
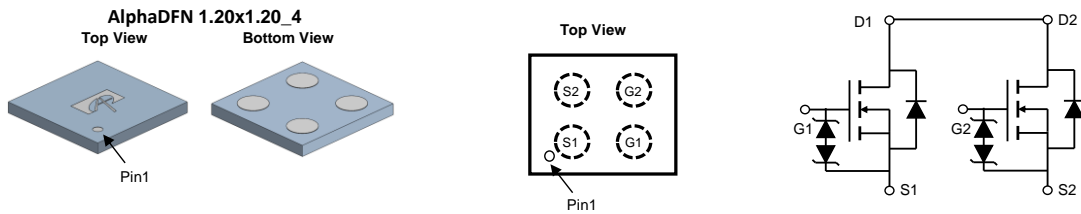


General Description <ul style="list-style-type: none"> Trench Power MOSFET technology Ultra low $R_{SS(ON)}$ Common drain configuration for design simplicity RoHS and Halogen-Free Compliant Applications <ul style="list-style-type: none"> Battery protection switch Mobile device battery charging and discharging 	Product Summary <table border="0"> <tr> <td>V_{SS}</td> <td>20V</td> </tr> <tr> <td>$R_{SS(ON)}$ (at $V_{GS}=4.5V$)</td> <td>< 36mΩ</td> </tr> <tr> <td>$R_{SS(ON)}$ (at $V_{GS}=3.8V$)</td> <td>< 39mΩ</td> </tr> <tr> <td>$R_{SS(ON)}$ (at $V_{GS}=3.1V$)</td> <td>< 44mΩ</td> </tr> <tr> <td>$R_{SS(ON)}$ (at $V_{GS}=2.5V$)</td> <td>< 55mΩ</td> </tr> </table> Typical ESD protection <p style="text-align: right;">HBM Class 2</p> 	V_{SS}	20V	$R_{SS(ON)}$ (at $V_{GS}=4.5V$)	< 36m Ω	$R_{SS(ON)}$ (at $V_{GS}=3.8V$)	< 39m Ω	$R_{SS(ON)}$ (at $V_{GS}=3.1V$)	< 44m Ω	$R_{SS(ON)}$ (at $V_{GS}=2.5V$)	< 55m Ω
V_{SS}	20V										
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$R_{SS(ON)}$ (at $V_{GS}=2.5V$)	< 55m Ω										



Orderable Part Number	Package Type	Form	Minimum Order Quantity
AOCA32116E	AlphaDFN 1.20x1.20_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}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Source Current(DC) ^{Note1}	I_S	6	A
Source Current(Pulse) ^{Note2}	I_{SM}	25	
Power Dissipation ^{Note1}	P_D	1.7	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	$R_{\theta JA}$	65	$^\circ\text{C/W}$
Maximum Junction-to-Ambient		75	$^\circ\text{C/W}$

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						
B _{VSSS}	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} =±12V 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	20	29.5	36	mΩ
		V _{GS} =3.8V, I _S =3A Test Circuit 4	21	31	39	mΩ
		V _{GS} =3.1V, I _S =3A Test Circuit 4	23	33.6	44	mΩ
		V _{GS} =2.5V, I _S =3A Test Circuit 4	26	38.6	55	mΩ
g _{FS}	Forward Transconductance	V _{SS} =5V, I _S =3A Test Circuit 3		20		S
V _{FSS}	Forward Source to Source Voltage	I _S =1A, V _{GS} =0V Test Circuit 5		0.68	1	V
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{SS} =10V, f=1MHz	410	520	630	pF
C _{oss}	Output Capacitance		50	72	95	pF
C _{rss}	Reverse Transfer Capacitance		14	48	82	pF
R _g	Gate resistance	f=1MHz		2		KΩ
SWITCHING PARAMETERS						
Q _g	Total Gate Charge	V _{GS1} =4.5V, V _{SS} =10V, I _S =3A		5.5		nC
t _{D(on)}	Turn-On DelayTime	V _{GS1} =4.5V, V _{SS} =10V, R _L =3.3Ω, R _{GEN} =3Ω Test Circuit8		0.5		μs
t _r	Turn-On Rise Time		1.4		μs	
t _{D(off)}	Turn-Off DelayTime		1.9		μs	
t _f	Turn-Off Fall Time		2.7		μs	

