

1.Features

- $V_{DS}=100V$
- $I_D=7.5A$
- $R_{DS(ON)}=19m\Omega(V_{GS}=10V)$
- $Q_g(tot) = 28nC(Typ.), V_{GS}=10V$
- Low Miller Charge
- Low Q_{rr} Body Diode
- Optimized efficiency at high frequencies
- UIS Capability (Single Pulse and Repetitive Pulse)

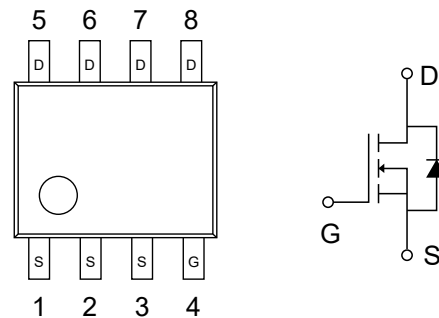
2.Applications

- 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/ $^{\circ}C$
Operating and 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	mΩ
		I _D =6.8A, V _{GS} =6V		24	28	mΩ
		I _D =7.5A, V _{GS} =10V, T _C =150°C		35	43	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 Characteristic

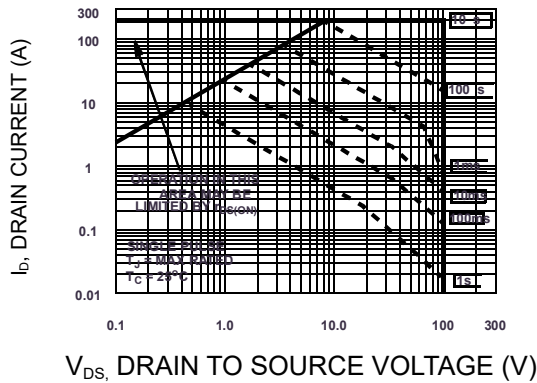


