

Dual N-Channel MOSFET

AO4918 (KO4918)

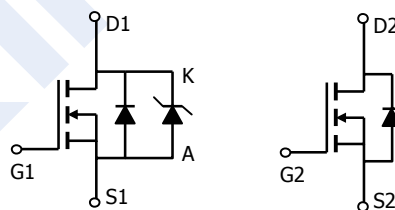
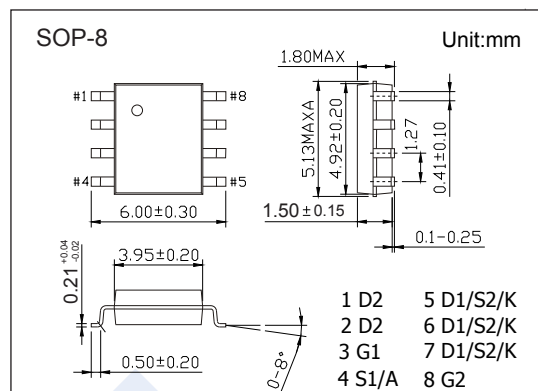
■ Features

N-Channel 1

- $V_{DS} (V) = 30V$
- $I_D = 9.3 A$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 14.5m\Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 16m\Omega$ ($V_{GS} = 4.5V$)
- $V_{DS} (V) = 30V$, $I_F = 3A$, $V_F < 0.5V@1A$

N-Channel 2

- $V_{DS} (V) = 30V$
- $I_D = 8.3 A$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 18m\Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 27m\Omega$ ($V_{GS} = 4.5V$)

■ 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}	± 12		± 20	
Schottky Reverse Voltage		V _{KA}		30		
Continuous Drain Current	T _A =25°C	I _D	9.3		8.3	A
	T _A =70°C		7.4		6.7	
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		
Power Dissipation	T _A =25°C	P _D	2			W
	T _A =70°C		1.28			
Thermal Resistance.Junction- to-Ambient	t ≤ 10s	R _{thJA}	62.5			°C/W
	Steady-State		110			
Thermal Resistance.Junction- to-Lead		R _{thJL}	40			
Junction Temperature		T _J	150			°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_{DS}	$I_D=250\mu A$, $V_{GS}=0V$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V$, $V_{GS}=0V$			0.05	mA
		$V_{DS}=30V$, $V_{GS}=0V$, $T_J=125^\circ C$			10	
		$V_{DS}=30V$, $V_{GS}=0V$, $T_J=150^\circ C$			20	
Gate-Body Leakage Current	I_{GSS}	$V_{DS}=0V$, $V_{GS}=\pm 12V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu A$	0.6		2	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$, $I_D=9.3A$			14.5	m Ω
		$V_{GS}=10V$, $I_D=9.3A$, $T_J=125^\circ C$			19	
		$V_{GS}=4.5V$, $I_D=8.8A$			16	
On State Drain Current	$I_{D(on)}$	$V_{GS}=10V$, $V_{DS}=5V$	40			A
Forward Transconductance	g_{FS}	$V_{DS}=5V$, $I_D=9.3A$	30	37		S
Input Capacitance	C_{iss}	$V_{GS}=0V$, $V_{DS}=15V$, $f=1MHz$		3740	4488	pF
Output Capacitance (FET + Schottky)	C_{oss}			295		
Reverse Transfer Capacitance	C_{rss}			186		
Gate Resistance	R_g	$V_{GS}=0V$, $V_{DS}=0V$, $f=1MHz$		0.86	1.1	Ω
