

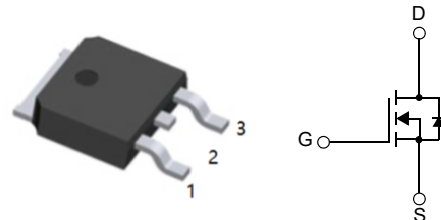
1.Features

- $V_{DS(V)}=60V$
- $I_D=37A$
- $R_{DS(ON)}<22m\Omega(V_{GS}=10V)$
- $R_{DS(ON)}<27m\Omega(V_{GS}=5V)$
- Low Miller Charge
- Low Q_{rr} Body Diode

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}	60	V
Gate to Source Voltage	V_{GS}	± 20	V
Drain Current Continuous ($V_{GS}=10V$)	I_D	37	A
Drain Current Continuous ($V_{GS}=5V$)		33	A
Continuous ($T_A=25^{\circ}C$, $V_{GS}=10V$, with $R_{\theta JA}=52^{\circ}C/W$)		7.4	A
Pulsed		Figure 4	A
Single Pulse Avalanche Energy (Note 1)	E_{AS}	45	mJ
Power Dissipation	P_D	72	W
Derate above $25^{\circ}C$		0.48	$^{\circ}C/W$
Operating and Storage Temperature	T_J, T_{STG}	-55 to 150	$^{\circ}C$



5.Thermal Characteristics

Parameter	Symbol	Rating	Units
Maximum Thermal resistance Junction to Case TO-252	$R_{\theta JC}$	2.1	°C/W
Thermal Resistance Junction to Ambient TO-252, 1in ² copper pad area	$R_{\theta JA}$	52	°C/W



6. Electrical Characteristic (T_J=25°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		60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =48V				1	μA
		V _{GS} =0V	T _J =125°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	1.6	2	V
Drain to Source On Resistance	R _{DS(ON)}	I _D =32A, V _{GS} =10V			18	22	mΩ
		I _D =29A, V _{GS} =5V			22	27	mΩ
Dynamic Characteristics							
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz			1420	1890	pF
Output Capacitance	C _{oss}				150	200	pF
Reverse Transfer Capacitance	C _{rss}				65	100	pF
Gate Resistance	R _g	f=1MHz			3.5		Ω
Total Gate Charge at 10V	Q _g	V _{GS} =0V to 10V	V _{DD} =30V I _D =35A		24	34	nC
Total Gate Charge at 5V	Q _g	V _{GS} =0V to 5V			13	18	nC
Threshold Gate Charge	Q _{g(th)}	V _{GS} =0V to 1V			1.3		nC
Gate to Source Gate Charge	Q _{gs}				4		nC
Gate Charge Threshold to Plateau	Q _{gs2}				2.7		nC
Gate to Drain “Miller” Charge	Q _{gd}				5		nC
Turn-On Time	t _(on)	V _{DD} =30V, I _D =35A V _{GS} =5V, R _{GS} =11Ω				130	ns
Turn-On Delay Time	t _{D(on)}				12		ns
Rise Time	t _r				75		ns
Turn-Off DelayTime	t _{D(off)}				26		ns
Fall Time	t _f				34		ns
Turn-Off Time	t _{off}					90	ns



Drain–Source Diode Characteristics						
Source to Drain Diode Forward Voltage	V _{SD}	I _{SD} =32A			1.25	V
		I _{SD} =16A			1	V
Reverse Recovery Time	t _{rr}	I _F =35A, di/dt=100A/μs			39	ns
Reverse Recovery Charge	Q _{rr}	I _F =35A, di/dt=100A/μs			35	nC

Notes:

1: Starting T_J=25°C, L=110μH, I_{AS}=28A, V_{DD}=54V, V_{GS}=10V.



