

Dual N-Channel MOSFET

AO4914 (KO4914)

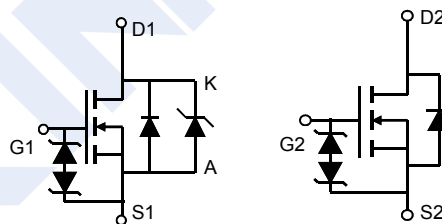
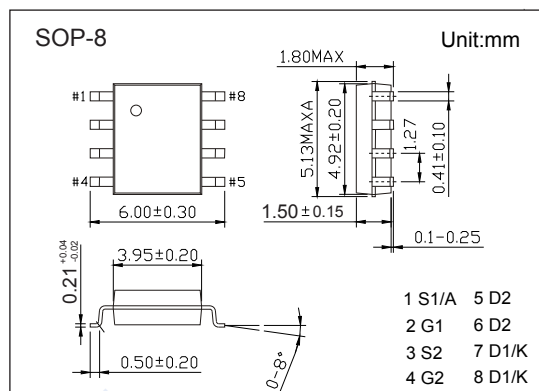
■ Features

N-Channel 1

- $V_{DS} (V) = 30V$
- $I_D = 8 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 20.5m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 28m\Omega (V_{GS} = 4.5V)$
- $V_{DS} (V) = 30V, I_F = 3A, V_F < 0.5V @ 1A$

N-Channel 2

- $V_{DS} (V) = 30V$
- $I_D = 8 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 20.5m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 28m\Omega (V_{GS} = 4.5V)$
- ESD Rating: 2KV HBM

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

Parameter		Symbol	N-Channel 1	Schottky	N-Channel 2	Unit
Drain-Source Voltage		V _{DS}	30		30	V
Gate-Source Voltage		V _{GS}	± 20		± 20	
Schottky Reverse Voltage		V _{KA}		30		
Continuous Drain Current	T _A =25°C	I _D	8		8	A
	T _A =70°C		6.5		6.5	
Pulsed Drain Current		I _{DM}	40		40	
Continuous Forward Current	T _A =25°C	I _F		3		A
	T _A =70°C			2.2		
Pulsed Diode Forward Current		I _{FM}		20		
Avalanche Current		I _{AS} , I _{AR}	19		19	mJ
Repetitive Avalanche Energy	L=0.1mH	E _{AS} , E _{AR}	18		18	
Power Dissipation	T _A =25°C	P _D	2			W
	T _A =70°C		1.3	1.28	1.3	
Thermal Resistance.Junction- to-Ambient	t ≤ 10s	R _{thJA}	62.5			°C/W
	Steady-State		90			
Thermal Resistance.Junction- to-Lead		R _{thJL}	40			°C
Junction Temperature		T _J	150			
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 =250 μA, V _{GS} =0V	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			0.05	mA
		V _{DS} =30V, V _{GS} =0V, T _J =125°C			10	
		V _{DS} =30V, V _{GS} =0V, T _J =150°C			20	
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 =250 μA	1.2		2.4	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =8A			20.5	mΩ
		V _{GS} =10V, I _D =8A, T _J =125°C			29	
		V _{GS} =4.5V, I _D =4A			28	
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	575		865	pF
Output Capacitance (FET + Schottky)	C _{oss}		115		215	
Reverse Transfer Capacitance	C _{rss}		50		120	
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}			2.5		
Gate Drain Charge	Q _{gd}			3		
Turn-On DelayTime	t _{d(on)}			5		
Turn-On Rise Time	t _r	V _{GS} =10V, V _{DS} =15V, R _L =1.8Ω, R _{GEN} =3Ω		3.5		ns
Turn-Off DelayTime	t _{d(off)}			19		
Turn-Off Fall Time	t _f			3.5		
Body Diode Reverse Recovery Time	t _{rr}			8		
Body Diode Reverse Recovery Charge	Q _{rr}	I _F =8A, di/dt=500A/μs		8		nC
Body-Diode + Schottky Continuous Current	I _S				3	A
Diode + Schottky Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V			0.5	V

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

■ Marking

Marking	4914 KA****
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■ 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 μA, 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 =250 μA	1.2		2.4	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =8A			20.5	mΩ
		V _{GS} =10V, I _D =8A, T _J =125°C			29	
		V _{GS} =4.5V, I _D =4A			28	
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}			2.5		
Gate Drain Charge	Q _{gd}			3		
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	
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 300 μs pulses, duty cycle 0.5% max.

