

Dual N-Channel MOSFET

AO4952 (KO4952)

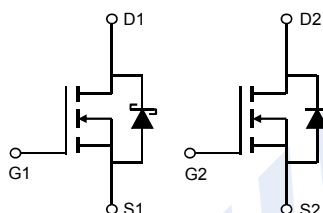
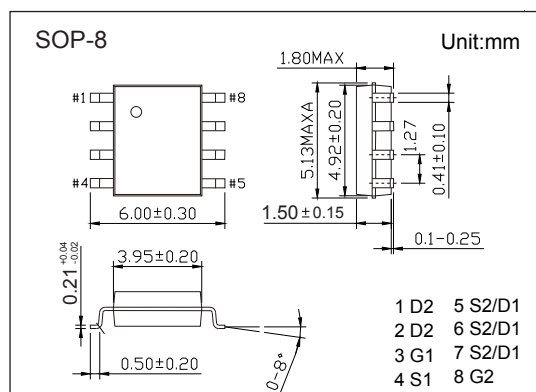
■ Features

N-Channel 1

- V_{DS} (V) = 30V
- I_D = 11 A (V_{GS} = 10V)
- $R_{DS(ON)} < 10.5m\Omega$ (V_{GS} = 10V)
- $R_{DS(ON)} < 15.5m\Omega$ (V_{GS} = 4.5V)
- SRFET™ Soft Recovery MOSFET: Integrated Schottky Diode

N-Channel 2

- V_{DS} (V) = 30V
- I_D = 11 A (V_{GS} = 10V)
- $R_{DS(ON)} < 11.5m\Omega$ (V_{GS} = 10V)
- $R_{DS(ON)} < 16.5m\Omega$ (V_{GS} = 4.5V)

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

Parameter		Symbol	N-Channel 1	N-Channel 2	Unit
Drain-Source Voltage		V _{DS}	30		V
Gate-Source Voltage		V _{GS}	± 20		
Continuous Drain Current	T _A =25℃	I _D	11		A
	T _A =70℃		9		
Pulsed Drain Current		I _{DM}	75	74	
Avalanche Current		I _{AR}	18	15	
Repetitive Avalanche Energy	L=0.1mH	E _{AR}	16	11	mJ
Power Dissipation	T _A =25℃	P _D	2		W
	T _A =70℃		1.3		
Thermal Resistance.Junction- to-Ambient	t ≤ 10s	R _{thJA}	62.5		℃/W
	Steady-State		90		
Thermal Resistance.Junction- to-Lead		R _{thJL}	40		℃
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 =10mA, 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			100	
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.4		2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =11A			10.5	mΩ
		V _{GS} =10V, I _D =11A, T _J =125°C			15	
		V _{GS} =4.5V, I _D =9A			15.5	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =11A		52		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, f=1MHz		605		pF
Output Capacitance	C _{oss}			275		
Reverse Transfer Capacitance	C _{rss}			37		
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz	1		3	Ω
Total Gate Charge (10V)	Q _g	V _{GS} =10V, V _{DS} =15V, I _D =11A		10.2	15	nC
Total Gate Charge (4.5V)				4.9	8	
Gate Source Charge	Q _{gs}			2		
Gate Drain Charge	Q _{gd}			2.3		
Turn-On DelayTime	t _{d(on)}			5		
Turn-On Rise Time	t _r	V _{GS} =10V, V _{DS} =15V, R _L =1.36Ω, R _{GEN} =3Ω		3		ns
Turn-Off DelayTime	t _{d(off)}			17.5		
Turn-Off Fall Time	t _f			3		
Body Diode Reverse Recovery Time	t _{rr}	I _F =11A, dI/dt=500A/μs		11		nC
Body Diode Reverse Recovery Charge	Q _{rr}			12.5		
Maximum Body-Diode Continuous Current	I _S				2.5	A
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V			0.65	V

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

■ Marking

Marking	4952 KA****
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Dual N-Channel MOSFET

