

1.Features

- $V_{DS(V)} = -60V$
- $R_{DS(ON)} < 15m\Omega (V_{GS} = -10V)$
- $R_{DS(ON)} < 20m\Omega (V_{GS} = -4.5V)$

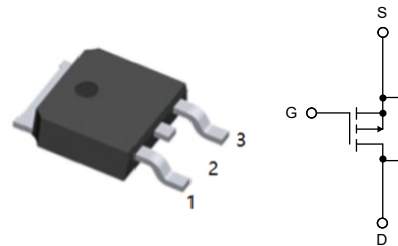
2.Applications

- Load Switch

3.Pinning information

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

TO-252(DPAK)
top view



4.Absolute Maximum Ratings $T_A = 25^\circ C$

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ($T_J = 150^\circ C$)	$T_C = 25^\circ C$	I_D	-50 ^d	A
	$T_C = 125^\circ C$		-27.5	
Pulsed Drain Current		I_{DM}	-80	
Avalanche Current		I_{AS}	-50	
Single Pulse Avalanche Energy ^a	$L = 0.1mH$	E_{AS}	125	mJ
Power Dissipation	$T_C = 25^\circ C$	P_D	113 ^c	W
	$T_A = 25^\circ C$		2.5 ^{b,c}	W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ C$



5. Thermal resistance rating

Parameter		Symbol	Typ	Max	Units
Junction-to-Ambient ^b	$t \leq 10s$	R_{thJA}	15	18	°C/W
	Steady-State		40	50	°C/W
Junction-to-Case		R_{thJC}	0.82	1.1	°C/W

Notes:

- a. Duty cycle $\leq 1\%$.
- b. When mounted on 1" square PCB (FR-4 material).
- c. See SOA curve for voltage derating.
- d. Package limited.



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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static						
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} =0V, I _D =-250μA	-60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.1	-1.8	-2.5	V
Gate-Body Leakage	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Zero gate voltage drain current	I _{DSS}	V _{DS} =-60V, V _{GS} =0V			-1	μA
		V _{DS} =-60V, V _{GS} =0V, T _J =125°C			-50	μA
		V _{DS} =-60V, V _{GS} =0V, T _J =150°C			-100	μA
On-State Drain Current ^a	I _{D(ON)}	V _{DS} =-5V, V _{GS} =-10V	-50			A
Drain-Source On-State Resistance ^a	R _{DS(ON)}	V _{GS} =-10V, I _D =-17A		12	15	mΩ
		V _{GS} =-10V, I _D =-50A, T _J =125°C			25	mΩ
		V _{GS} =-10V, I _D =-50A, T _J =150°C			28	mΩ
		V _{GS} =-4.5V, I _D =-14A			20	mΩ
Forward Transconductance ^a	g _{FS}	V _{DS} =-15V, I _D =-17A		61		S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-25V, f=1MHz		4950		pF
Output Capacitance	C _{oss}			480		pF
Reverse Transfer Capacitance	C _{rss}			405		pF
Total Gate Charge ^c	Q _g	V _{DS} =-30V, V _{GS} =-10V, I _D =-50A		110	165	nC
Gate-Source Charge ^c	Q _{gs}			19		nC
Gate-Drain Charge ^c	Q _{gd}			28		nC
Turn-On Delay Time ^c	t _{D(on)}	V _{DD} =-30V, R _L =0.6Ω I _D =-50A, V _{GEN} =-10V, R _G =6Ω		15	23	nS
Rise Time ^c	t _r			70	105	nS
Turn-Off Delay Time ^c	t _{D(off)}			175	260	nS
Fall Time ^c	t _f			175	260	nS



Source-Drain Diode Ratings and Characteristics T _c =25 °C ^b						
Continuous Current	I _S				-50	A
Pulsed Current	I _{SM}				-80	A
Forward Voltage ^a	V _{SD}	I _F =-50A, V _{GS} =0V		-1	-1.6	V
Reverse Recovery Time	t _{rr}	I _F =-50A, dI/dt=100A/μs		45	70	ns

Notes:

- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.
- b. Guaranteed by design, not subject to production testing.
- c. Independent of operating temperature.