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■ N-Channel 1 Typical Characteristics

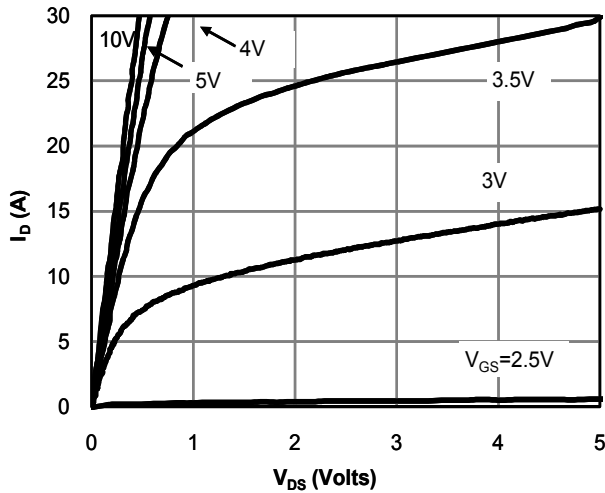


Fig 1: On-Region Characteristics (Note E)

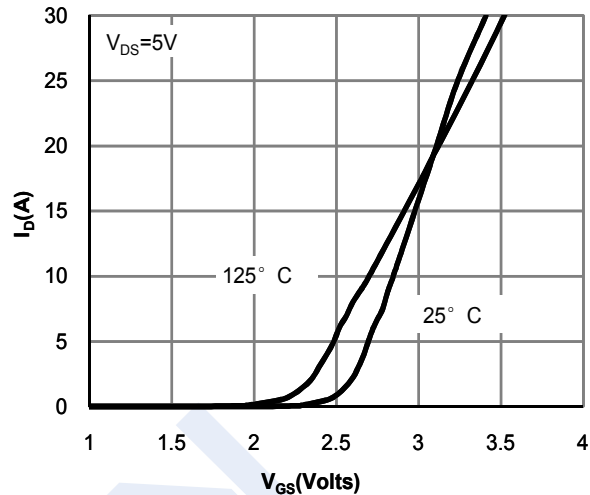


Figure 2: Transfer Characteristics (Note E)