7.1 Typical characteristic

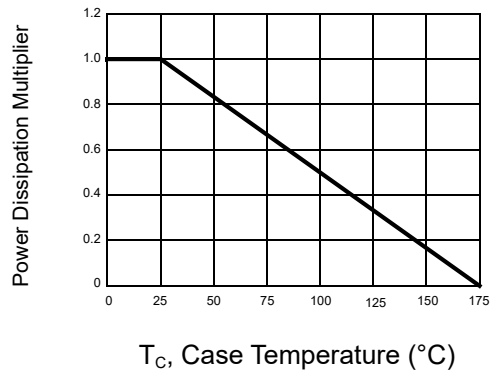


Figure 1: Normalized Power Dissipation vs Case Temperature

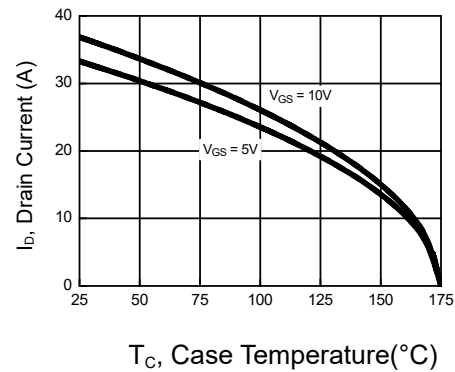


Figure 2: Maximum Continuous Drain Current vs Case Temperature

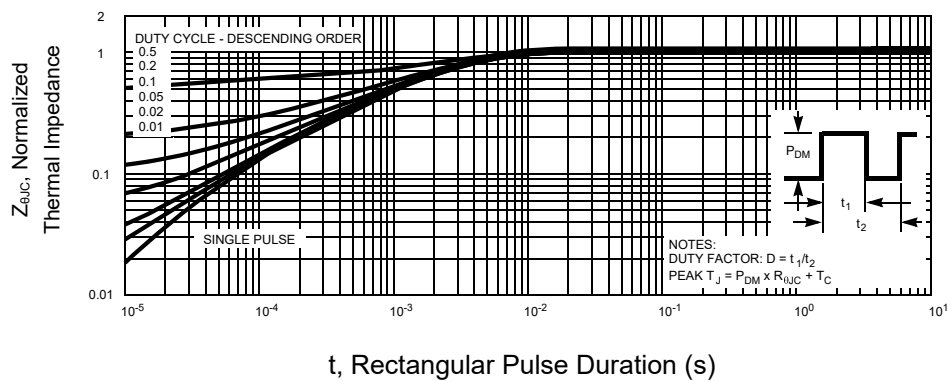


Figure 3: Normalized Maximum Transient Thermal Impedance

