

1.Features

- $V_{DS(V)}=30V$
- $I_D=35A(V_{GS}=10V)$
- $R_{DS(ON)}<5.7m\Omega(V_{GS}=10V)$
- $R_{DS(ON)}<6.8m\Omega(V_{GS}=4.5V)$
- Low Miller Charge
- Low Q_{rr} Body Diode
- UIS Capability (Single Pulse and Repetitive Pulse)

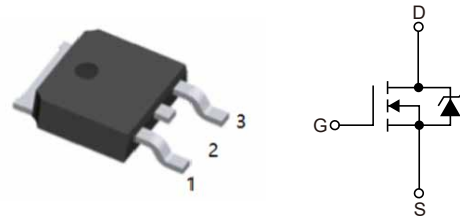
2.Applications

- 12V Automotive Load Control
- Starter / Alternator Systems
- Electronic Power Steering Systems
- ABS
- DC-DC Converters

3.Pinning information

Pin	Symbol	Description
1	G	GATE
2	D	DRAIN
3	S	SOURCE

TO-252(DPAK)
top view



4.Absolute Maximum Ratings $T_c=25^{\circ}C$

Parameter	Symbol	Rating	Units
Drain to Source Voltage	V_{DSS}	30	V
Gate to Source Voltage	V_{GS}	± 20	V
Drain Current Continuous ($T_c<154^{\circ}C$, $V_{GS}=10V$)	I_D	35	A
Continuous ($T_c<150^{\circ}C$, $V_{GS}=4.5V$)		35	A
Continuous ($T_{amb}=25^{\circ}C$, $V_{GS}=10V$, with $R_{\theta JA}=52^{\circ}C/W$)		17	A
Pulsed		Figure 4	A
Single Pulse Avalanche Energy (Note 1)	E_{AS}	168	mJ
Power Dissipation	P_D	80	W
Derate above $25^{\circ}C$		0.53	$^{\circ}C/W$
Operating and Storage Temperature	T_J, T_{STG}	-55 to 175	$^{\circ}C$



5. Thermal Characteristics

Parameter	Symbol	Rating	Units
Thermal Resistance, Junction-to-Case TO-252	$R_{\theta JC}$	1.88	°C/W
Thermal Resistance, Junction-to-Ambient TO-252	$R_{\theta JA}$	100	°C/W
Thermal Resistance, Junction-to-Ambient TO-252, 1in ² copper pad area	$R_{\theta JA}$	52	°C/W



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

Parameter	Symbol	Conditions		Min	Typ	Max	Units
Off Characteristics							
Drain to Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V		30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =25V				1	μA
		V _{GS} =0V	T _J =150°C			250	μA
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		1.2		2.5	V
Drain to Source On Resistance	R _{DS(ON)}	I _D =35A, V _{GS} =10V			4.7	5.7	mΩ
		I _D =35A, V _{GS} =4.5V			5.7	6.8	mΩ
Dynamic Characteristics							
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz			2525		pF
Output Capacitance	C _{oss}				490		pF
Reverse Transfer Capacitance	C _{rss}				300		pF
Gate Resistance	R _g	V _{GS} =0.5V, f=1MHz			2.1		Ω
Total Gate Charge at 10V	Q _{g(TOT)}	V _{GS} =0V to 10V	V _{DD} =15V I _D =35A I _g =1mA		46	60	nC
Total Gate Charge at 5V	Q _{g(5)}	V _{GS} =0V to 5V			24	32	nC
Threshold Gate Charge	Q _{g(TH)}	V _{GS} =0V to 1V			2.3	3	nC
Gate to Source Gate Charge	Q _{gs}				6.9		nC
Gate Charge Threshold to Plateau	Q _{gs2}				4.6		nC
Gate to Drain “Miller” Charge	Q _{gd}				9.8		nC
Turn-On Time	t _(on)	V _{DD} =15V, I _D =35A V _{GS} =4.5V, R _{GS} =6.2Ω				283	ns
Turn-On Delay Time	t _{D(on)}				18		ns
Rise Time	t _r				171		ns
Turn-Off DelayTime	t _{D(off)}				31		ns
Fall Time	t _f				61		ns
Turn-Off Time	t _{off}					137	ns



Drain–Source Diode Characteristics						
Source to Drain Diode Forward Voltage	V_{SD}	$I_{SD}=35A$			1.25	V
		$I_{SD}=15A$			1	V
Reverse Recovery Time	t_{rr}	$I_F=35A, di/dt=100A/\mu s$			27	ns
Reverse Recovery Charge	Q_{rr}	$I_F=35A, di/dt=100A/\mu s$			12	nC

Notes:

1: Starting $T_J=25^{\circ}C$, $L=0.43mH$, $I_{AS}=28A$.