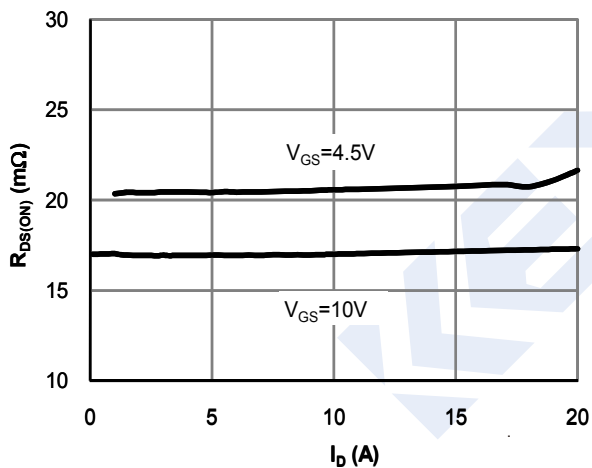


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

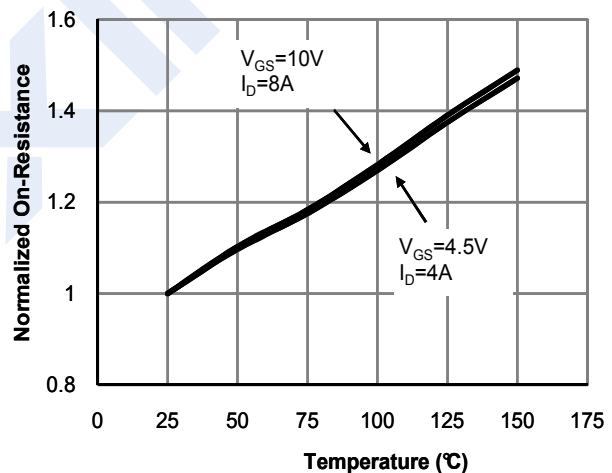


Figure 4: On-Resistance vs. Junction Temperature

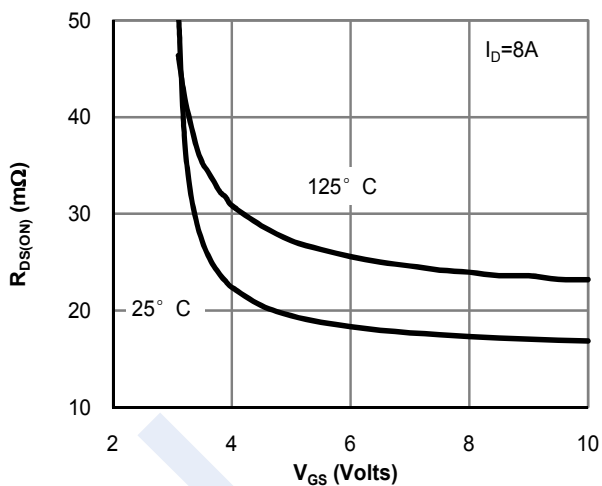


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

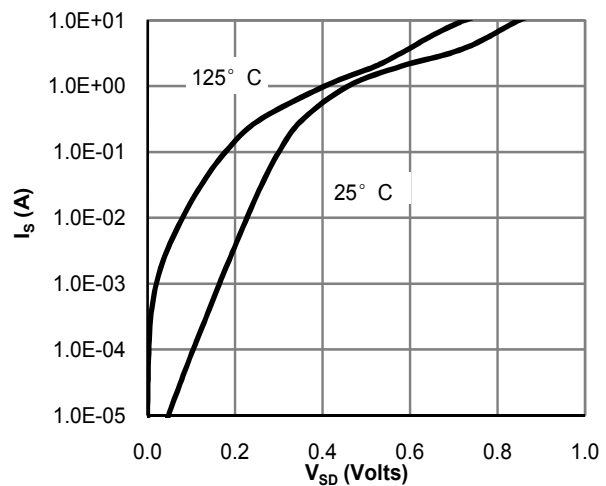