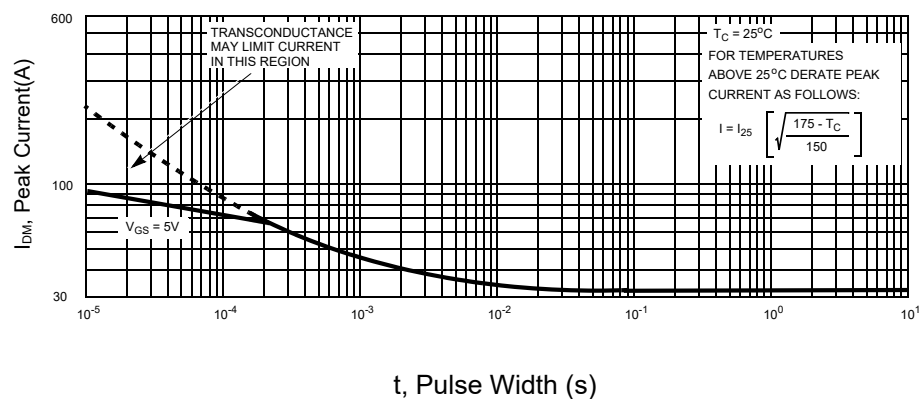


Figure 4: Peak Current Capability



7.2 Typical characteristic

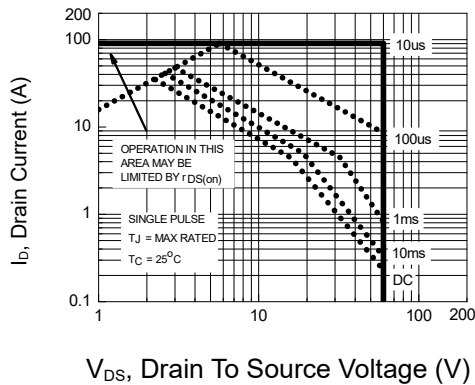


Figure 5: Forward Bias Safe Operating Area

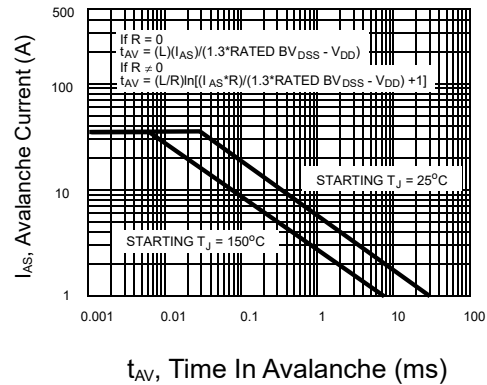


Figure 6: Unclamped Inductive Switching Capability

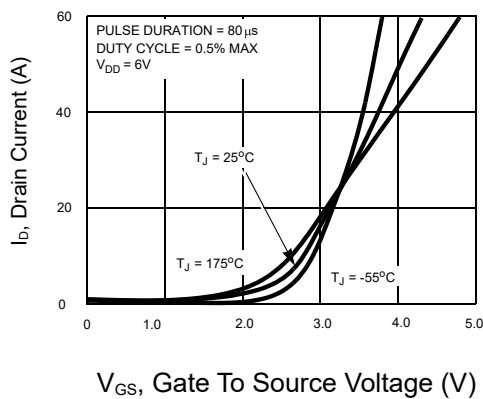


