

General Description

- Trench Power AlphaMOS (αMOS LV) technology
- Low $R_{SS(ON)}$
- With ESD protection to improve battery performance and safety
- Common drain configuration for design simplicity
- RoHS and Halogen-Free Compliant

Applications

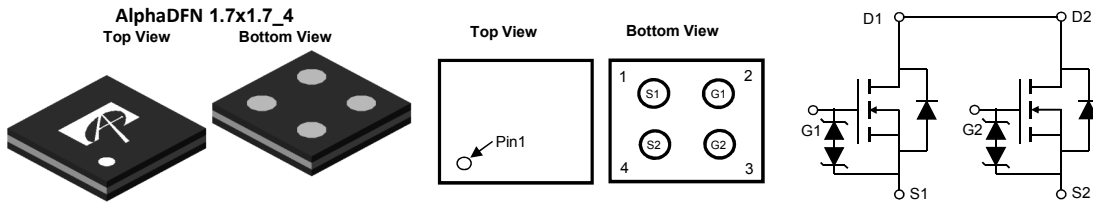
- Battery protection switch
- Mobile device battery charging and discharging

Product Summary

V_{SS}	20V
I_S (at $V_{GS}=4.5V$)	4.5A
$R_{SS(ON)}$ (at $V_{GS}=4.5V$)	< 18mΩ
$R_{SS(ON)}$ (at $V_{GS}=4.0V$)	< 20mΩ
$R_{SS(ON)}$ (at $V_{GS}=3.7V$)	< 21mΩ
$R_{SS(ON)}$ (at $V_{GS}=3.1V$)	< 23mΩ
$R_{SS(ON)}$ (at $V_{GS}=2.5V$)	< 29mΩ

Typical ESD protection

HBM Class 3A



Orderable Part Number	Package Type	Form	Minimum Order Quantity
AOC2806	AlphaDFN 1.7x1.7_4	Tape & Reel	3000

Absolute Maximum Ratings $T_A=25^\circ C$ unless otherwise noted

Parameter	Symbol	Maximum	Units
Source-Source Voltage	V_{SS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Source Current(DC) ^{Note1}	I_S	4.5	A
Source Current(Pulse) ^{Note2}	I_{SM}	18	A
Power Dissipation ^{Note1}	P_D	0.7	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient	$R_{\theta JA}$	115	140	°C/W
Maximum Junction-to-Ambient		140	180	°C/W

