

1.Features

- $V_{DS}=30V$
- $I_D=25A$
- $R_{DS(ON)}=7m\Omega(V_{GS}=10V)$
- $R_{DS(ON)}=9m\Omega(V_{GS}=4.5V)$

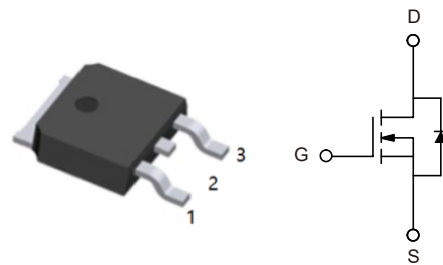
2.Applications

- OR-ing
- Server
- DC/DC

3.Pinning information

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

TO-252(DPAK)
top view



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

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ($T_J=175^{\circ}C$)	$T_C=25^{\circ}C$	I_D	25	A
	$T_C=70^{\circ}C$		22	
	$T_A=25^{\circ}C$		21.8 ^{b,c}	
	$T_A=70^{\circ}C$		18 ^{b,c}	
Pulsed Drain Current		I_{DM}	200	
Avalanche Current Pulse	L = 0.1 mH	I_{AS}	39	mJ
Single Pulse Avalanche Energy		E_{AS}	94.8	
Continuous Source-Drain Diode Current	$T_C=25^{\circ}C$	I_S	50 ^{a,e}	A
	$T_A=25^{\circ}C$		3.13 ^{b,c}	



Maximum Power Dissipation	$T_C=25^{\circ}\text{C}$	P_D	100 ^a	W
	$T_C=70^{\circ}\text{C}$		75	
	$T_A=25^{\circ}\text{C}$		3.25 ^{b,c}	
	$T_A=70^{\circ}\text{C}$		2.33 ^{b,c}	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 175	$^{\circ}\text{C}$

5.Thermal resist ance rating

Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^{b,d}	$t \leq 10\text{sec}$	R_{thJA}	32	40	$^{\circ}\text{C/W}$
Maximum Junction-to-Case	Steady-State	R_{thJC}	0.5	0.6	$^{\circ}\text{C/W}$

Notes:

- a. Based on $T_C = 25^{\circ}\text{C}$.
- b. Surface mounted on 1" x 1" FR4 board.
- c. $t = 10\text{ sec}$.
- d. Maximum under steady state conditions is 90°C/W .
- e. Calculated based on maximum junction temperature. Package limitation current is 90 A.



6.Specifications (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static						
Drain-Source Breakdown Voltage	V _{DS}	V _{DS} =0V, I _D =250μA	30			V
V _{DS} Temperature Coefficient	ΔV _{DS} /T _J	I _D =250μA		35		mV/°C
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)} /T _J			-7.5		
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.5		2	V
Gate-Source Leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
		V _{DS} =30V, V _{GS} =0V, T _J =55°C			10	
On-State Drain Current ^a	I _{D(ON)}	V _{DS} ≥5V, V _{GS} =10V	90			A
Drain-Source On-State Resistance ^a	R _{DS(ON)}	V _{GS} =10V, I _D =21.8A		7		mΩ
		V _{GS} =4.5V, I _D =18A		9		
Forward Transconductance ^a	g _{FS}	V _{DS} =15V, I _D =21.8A		160		S
Dynamic^b						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz		2201		pF
Output Capacitance	C _{oss}			525		
Reverse Transfer Capacitance	C _{rss}			370		
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =21.8A		35	45	nC
		V _{DS} =15V, V _{GS} =4.5V		25	35	
Gate Source Charge	Q _{gs}	I _D =21.8A		15		
Gate Drain Charge	Q _{gd}			20		
Gate Resistance	R _g	f=1MHz		1.4	2.1	Ω
Turn-On DelayTime	t _{D(on)}	V _{DD} =15V, R _L =0.625Ω I _D ↔24A, V _{GEN} =10V R _g =1Ω		18	27	ns
Rise Time	t _r			11	17	
Turn-Off DelayTime	t _{D(off)}			70	105	
Fall Time	t _f			10	15	



