



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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### General Description

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

### Applications

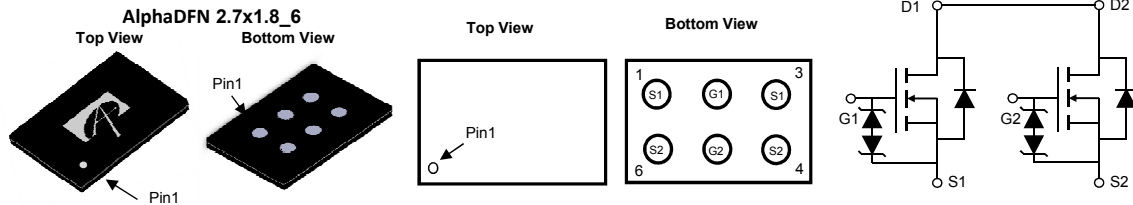
- Battery protection switch
- Mobile device battery charging and discharging

### Product Summary

$V_{SS}$	20V
$R_{SS(ON)}$ (at $V_{GS}=4.5V$ )	< 5.7mΩ
$R_{SS(ON)}$ (at $V_{GS}=4.0V$ )	< 5.8mΩ
$R_{SS(ON)}$ (at $V_{GS}=3.7V$ )	< 6mΩ
$R_{SS(ON)}$ (at $V_{GS}=3.1V$ )	< 7.5mΩ
$R_{SS(ON)}$ (at $V_{GS}=2.5V$ )	< 9mΩ

### Typical ESD protection

HBM Class 2



Orderable Part Number	Package Type	Form	Minimum Order Quantity
AOC3864	AlphaDFN 2.7x1.8_6	Tape & Reel	5000

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

Parameter	Symbol	Rating	Units
Source-Source Voltage	$V_{SS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Source Current(DC) <sup>Note1</sup>	$I_S$	19	A
Source Current(Pulse) <sup>Note2</sup>	$I_{SM}$	80	
Power Dissipation <sup>Note1</sup>	$P_D$	2.4	W
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ C$

### Thermal Characteristics

Parameter	Symbol	Typical	Units
Maximum Junction-to-Ambient $t \leq 10s$	$R_{\theta JA}$	43	$^\circ C/W$
Maximum Junction-to-Ambient Steady-State		52	$^\circ C/W$

**Note 1.**  $I_S$  rated value is based on bare silicon. Mounted on 70mmx70mm FR-4 board.

**Note 2.** PW < 10  $\mu s$  pulses, duty cycle 1% max.

**Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>STATIC PARAMETERS</b>						
BV <sub>SSS</sub>	Source-Source Breakdown Voltage	I <sub>S</sub> =250μA, V <sub>GS</sub> =0V Test Circuit 6	20			V
I <sub>SSS</sub>	Zero Gate Voltage Source Current	V <sub>SS</sub> =20V, V <sub>GS</sub> =0V Test Circuit 1			1	μA
		T <sub>J</sub> =55°C			5	
I <sub>GSS</sub>	Gate leakage current	V <sub>SS</sub> =0V, V <sub>GS</sub> =±8V Test Circuit 2			±10	μA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>SS</sub> =V <sub>GS</sub> , I <sub>S</sub> =250μA Test Circuit 3	0.5	0.9	1.3	V
R <sub>SS(ON)</sub>	Static Source to Source On-Resistance	V <sub>GS</sub> =4.5V, I <sub>S</sub> =4A Test Circuit 4	3.4	4.5	5.7	mΩ
		T <sub>J</sub> =125°C	4.7	6.2	7.9	
		V <sub>GS</sub> =4.0V, I <sub>S</sub> =4A Test Circuit 4	3.5	4.6	5.8	mΩ
		V <sub>GS</sub> =3.7V, I <sub>S</sub> =4A Test Circuit 4	3.6	4.7	6.0	mΩ
		V <sub>GS</sub> =3.1V, I <sub>S</sub> =4A Test Circuit 4	3.7	5.2	7.5	mΩ
		V <sub>GS</sub> =2.5V, I <sub>S</sub> =4A Test Circuit 4	3.8	5.9	9.0	mΩ
g <sub>FS</sub>	Forward Transconductance	V <sub>SS</sub> =5V, I <sub>S</sub> =4A Test Circuit 3		55		S
V <sub>FSS</sub>	Forward Source to Source Voltage	I <sub>S</sub> =1A, V <sub>GS</sub> =0V Test Circuit 5		0.60	1	V
<b>DYNAMIC PARAMETERS</b>						
R <sub>g</sub>	Gate resistance	f=1MHz		1		KΩ
<b>SWITCHING PARAMETERS</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>GS1</sub> =4.5V, V <sub>SS</sub> =10V, I <sub>S</sub> =4A		27	38	nC
t <sub>D(on)</sub>	Turn-On DelayTime	V <sub>GS1</sub> =4.5V, V <sub>SS</sub> =10V, R <sub>L</sub> =2.5Ω, R <sub>GEN</sub> =3Ω Test Circuit8		1.2		μs
t <sub>r</sub>	Turn-On Rise Time			2.2		μs
t <sub>D(off)</sub>	Turn-Off DelayTime			5.5		μs
t <sub>f</sub>	Turn-Off Fall Time			6.5		μs

