

Dual N-Channel MOSFET

AO4932 (K04932)

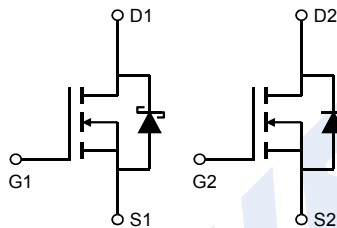
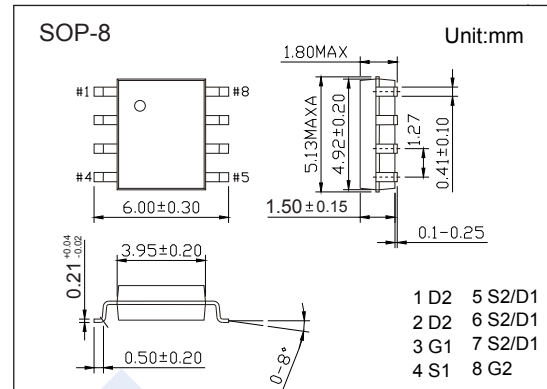
■ Features

N-Channel 1

- $V_{DS} (V) = 30V$
- $I_D = 11 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 12.5m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 15m\Omega (V_{GS} = 4.5V)$
- SRFET™ Soft Recovery MOSFET: Integrated Schottky Diode

N-Channel 2

- $V_{DS} (V) = 30V$
- $I_D = 8 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 19m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 23m\Omega (V_{GS} = 4.5V)$

■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	N-Channel 1	N-Channel 2	Unit	
Drain-Source Voltage	V_{DS}	30		V	
Gate-Source Voltage	V_{GS}	± 12	± 20		
Continuous Drain Current	I_D	$T_A=25^\circ C$	11	A	
		$T_A=70^\circ C$	9		
Pulsed Drain Current	I_{DM}	60	40	A	
Avalanche Current	I_{AR}	15	19		
Repetitive Avalanche Energy	$L=0.1mH$	E_{AR}	11	18	mJ
Power Dissipation	P_D	$T_A=25^\circ C$	2		W
		$T_A=70^\circ C$	1.3		
Thermal Resistance.Junction- to-Ambient	R_{thJA}	$t \leq 10s$	62.5		$^\circ C/W$
		Steady-State	90		
Thermal Resistance.Junction- to-Lead	R_{thJL}	40		$^\circ C/W$	
Junction Temperature	T_J	150		$^\circ C$	
Storage Temperature Range	T_{stg}	-55 to 150			

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■ N-Channel 1 Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Drain-Source Breakdown Voltage	V _{DSS}	I _D =1mA, V _{GS} =0V	30			V	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			0.5	mA	
		V _{DS} =30V, V _{GS} =0V, T _J =55°C			500		
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±100	nA	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.1		2.1	V	
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =11A			12.8	mΩ	
		V _{GS} =10V, I _D =11A, T _J =125°C			18		
		V _{GS} =4.5V, I _D =9A			15		
On State Drain Current	I _{D(ON)}	V _{GS} =10V, V _{DS} =5V	60			A	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =11A		75		S	
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, f=1MHz	930		1400	pF	
Output Capacitance	C _{oss}		90		170		
Reverse Transfer Capacitance	C _{rss}		45		125		
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz	0.7		2.1	Ω	
Total Gate Charge (10V)	Q _g	V _{GS} =10V, V _{DS} =15V, I _D =11A	16		24	nC	
Total Gate Charge (4.5V)			7		10.5		
Gate Source Charge			Q _{gs}		3.2		
Gate Drain Charge			Q _{gd}		3		
Turn-On DelayTime	t _{d(on)}	V _{GS} =10V, V _{DS} =15V, R _L =1.4Ω, R _{GEN} =3Ω		6		ns	
Turn-On Rise Time	t _r			2.4			
Turn-Off DelayTime	t _{d(off)}			23			
Turn-Off Fall Time	t _f			4			
Body Diode Reverse Recovery Time	t _{rr}	I _F = 11A, di/dt= 500A/us	5.5		8.5	nC	
Body Diode Reverse Recovery Charge	Q _{rr}		5		8		
Maximum Body-Diode Continuous Current	I _S				4	A	
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V			0.7	V	

Note. The static characteristics in Figures 1 to 6 are obtained using <300us pulses, duty cycle 0.5% max.

