
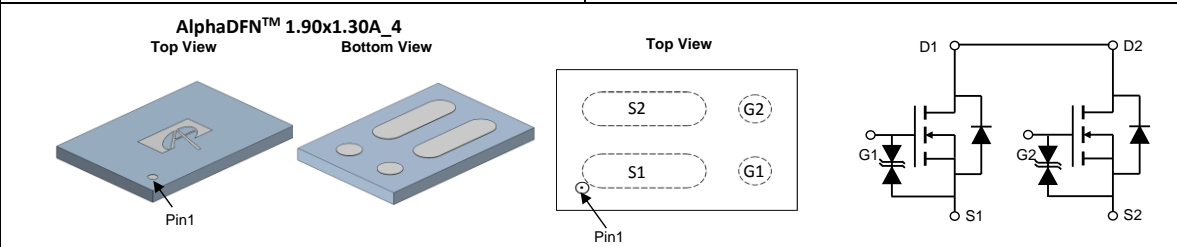


<p>General Description</p> <ul style="list-style-type: none"> Trench Power MOSFET technology Low $R_{SS(ON)}$ ESD protection Common drain configuration for design simplicity RoHS and Halogen-Free Compliant <p>Applications</p> <ul style="list-style-type: none"> Battery protection switch Type C - PD load switch 	<p>Product Summary</p> <p>V_{SS} 30V</p> <p>$R_{SS(ON)}$ (at $V_{GS}=10V$) < 18mΩ</p> <p>$R_{SS(ON)}$ (at $V_{GS}=8V$) < 19mΩ</p> <p>$R_{SS(ON)}$ (at $V_{GS}=4.5V$) < 24mΩ</p> <p>Typical ESD protection HBM Class 2</p> 
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Orderable Part Number	Package Type	Form	Minimum Order Quantity
AOCA32301	AlphaDFN™ 1.90x1.30A_4	Tape & Reel	8000

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

Parameter	Symbol	Rating	Units
Source-Source Voltage	V_{SS}	30	V
Gate-Source Voltage	V_{GS}	± 16	V
Source Current(DC) ^{Note1}	I_S	9	A
Source Current(Pulse) ^{Note2}	I_{SM}	50	
Power Dissipation ^{Note1}	P_D	1.9	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typical	Units
Maximum Junction-to-Ambient	$R_{\theta JA}$	55	$^\circ\text{C/W}$
Maximum Junction-to-Ambient		65	$^\circ\text{C/W}$

Note 1. I_S rated value is based on bare silicon. Mounted on 70mmx70mm FR-4 board.
Note 2. PW <10 μs pulses, duty cycle 1% 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	30			V
I _{SSS}	Zero Gate Voltage Source Current	V _{SS} =30V, V _{GS} =0V Test Circuit 1			1	μA
		T _J =55°C			5	
I _{GSS}	Gate leakage current	V _{SS} =0V, V _{GS} =±16V Test Circuit 2			±10	μA
V _{GS(th)}	Gate Threshold Voltage	V _{SS} =V _{GS} , I _S =250μA Test Circuit 3	1.1	1.5	1.9	V
R _{SS(ON)}	Static Source to Source On-Resistance	V _{GS} =10V, I _S =4A Test Circuit 4	10	14.5	18	mΩ
		T _J =125°C	14	21	26	
		V _{GS} =8V, I _S =4A Test Circuit 4	11	15.2	19	mΩ
		V _{GS} =4.5V, I _S =4A Test Circuit 4	13	18.6	24	mΩ
g _{FS}	Forward Transconductance	V _{SS} =5V, I _S =4A Test Circuit 3		22		S
V _{FSS}	Forward Source to Source Voltage	I _S =1A, V _{GS} =0V Test Circuit 5		0.7	1	V
DYNAMIC PARAMETERS						
R _g	Gate resistance	f=1MHz		1.5		Ω
SWITCHING PARAMETERS						
Q _g	Total Gate Charge	V _{GS1} =10V, V _{SS} =15V, I _S =4A		24.5		nC
t _{D(on)}	Turn-On DelayTime	V _{GS1} =10V, V _{SS} =15V, R _L =3.75Ω, R _{GEN} =3Ω Test Circuit8		9		ns
t _r	Turn-On Rise Time			23		ns
t _{D(off)}	Turn-Off DelayTime			30.5		ns
t _f	Turn-Off Fall Time			13		ns

