

Dual N-Channel MOSFET

AO4824L (KO4824L)

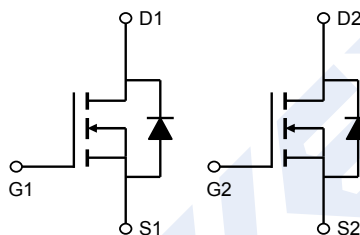
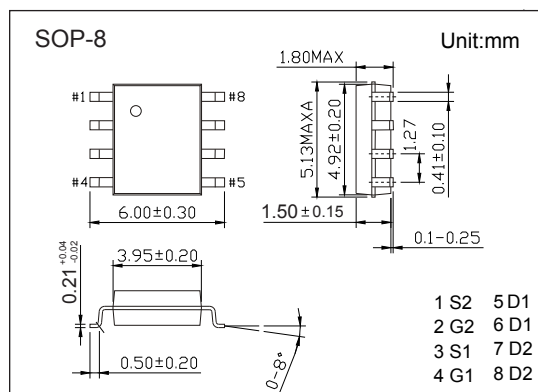
■ Features

N-Channel 1

- $V_{DS} (V) = 30V$
- $I_D = 8.5A$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 17m\Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 27m\Omega$ ($V_{GS} = 4.5V$)

N-Channel 2

- $V_{DS} (V) = 30V$
- $I_D = 9.8A$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 13m\Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 15m\Omega$ ($V_{GS} = 4.5V$)

■ 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}	±20	±12	
Continuous Drain Current	T _A =25℃	I _D	8.5	9.8	A
	T _A =70℃		6.8	7.8	
Pulsed Drain Current		I _{DM}	30	40	
Power Dissipation	T _A =25℃	P _D	2		W
	T _A =70℃		1.28		
Thermal Resistance.Junction- to-Ambient	t ≤ 10s	R _{thJA}	62.5		℃/W
	Steady-State		110		
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 =250 μA, 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°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		3	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =8.5A			17	mΩ
		V _{GS} =10V, I _D =8.5A, T _J =125°C			25	
		V _{GS} =4.5V, I _D =6A			27	
On State Drain Current	I _{D(ON)}	V _{GS} =10V, V _{DS} =5V	30			A
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =8.5A		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		0.7	0.85	Ω
Total Gate Charge (10V)	Q _g	V _{GS} =10V, V _{DS} =15V, I _D =8.5A		19.2	23	nC
Total Gate Charge (4.5V)				9.36	11.2	
Gate Source Charge	Q _{gs}			2.6		
Gate Drain Charge	Q _{gd}			4.2		
Turn-On DelayTime	t _{d(on)}	V _{GS} =10V, V _{DS} =15V, R _L =1.8Ω, R _{GEN} =3Ω		5.2	7.5	ns
Turn-On Rise Time	t _r			4.4	6.5	
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/μs		16.7	21	nC
Body Diode Reverse Recovery Charge	Q _{rr}			6.7	10	
Maximum Body-Diode Continuous Current	I _S				3	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.

■ Marking

Marking	4824L KA****
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Dual N-Channel MOSFET

AO4824L (K04824L)

■ 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} =24V, V _{GS} =0V			1	μA
		V _{DS} =24V, V _{GS} =0V, T _J =55°C			5	
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 =250μA	0.6		2	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =9.8A			13	mΩ
		V _{GS} =10V, I _D =9.8A, T _J =125°C			17	
		V _{GS} =4.5V, I _D =9A			15	
On State Drain Current	I _{D(ON)}	V _{GS} =4.5V, V _{DS} =5V	40			A
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =9.8A	30	37		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, f=1MHz		3656	4250	pF
Output Capacitance	C _{oss}			256		
Reverse Transfer Capacitance	C _{rss}			168		
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz		0.86	1.05	Ω
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =15V, I _D =9.8A		30.5	36	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 =1.6Ω, R _{GEN} =3Ω		5.5	8.2	ns
Turn-On Rise Time	t _r			3.1	5	
Turn-Off DelayTime	t _{d(off)}			52.4	75	
Turn-Off Fall Time	t _f			5.7	8.5	
Body Diode Reverse Recovery Time	t _{rr}	I _F = 9.8A, di/dt= 100A/us		21.5	26	nC
Body Diode Reverse Recovery Charge	Q _{rr}			11	15	
Maximum Body-Diode Continuous Current	I _S				3	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.