■ Marking

Marking	4932 KA****
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Dual N-Channel MOSFET

AO4932 (K04932)

■ N-Channel 2 Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250 μ A, V _{GS} =0V	30			V	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA	
		V _{DS} =30V, V _{GS} =0V, T _J =55°C			5		
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±16V			±10	μA	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2		2.4	V	
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =8A			19	mΩ	
		V _{GS} =10V, I _D =8A T _J =125°C			25		
		V _{GS} =4.5V, I _D =4A			23		
On State Drain Current	I _{D(ON)}	V _{GS} =10V, V _{DS} =5V	40			A	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =8A		30		S	
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, f=1MHz	600		888	pF	
Output Capacitance	C _{oss}		77		145		
Reverse Transfer Capacitance	C _{rss}		50		115		
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz	0.5		1.7	Ω	
Total Gate Charge (10V)	Q _g	V _{GS} =10V, V _{DS} =15V, I _D =8A	12		18	nC	
Total Gate Charge (4.5V)			6		9		
Gate Source Charge			Q _{gs}	2			3
Gate Drain Charge			Q _{gd}	2			5
Turn-On DelayTime	t _{d(on)}	V _{GS} =10V, V _{DS} =15V, R _L =1.8Ω, R _{GEN} =3Ω		5		ns	
Turn-On Rise Time	t _r			3.5			
Turn-Off DelayTime	t _{d(off)}			19			
Turn-Off Fall Time	t _f			3.5			
Body Diode Reverse Recovery Time	t _{rr}	I _F = 8A, di/dt= 500A/us	6		10	nC	
Body Diode Reverse Recovery Charge	Q _{rr}		14		22		
Maximum Body-Diode Continuous Current	I _S				2.5	A	
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V			1	V	

Note.The static characteristics in Figures 1 to 6 are obtained using <300us pulses, duty cycle 0.5% max.

Dual N-Channel MOSFET

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■ N-Channel 1 Typical Characteristics

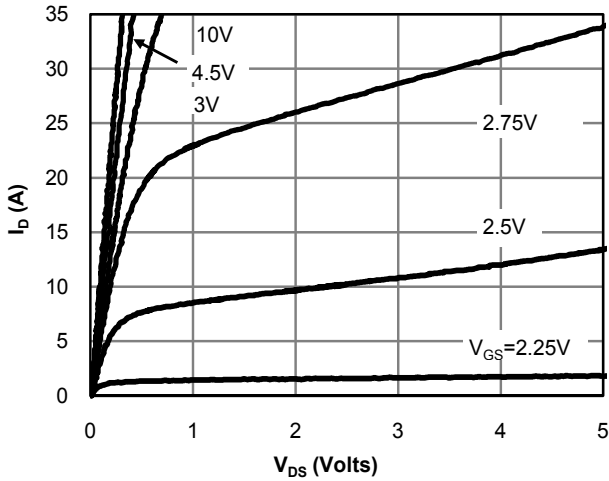


Figure 1: On-Region Characteristics (Note E)

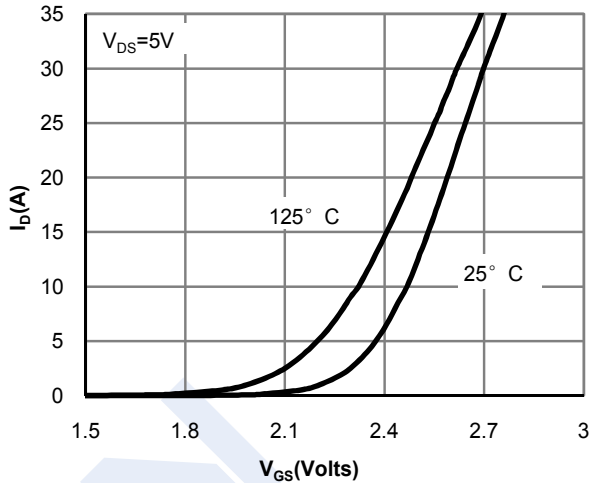


Figure 2: Transfer Characteristics (Note E)