Figure 7: Transfer Characteristics

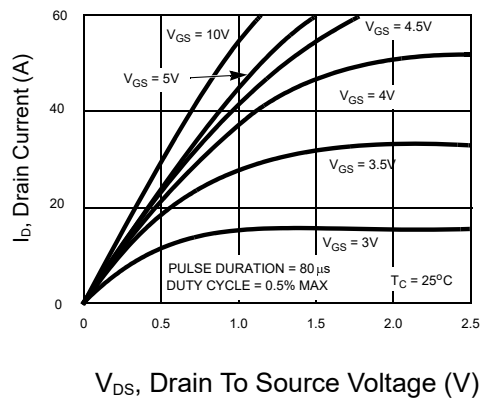


Figure 8: Saturation Characteristics

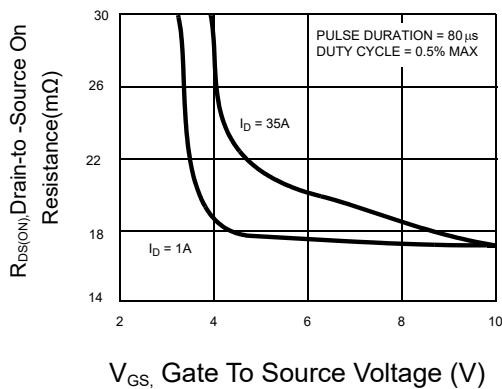


Figure 9: Drain to Source On Resistance vs. Gate Voltage and Drain Current

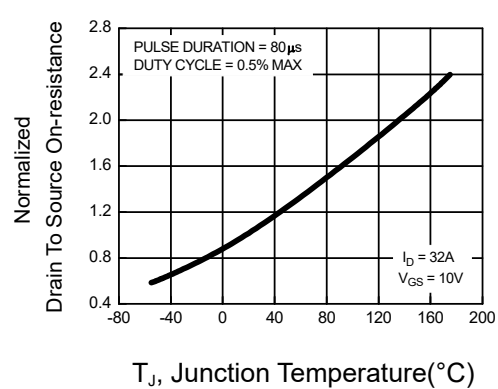
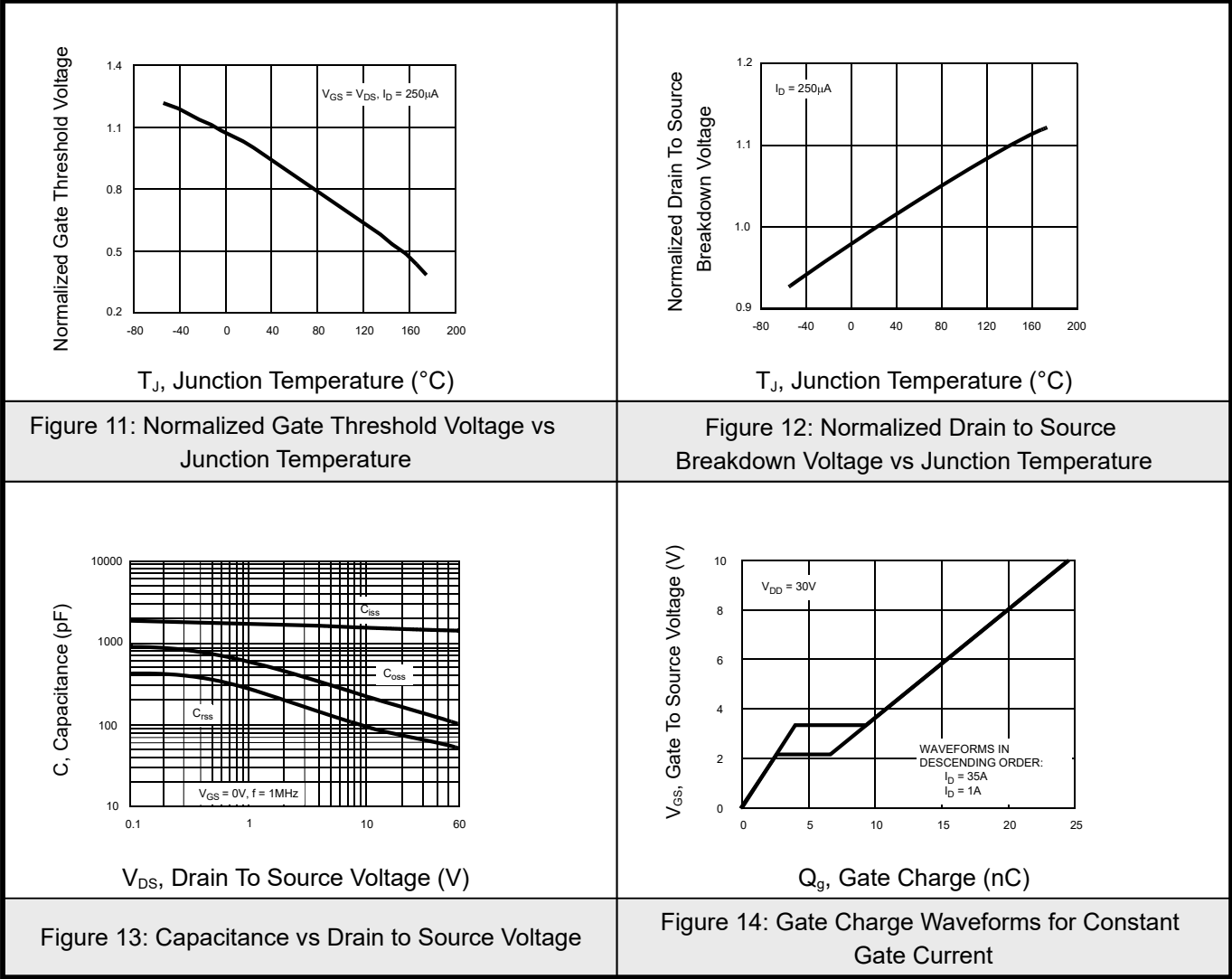


