_A=25^{\circ}C$, $V_{GS}=10V$, $R_{\theta JA}=50^{\circ}C/W$)	I_D	7.5	A
Continuous ($T_A=100^{\circ}C$, $V_{GS}=10V$, $R_{\theta JA}=50^{\circ}C/W$)		4.8	
Pulsed		Figure 4	
Single Pulse Avalanche Energy (Note 1)	E_{AS}	416	mJ
Power Dissipation	P_D	2.5	W
Derate above $25^{\circ}C$		20	mW/ $^{\circ}C$
Storage Temperature	T_J, T_{STG}	-55 to 150	$^{\circ}C$



5. Thermal Characteristics

Parameter	Symbol	Rating	Units
Thermal Resistance, Junction to Ambient at 10 seconds (Note 3)	$R_{\theta JA}$	50	°C/W
Thermal Resistance, Junction to Ambient at 1000 seconds (Note 3)	$R_{\theta JA}$	85	°C/W
Thermal Resistance, Junction to Case (Note 2)	$R_{\theta JC}$	25	°C/W



6. Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V			1	μA
		T _C =150°C			250	
Gate to Source Leakage Current	I _{GSS}	V _{GS} =±20V			±100	nA
On Characteristics						
Gate to Source Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2		4	V
Drain to Source On Resistance	R _{DS(ON)}	I _D =7.5A, V _{GS} =10V		19	23	A
		I _D =6.8A, V _{GS} =4.5V		24	28	mΩ
		I _D =7.5A, V _{GS} =10V		35	43	mΩ
		T _C =150°C				mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V V _{GS} =0V f=1MHz		2015		pF
Output Capacitance	C _{oss}			285		pF
Reverse Transfer Capacitance	C _{rss}			70		pF
Total Gate Charge at 10V	Q _g (TOT)	V _{GS} =0V to 10V		28	37	nC
Threshold Gate Charge	Q _g (TH)	V _{GS} =0V to 2V		4	6	nC
Gate to Source Gate Charge	Q _{gs}	V _{DD} =50V I _D =7.5A I _G =1mA		10		nC
Gate Charge Threshold to Plateau	Q _{gs2}			6.8		nC
Gate to Drain “Miller” Charge	Q _{gd}			6		nC
Switching Characteristics (V _{GS} =10V)						
Turn-On Time	t _{ON}	V _{DD} =50V, I _D =4A V _{GS} =10V, R _{GS} =10Ω			51	ns
Turn-On Delay Time	t _{D(on)}			14		ns
Rise Time	t _r			20		ns
Turn-Off Delay Time	t _{D(off)}			37		ns
Fall Time	t _f			27		ns
Turn-Off Time	t _{OFF}				96	ns



Drain-Source Diode Characteristics						
Source to Drain Diode Voltage	V _{SD}	I _{SD} =7.5A			1.25	V
		I _{SD} =4A			1	V
Reverse Recovery Time	t _{rr}	I _{SD} =7.5A, dI _{SD} /dt=100A/μs			55	ns
Reverse Recovered Charge	Q _{rr}	I _{SD} =7.5A, dI _{SD} /dt=100A/μs			90	nC

Notes:

- 1: Starting T_J=25°C, L=13mH, I_{AS}= 8A.
- 2: R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{θJC} is guaranteed by design while R_{θCA} is determined by the user's board design.
- 3: R_{θJA} is measured with 1.0 in2 copper on FR-4 board