Turn-On Delay Time	t _{D(on)}	V _{DD} =15V, R _L =0.67Ω I _D ∞22.5V, V _{GEN} =4.5V R _g =1Ω		55	83	ns
Rise Time	t _r			180	270	ns
Turn-Off Delay Time	t _{D(off)}			55	83	ns
Fall Time	t _f			12	18	ns
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I _S	T _C =25°C			120	A
Pulse Diode Forward Current	I _{SM}				120	A
Body Diode Voltage	V _{SD}	I _S =22A		0.8	1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F =20A, dI/dt=100A/μs T _J =25°C		52	78	ns
Body Diode Reverse Recovery Charge	Q _{rr}			70.2	105	nC
Reverse Recovery Fall Time	t _a			27		ns
Reverse Recovery Rise Time	t _b			25		ns

Notes:

- Pulse test; pulse width $\leq 300 \mu s$, duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.



7.1Typical characteristic 25 °C, unless otherwise noted

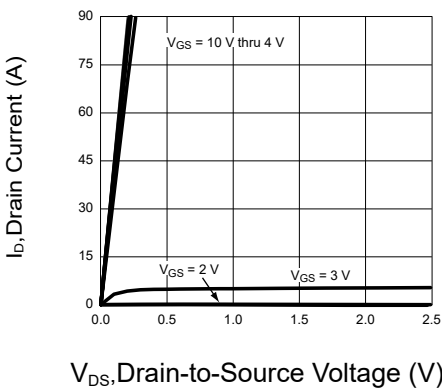


Figure 1: Output Characteristics

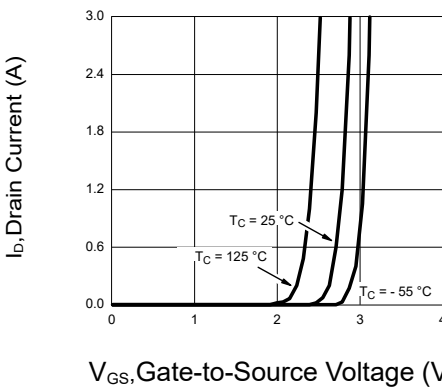


Figure 2: Transfer Characteristics

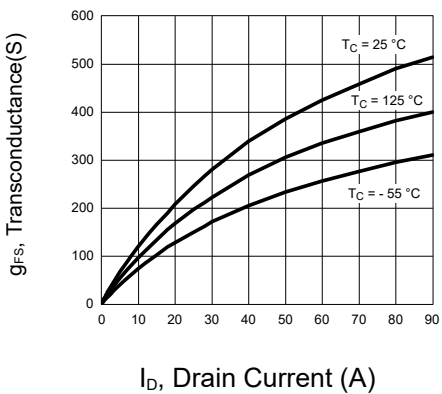


Figure 3: Transconductance

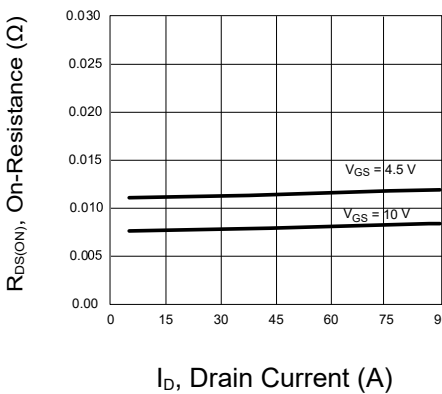


Figure 4: $R_{DS(ON)}$ vs. Drain Current

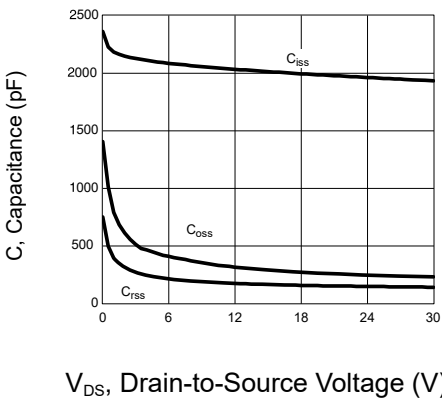


Figure 5: Capacitance

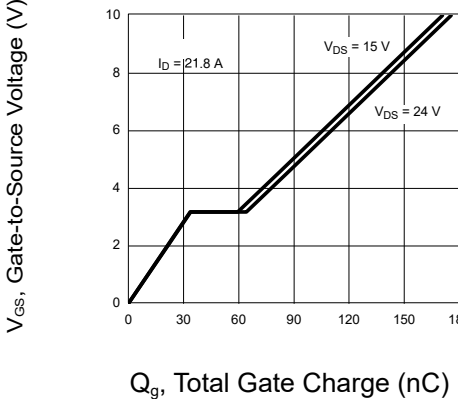
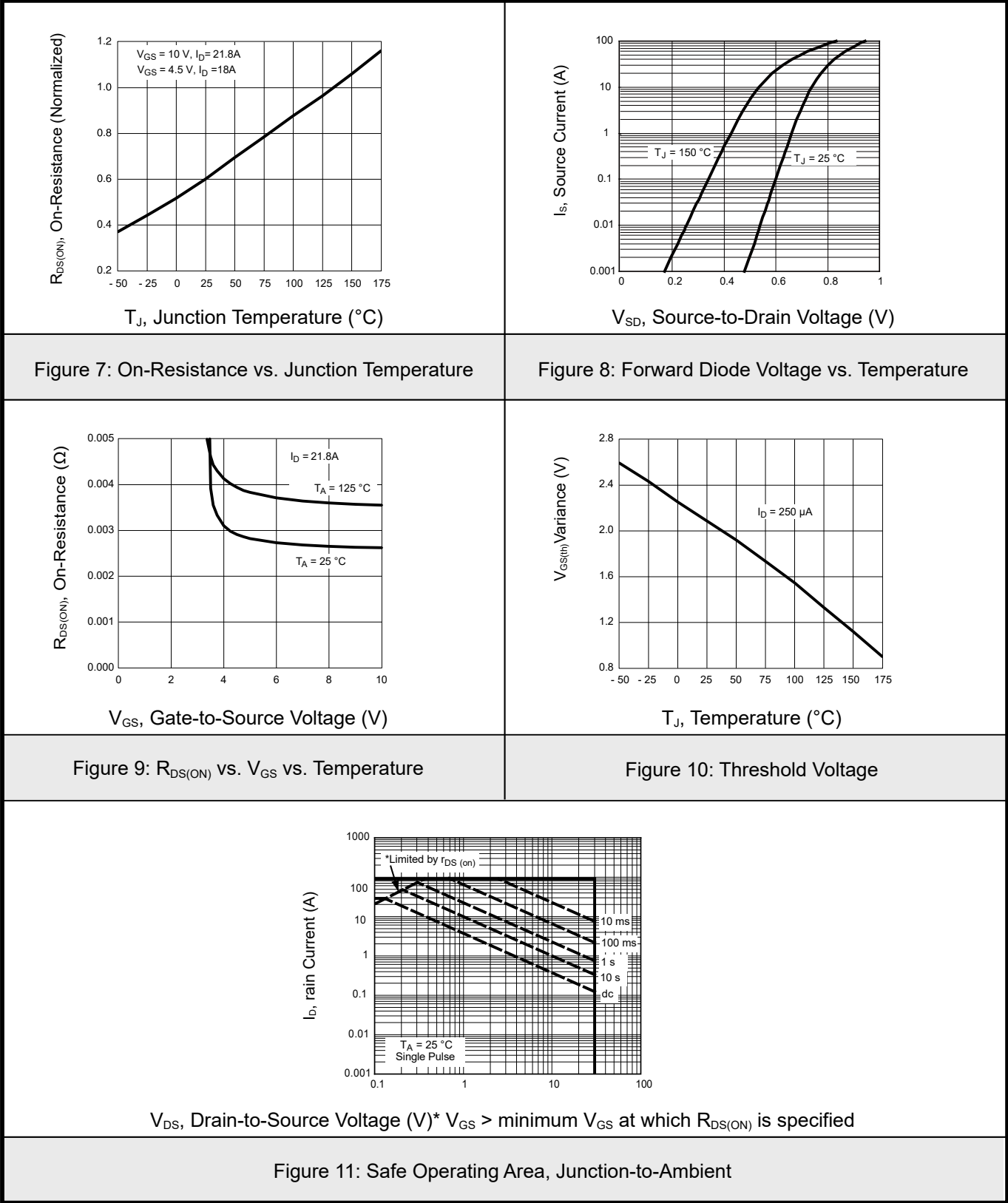