Figure 10: Normalized Drain to Source On Resistance vs. Junction Temperature

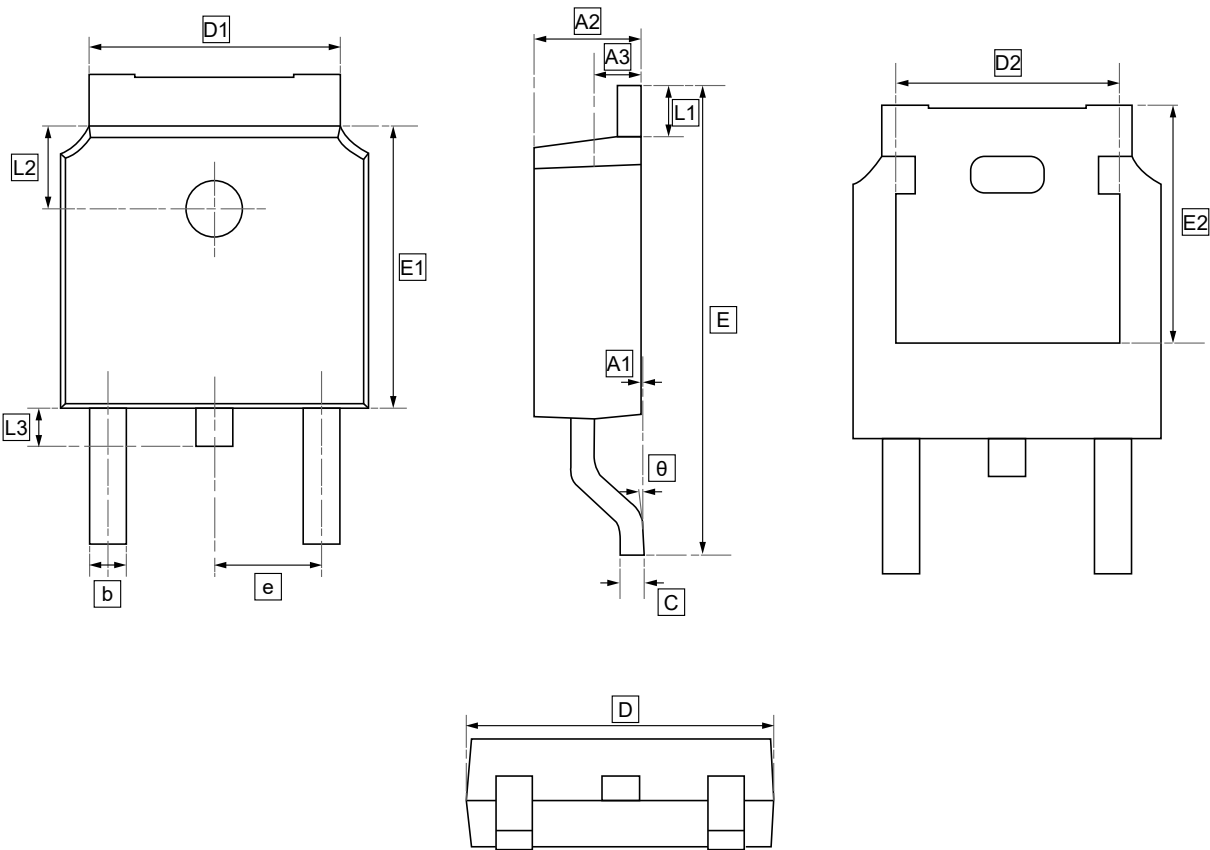


7.3Typical characteristic





8.TO-252 Package Outline Dimensions

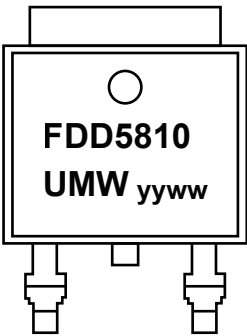


DIMENSIONS (mm are the original dimensions)

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	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		BSC	1.27	1.90	1.00



9.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW FDD5810	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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