

Dual N-Channel MOSFET

AO4914 (KO4914)

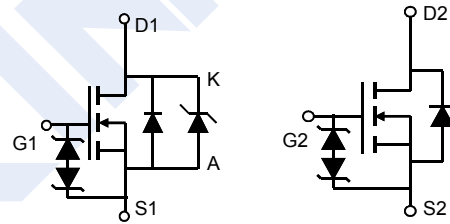
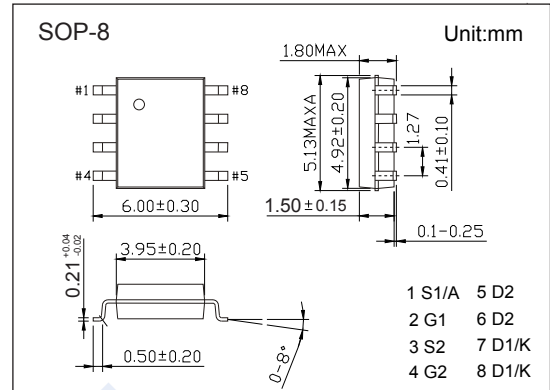
■ Features

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	$T_A = 25^\circ C$	I_D	8		8	A
	$T_A = 70^\circ C$		6.5		6.5	
Pulsed Drain Current		I_{DM}	40		40	
Continuous Forward Current	$T_A = 25^\circ C$	I_F		3		A
	$T_A = 70^\circ C$			2.2		
Pulsed Diode Forward Current		I_{FM}		20		
Avalanche Current		I_{AS}, I_{AR}	19		19	
Repetitive Avalanche Energy	$L = 0.1mH$	E_{AS}, E_{AR}	18		18	mJ
Power Dissipation	$T_A = 25^\circ C$	P_D	2			W
	$T_A = 70^\circ C$		1.3	1.28	1.3	
Thermal Resistance.Junction- to-Ambient	$t \leq 10s$	R_{thJA}	62.5			$^\circ C/W$
	Steady-State		90			
Thermal Resistance.Junction- to-Lead		R_{thJL}	40			
Junction Temperature		T_J	150			$^\circ C$
Storage Temperature Range		T_{stg}	-55 to 150			

Dual N-Channel MOSFET

AO4914 (K04914)

■ 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)}	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		8		nC	
Body Diode Reverse Recovery Charge	Q _{rr}			8			
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****

Dual N-Channel MOSFET

AO4914 (KO4914)

■ 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 =250 μ A	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.

Dual N-Channel MOSFET AO4914 (KO4914)

■ N-Channel 1 Typical Characteristics

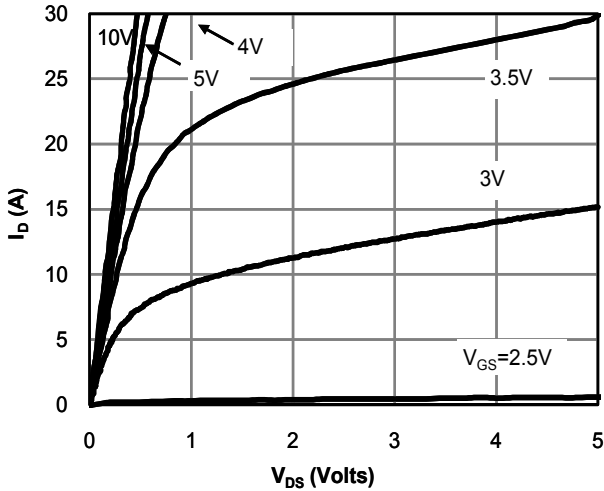


Fig 1: On-Region Characteristics (Note E)