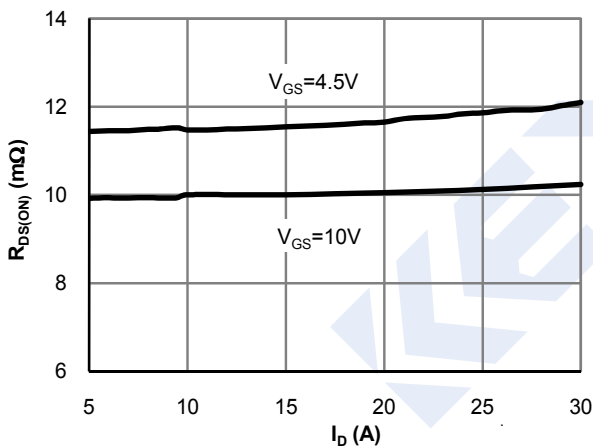


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

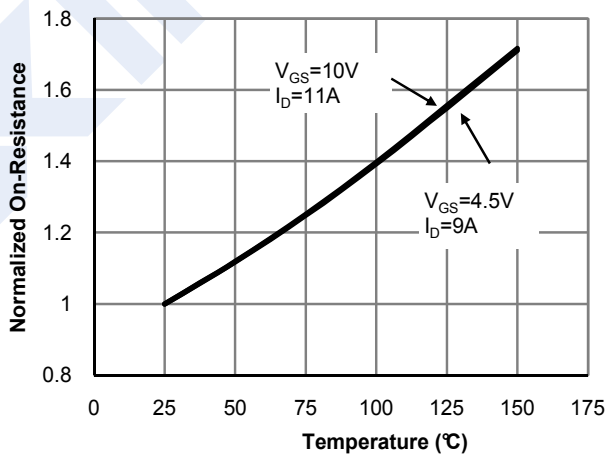


Figure 4: On-Resistance vs. Junction Temperature

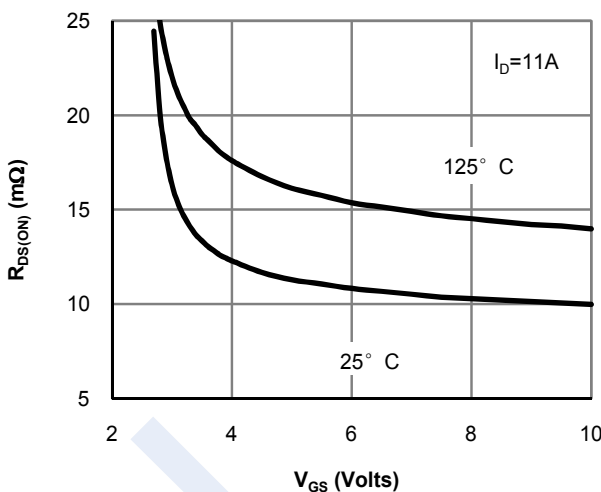


Figure 5: On-Resistance vs. Gate-Source Voltage

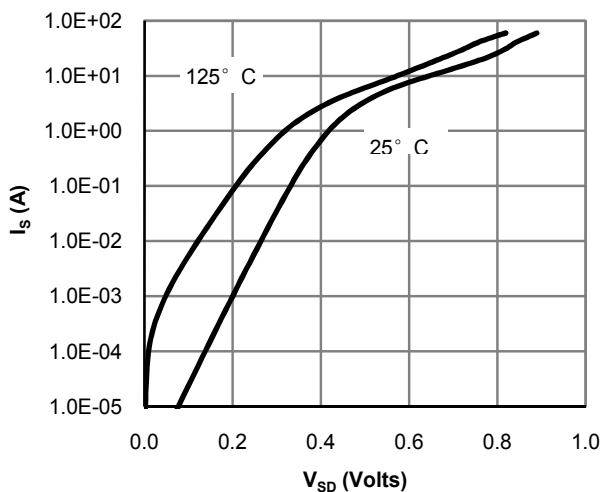


Figure 6: Body-Diode Characteristics (Note E)

Dual N-Channel MOSFET AO4932 (KO4932)