Figure 6: Gate Charge



7.2Typical characteristic 25 °C, unless otherwise noted





7.3Typical characteristic 25 °C, unless otherwise noted

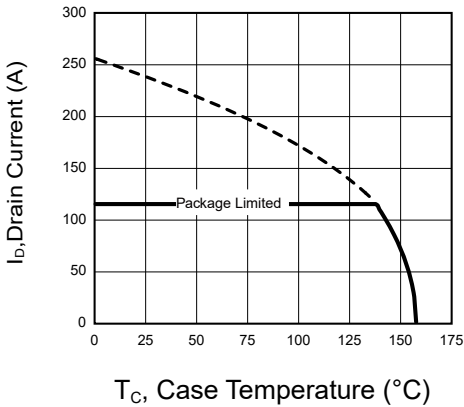


Figure 12: Current Derating*

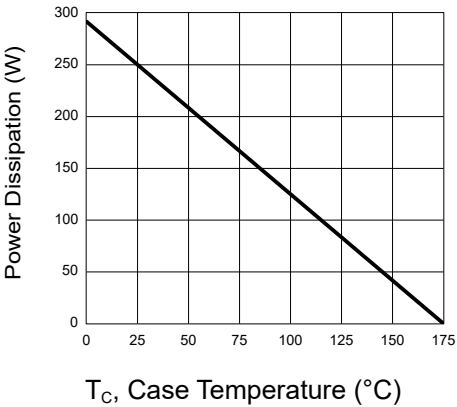


Figure 13: Power Derating

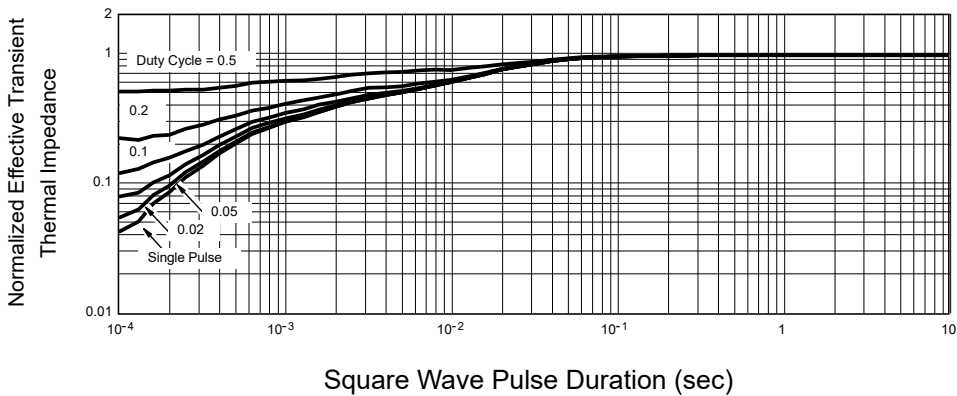
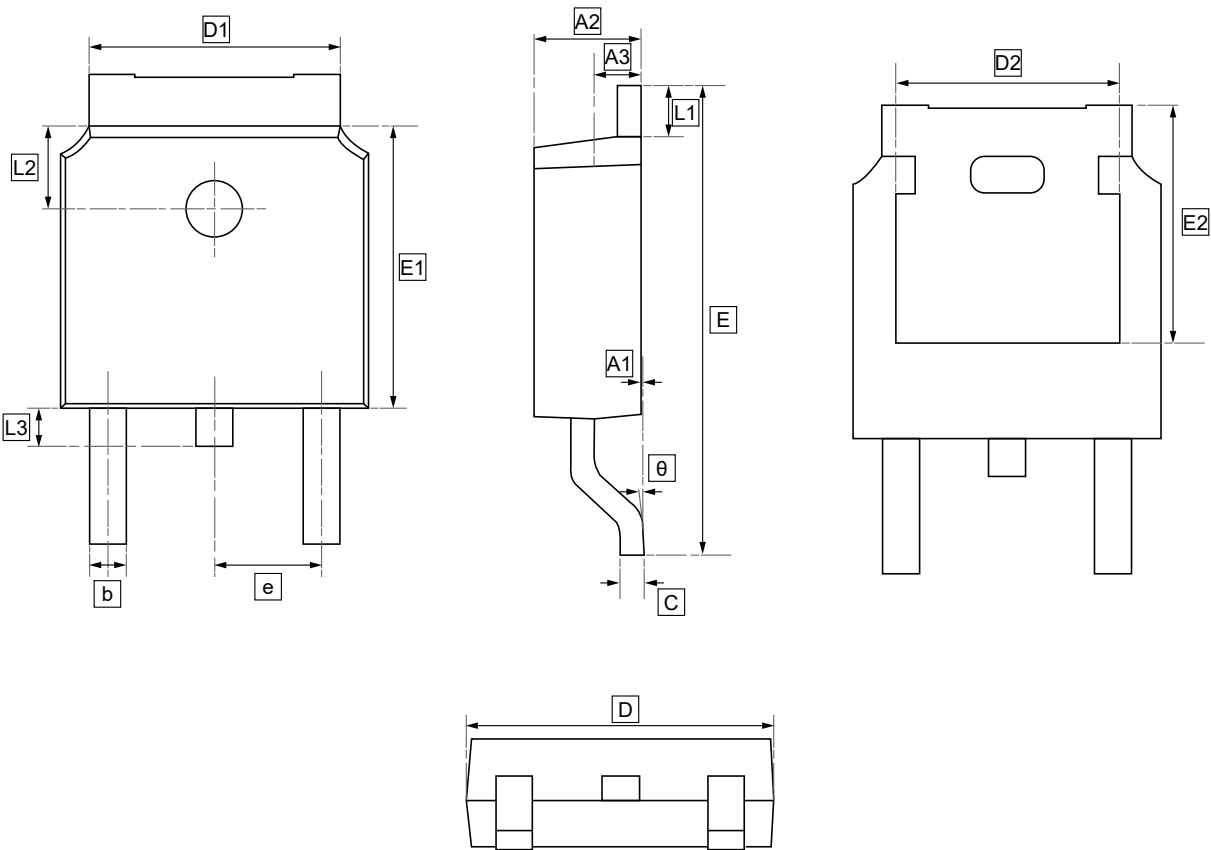


Figure 14: Normalized Thermal Transient Impedance, Junction-to-Case

* The power dissipation P_D is based on T_{J(max)} =175 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.



8.TO-252 Package Outline Dimensions

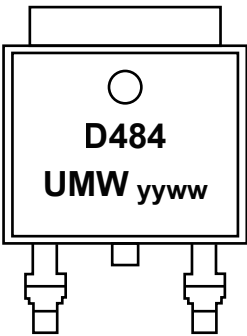


DIMENSIONS (mm are the original dimensions)

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 AOD484	TO-252	2500	Tape and reel



10.Disclaimer

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