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

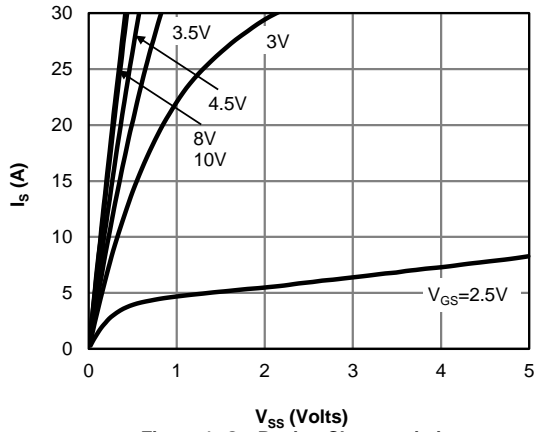


Figure 1: On-Region Characteristics

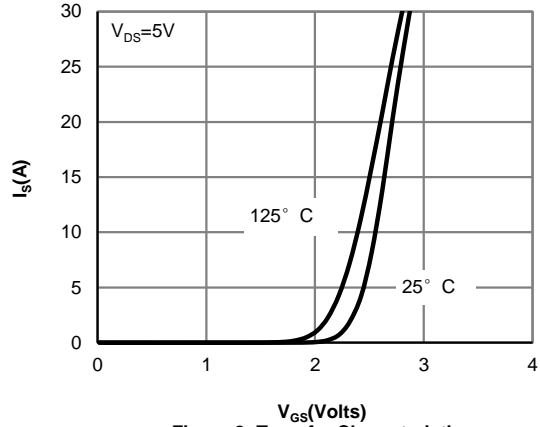


Figure 2: Transfer Characteristics

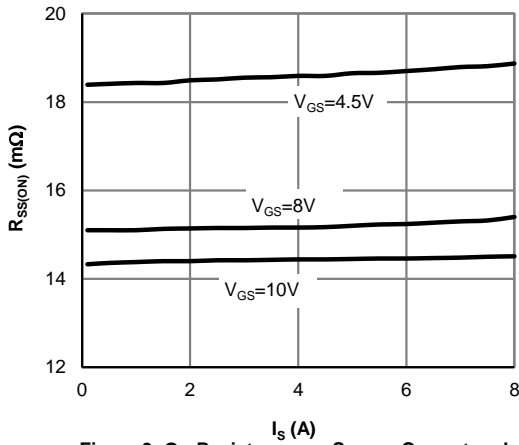


Figure 3: On-Resistance vs. Source Current and Gate Voltage

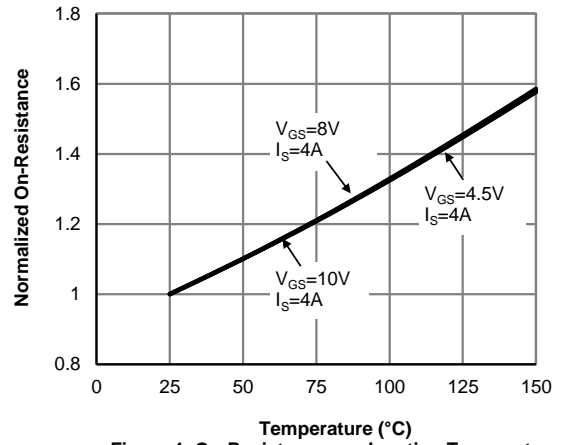


Figure 4: On-Resistance vs. Junction Temperature

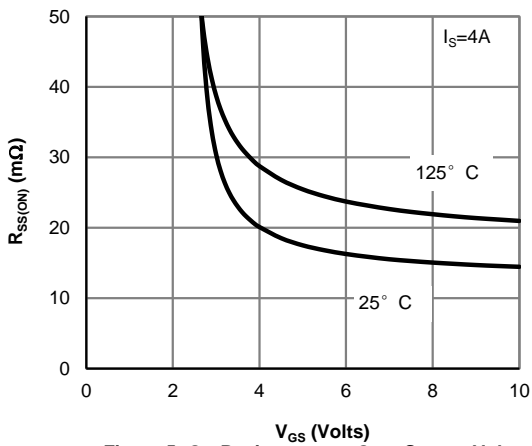


Figure 5: On-Resistance vs. Gate-Source Voltage

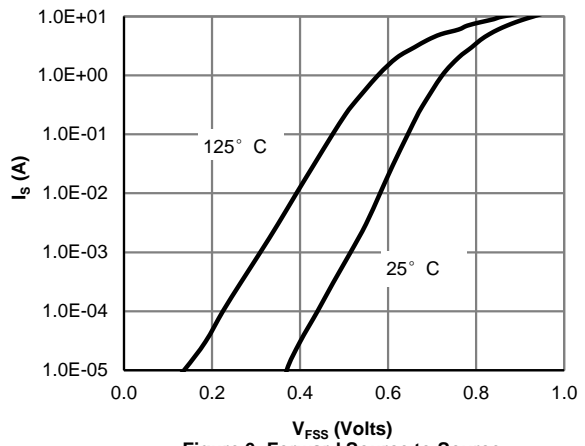


Figure 6: Forward Source to Source Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