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■ N-Channel 1 Typical Characteristics

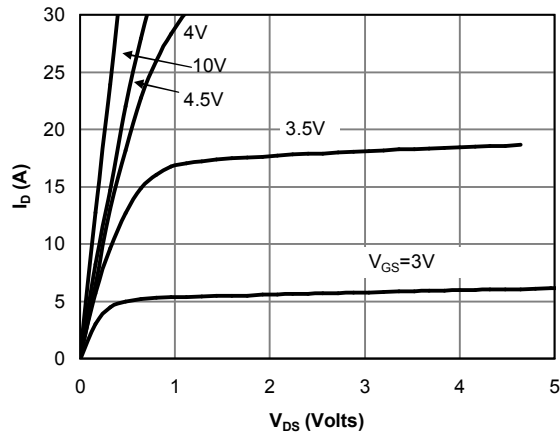


Fig 1: On-Region Characteristics

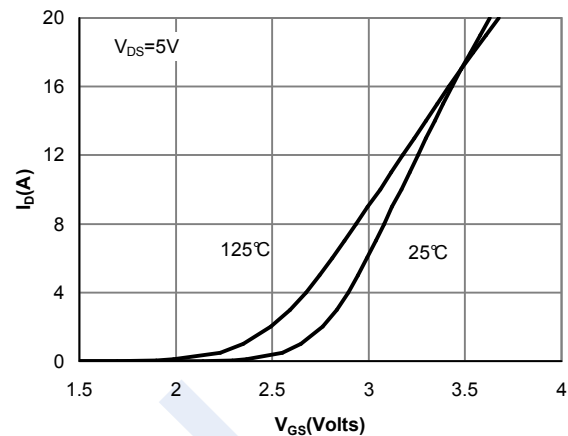


Figure 2: Transfer Characteristics

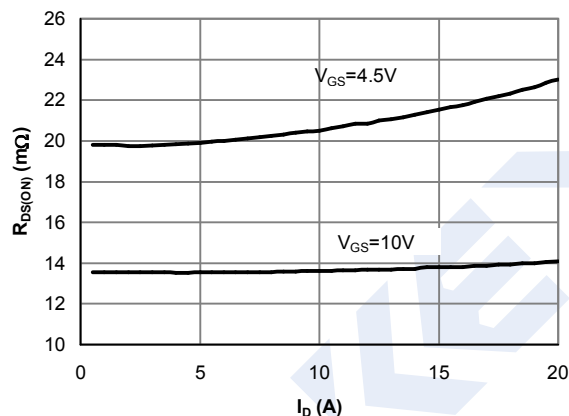


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

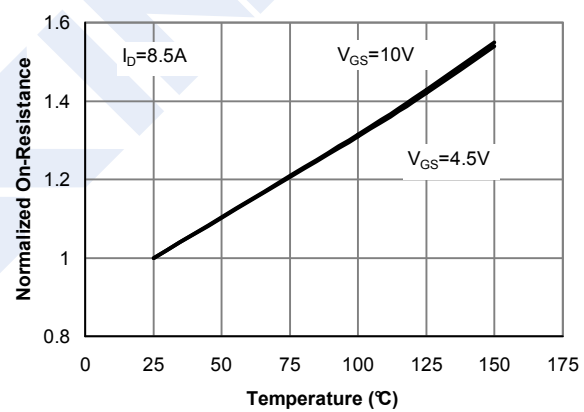


Figure 4: On-Resistance vs. Junction Temperature

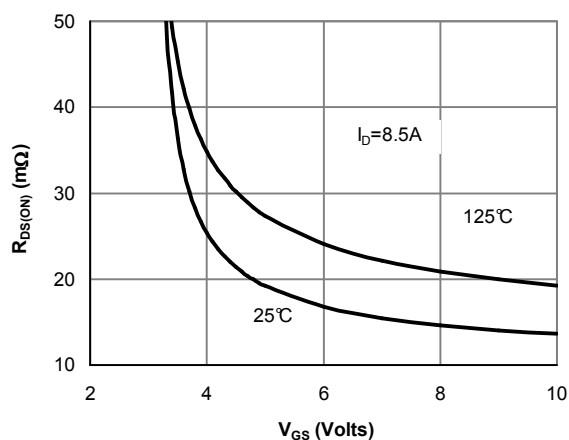


Figure 5: On-Resistance vs. Gate-Source Voltage

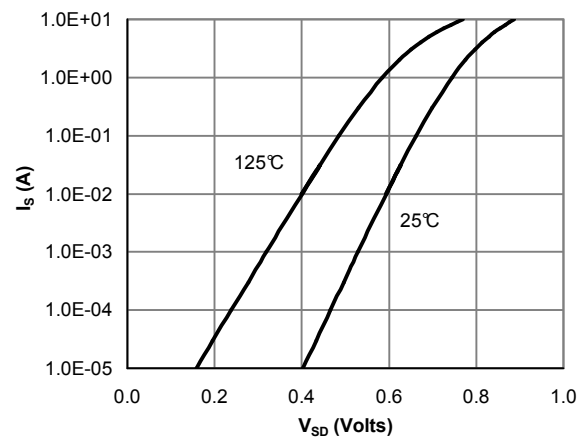


Figure 6: Body-Diode Characteristics

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■ N-Channel 1 Typical Characteristics