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

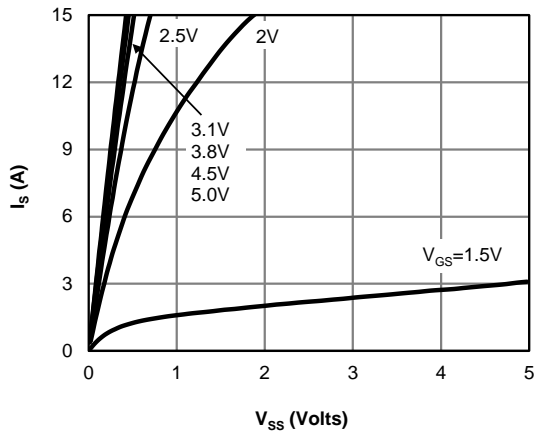


Figure 1: On-Region Characteristics

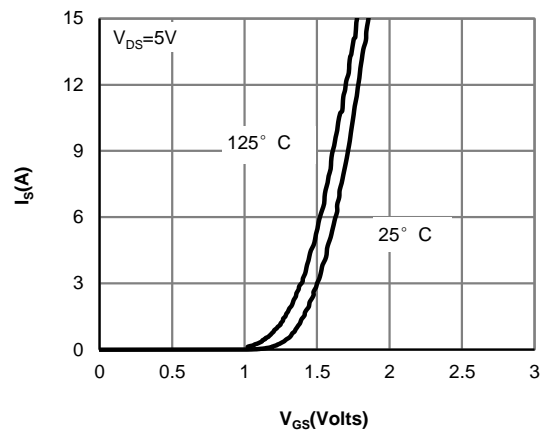


Figure 2: Transfer Characteristics

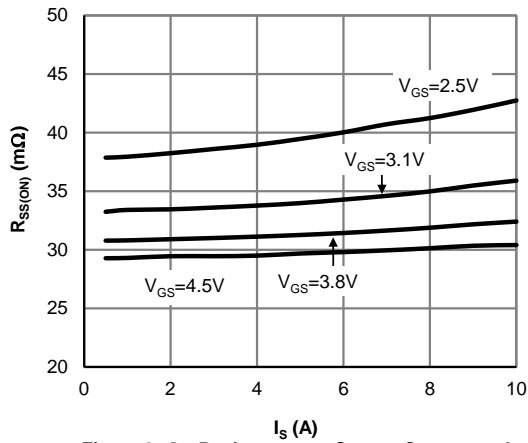


Figure 3: On-Resistance vs. Source Current and Gate Voltage

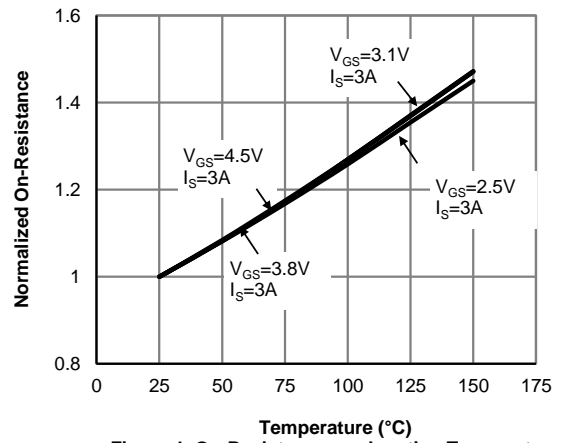


Figure 4: On-Resistance vs. Junction Temperature

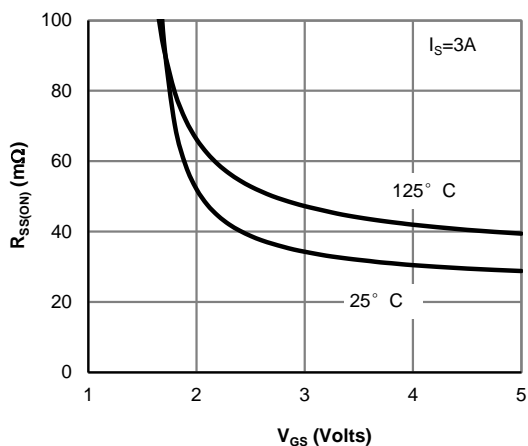


Figure 5: On-Resistance vs. Gate-Source Voltage

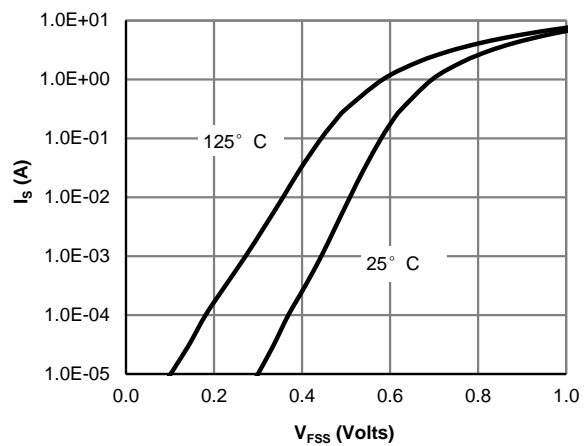


Figure 6: Forward Source to Source Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