■ N-Channel 1 Typical Characteristics

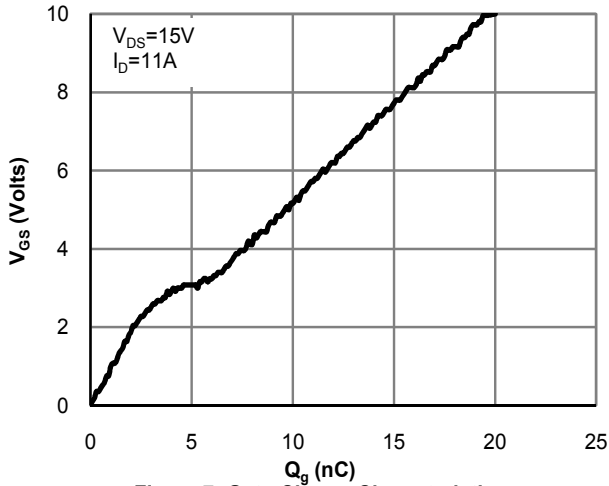


Figure 7: Gate-Charge Characteristics

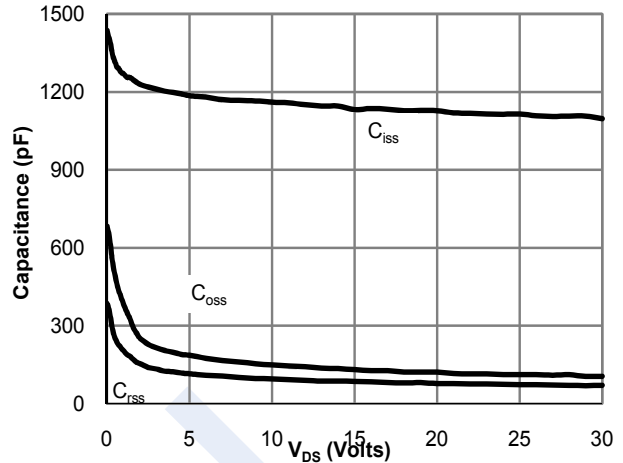


Figure 8: Capacitance Characteristics

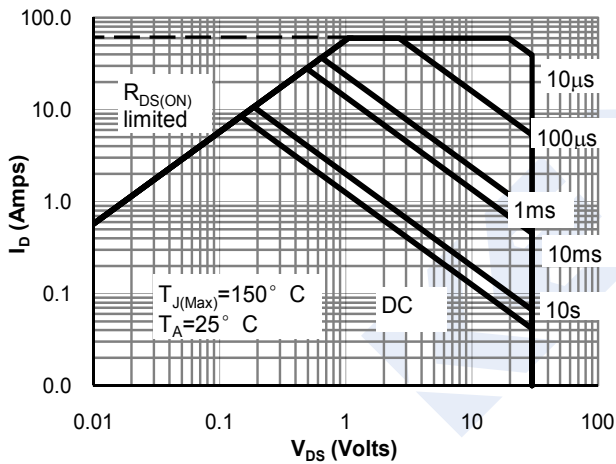


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

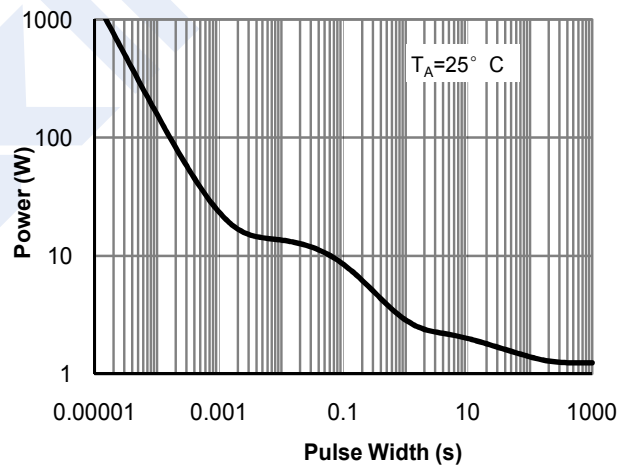


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

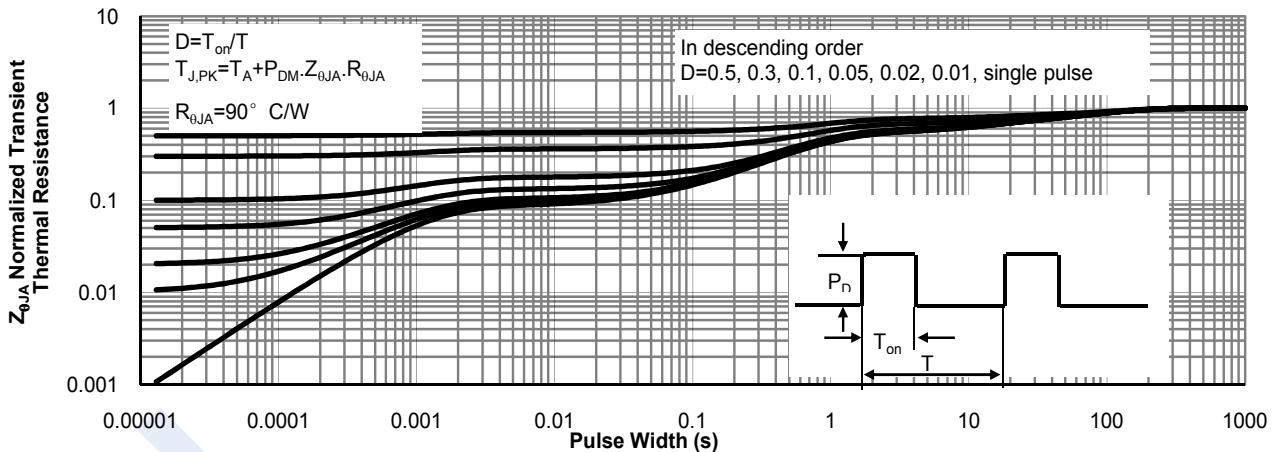


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

Dual N-Channel MOSFET AO4932 (KO4932)