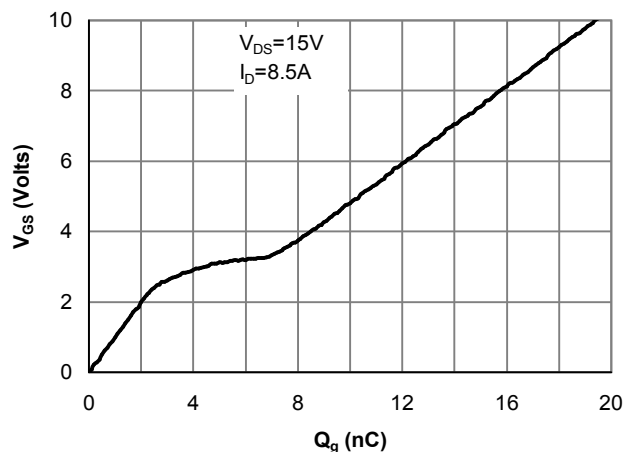


Figure 7: Gate-Charge Characteristics

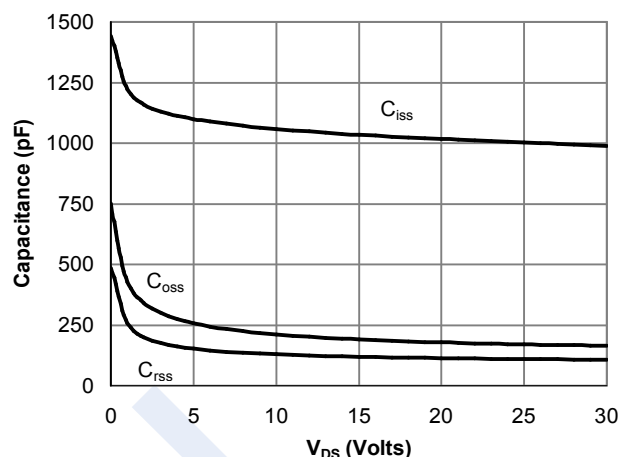


Figure 8: Capacitance Characteristics

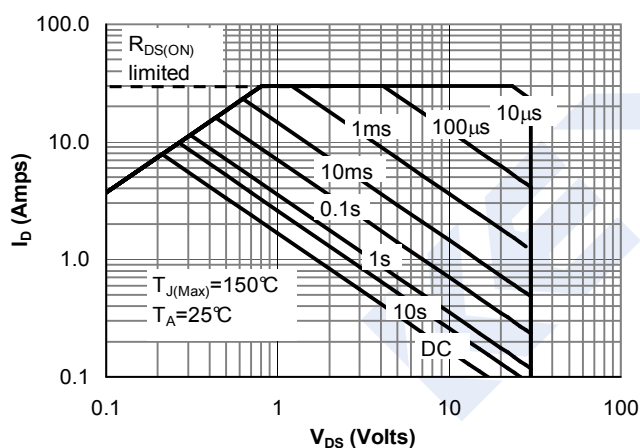


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