Total Gate Charge	Q_g	$V_{GS}=4.5V$, $V_{DS}=15V$, $I_D=9.3A$		30.5	37	nC
Gate Source Charge	Q_{gs}			4.5		
Gate Drain Charge	Q_{gd}			8.5		
Turn-On DelayTime	$t_{d(on)}$	$V_{GS}=10V$, $V_{DS}=15V$, $R_L=1.6\Omega$, $R_{GEN}=3\Omega$		6	9	ns
Turn-On Rise Time	t_r			8.2	12	
Turn-Off DelayTime	$t_{d(off)}$			54.5	75	
Turn-Off Fall Time	t_f			10.5	15	
Body Diode Reverse Recovery Time	t_{rr}	$I_F=9.3A$, $dI/dt=100A/\mu s$		23.5	28	nC
Body Diode Reverse Recovery Charge	Q_{rr}			13.3	16	
Body-Diode + Schottky Continuous Current	I_S				3.5	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	4918 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_{DS}	$I_D=250\mu A$, $V_{GS}=0V$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=24V$, $V_{GS}=0V$			1	μA
		$V_{DS}=24V$, $V_{GS}=0V$, $T_J=55^\circ C$			5	
Gate-Body Leakage Current	I_{GSS}	$V_{DS}=0V$, $V_{GS}=\pm 20V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu A$	1		3	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$, $I_D=8.3A$			18	m Ω
		$V_{GS}=10V$, $I_D=8.3A$, $T_J=125^\circ C$			27	
		$V_{GS}=4.5V$, $I_D=7A$			27	
On State Drain Current	$I_{D(ON)}$	$V_{GS}=4.5V$, $V_{DS}=5V$	30			A
Forward Transconductance	g_{FS}	$V_{DS}=5V$, $I_D=8.3A$		23		S
Input Capacitance	C_{iss}	$V_{GS}=0V$, $V_{DS}=15V$, $f=1MHz$		1040	1250	pF
Output Capacitance	C_{oss}			180		
Reverse Transfer Capacitance	C_{rss}			110		
Gate Resistance	R_g	$V_{GS}=0V$, $V_{DS}=0V$, $f=1MHz$			0.85	Ω
Total Gate Charge (10V)	Q_g	$V_{GS}=10V$, $V_{DS}=15V$, $I_D=8.3A$		19.2	24	nC
Total Gate Charge (4.5V)				9.36	12	
Gate Source Charge	Q_{gs}			2.6		
Gate Drain Charge	Q_{gd}			4.2		
Turn-On DelayTime	$t_{d(on)}$			5.2	7.5	
Turn-On Rise Time	t_r	$V_{GS}=10V$, $V_{DS}=15V$, $R_L=1.8\Omega$, $R_{GEN}=3\Omega$		4.4	6.5	ns
Turn-Off DelayTime	$t_{d(off)}$			17.3	25	
Turn-Off Fall Time	t_f			3.3	5	
Body Diode Reverse Recovery Time	t_{rr}	$I_F=8.5A$, $dI/dt=100A/\mu s$		16.7	21	nC
Body Diode Reverse Recovery Charge	Q_{rr}			6.7	10	
Body-Diode 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.