7.1 Typical Characteristics

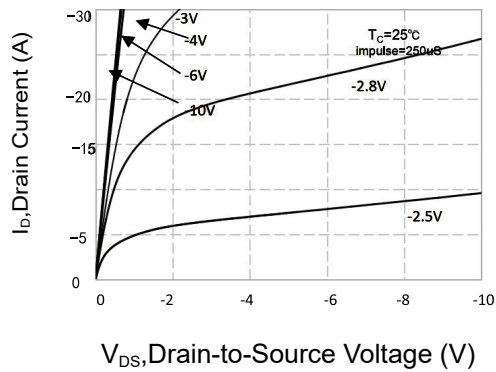


Figure 1: On-Region Characteristics

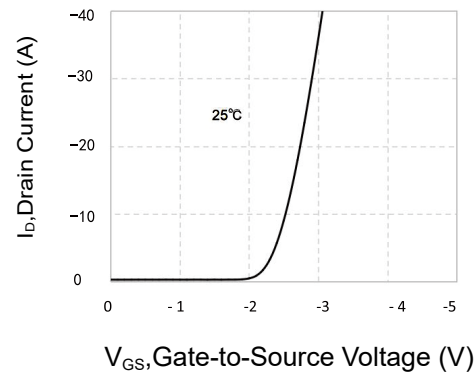


Figure 2: Transfer Characteristics

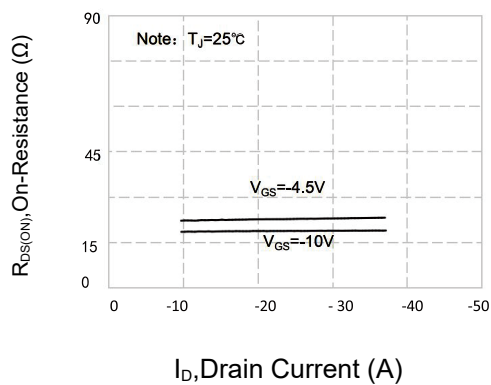


Figure 3: On-Resistance Variation vs Drain Current and Gate Voltage

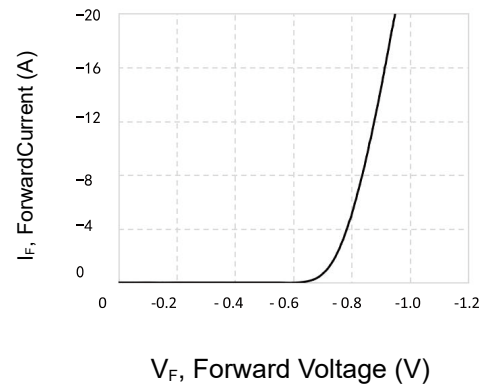


Figure 4: Body Diode Forward Voltage Variation with Source Current and temperature