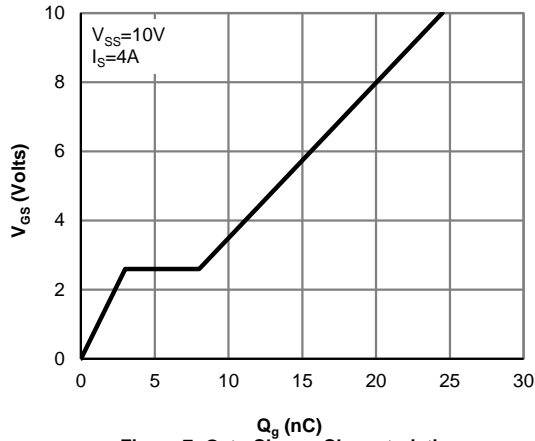


Figure 7: Gate-Charge Characteristics

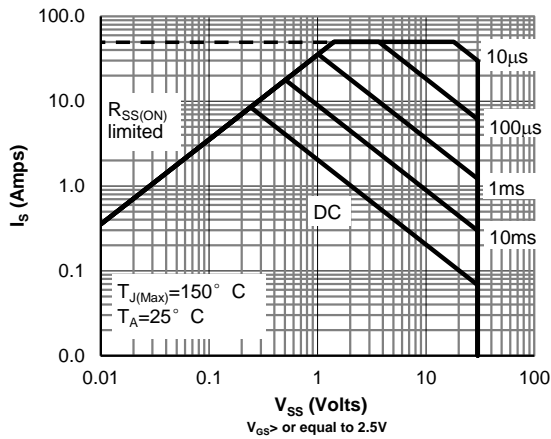


Figure 8: Maximum Forward Biased Safe Operating Area (Note1)

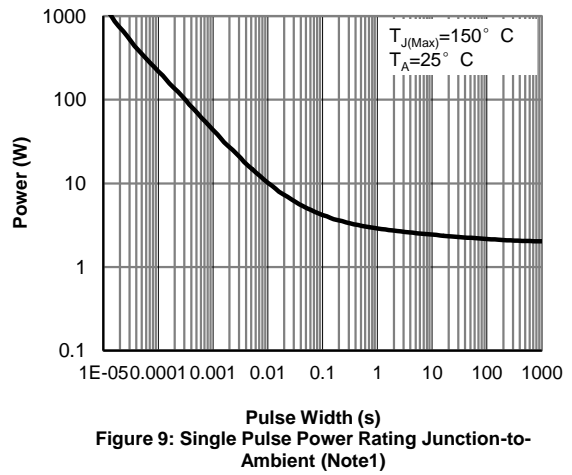


Figure 9: Single Pulse Power Rating Junction-to-Ambient (Note1)