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■ N-Channel 1 Typical Characteristics

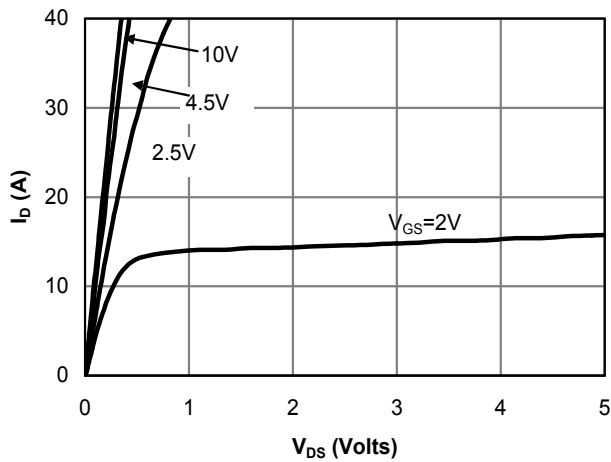


Fig 1: On-Region Characteristics

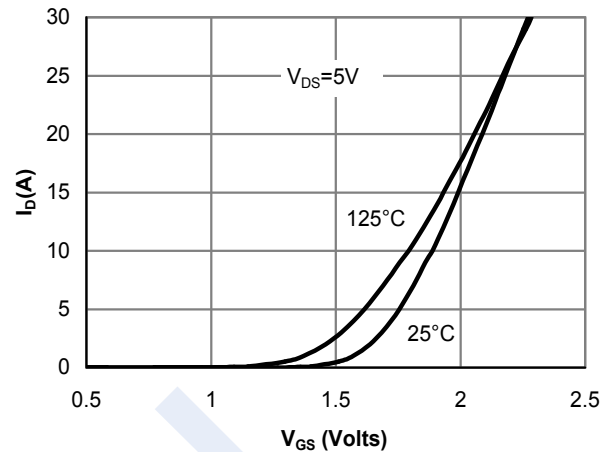


Figure 2: Transfer Characteristics

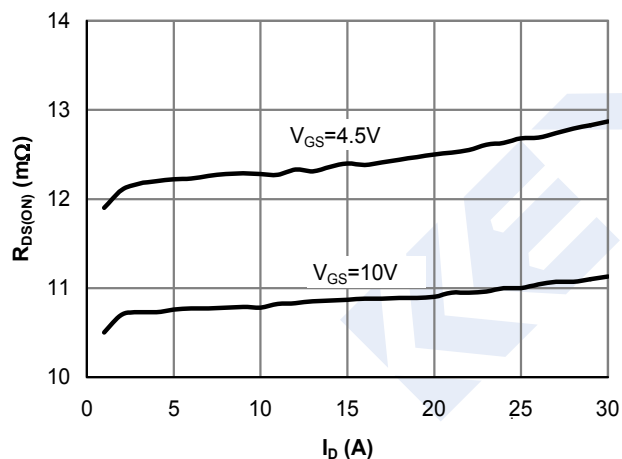


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

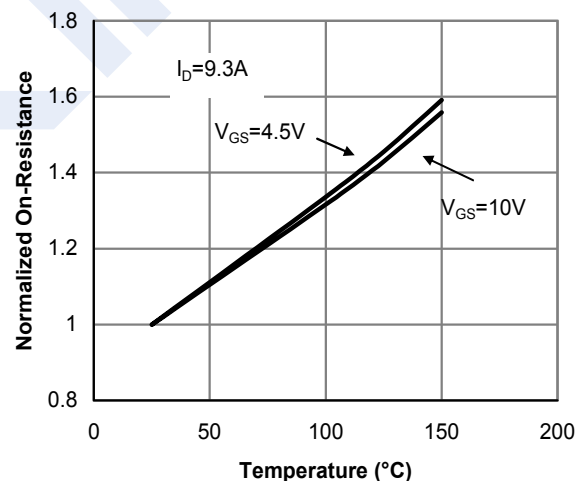


Figure 4: On resistance vs. Junction Temperature

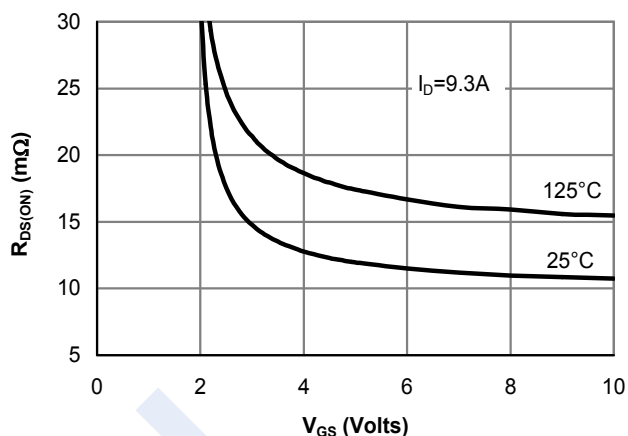


Figure 5: On resistance vs. Gate-Source Voltage

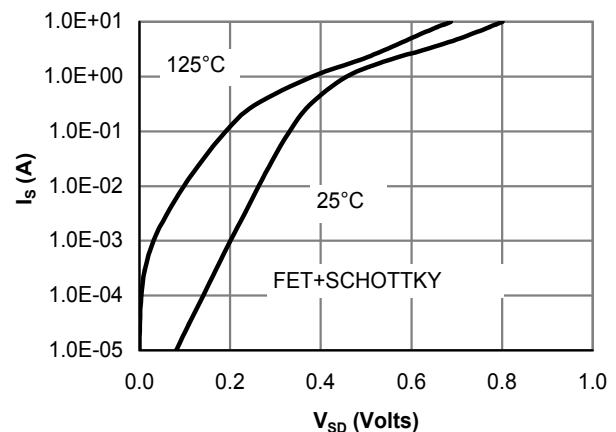


Figure 6: Body-Diode Characteristics (Note F)

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■ N-Channel 1 Typical Characteristics