7.1 TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

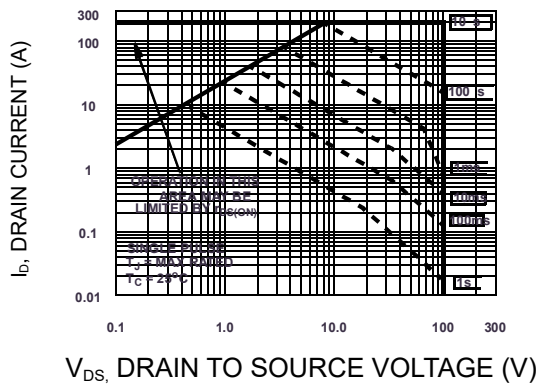


Fig 1: Forward Bias Safe Operating Area

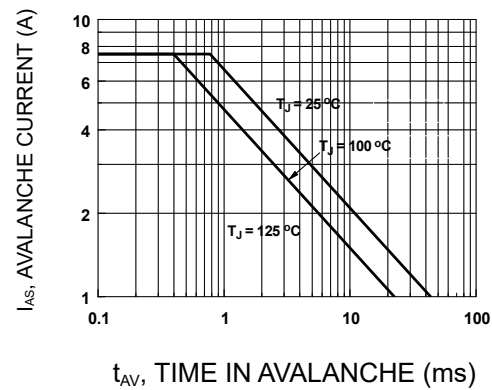


Figure 2: Unclamped Inductive Switching Capability

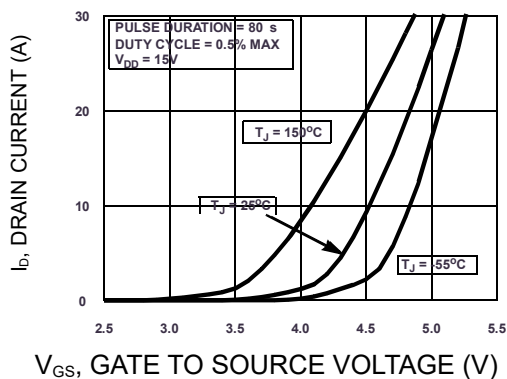


Figure 3: Transfer Characteristics

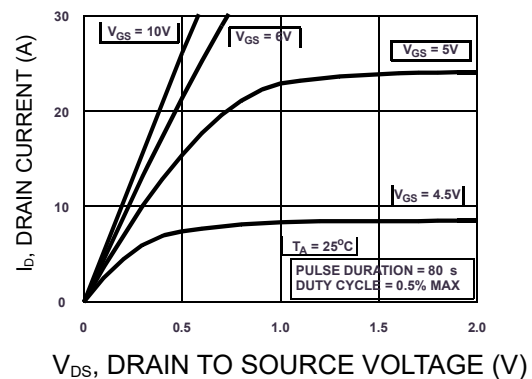


Figure 4: Saturation Characteristics

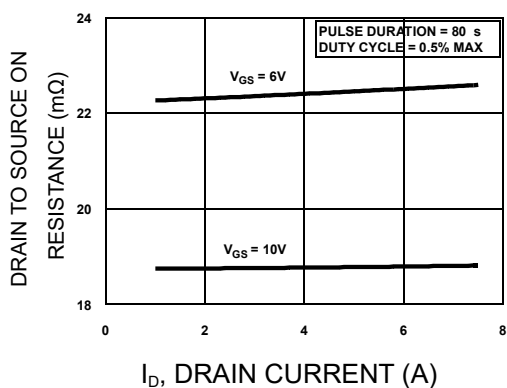


Figure 5: Drain to Source On Resistance vs Drain Current

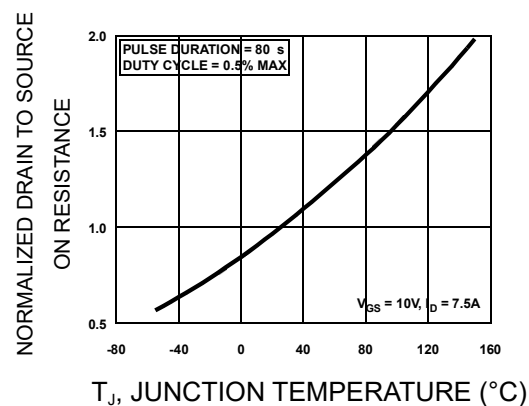
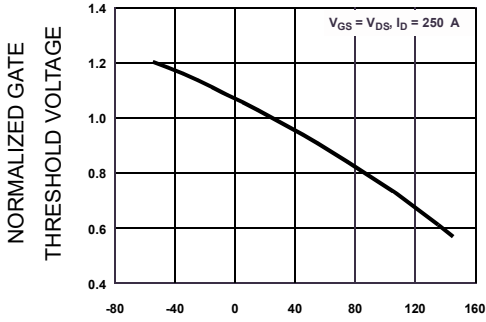
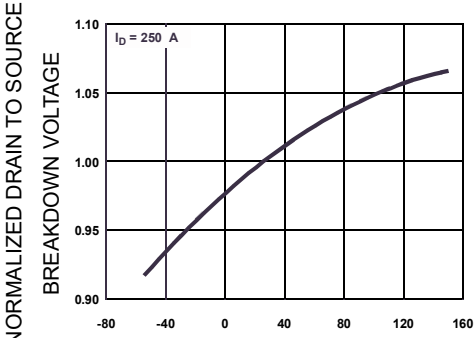
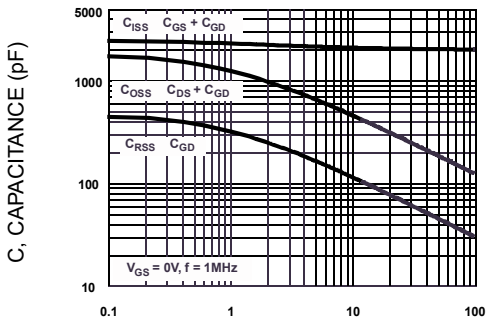
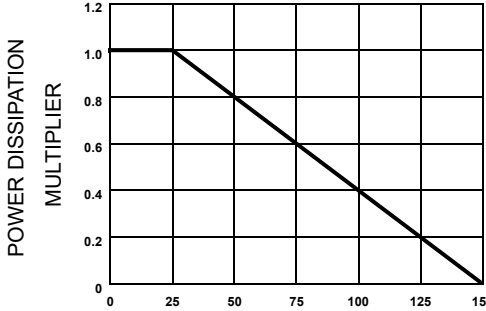
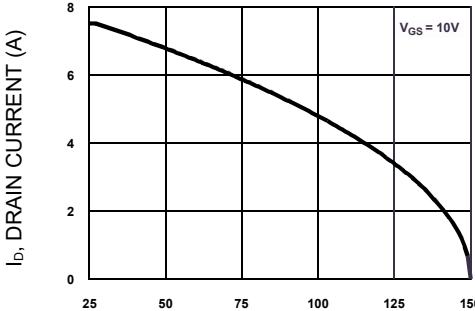