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

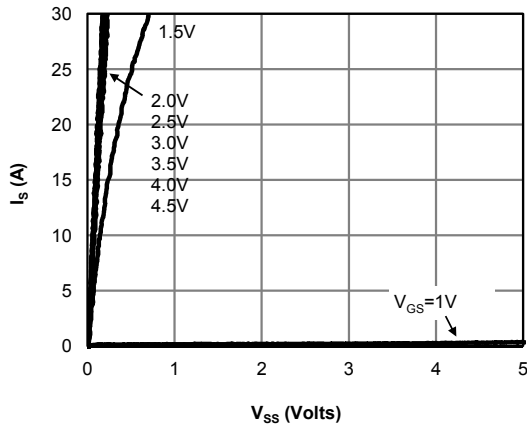


Figure 1: On-Region Characteristics

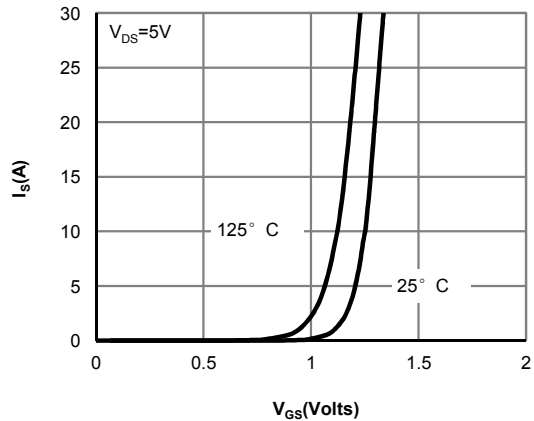


Figure 2: Transfer Characteristics

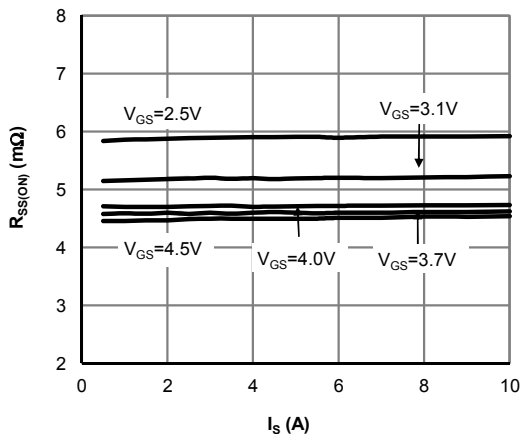


Figure 3: On-Resistance vs. Source Current and Gate Voltage

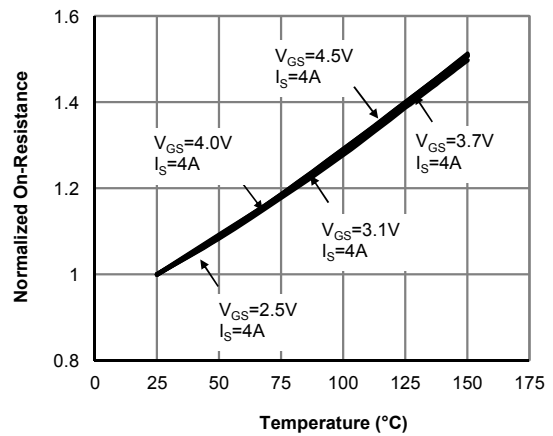


Figure 4: On-Resistance vs. Junction Temperature

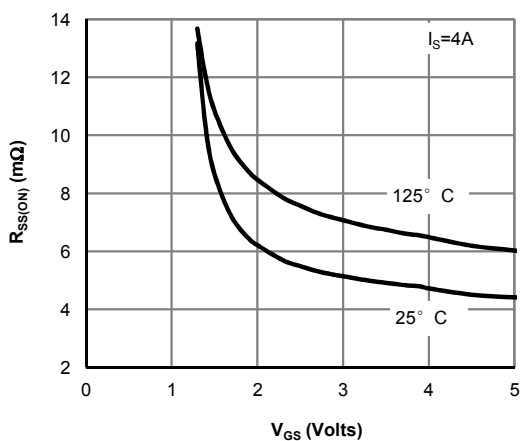


Figure 5: On-Resistance vs. Gate-Source Voltage

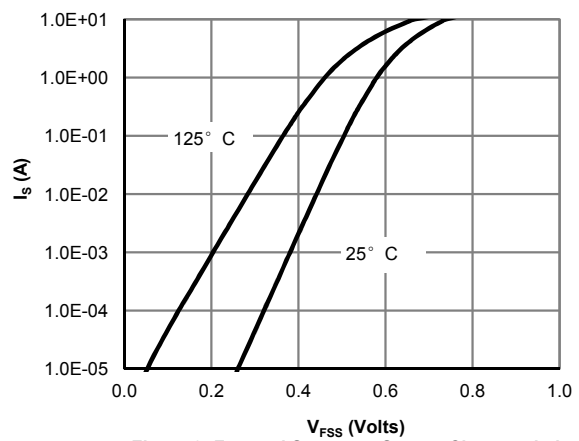