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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} =±20V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.4		2.2	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =11A			11.5	mΩ
		V _{GS} =10V, I _D =11A T _J =125°C			15.8	
		V _{GS} =4.5V, I _D =9A			16.5	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =11A		40		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, f=1MHz		542		pF
Output Capacitance	C _{oss}			233		
Reverse Transfer Capacitance	C _{rss}			31		
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz	1		3	Ω
Total Gate Charge (10V)	Q _g	V _{GS} =10V, V _{DS} =15V, I _D =11A		9	12.5	nC
Total Gate Charge (4.5V)				4.3	6	
Gate Source Charge	Q _{gs}			2.2		
Gate Drain Charge	Q _{gd}			1.7		
Turn-On DelayTime	t _{d(on)}	V _{GS} =10V, V _{DS} =15V, R _L =1.36Ω, R _{GEN} =3Ω		4		ns
Turn-On Rise Time	t _r			3.5		
Turn-Off DelayTime	t _{d(off)}			18		
Turn-Off Fall Time	t _f			3		
Body Diode Reverse Recovery Time	t _{rr}	I _F = 11A, di/dt= 500A/μs		9.7		nC
Body Diode Reverse Recovery Charge	Q _{rr}			11.5		
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 <300μs pulses, duty cycle 0.5% max.

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■ N-Channel 1 Typical Characteristics

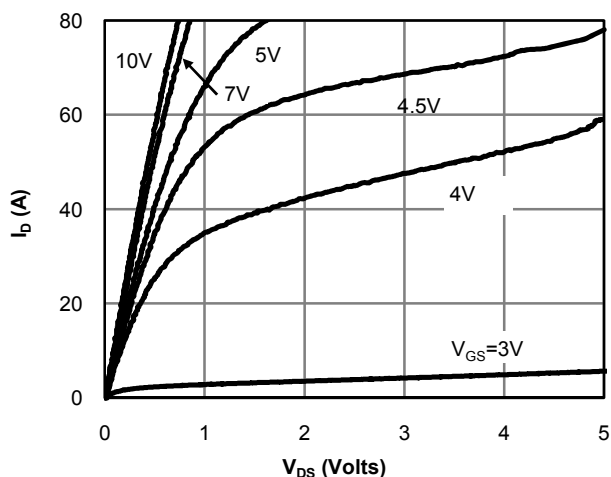


Fig 1: On-Region Characteristics (Note E)

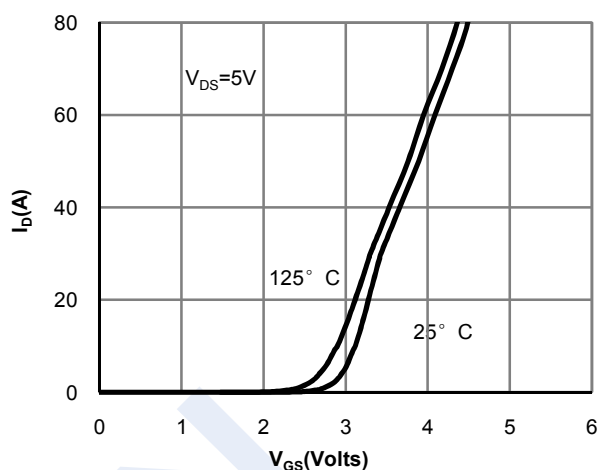


Figure 2: Transfer Characteristics (Note E)

