

N-Channel Enhancement Mode Field Effect Transistor

Product Summary

- V_{DS} 20V
- I_D 4.3A
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) <27 mohm
- $R_{DS(ON)}$ (at $V_{GS}=2.5V$) <37 mohm

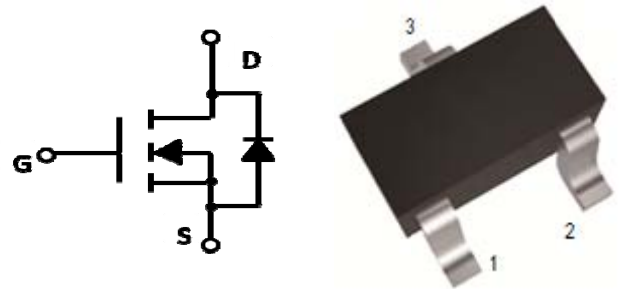
General Description

- Trench Power LV MOSFET technology
- High Power and current handling capability
- Marking : A2SHB

Applications

- PWM application
- Load switch

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1 : Gate 2 : Source 3 : Drain

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	20	V
Gate-source Voltage		V_{GS}	± 10	V
Drain Current	$T_A=25^\circ\text{C}$ @ Steady State	I_D	4.3	A
	$T_A=70^\circ\text{C}$ @ Steady State		3.5	
Pulsed Drain Current ^A		I_{DM}	18	A
Total Power Dissipation @ $T_A=25^\circ\text{C}$		P_D	1.0	W
Thermal Resistance Junction-to-Ambient @ Steady State ^B		$R_{\theta JA}$	125	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ\text{C}$

Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V, T _C =25℃			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±10V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	0.55	0.85	1.25	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = 4.5V, I _D =4.3A		21	27	mΩ
		V _{GS} = 2.5V, I _D =3.0A		29	37	
Diode Forward Voltage	V _{SD}	I _S =4.3A, V _{GS} =0V			1.2	V
Maximum Body-Diode Continuous Current	I _S				4.3	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHz		595		pF
Output Capacitance	C _{oss}			106		
Reverse Transfer Capacitance	C _{rss}			59		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =10V, I _D =4.3A		6.6		nC
Gate Source Charge	Q _{gs}			0.9		
Gate Drain Charge	Q _{gd}			1.4		
Turn-on Delay Time	t _{D(on)}	V _{GS} =4.5V, V _{DD} =10V, R _L =1.5Ω, R _{GEN} =3Ω		13		ns
Turn-on Rise Time	t _r			54		
Turn-off Delay Time	t _{D(off)}			18		
Turn-off Fall Time	t _f			11		

A. Pulse Test: Pulse Width≤300us, Duty cycle ≤2%.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Performance Characteristics