■ N-Channel 1 Typical Characteristics

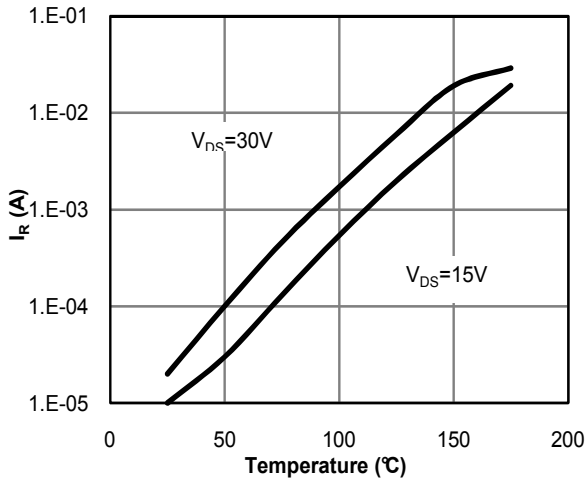


Figure 12: Diode Reverse Leakage Current vs. Junction Temperature

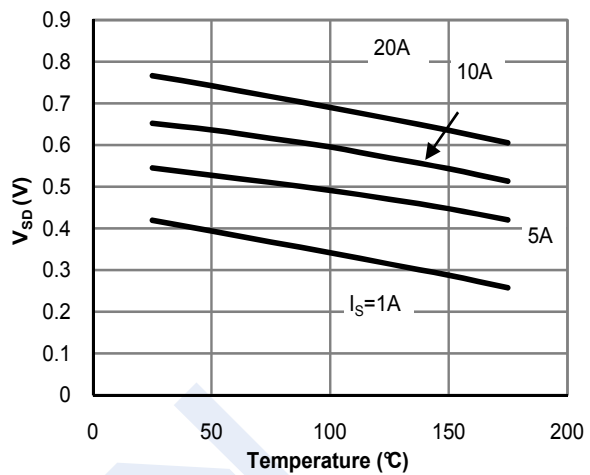


Figure 13: Diode Forward voltage vs. Junction Temperature

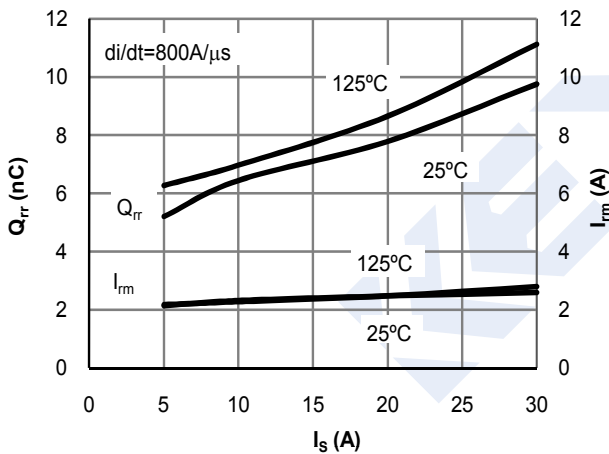


Figure 14: Diode Reverse Recovery Charge and Peak Current vs. Conduction Current

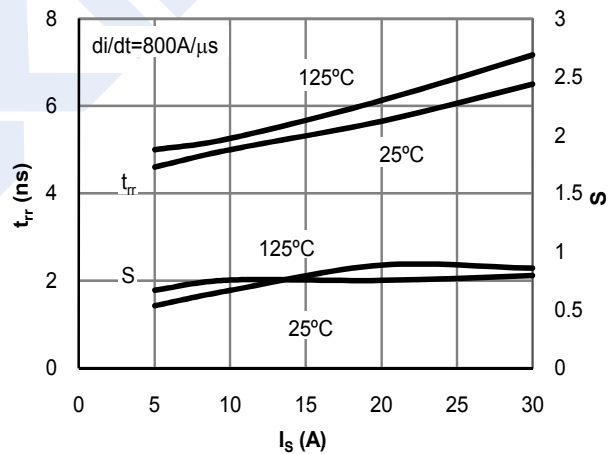


Figure 15: Diode Reverse Recovery Time and Softness Factor vs. Conduction Current