Figure 6: Normalized Drain to Source On Resistance vs Junction Temperature

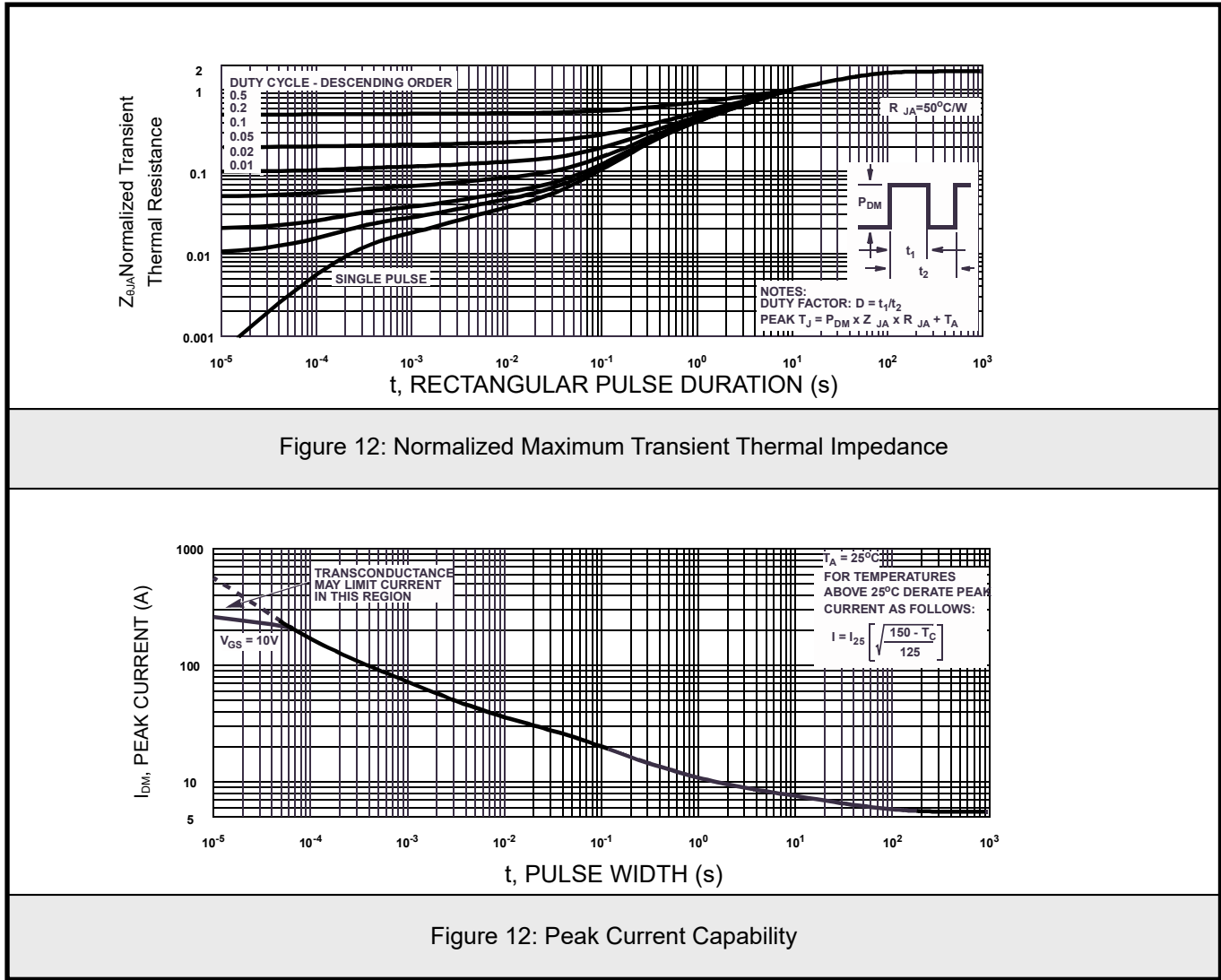


7.2TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

 NORMALIZED GATE THRESHOLD VOLTAGE T_J, JUNCTION TEMPERATURE (°C)	 NORMALIZED DRAIN TO SOURCE BREAKDOWN VOLTAGE T_J, JUNCTION TEMPERATURE (°C)
Figure 6: Normalized Drain to Source On Resistance vs Junction Temperature	Figure 2: Normalized Drain to Source Breakdown Voltage vs Junction Temperature
 C, CAPACITANCE (pF) V_{DS}, DRAIN TO SOURCE VOLTAGE (V)	 VGS, GATE TO SOURCE VOLTAGE (V) Q_g, GATE CHARGE (nC)
Figure 3: Capacitance vs Drain to Source Voltage	Figure 4: Gate Charge Waveforms for Constant Gate Currents
 POWER DISSIPATION MULTIPLIER T_A, AMBIENT TEMPERATURE (°C)	 I_D, DRAIN CURRENT (A) T_C, CASE TEMPERATURE (°C)