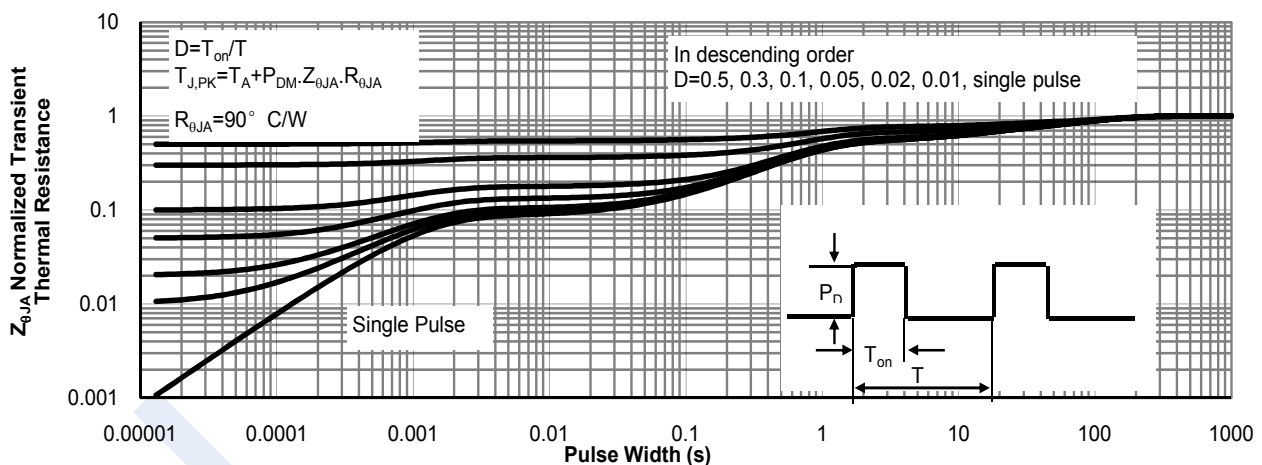
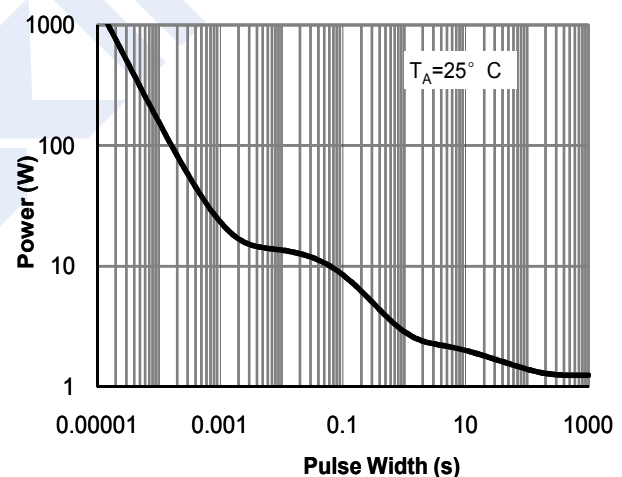
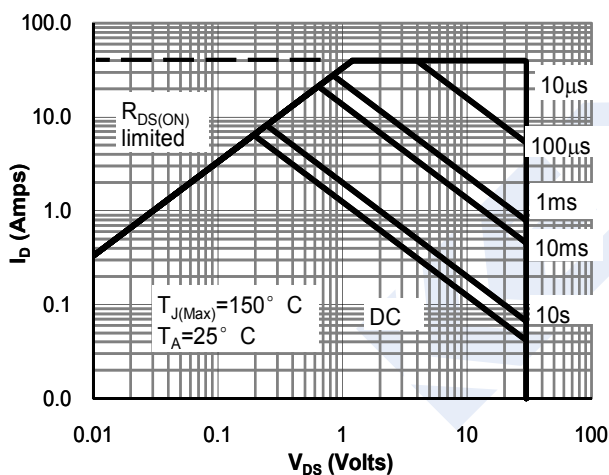
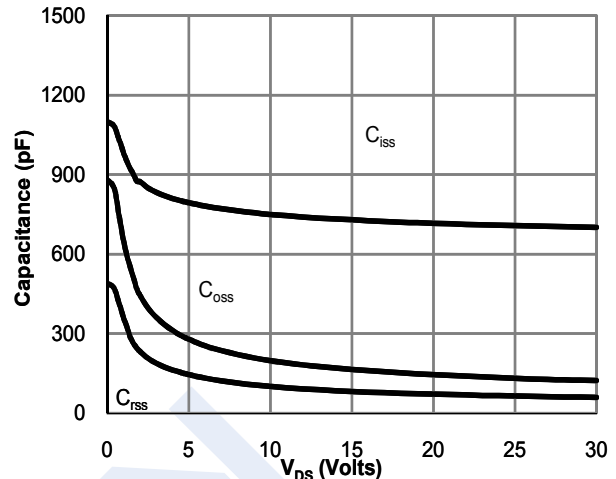
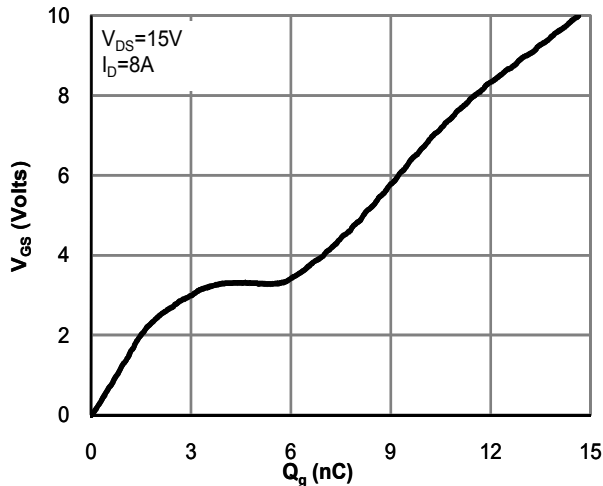


Figure 6: Body-Diode Characteristics (Note E)

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■ N-Channel 1 Typical Characteristics