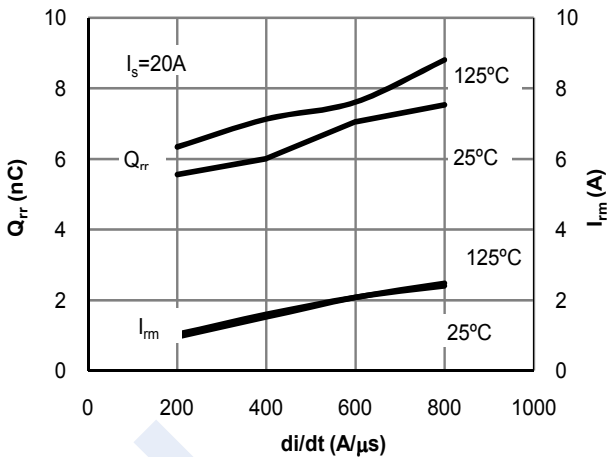


Figure 16: Diode Reverse Recovery Charge and Peak Current vs. di/dt

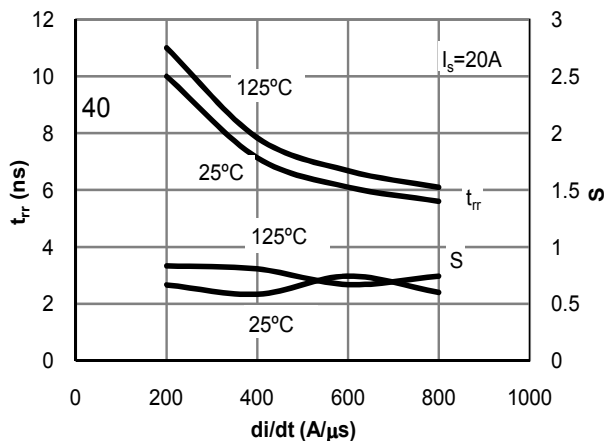


Figure 17: Diode Reverse Recovery Time and Softness Factor vs. di/dt

Dual N-Channel MOSFET AO4932 (KO4932)

■ N-Channel 2 Typical Characteristics

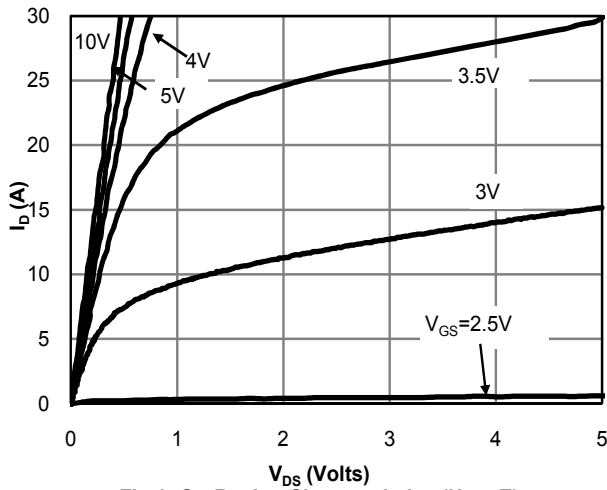


Fig 1: On-Region Characteristics (Note E)

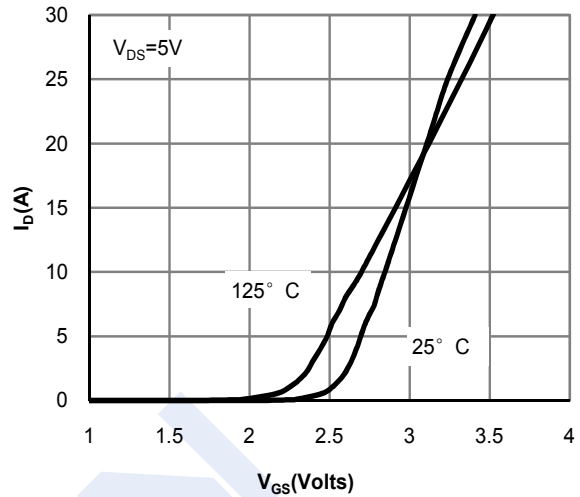


Figure 2: Transfer Characteristics (Note E)