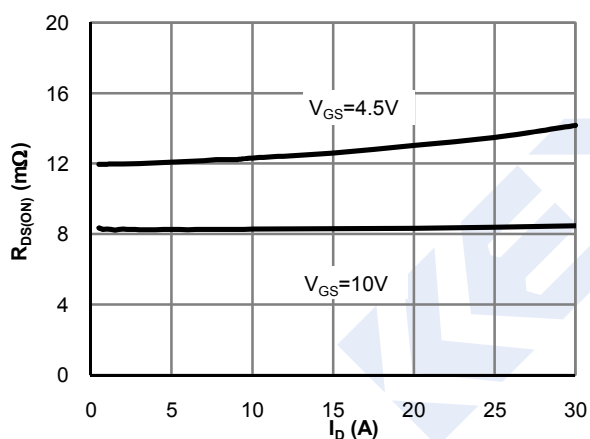


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

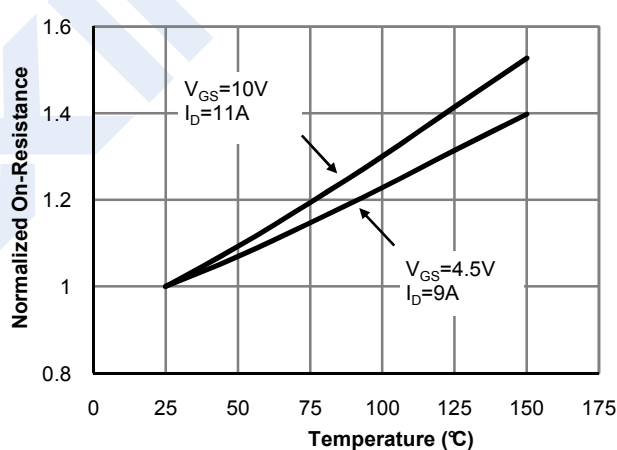


Figure 4: On-Resistance vs. Junction Temperature

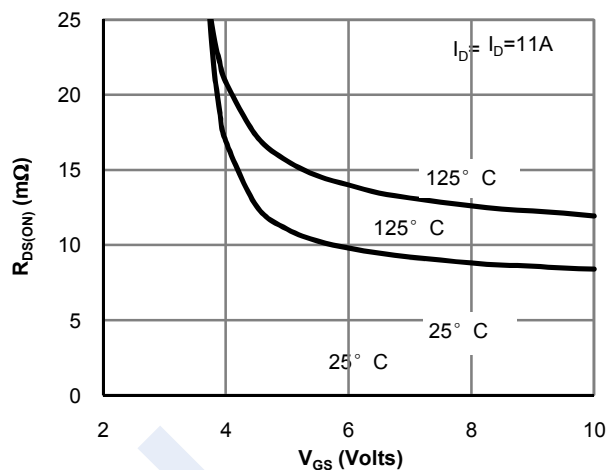


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