7.1 Typical characteristic

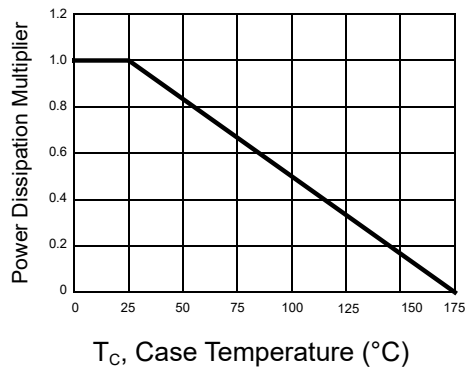


Figure 1: Normalized Power Dissipation vs Case Temperature

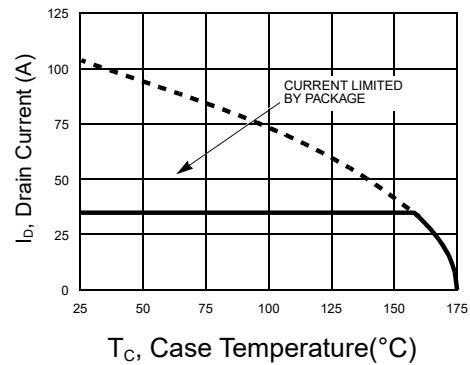


Figure 2: Maximum Continuous Drain Current vs Case Temperature

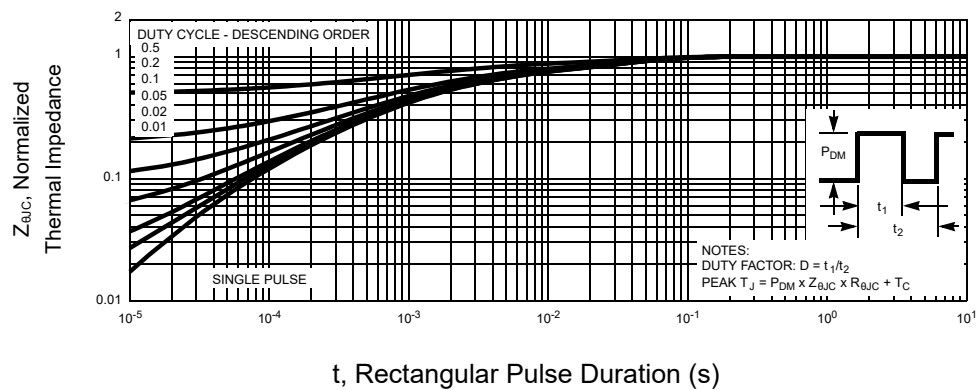


Figure 3: Normalized Maximum Transient Thermal Impedance