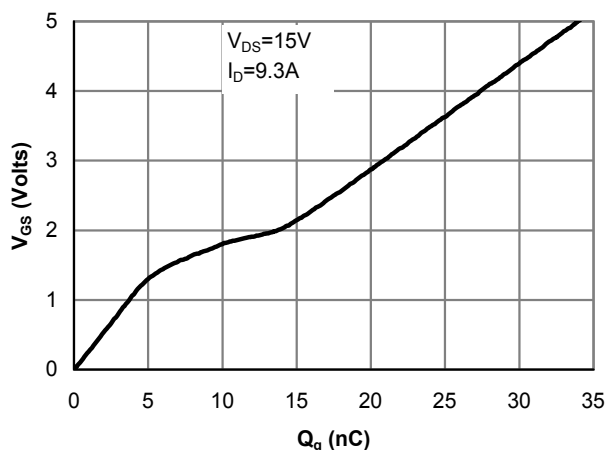


Figure 7: Gate-Charge Characteristics

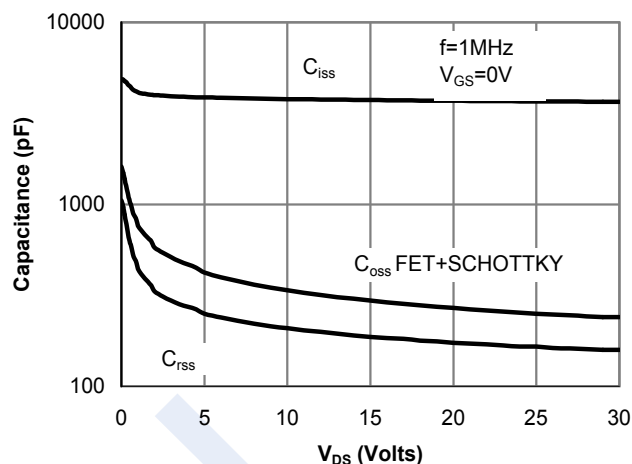


Figure 8: Capacitance Characteristics

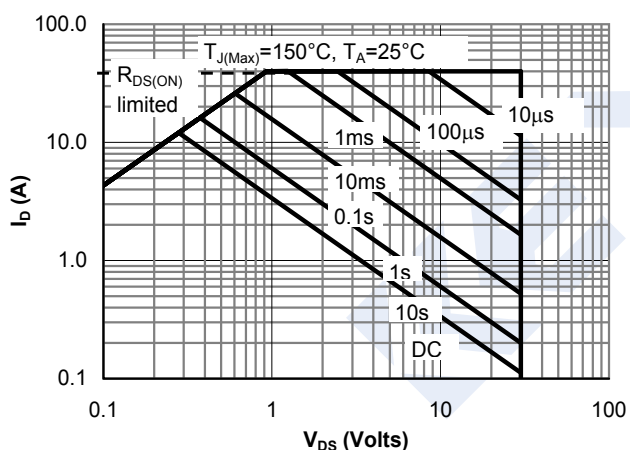


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

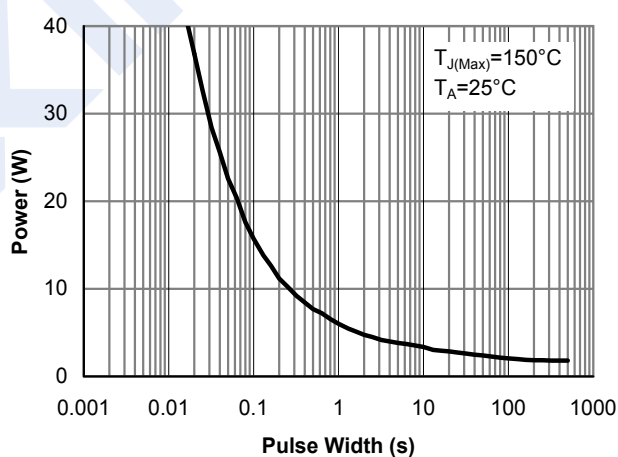


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

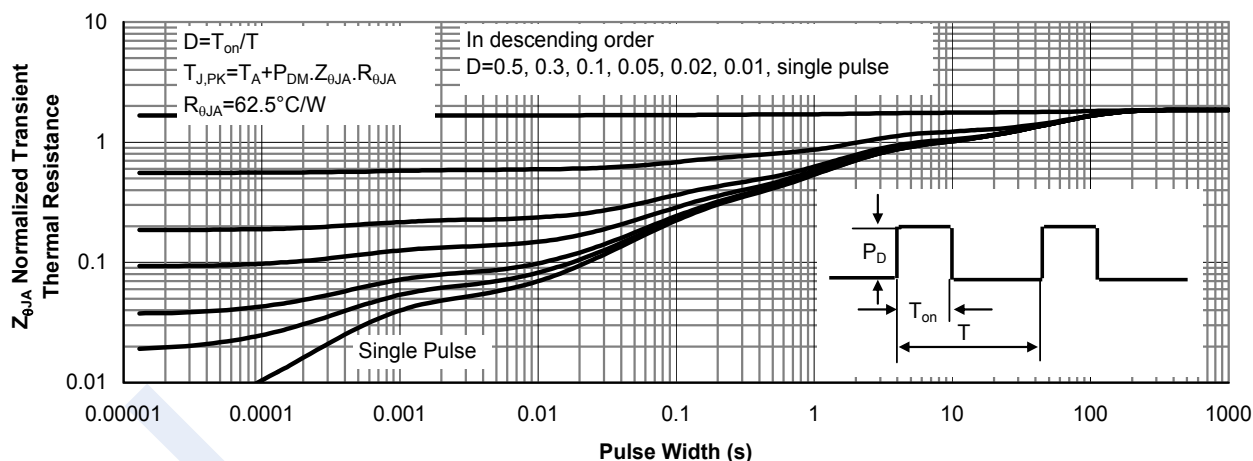


Figure 11: Normalized Maximum Transient Thermal Impedance

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■ N-Channel 2 Typical Characteristics