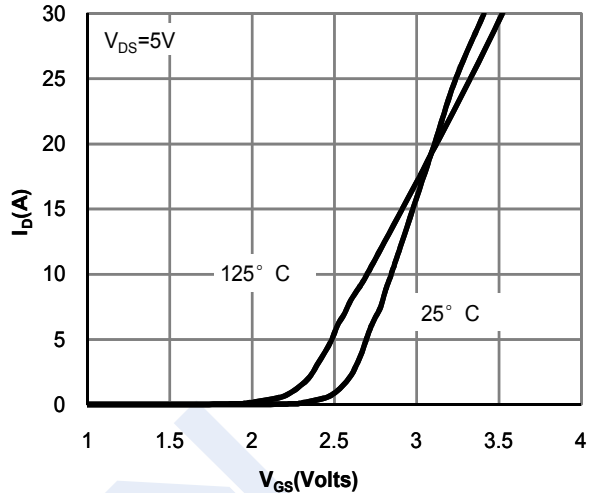


Figure 2: Transfer Characteristics (Note E)

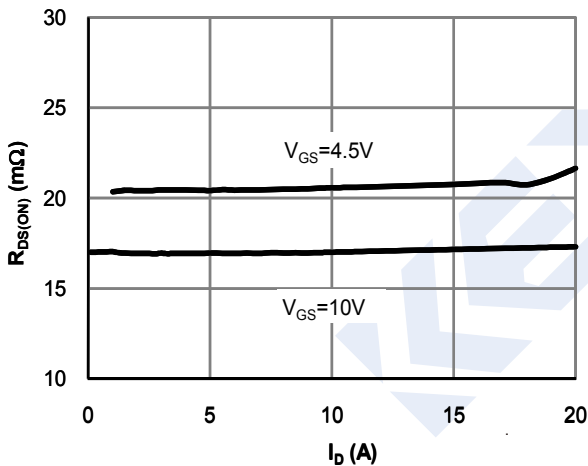


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

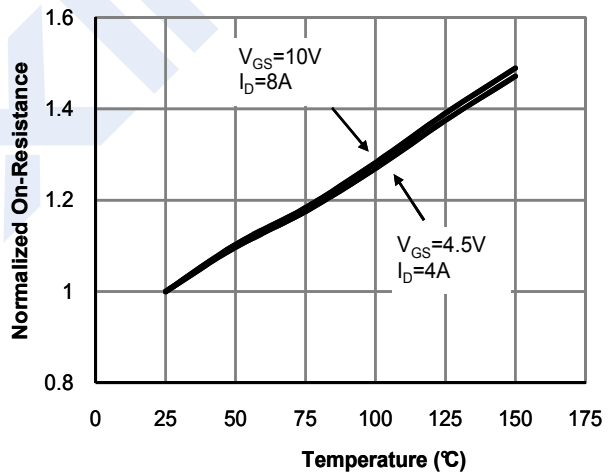


Figure 4: On-Resistance vs. Junction Temperature

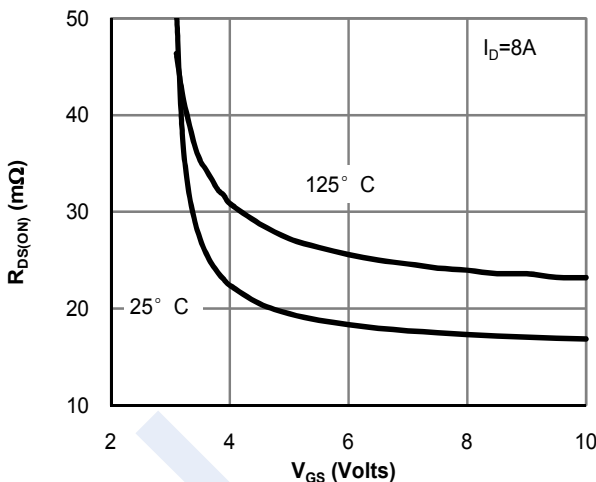


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

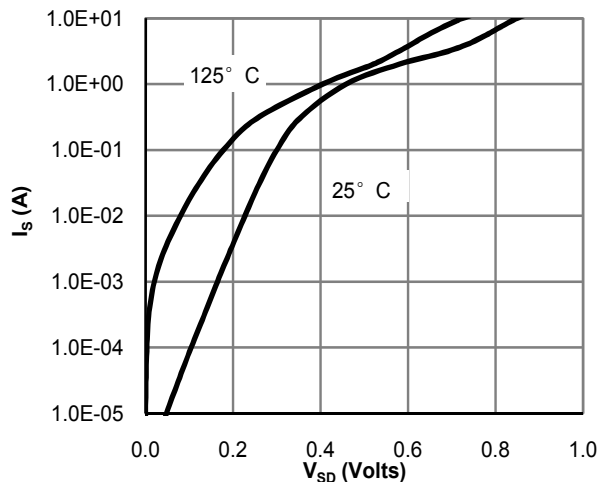


Figure 6: Body-Diode Characteristics (Note E)

Dual N-Channel MOSFET AO4914 (KO4914)