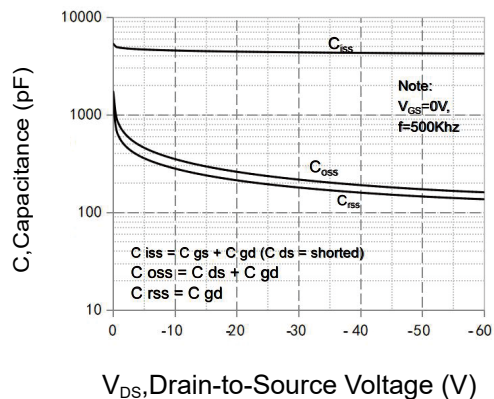


Figure 5: Capacitance Characteristics

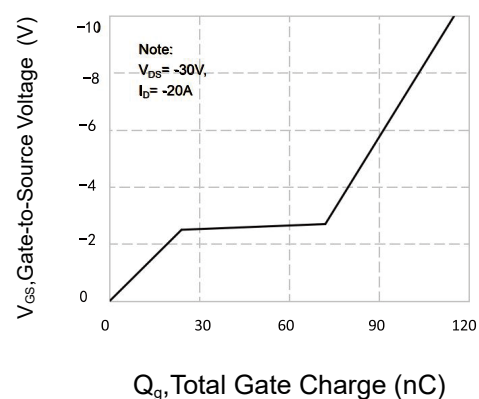


Figure 6: Gate Charge Characteristics

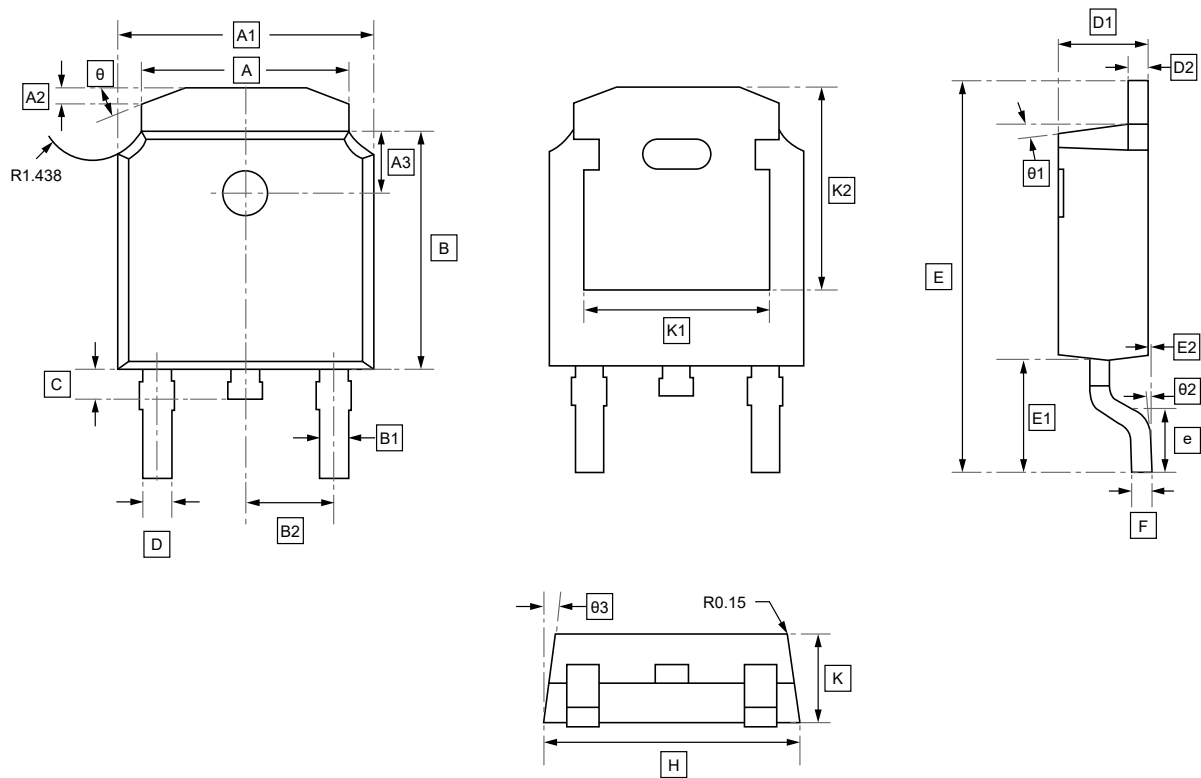


7.2Typical Characterisitics

Figure 7: Breakdown Voltage Variation vs Gate-Voltage	Figure 8: On-Resistance Variation vs Gate Voltage
Figure 9: Maximum Safe Operating Area	Figure 10: Maximum Continuous Drain Current vs Case Temperature
Figure 11: Transient Thermal Response Curve	



8.TO-252 Package Outline Dimensions



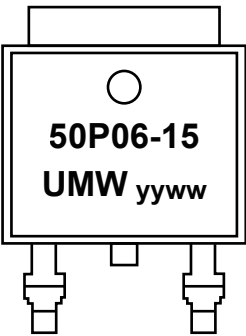
DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	B	B1	B2	C	D	D1	D2	E
Min	5.20	6.50	0.40	1.40	6.00	0.740	2.286	0.60	0.74	2.15	0.50	9.80
Max	5.46	6.70	(typ)	1.80	6.20	0.940	(typ)	1.0	0.86	2.45	(typ)	10.40

Symbol	E1	E2	e	F	H	K	K1	K2	θ	θ1	θ2	θ3
Min	2.60	0.00	1.65	0.50	6.50	2.15	4.63	5.10	20°	7°	0°	7°
Max	3.20	0.127	(typ)	0.60	6.70	2.45	5.03	5.50	(typ)	(typ)	8°	(typ)



9.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW SUD50P06-15	TO-252	2500	Tape and reel



10.Disclaimer

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