Dual N-Channel MOSFET

AO4914 (KO4914)

■ N-Channel 2 Typical Characteristics

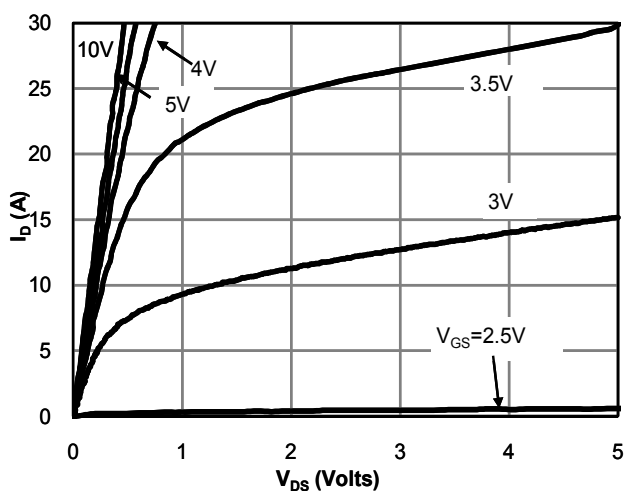


Fig 1: On-Region Characteristics (Note E)

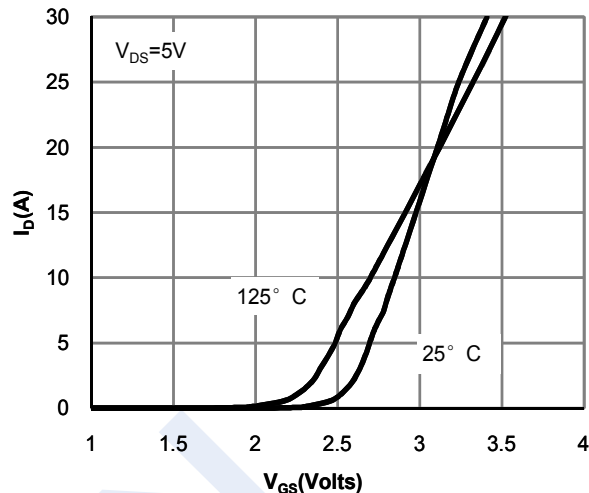


Figure 2: Transfer Characteristics (Note E)