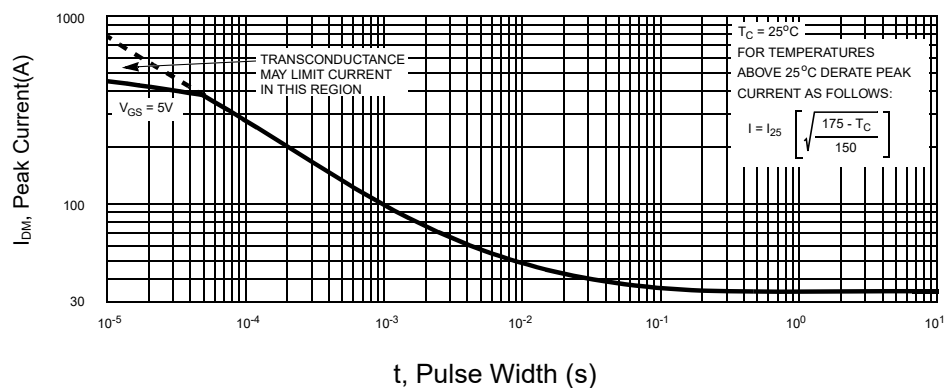


Figure 4: Peak Current Capability



7.2 Typical characteristic

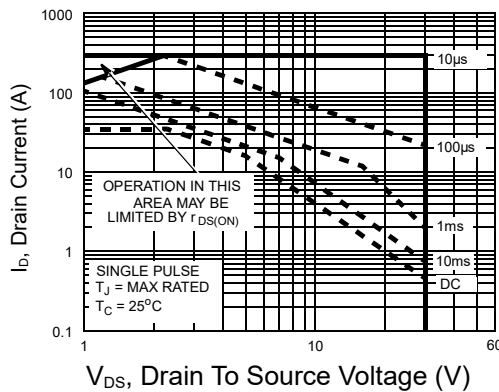


Figure 5: Forward Bias Safe Operating Area

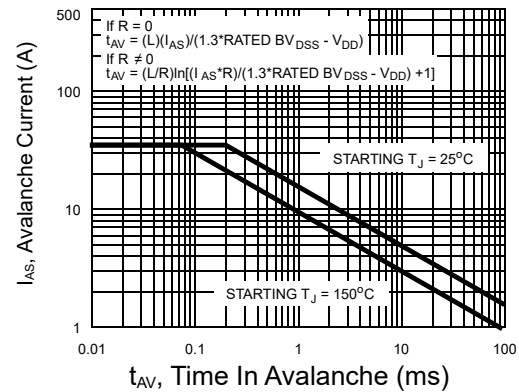


Figure 6: Unclamped Inductive Switching Capability

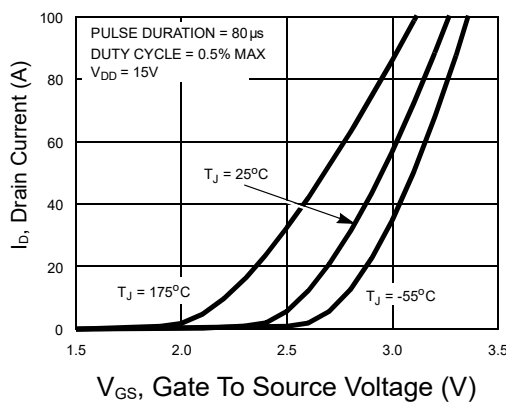