■ N-Channel 1 Typical Characteristics

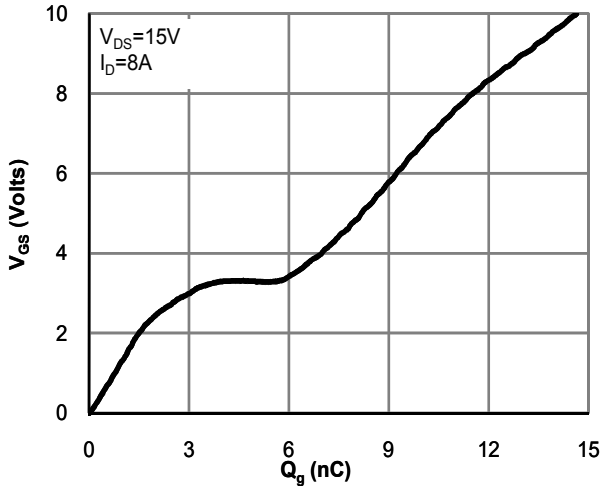


Figure 7: Gate-Charge Characteristics

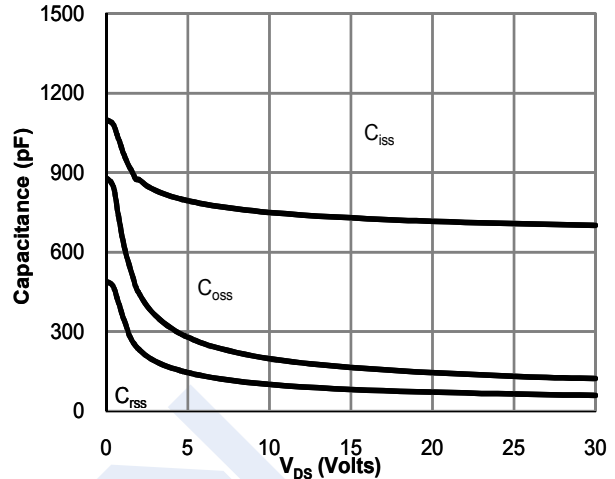


Figure 8: Capacitance Characteristics

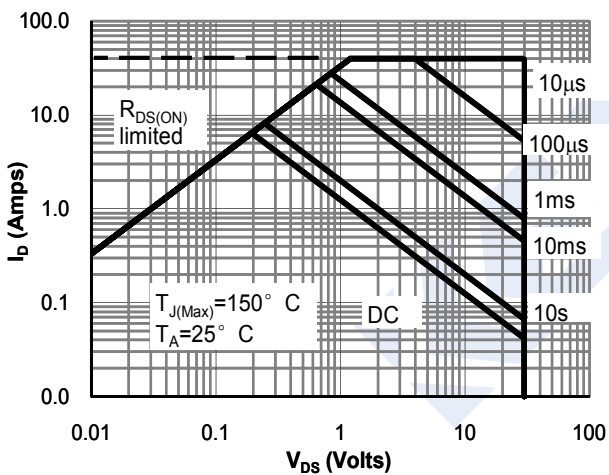


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

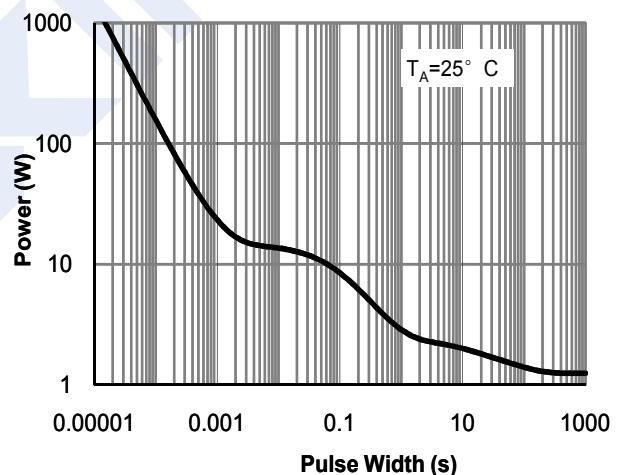