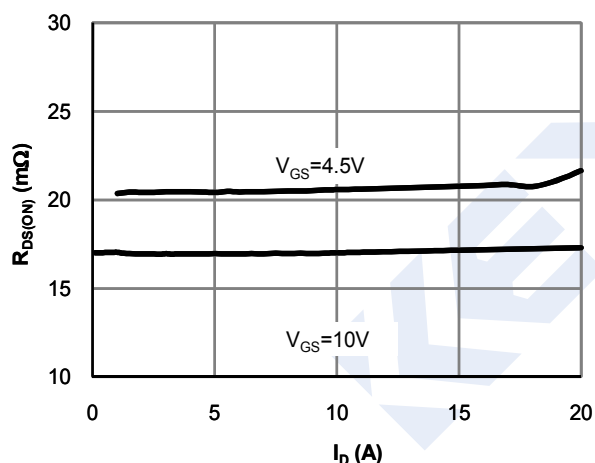


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

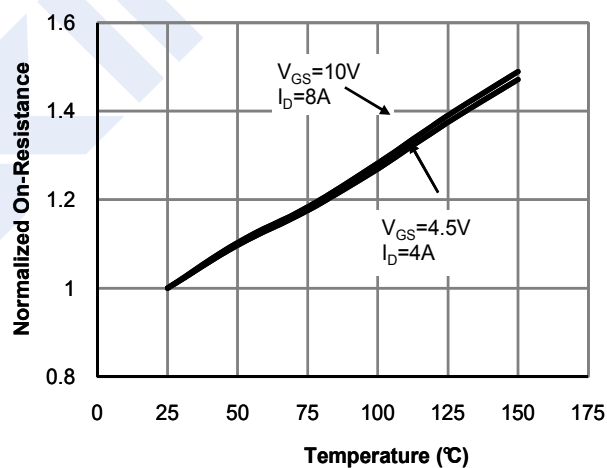


Figure 4: On-Resistance vs. Junction Temperature

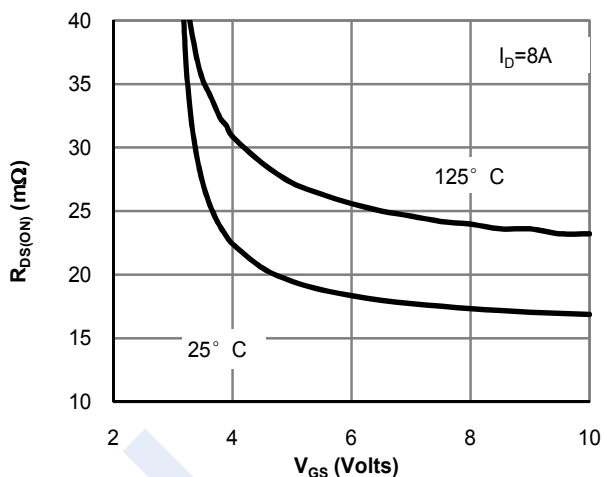


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

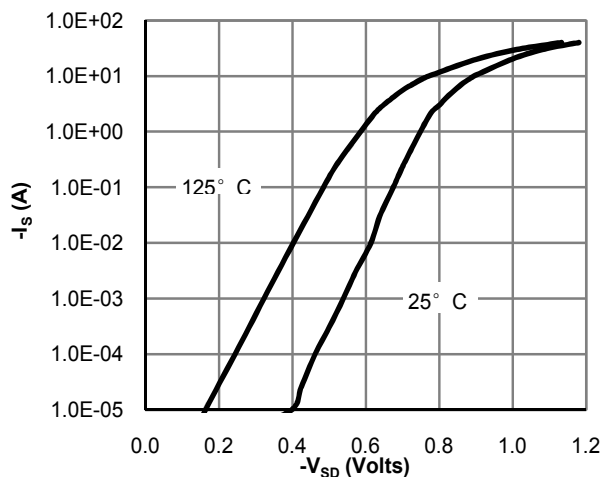


Figure 6: Body-Diode Characteristics (Note E)

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AO4914 (KO4914)