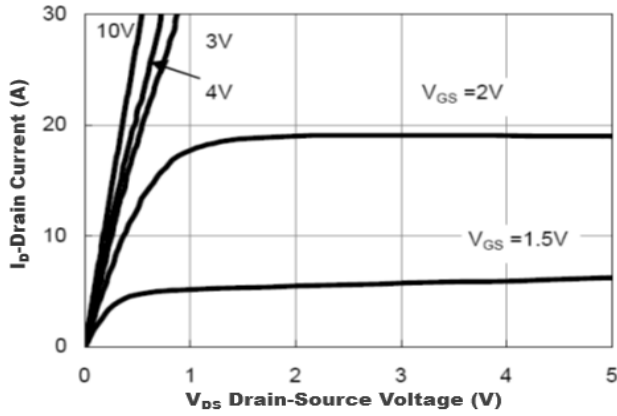


Figure1. Output Characteristics

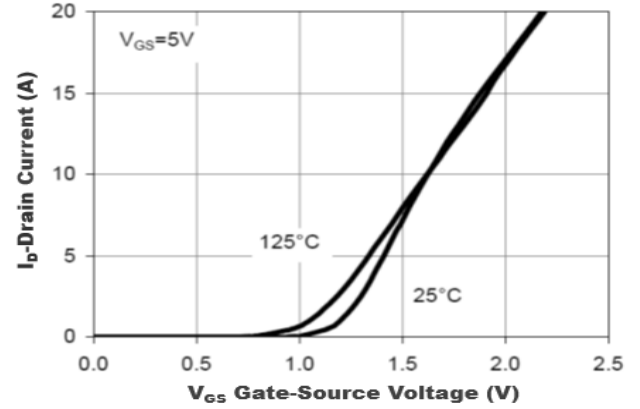


Figure2. Transfer Characteristics

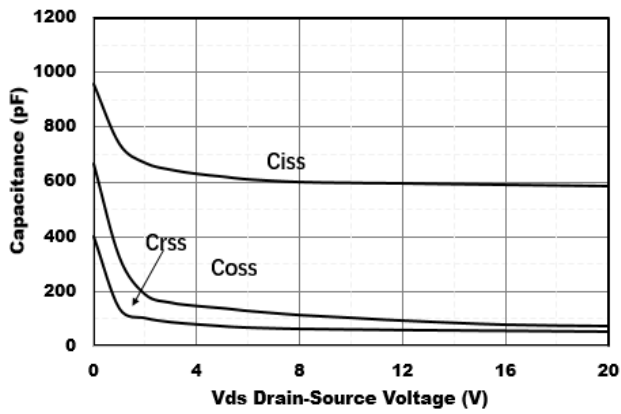


Figure3. Capacitance Characteristics

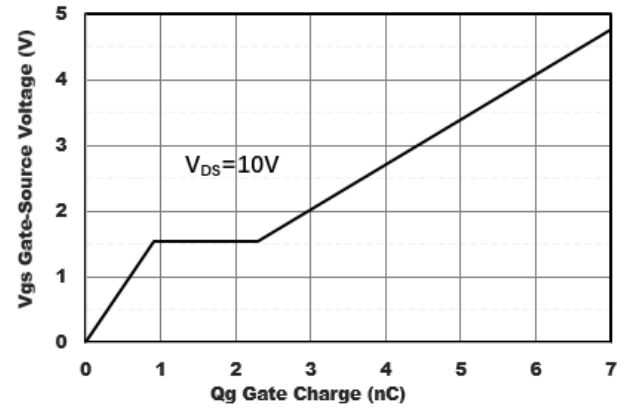


Figure4. Gate Charge

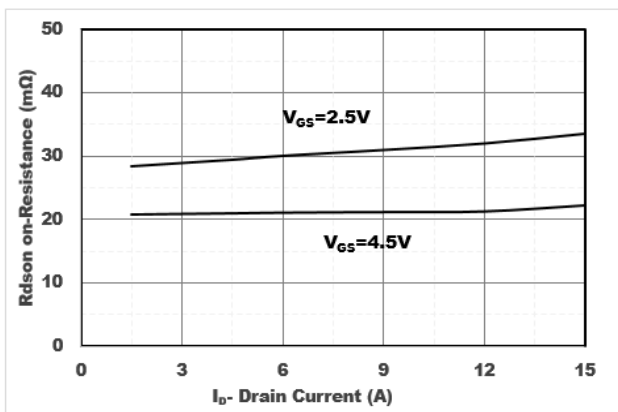


Figure5. Drain-Source on Resistance

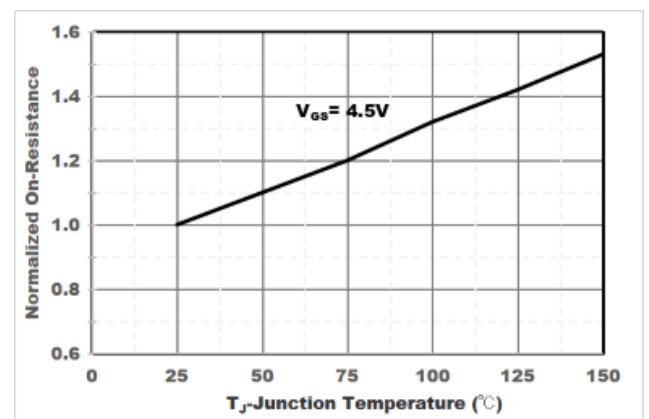


Figure6. Drain-Source on Resistance

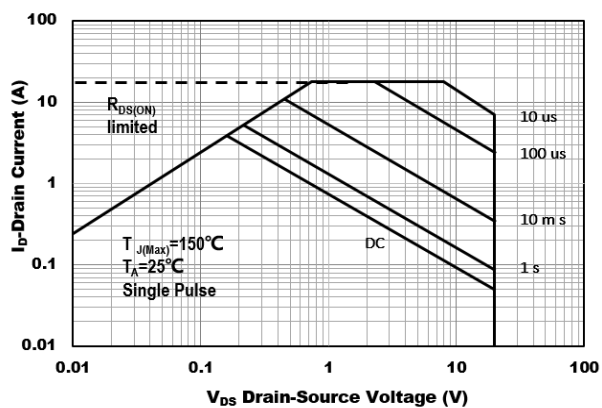


Figure7. Safe Operation Area

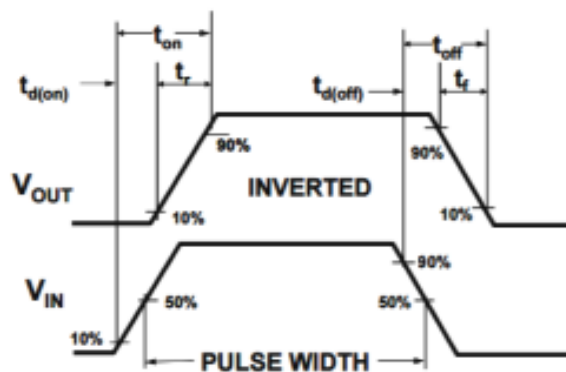


Figure8. Switching wave

Package Outline Dimensions (UNIT: mm)

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