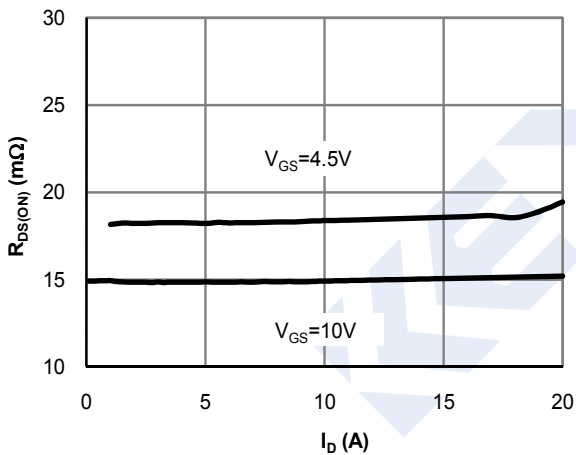


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

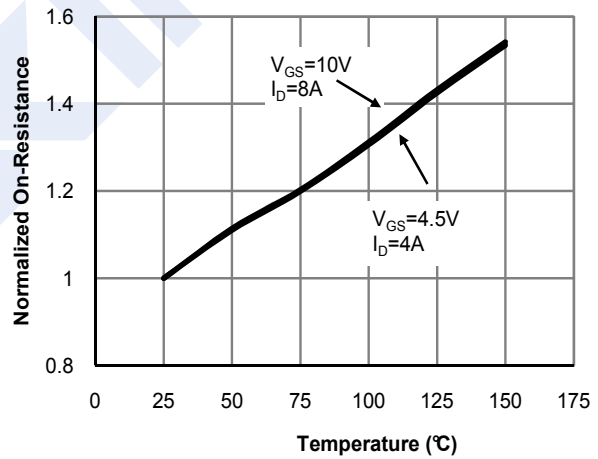


Figure 4: On-Resistance vs. Junction Temperature

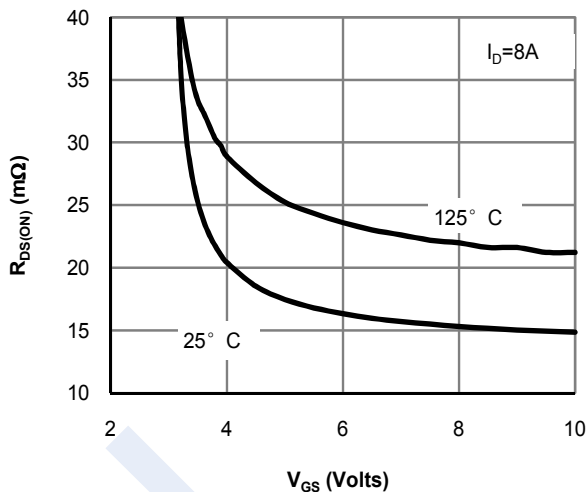


Figure 5: On-Resistance vs. Gate-Source Voltage

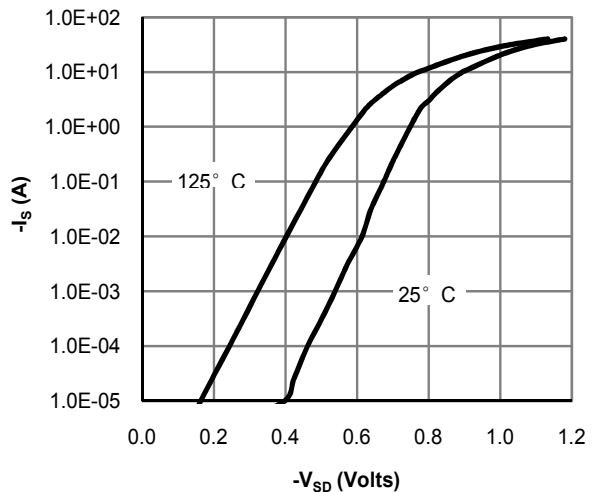


Figure 6: Body-Diode Characteristics (Note E)

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AO4932 (KO4932)