Fig 1: Forward Bias Safe Operating Area

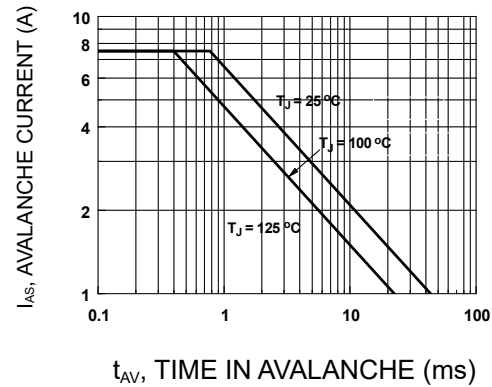


Figure 2: Unclamped Inductive Switching Capability

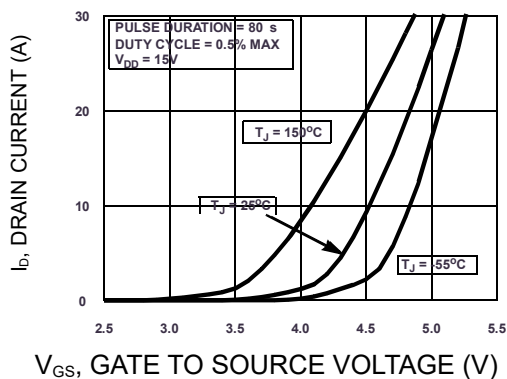


Figure 3: Transfer Characteristics

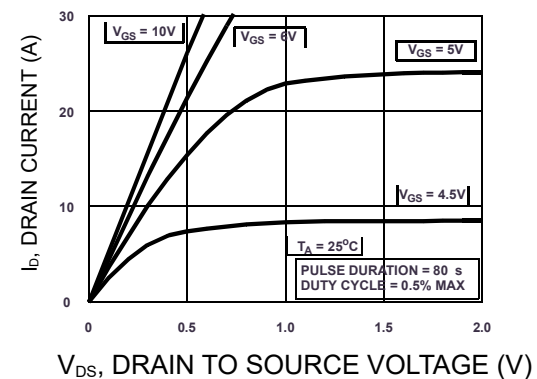


Figure 4: Saturation Characteristics

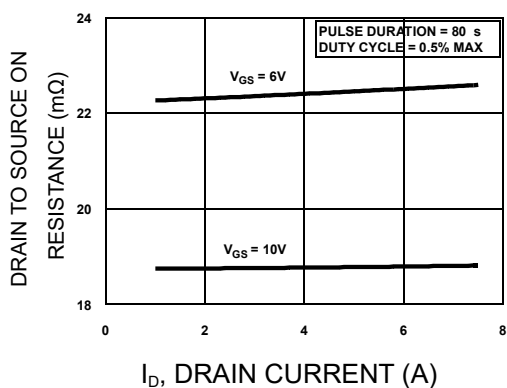


Figure 5: Drain to Source On Resistance vs Drain Current

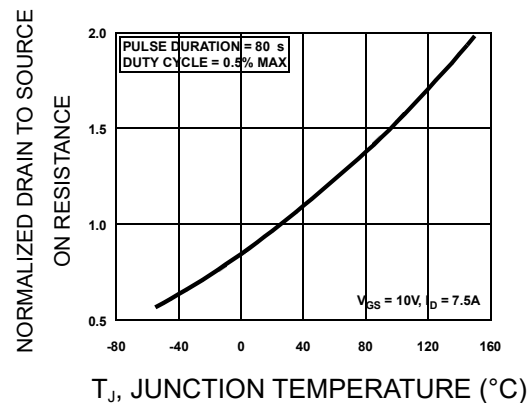
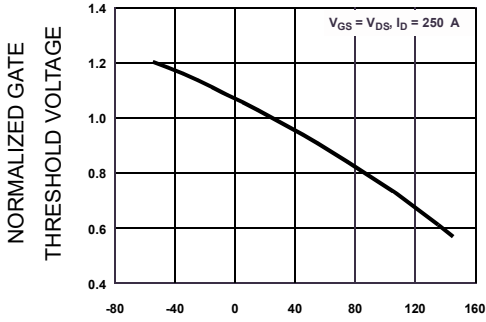
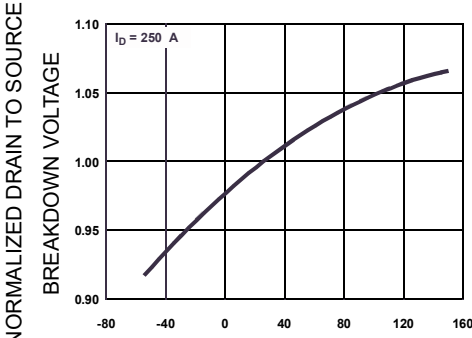
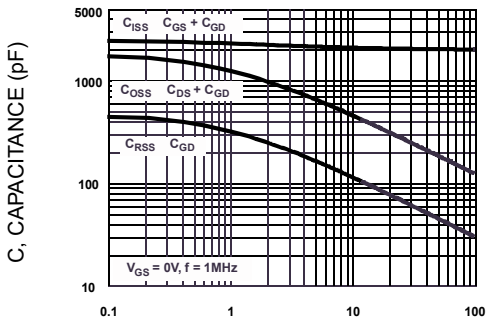
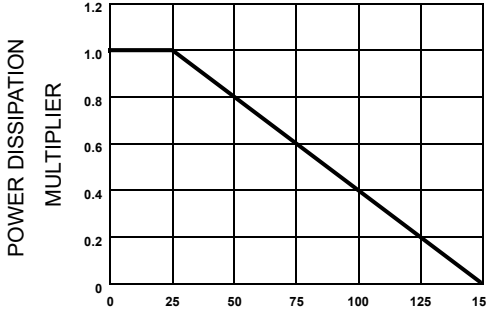
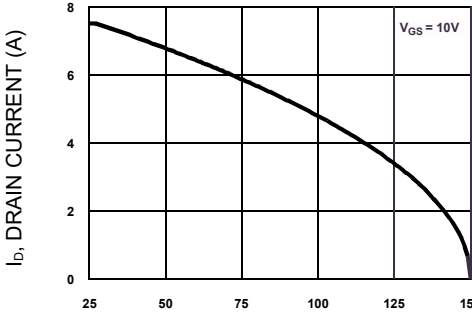