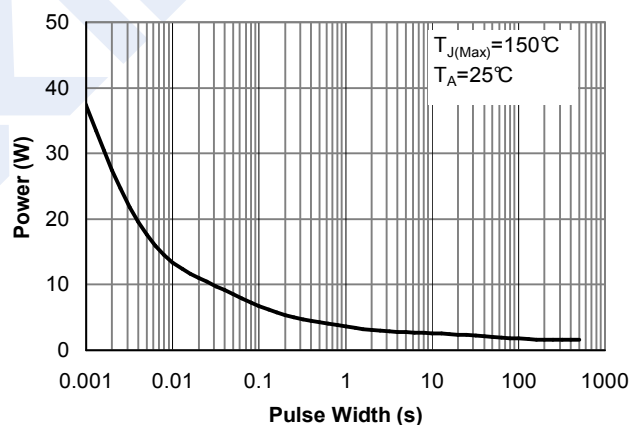


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

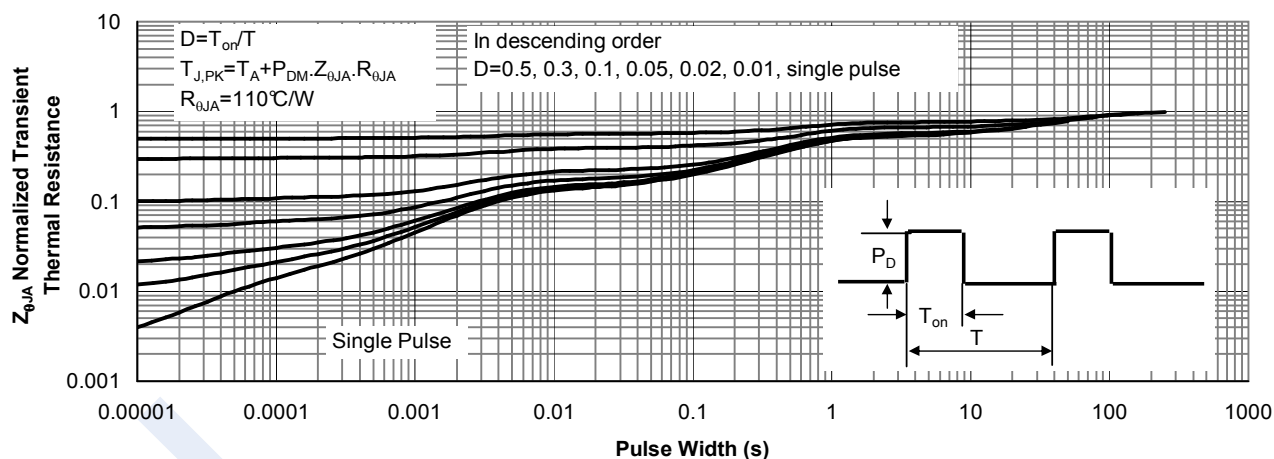


Figure 11: Normalized Maximum Transient Thermal Impedance

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■ N-Channel 2 Typical Characteristics