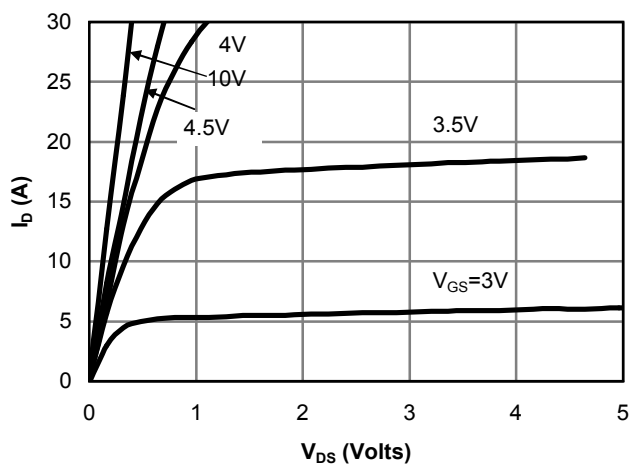


Fig 1: On-Region Characteristics

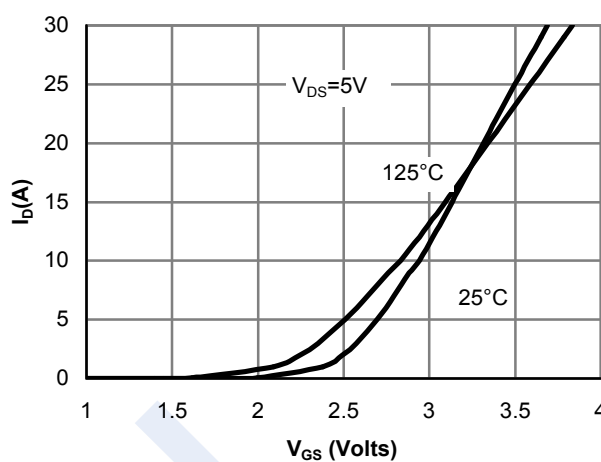


Figure 2: Transfer Characteristics

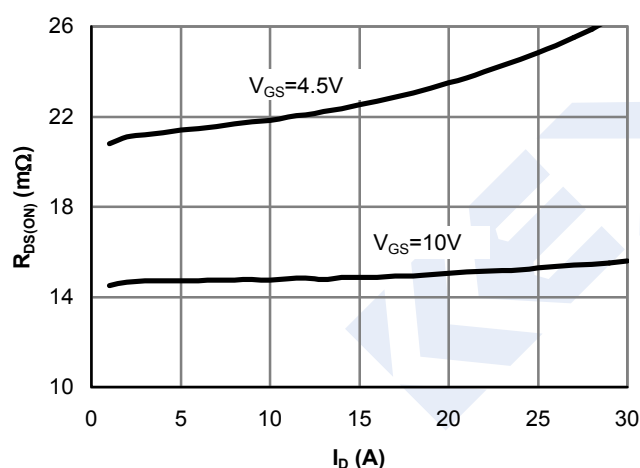


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

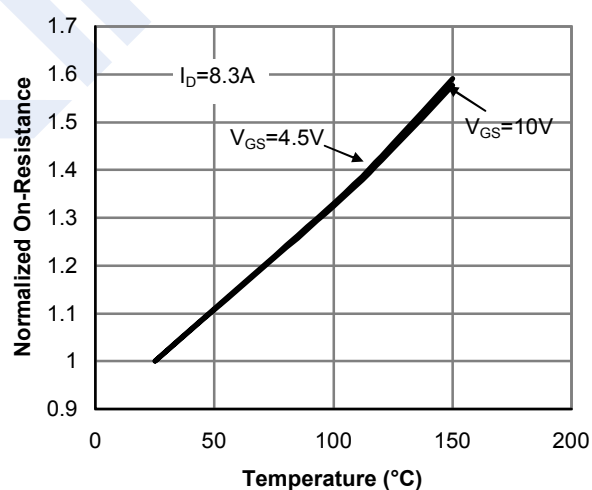