■ N-Channel 2 Typical Characteristics

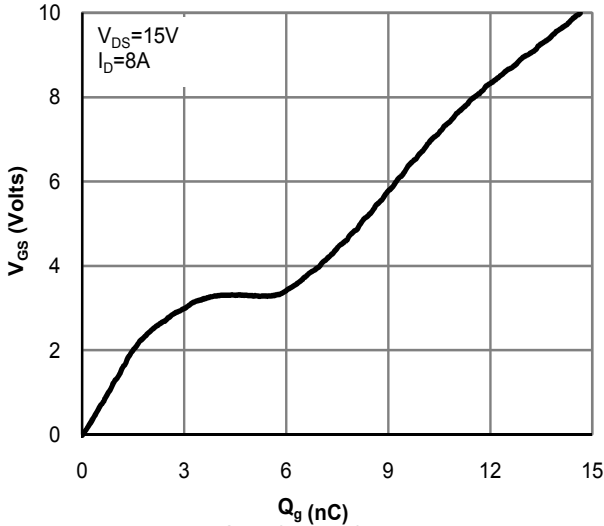


Figure 7: Gate-Charge Characteristics

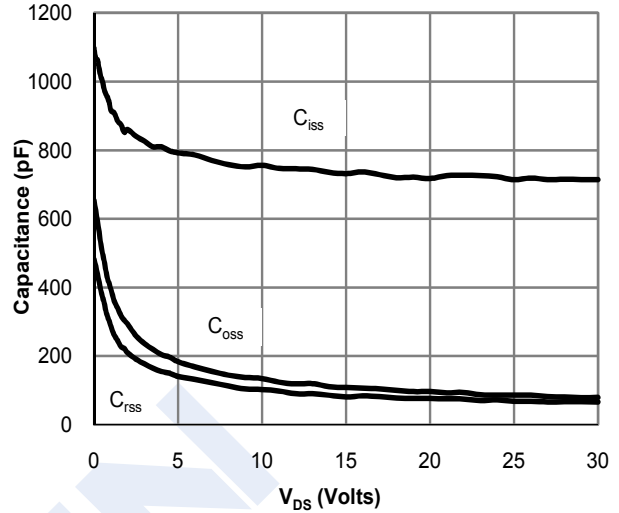


Figure 8: Capacitance Characteristics

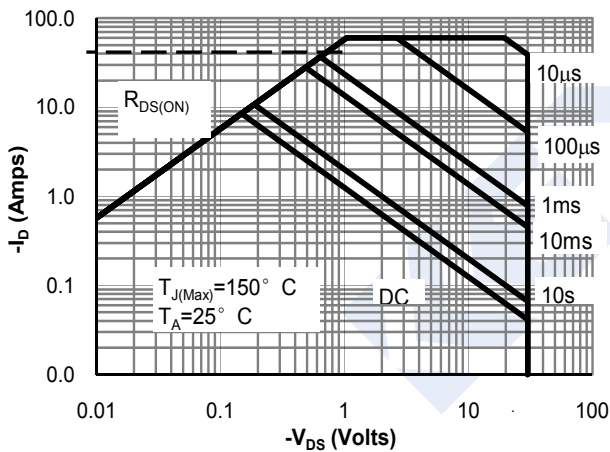


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

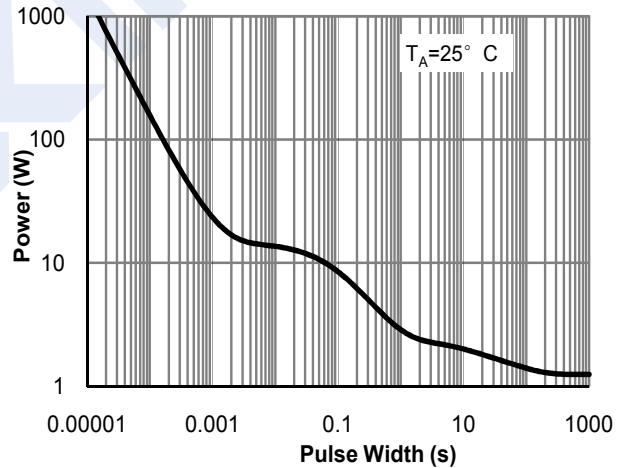


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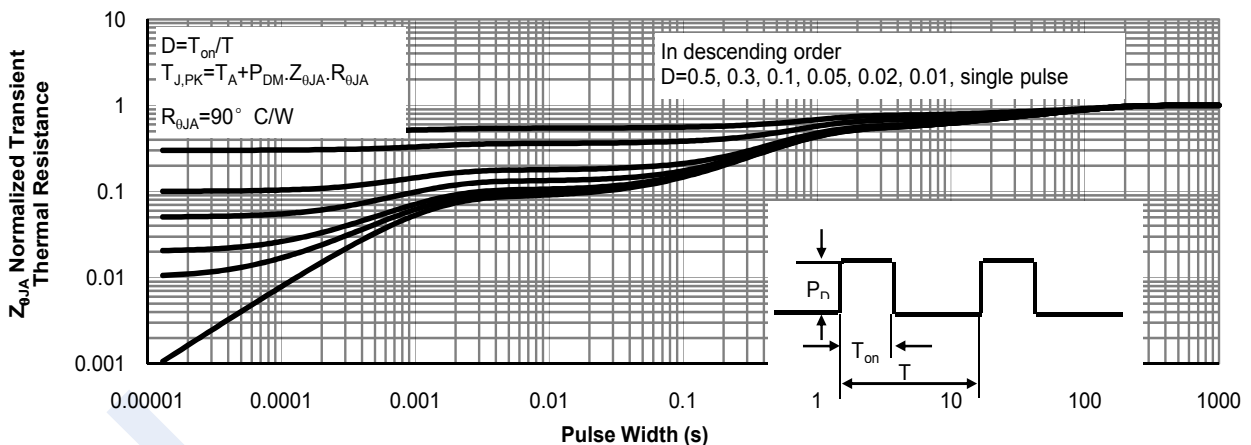


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)