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

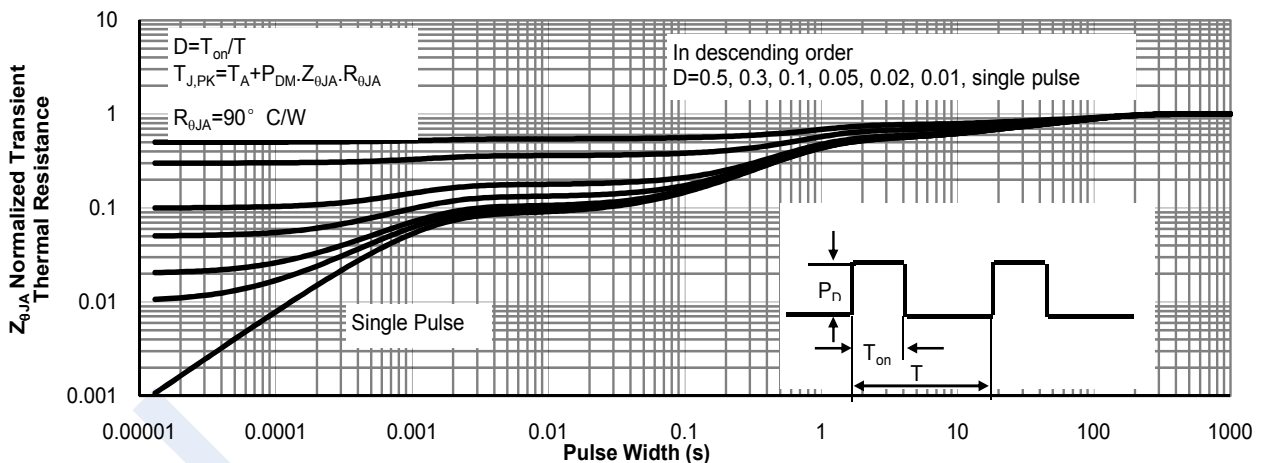


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

Dual N-Channel MOSFET AO4914 (KO4914)

■ N-Channel 2 Typical Characteristics

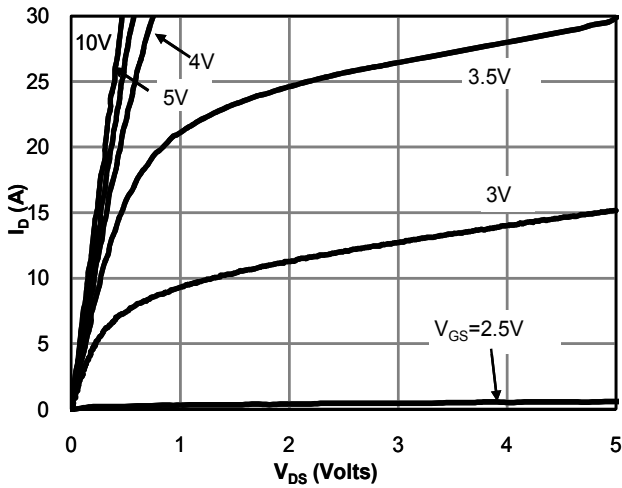


Fig 1: On-Region Characteristics (Note E)