Figure 4: On resistance vs. Junction Temperature

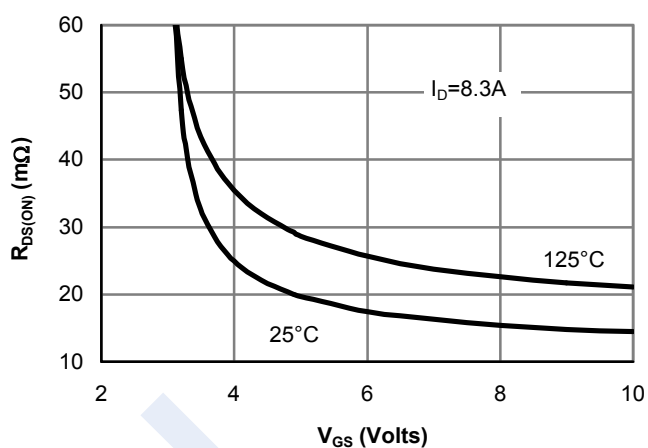


Figure 5: On resistance vs. Gate-Source Voltage

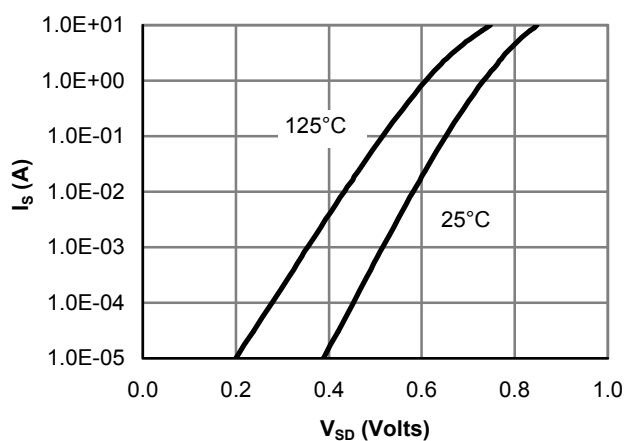


Figure 6: Body-Diode Characteristics

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■ N-Channel 2 Typical Characteristics