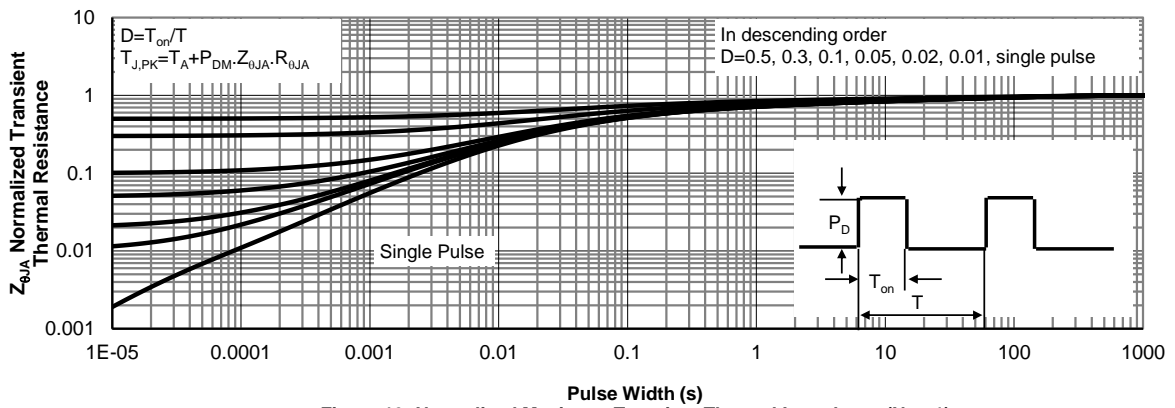
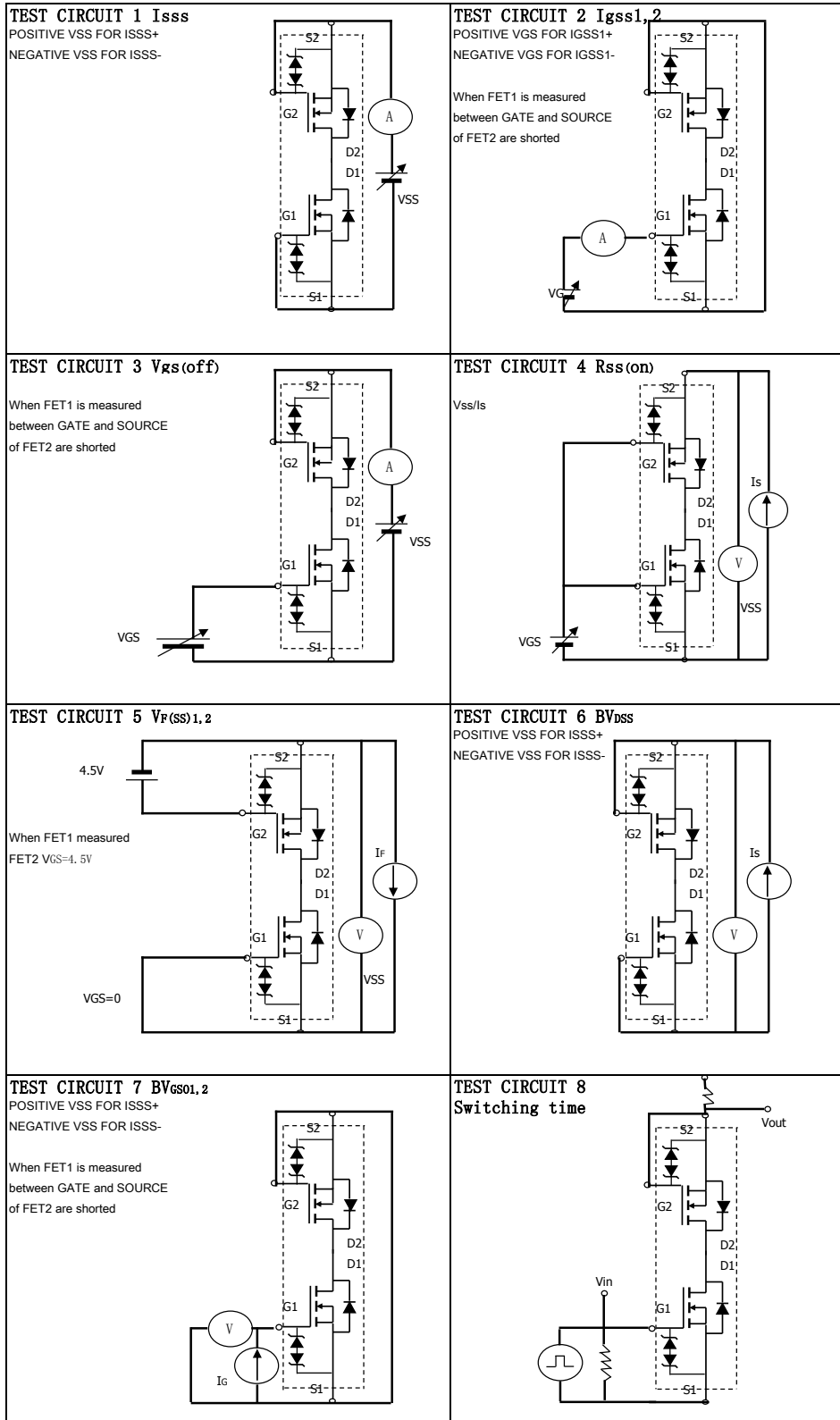


Figure 10: Normalized Maximum Transient Thermal Impedance (Note1)



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