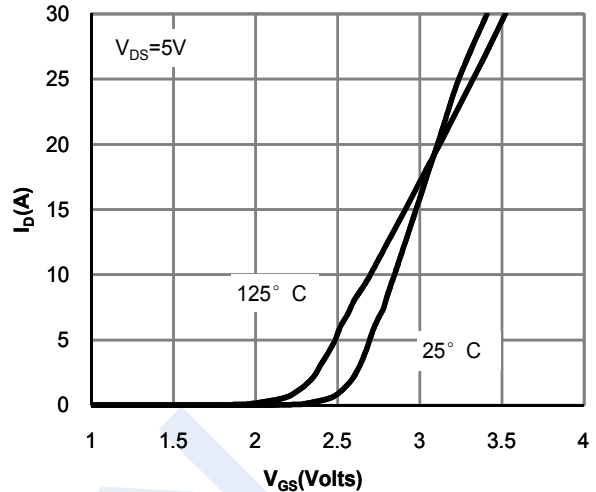


Figure 2: Transfer Characteristics (Note E)

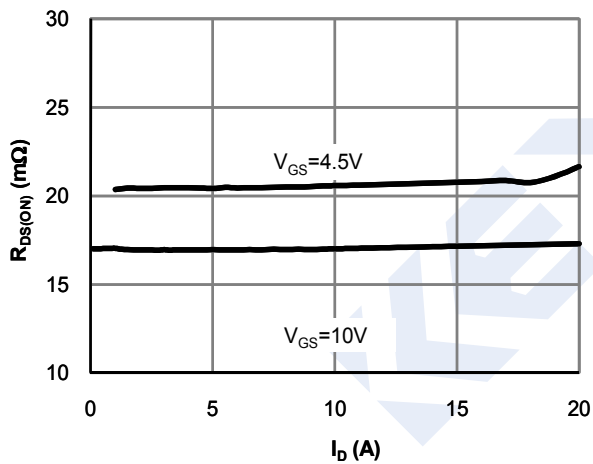


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

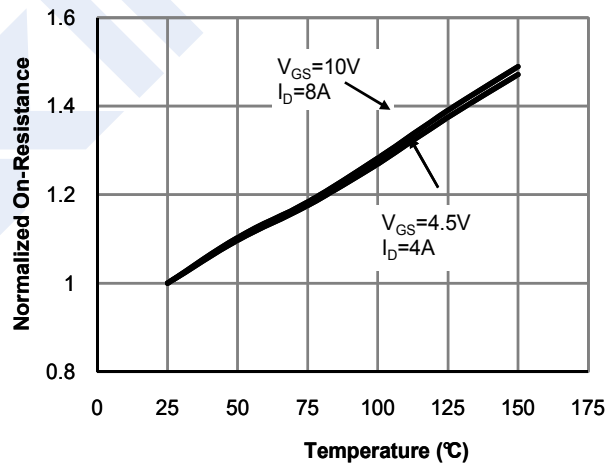


Figure 4: On-Resistance vs. Junction Temperature

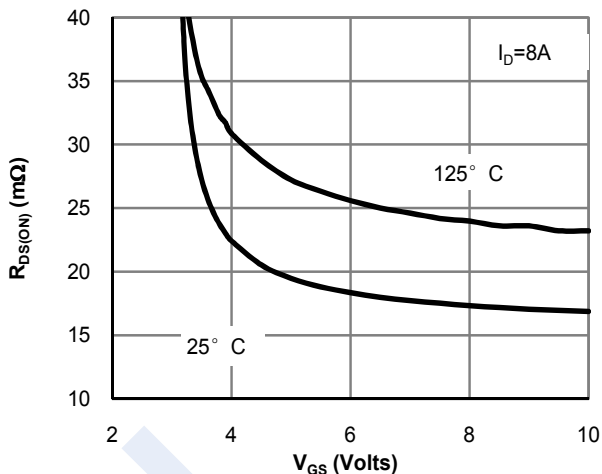


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

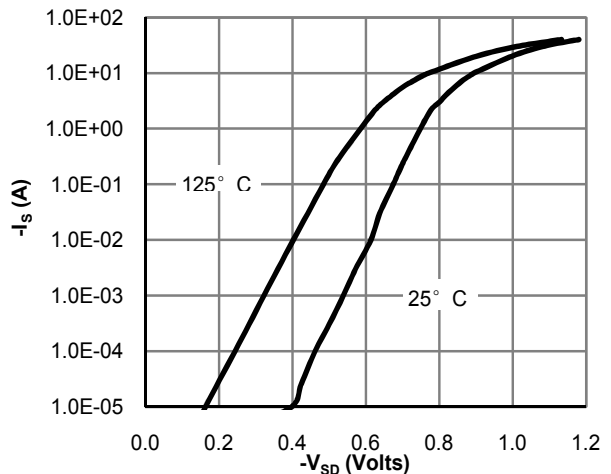


Figure 6: Body-Diode Characteristics (Note E)

Dual N-Channel MOSFET AO4914 (KO4914)