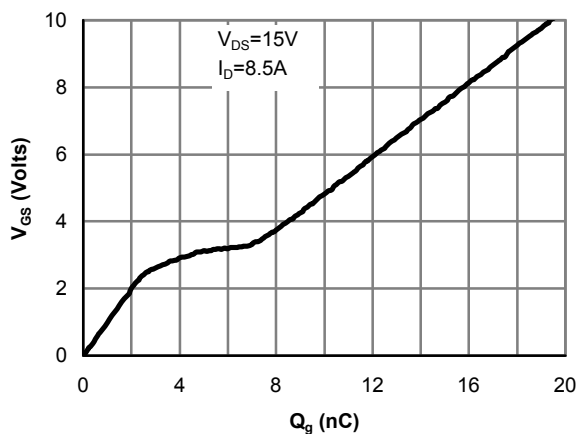


Figure 7: Gate-Charge Characteristics

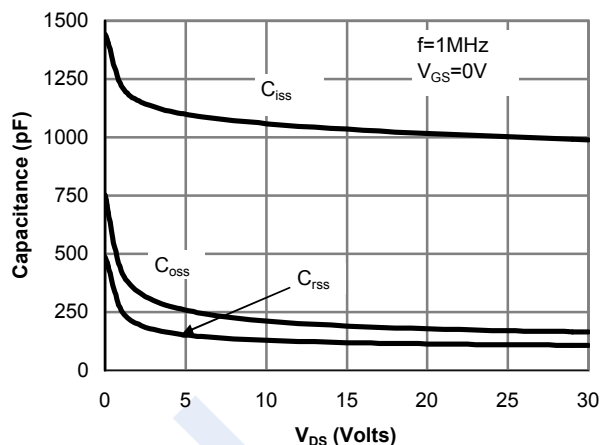


Figure 8: Capacitance Characteristics

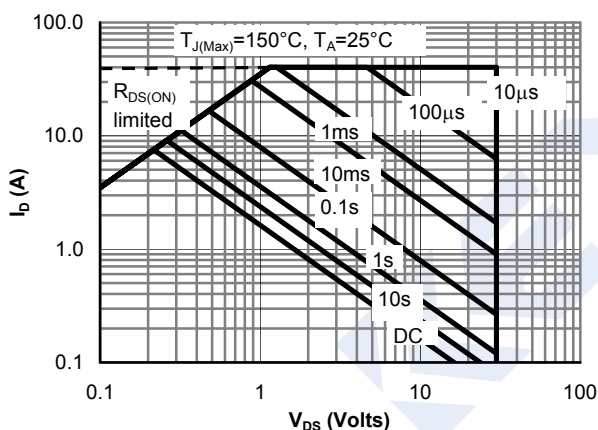


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

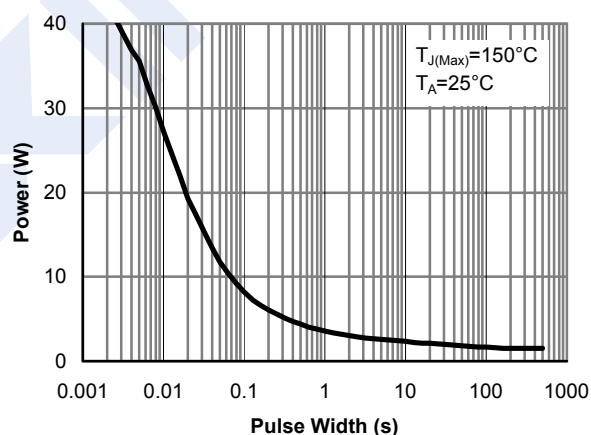


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

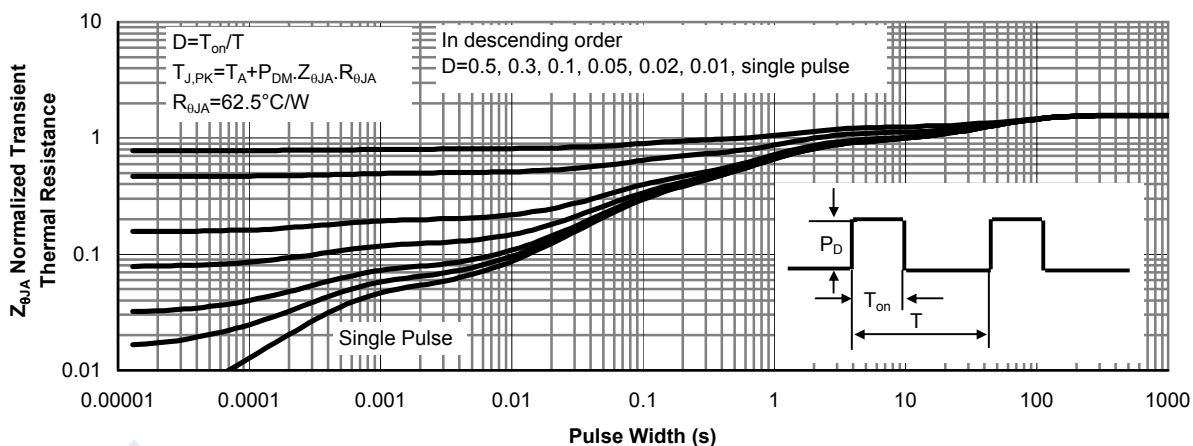


Figure 11: Normalized Maximum Transient Thermal Impedance