Figure 5: Normalized Power Dissipation vs Ambient Temperature	Figure 6: Maximum Continuous Drain Current vs Case Temperature

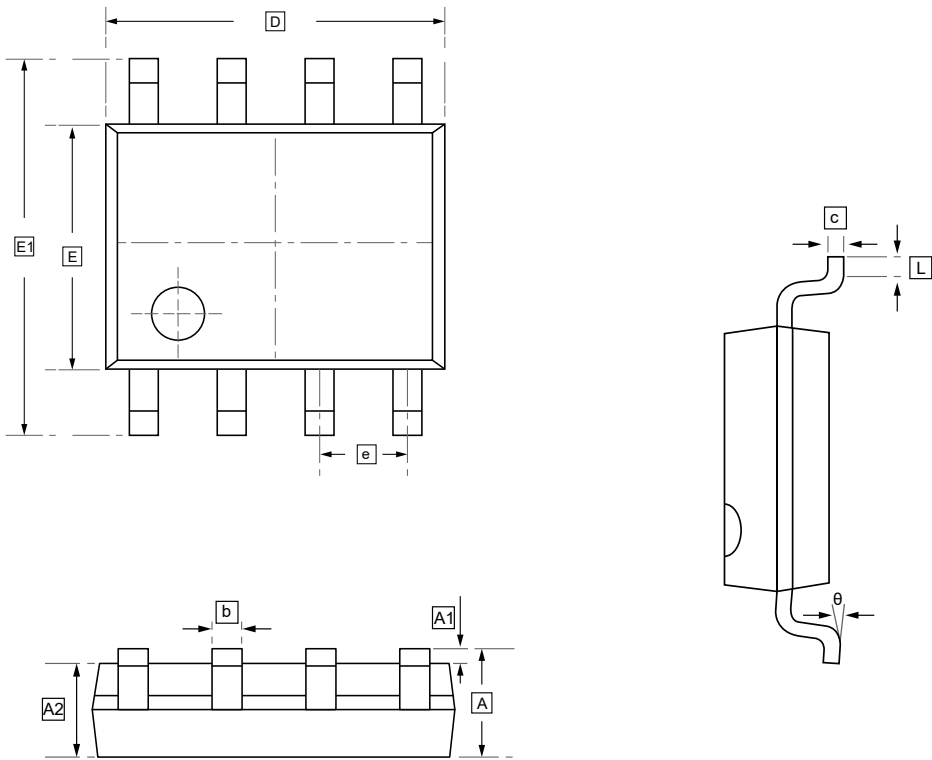


7.3TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS





8.SOP-8 Package Outline Dimensions

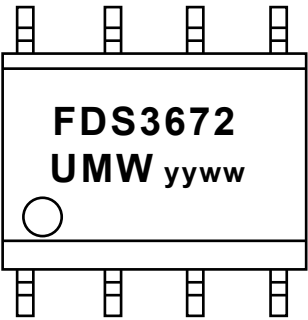


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E	E1	e	L	θ
Min	1.350	0.000	1.350	0.330	0.170	4.700	3.800	5.800	1.270	0.400	0°
Max	1.750	0.100	1.550	0.510	0.250	5.100	4.000	6.200	BSC	1.270	8°



9.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW FDS3672	SOP-8	3000	Tape and reel



10.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.

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