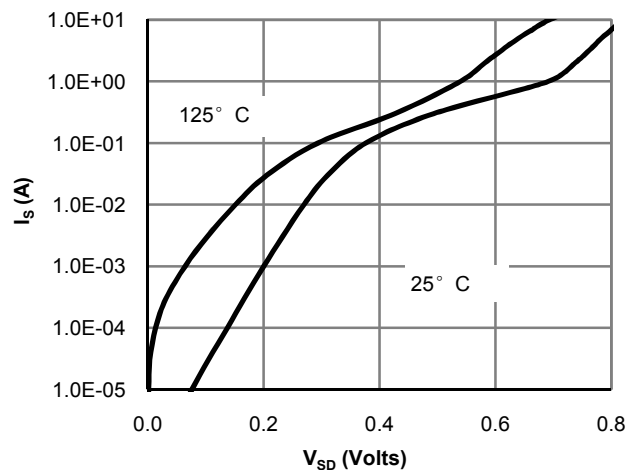
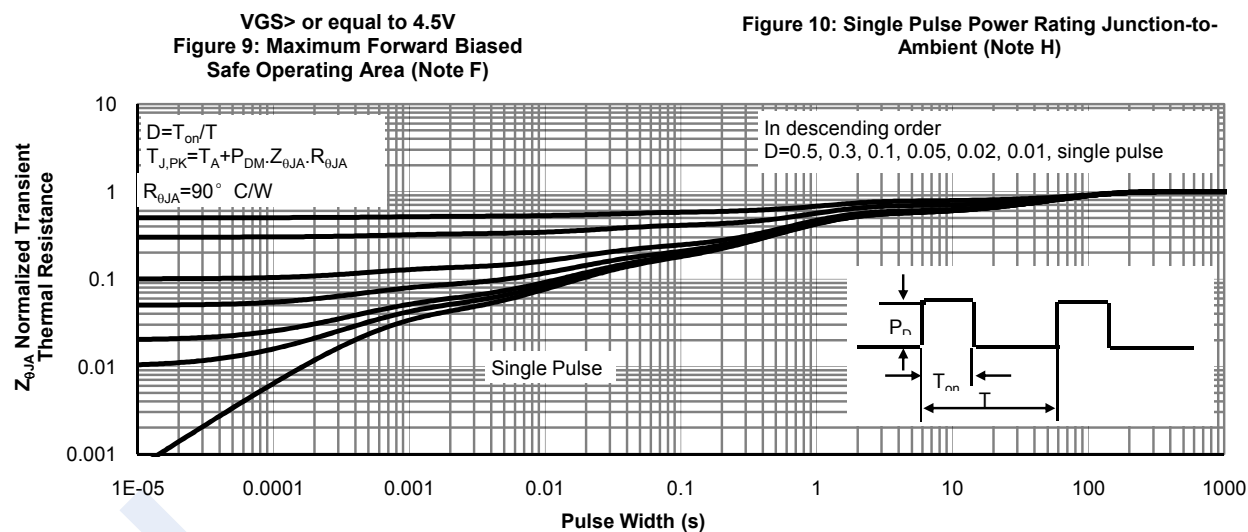
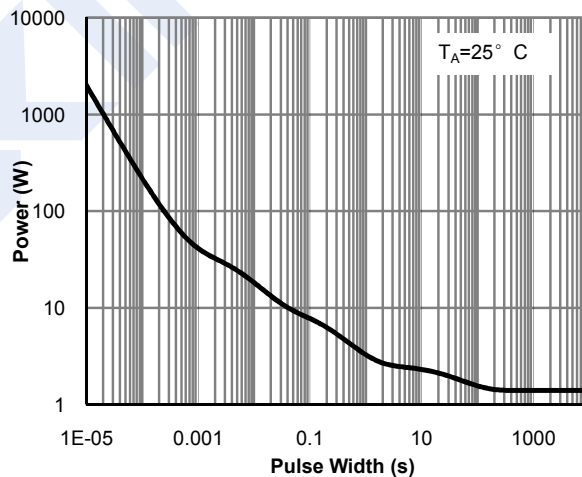
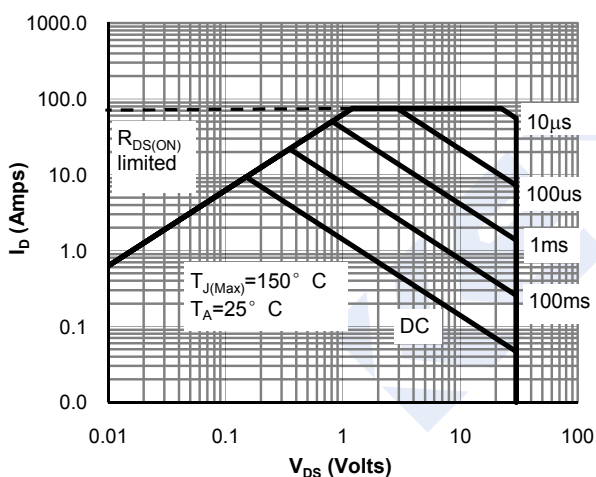
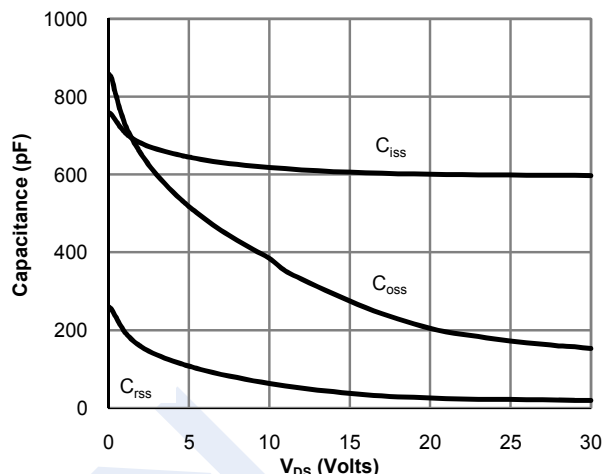
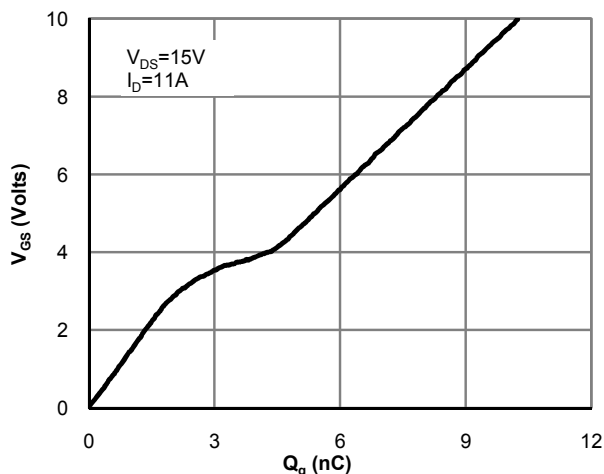