■ N-Channel 2 Typical Characteristics

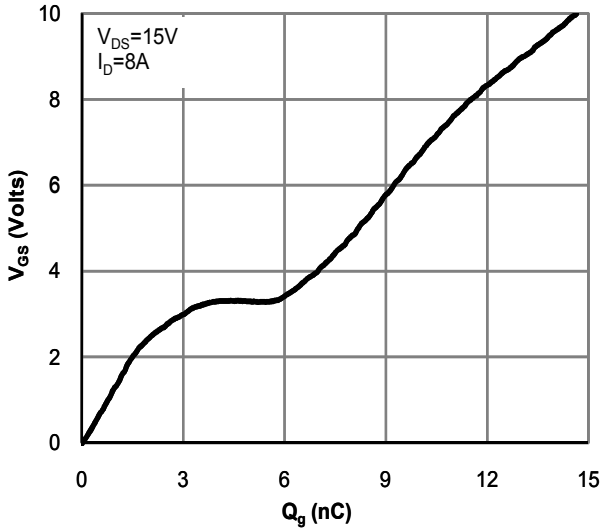


Figure 7: Gate-Charge Characteristics

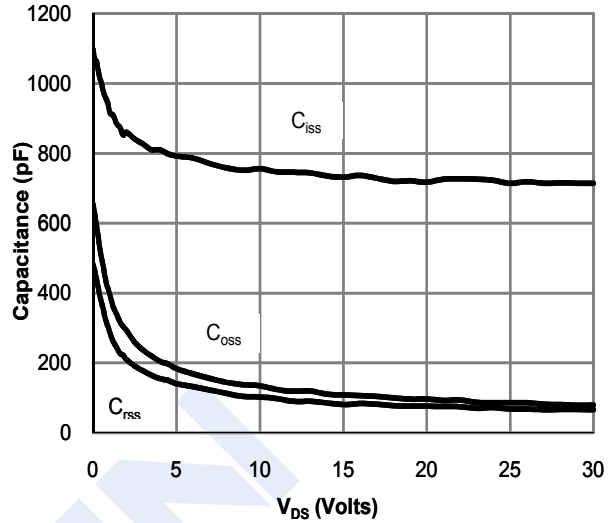


Figure 8: Capacitance Characteristics

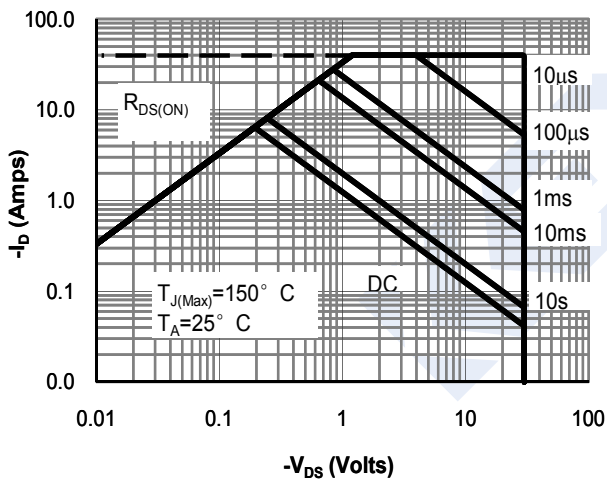