Figure 6: Normalized Drain to Source On Resistance vs Junction Temperature

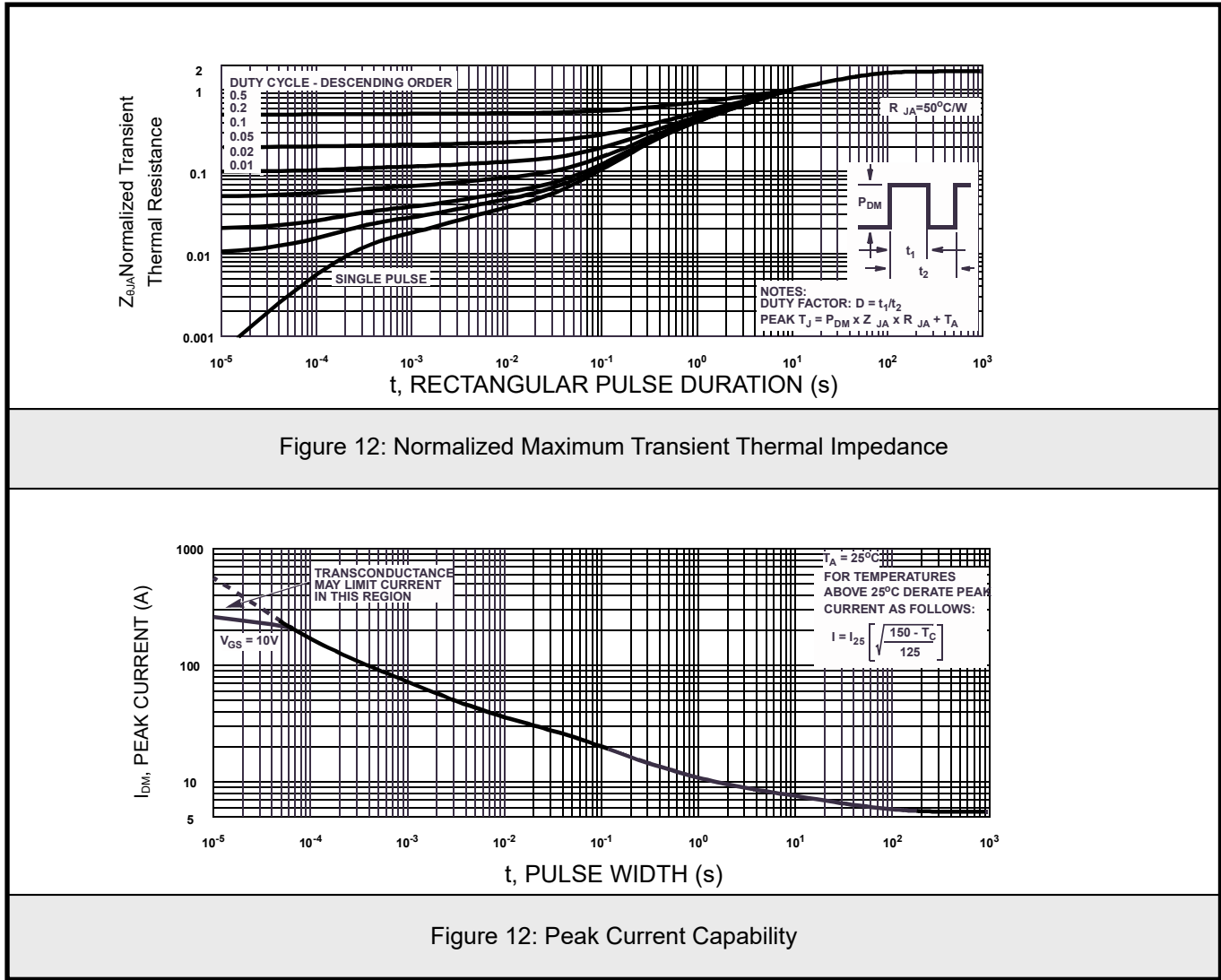


7.2 Typical Characteristic

 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

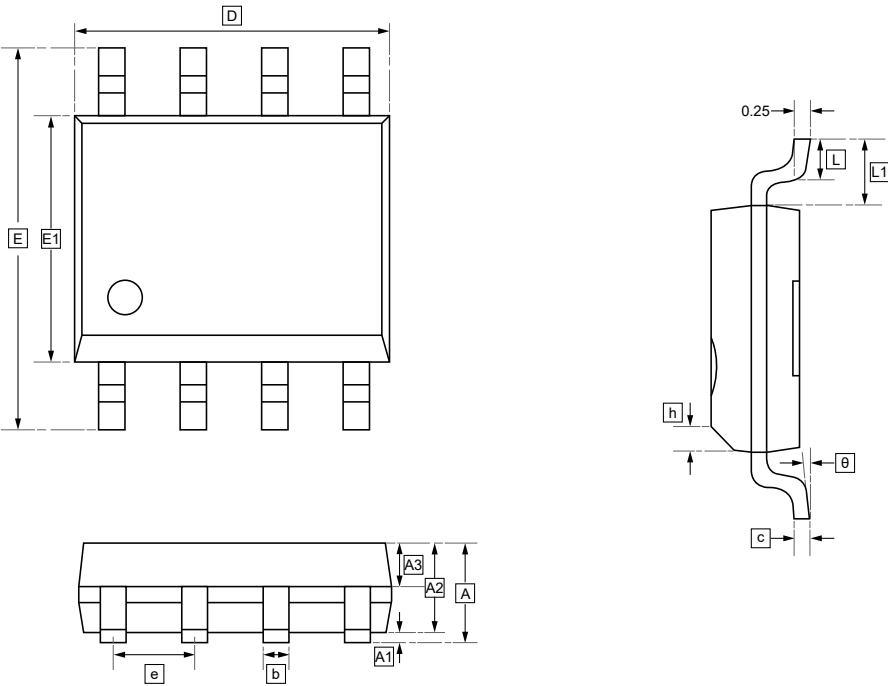


7.3 Typical Characteristic





8.SOP-8 Package Outline Dimensions



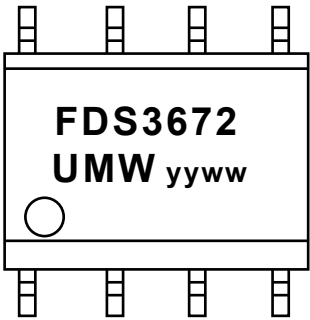
DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	b	c	D	E	E1	e	h	L
Min	-	0.05	1.30	0.60	0.39	0.20	4.80	5.80	3.80	1.24	0.30	0.50
Max	1.75	0.20	1.50	0.70	0.47	0.24	5.00	6.20	4.00	1.30	0.50	0.80

Symbol	L1	θ
Min	1.00	0°
Max	1.10	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

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