Figure 6: Body-Diode Characteristics (Note E)

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■ N-Channel 1 Typical Characteristics



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■ N-Channel 2 Typical Characteristics

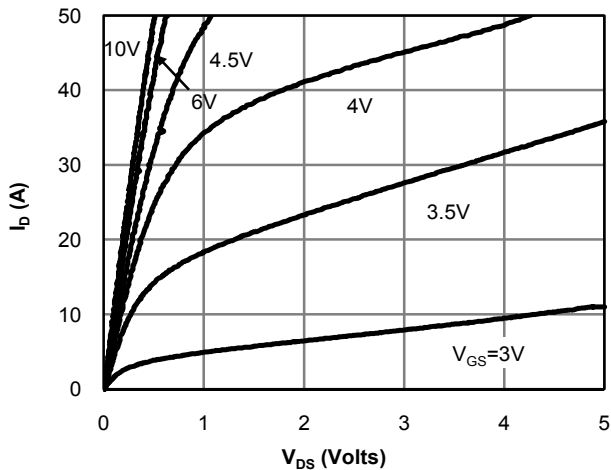


Fig 1: On-Region Characteristics (Note E)

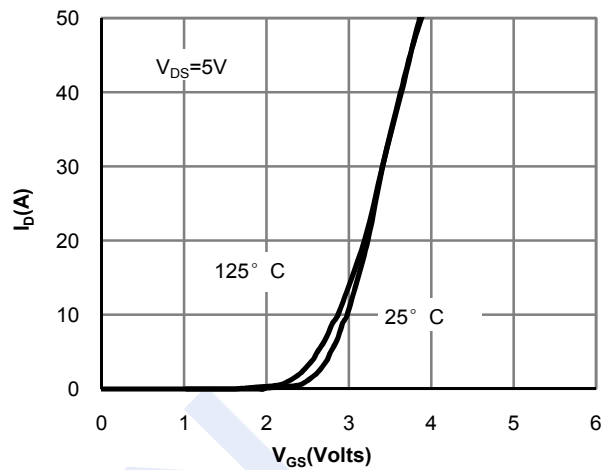


Figure 2: Transfer Characteristics (Note E)