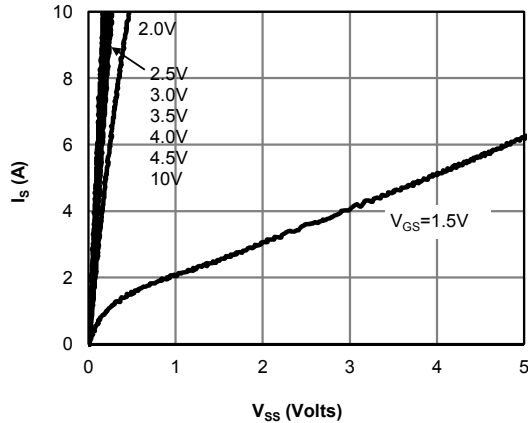
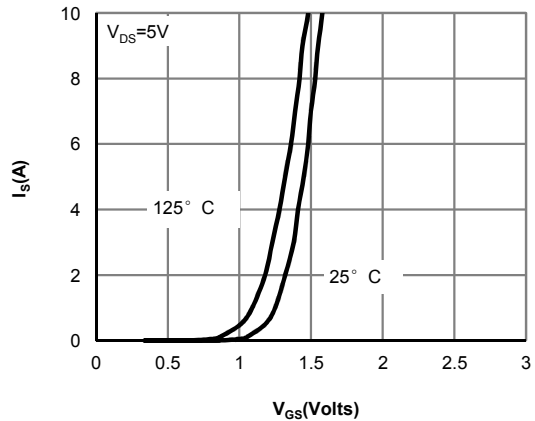
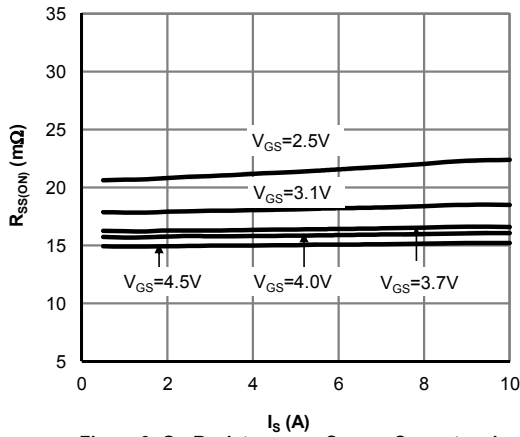
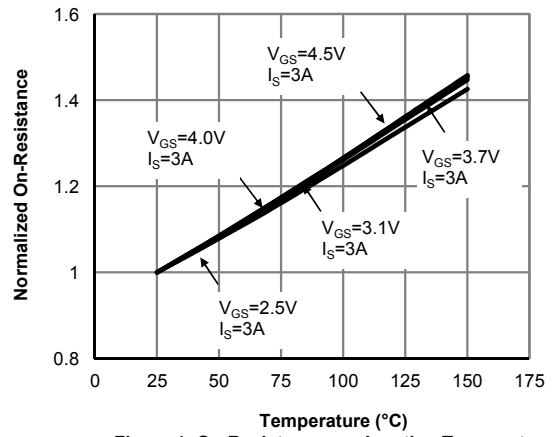
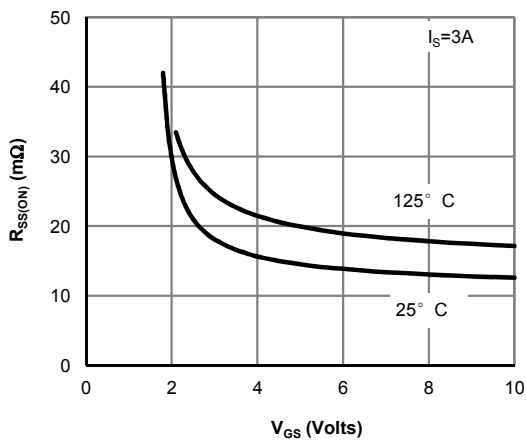
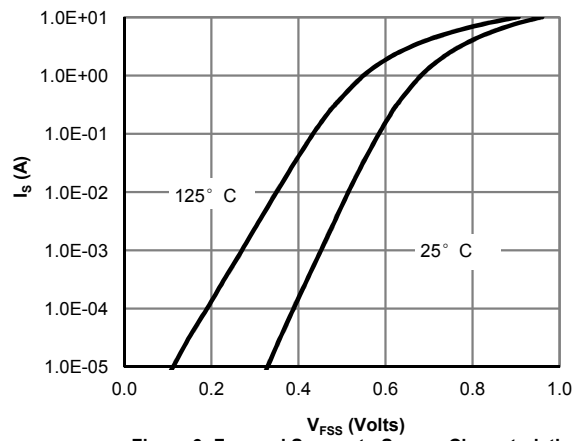
Note 1. Mounted on 1in2 FR-4 board with 2oz. Copper.

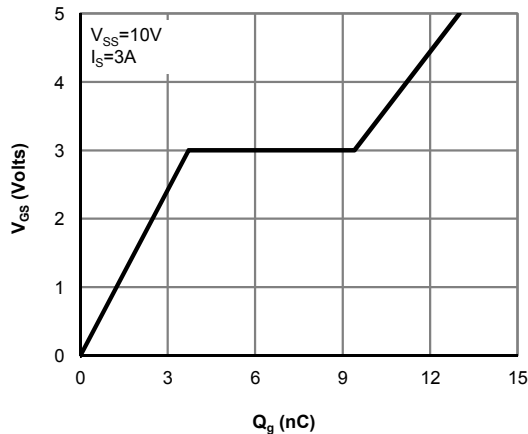
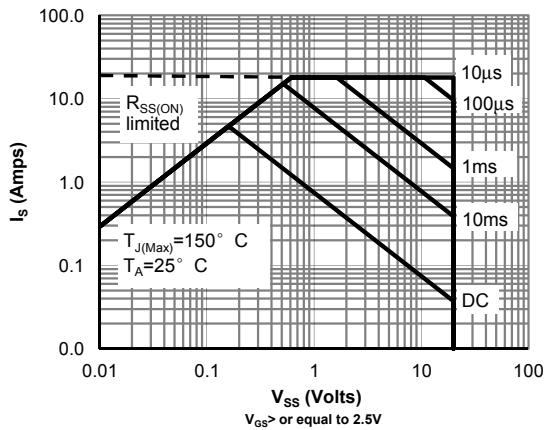
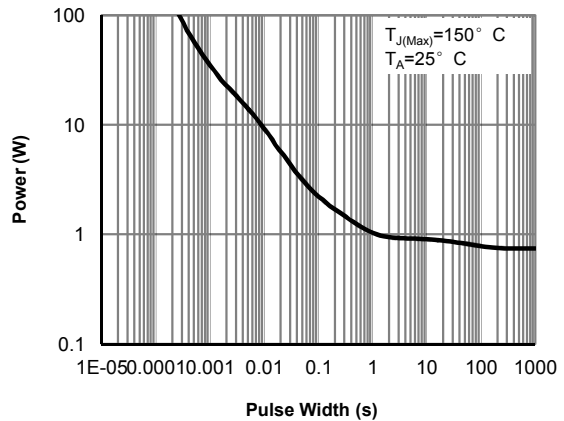
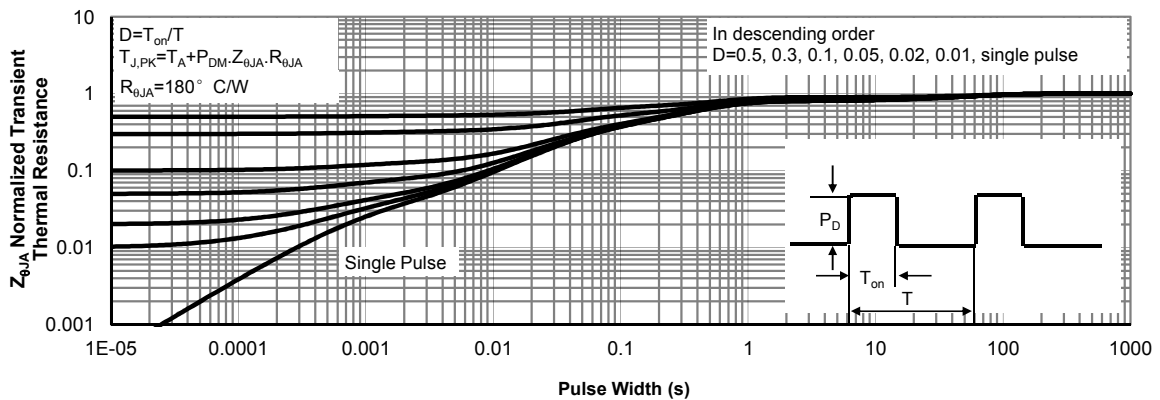
Note 2. PW <300 μs pulses, duty cycle 0.5% max