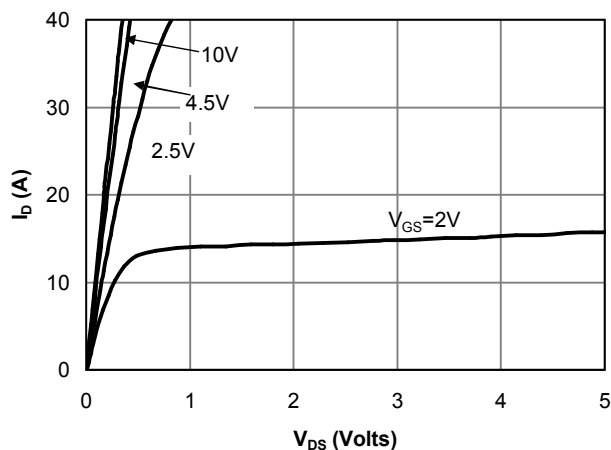


Fig 1: On-Region Characteristics

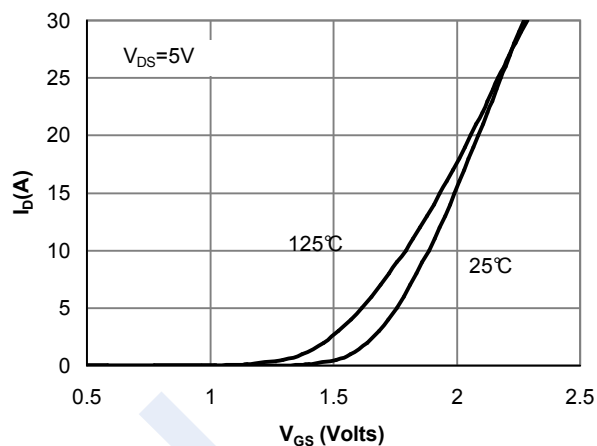


Figure 2: Transfer Characteristics

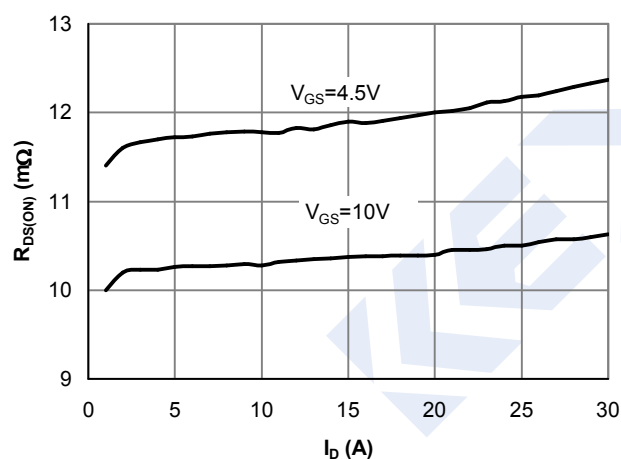


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

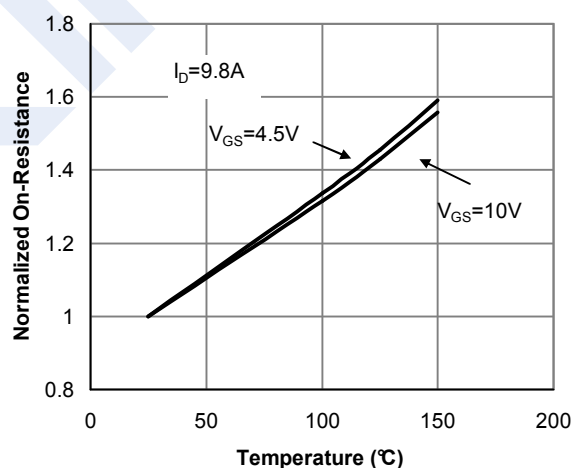


Figure 4: On resistance vs. Junction Temperature

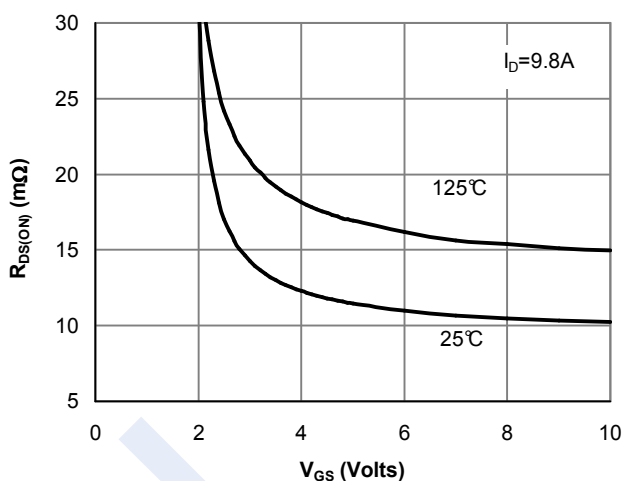


Figure 5: On resistance vs. Gate-Source Voltage

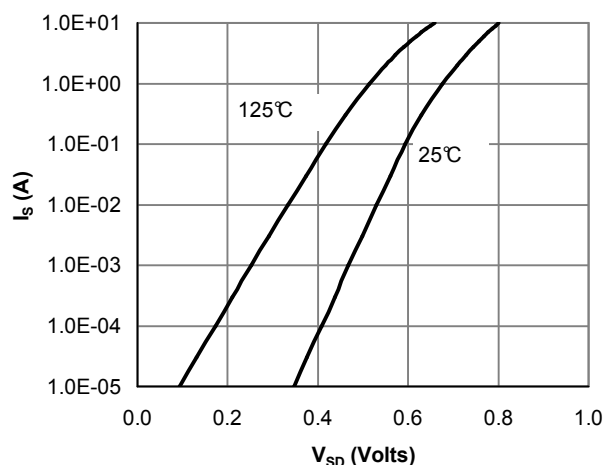


Figure 6: Body-Diode Characteristics

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■ N-Channel 2 Typical Characteristics