Figure 6: Forward Source to Source Characteristics



**TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS**

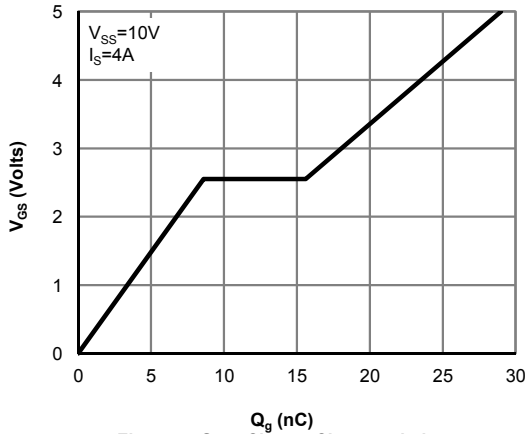


Figure 7: Gate-Charge Characteristics

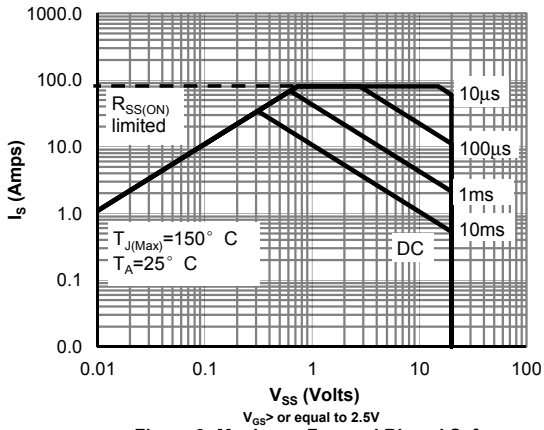


Figure 9: Maximum Forward Biased Safe Operating Area (Note1)

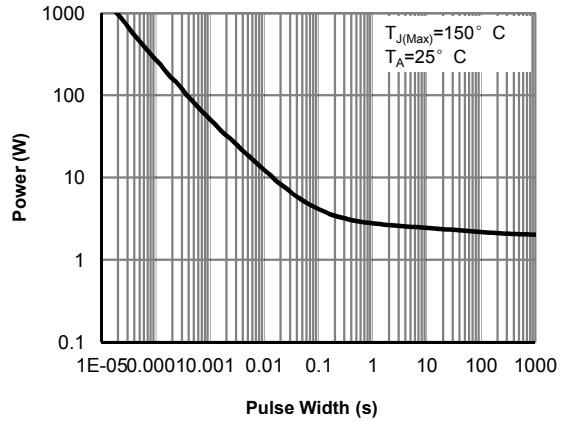


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note1)

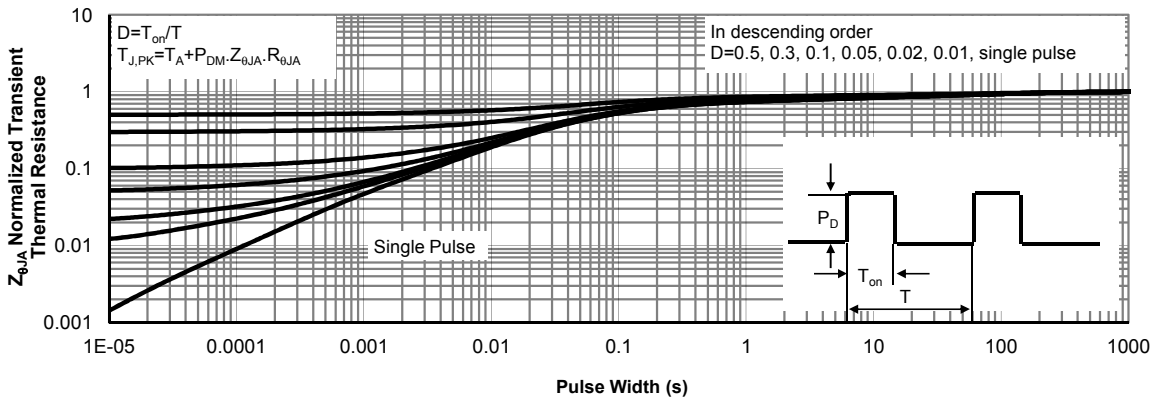


Figure 11: Normalized Maximum Transient Thermal Impedance (Note1)