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

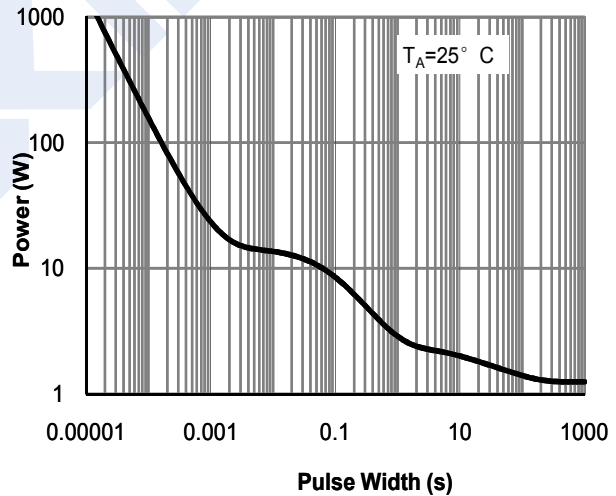


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

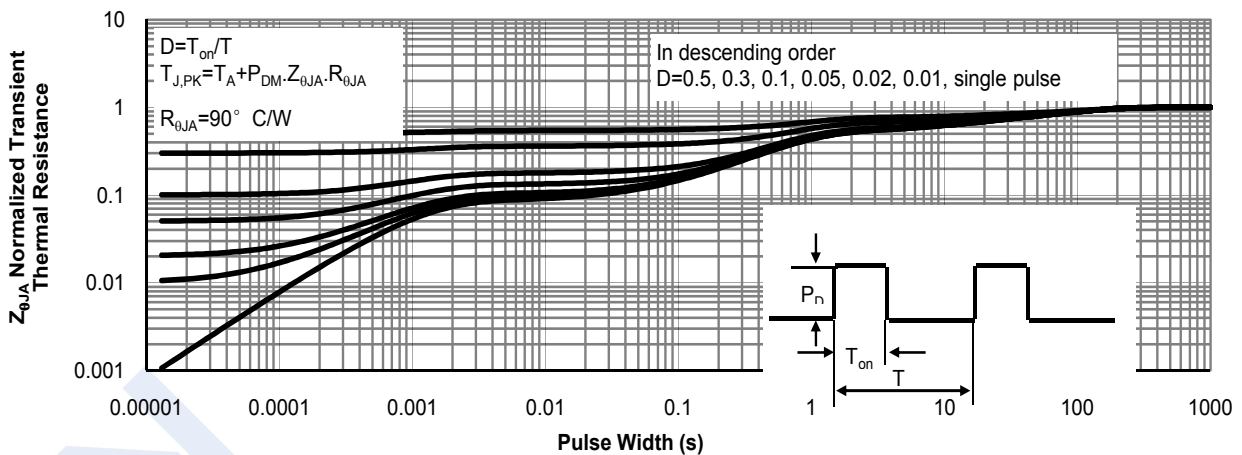


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)