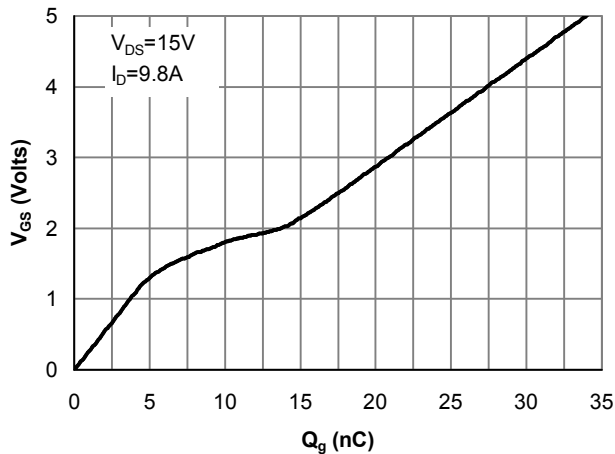


Figure 7: Gate-Charge Characteristics

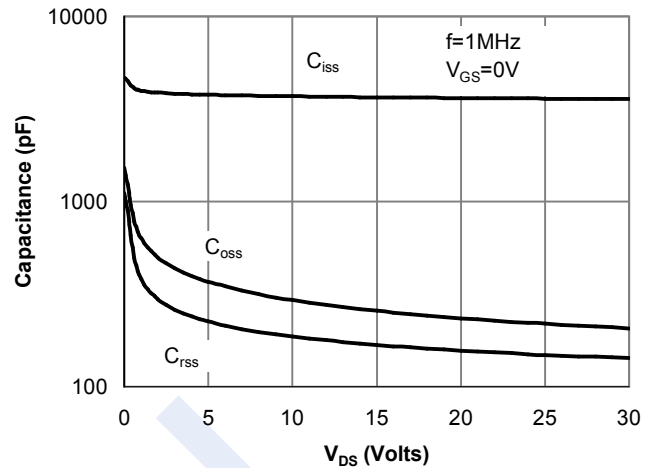


Figure 8: Capacitance Characteristics

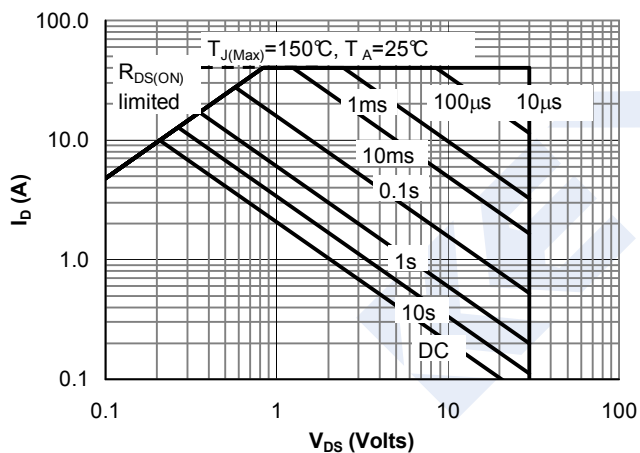