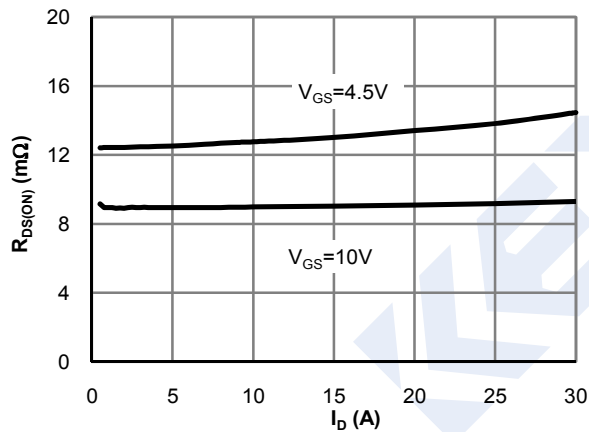


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

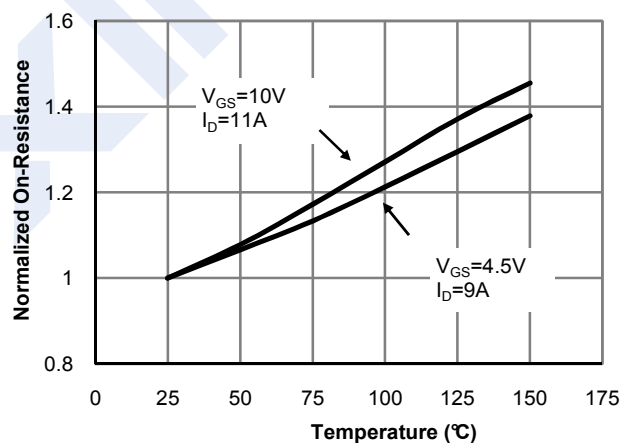


Figure 4: On-Resistance vs. Junction Temperature

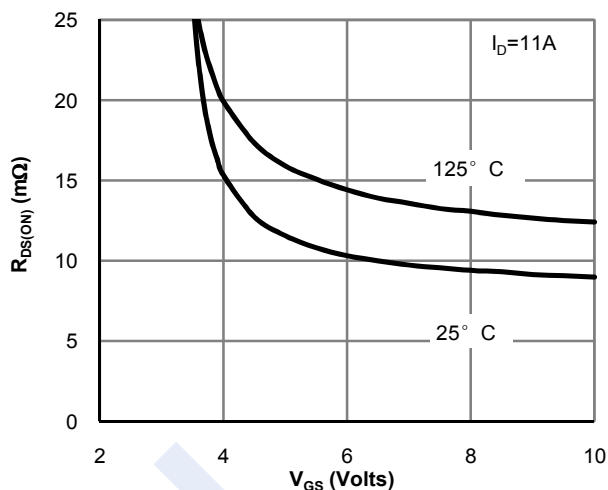


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

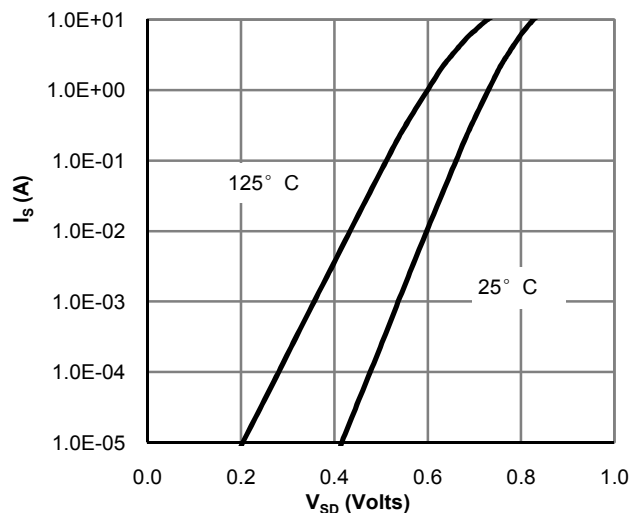


Figure 6: Body-Diode Characteristics (Note E)

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■ N-Channel 2 Typical Characteristics

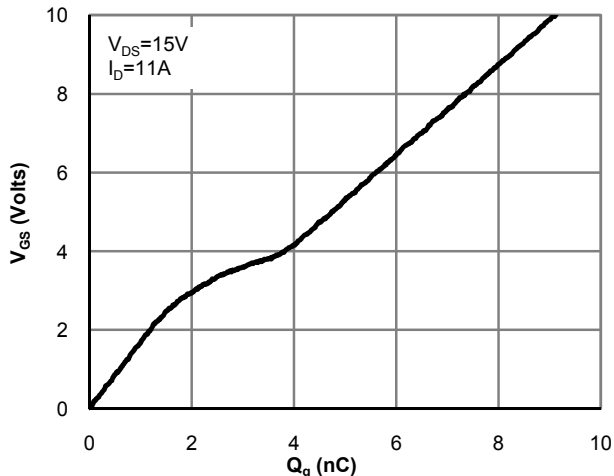


Figure 7: Gate-Charge Characteristics

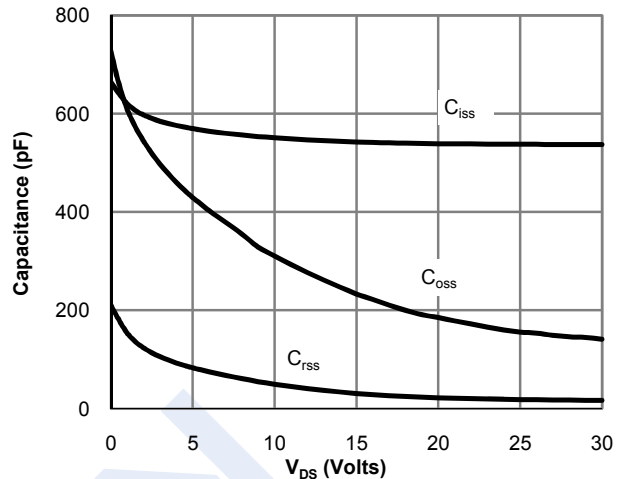
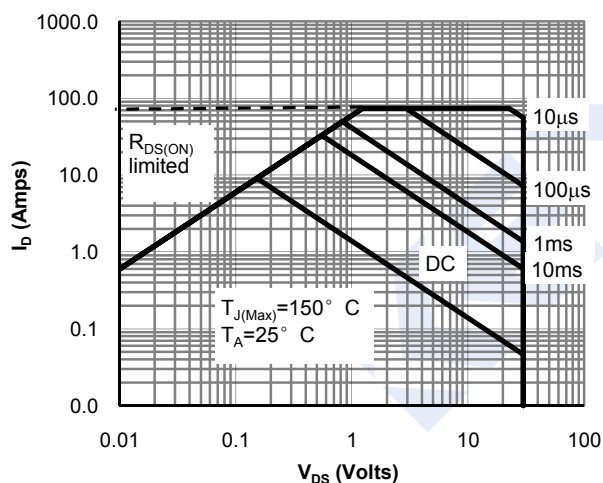