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units	
STATIC PARAMETERS							
BV _{SSS}	Source-Source Breakdown Voltage	I _S =250μA, V _{GS} =0V Test Circuit 6	20			V	
I _{SSS}	Zero Gate Voltage Source Current	V _{SS} =20V, V _{GS} =0V Test Circuit 1 T _J =55°C			1 5	μA	
I _{GSS}	Gate leakage current	V _{SS} =0V, V _{GS} =±10V Test Circuit 2			±10	μA	
V _{GS(th)}	Gate Threshold Voltage	V _{SS} =V _{GS} , I _S =250μA Test Circuit 3	0.5	0.85	1.3	V	
R _{SS(ON)}	Static Source to Source On-Resistance	V _{GS} =4.5V, I _S =3A Test Circuit 4 T _J =125°C	10	15	18	mΩ	
			14	20.5	25		
		V _{GS} =4.0V, I _S =3A Test Circuit 4	11	15.8	20	mΩ	
		V _{GS} =3.7V, I _S =3A Test Circuit 4	11.5	16.3	21	mΩ	
		V _{GS} =3.1V, I _S =3A Test Circuit 4	12.5	17.6	23	mΩ	
	V _{GS} =2.5V, I _S =3A Test Circuit 4	14.5	21	29	mΩ		
g _{FS}	Forward Transconductance	V _{SS} =5V, I _S =3A Test Circuit 3		16		S	
V _{FSS}	Forward Source to Source Voltage	I _S =1A, V _{GS} =0V Test Circuit 5		0.68	1	V	
DYNAMIC PARAMETERS							
R _g	Gate resistance	f=1MHz		2		KΩ	
SWITCHING PARAMETERS							
Q _g	Total Gate Charge	V _{G1S1} =4.5V, V _{SS} =10V, I _S =3A		12.5		nC	
t _{D(on)}	Turn-On DelayTime	V _{G1S1} =4.5V, V _{SS} =10V, R _L =3.3Ω, R _{GEN} =3Ω Test Circuit8		1.0		μs	
t _r	Turn-On Rise Time			3.0		μs	
t _{D(off)}	Turn-Off DelayTime				2.1		μs
t _f	Turn-Off Fall Time				8.8		μs

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 1: On-Region Characteristics

Figure 2: Transfer Characteristics

Figure 3: On-Resistance vs. Source Current and Gate Voltage

Figure 4: On-Resistance vs. Junction Temperature

Figure 5: On-Resistance vs. Gate-Source Voltage

Figure 6: Forward Source to Source Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 7: Gate-Charge Characteristics

Figure 9: Maximum Forward Biased Safe Operating Area (Note1)

Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note1)

Figure 11: Normalized Maximum Transient Thermal Impedance (Note1)