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

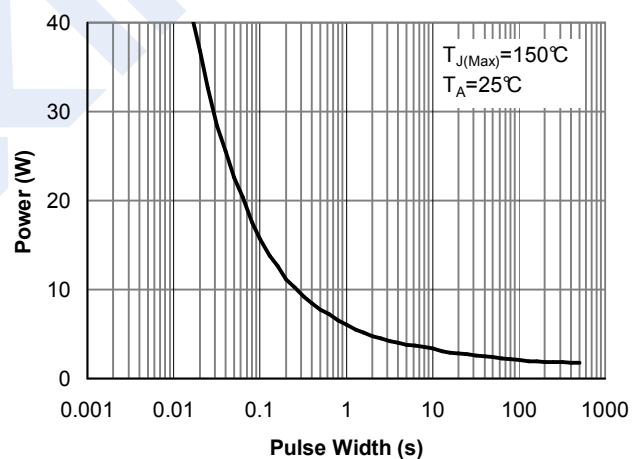


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

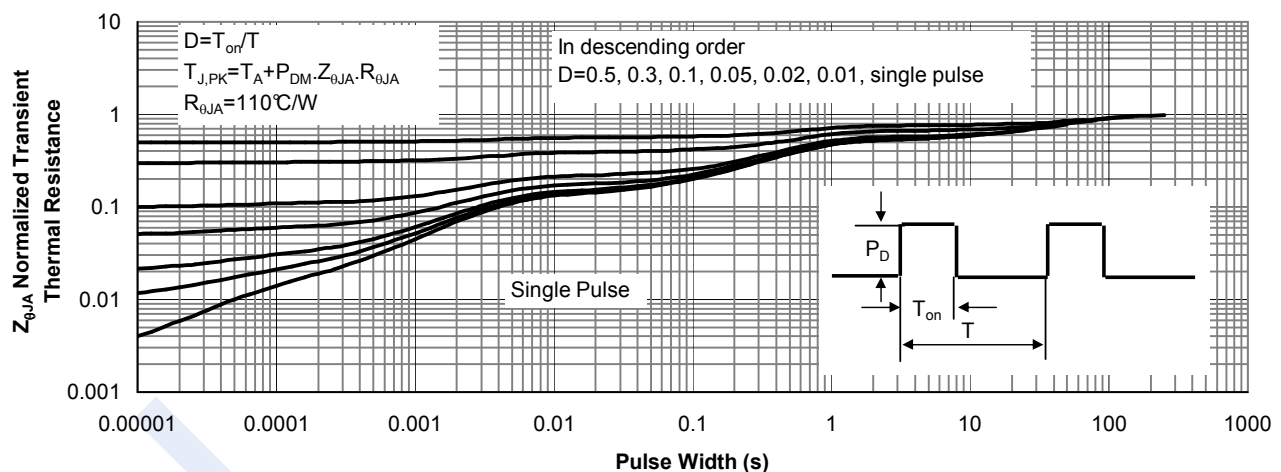


Figure 11: Normalized Maximum Transient Thermal Impedance