Figure 7: Transfer Characteristics

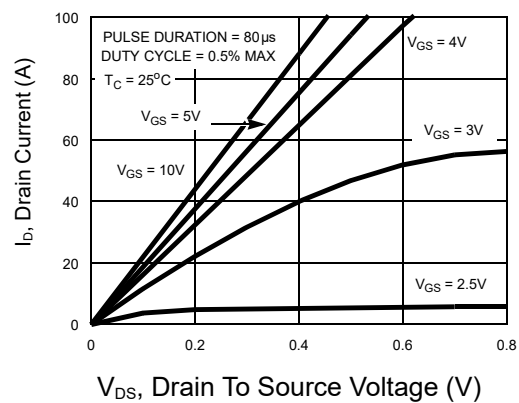


Figure 8: Saturation Characteristics

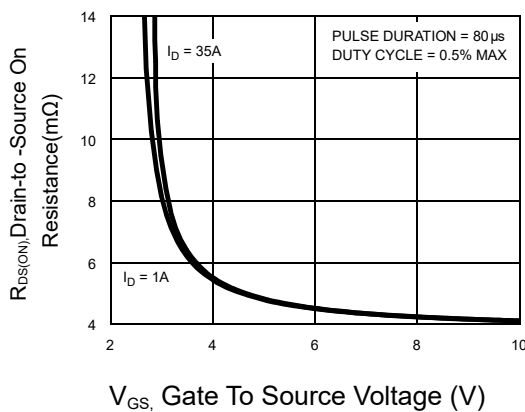


Figure 9: Drain to Source On Resistance vs Gate Voltage and Drain Current

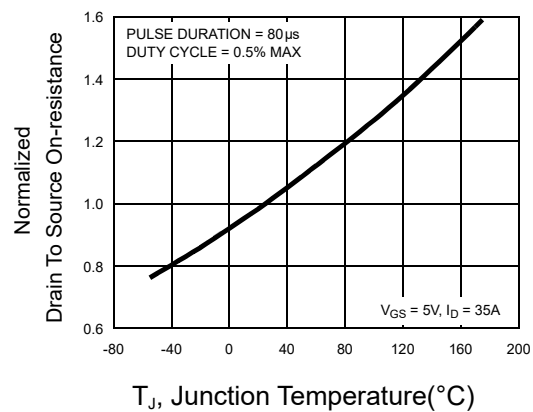
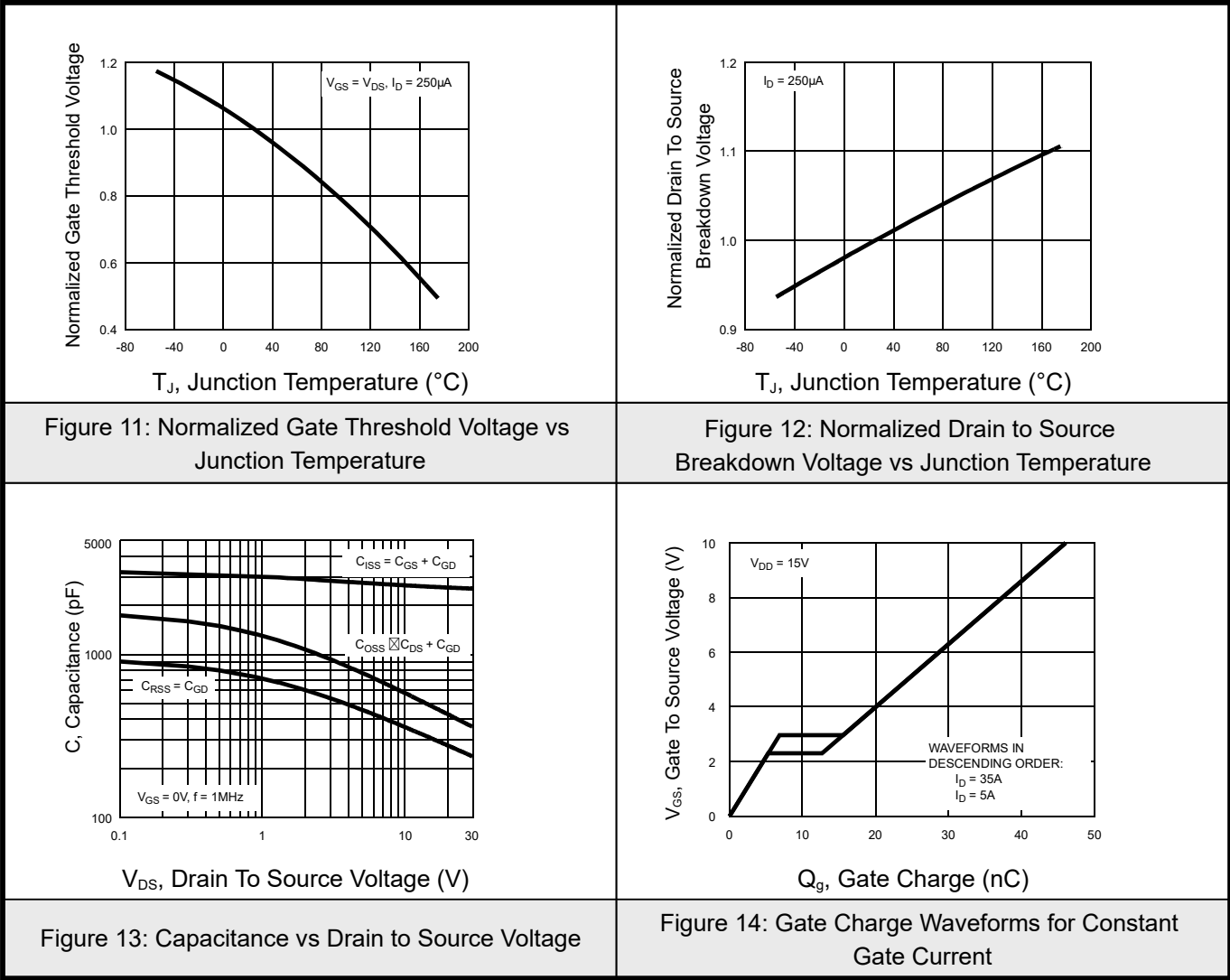