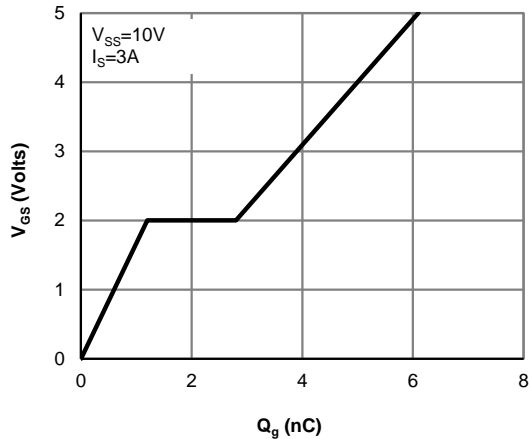


Figure 7: Gate-Charge Characteristics

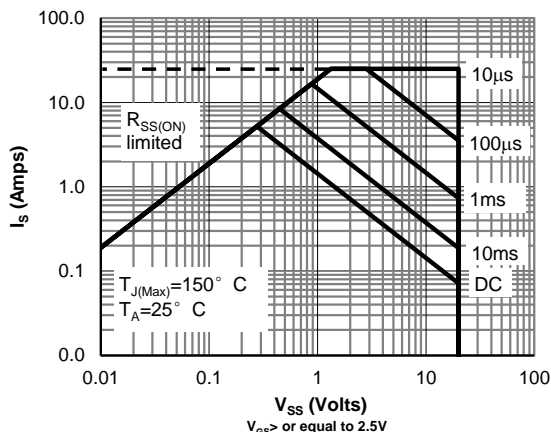


Figure 8: Maximum Forward Biased Safe Operating Area (Note1)

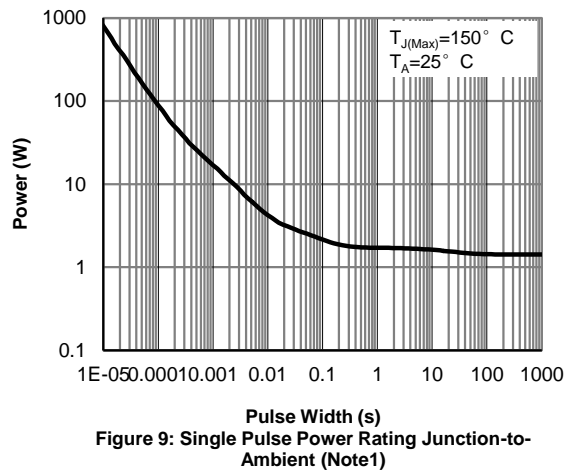


Figure 9: Single Pulse Power Rating Junction-to-Ambient (Note1)

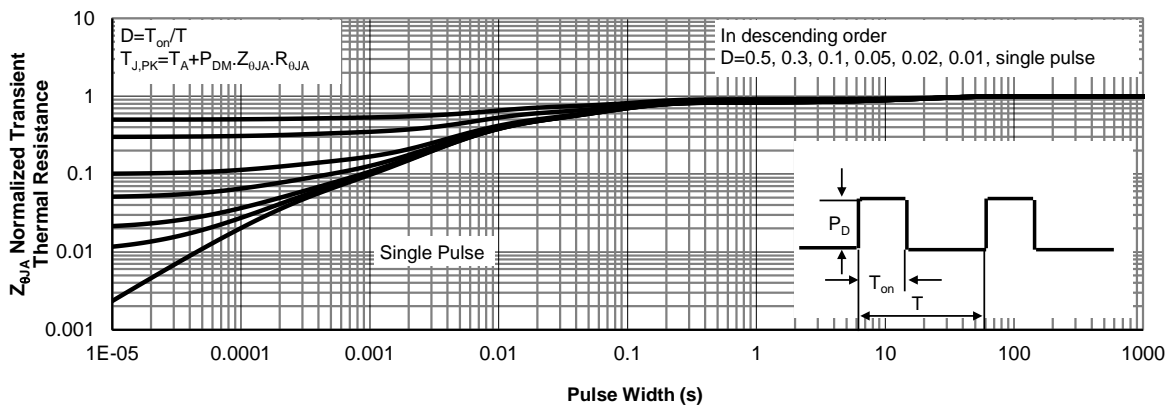


Figure 10: Normalized Maximum Transient Thermal Impedance (Note1)