Figure 8: Capacitance Characteristics



V_{GS} or equal to 4.5V
Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

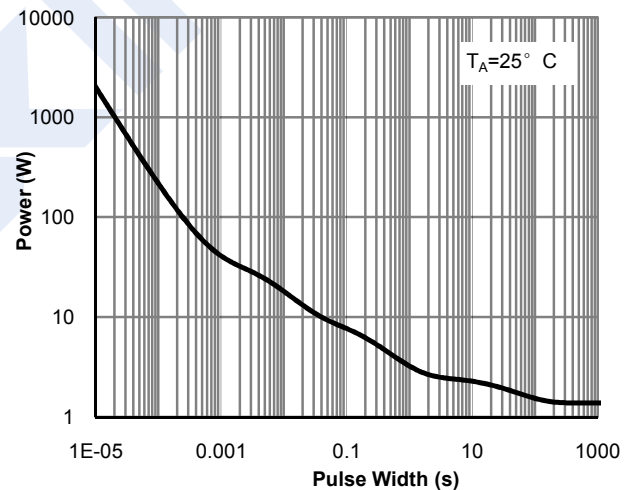


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note H)

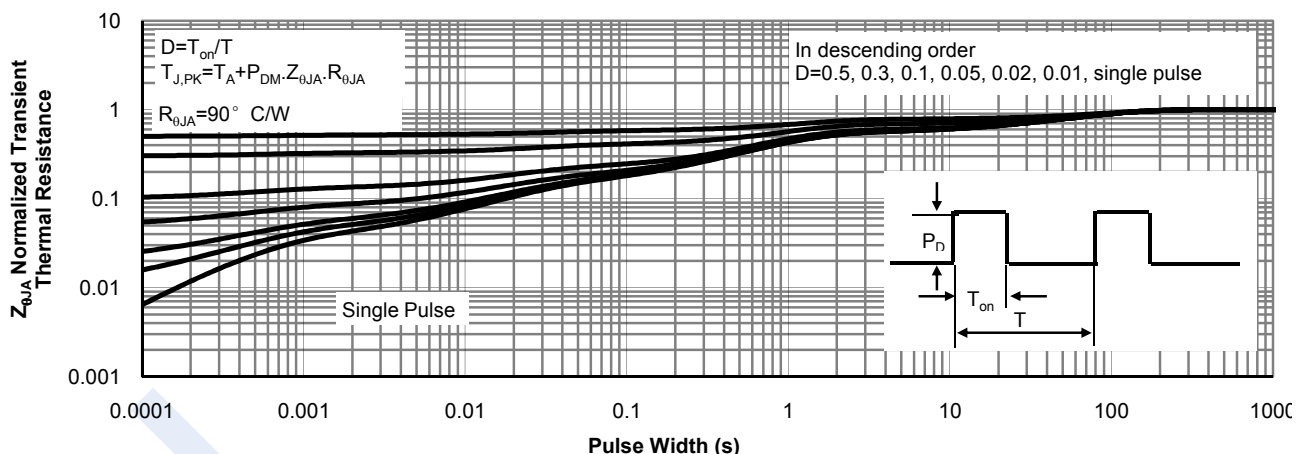


Figure 11: Normalized Maximum Transient Thermal Impedance (Note H)