Figure 10: Normalized Drain to Source On Resistance vs Junction Temperature

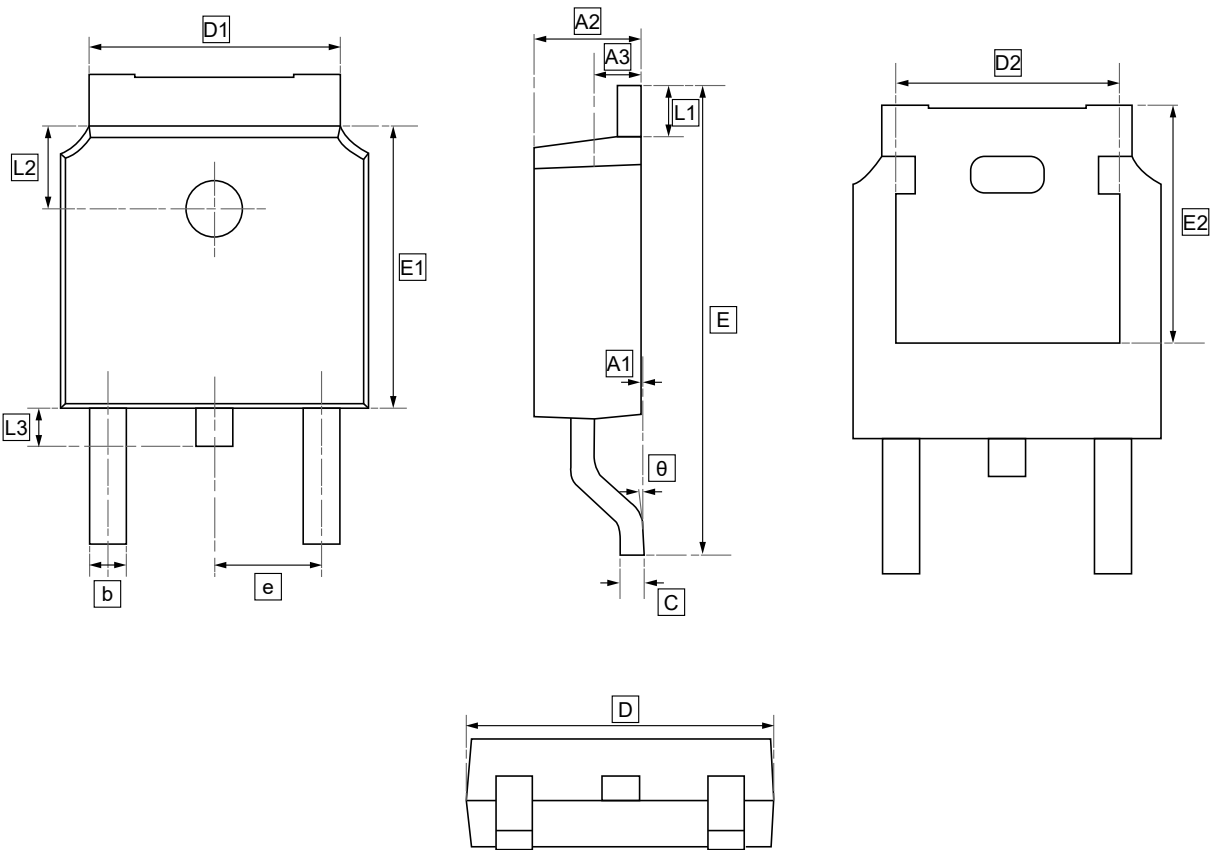


7.3Typical characteristic





8.TO-252 Package Outline Dimensions

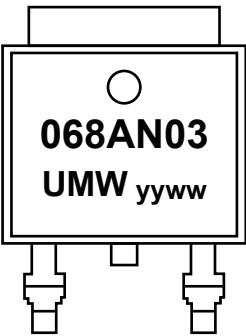


DIMENSIONS (mm are the original dimensions)

Symbol	A1	A2	A3	b	c	D	D1	D2	E	E1	E2	e	L1	L2	L3	θ
Min	0.00	2.18	0.90	0.65	0.46	6.35	4.95	4.32	9.40	5.97	5.21	2.286 BSC	0.89	1.70	0.60	0.00
Max	0.13	2.39	1.10	0.85	0.61	6.73	5.46	4.90	10.41	6.22	5.38		1.27	1.90	1.00	8.00



9.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW FDD068AN03L	TO-252	2500	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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