■ N-Channel 2 Typical Characteristics

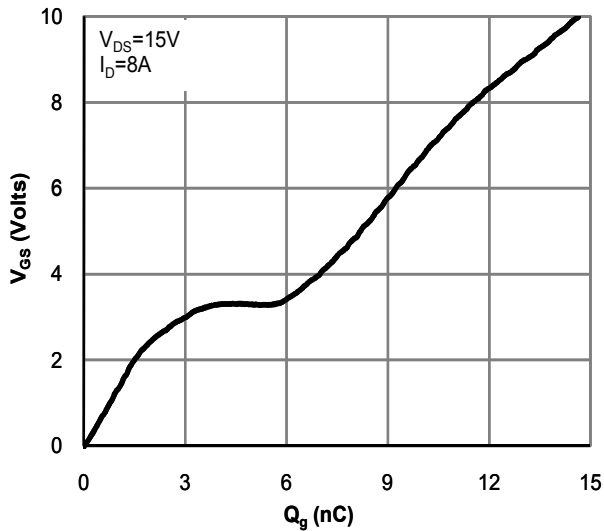


Figure 7: Gate-Charge Characteristics

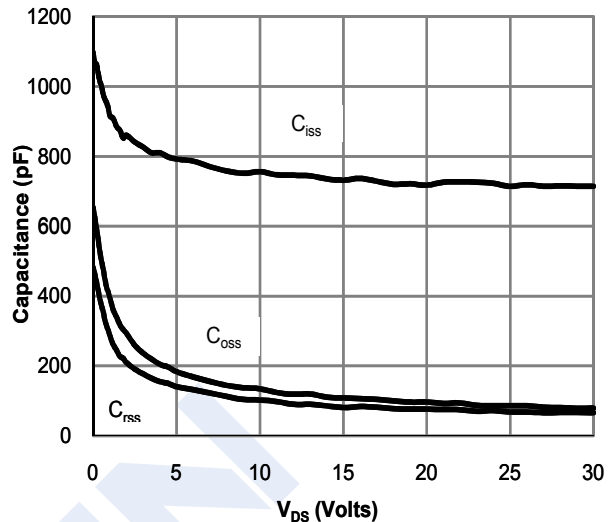


Figure 8: Capacitance Characteristics

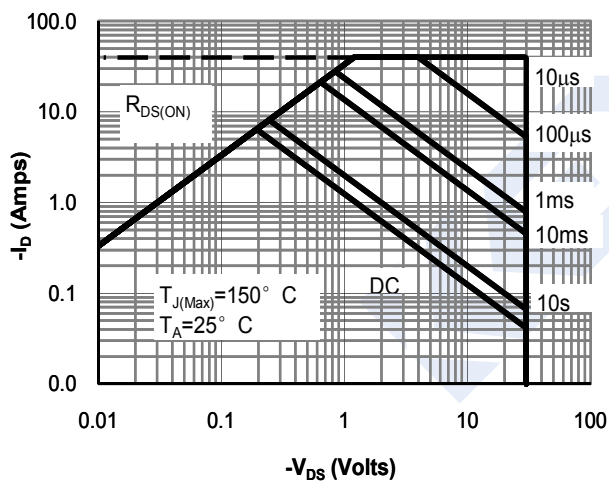


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

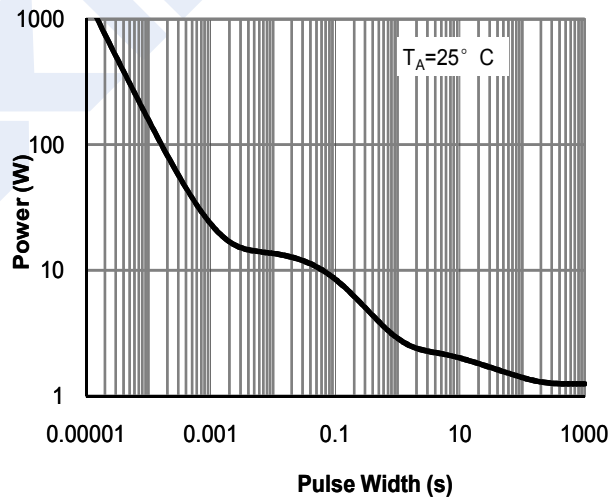


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

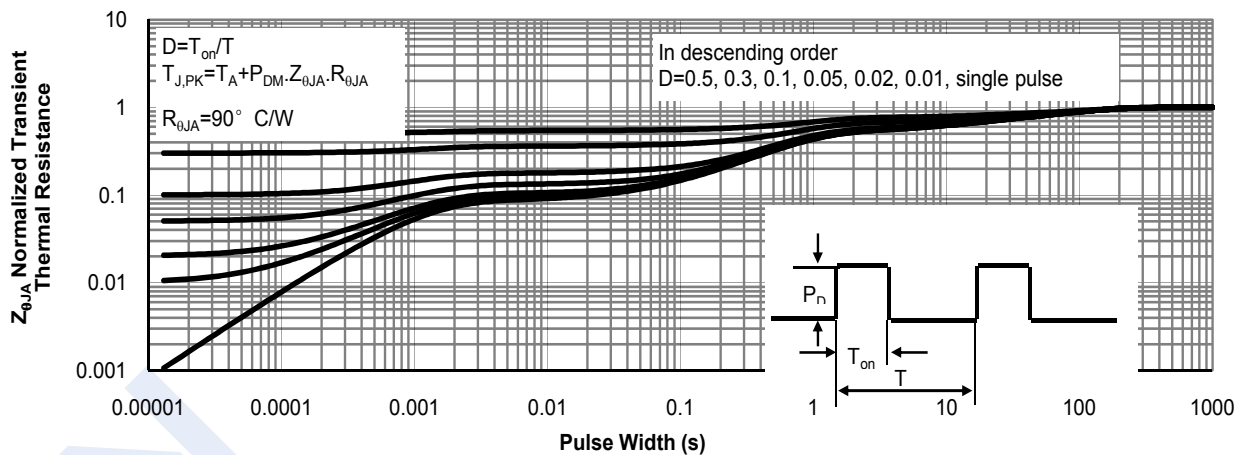


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)