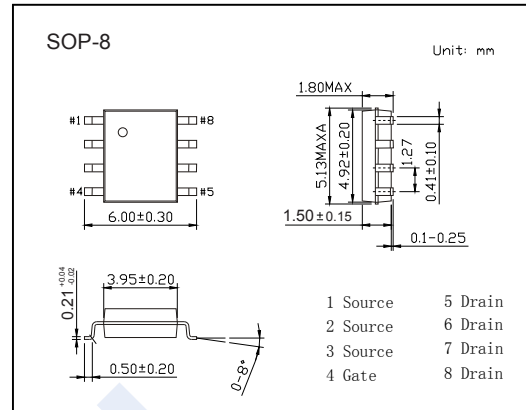
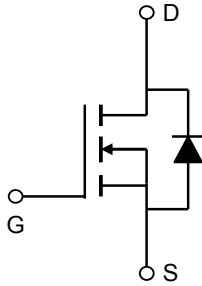


N-Channel MOSFET

AO4478 (KO4478)

■ Features

- $V_{DS} = 30V$
- $I_D = 9 A$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 19m\Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 26m\Omega$ ($V_{GS} = 4.5V$)



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

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	V_{DS}	30	V	
Gate-Source Voltage	V_{GS}	± 25		
Continuous Drain Current	I_D	$T_A=25^\circ C$	9	A
		$T_A=70^\circ C$	7	
Pulsed Drain Current	I_{DM}	60		
Avalanche Current	I_{AR}	17		
Repetitive Avalanche Energy	$L=0.1mH$	E_{AR}	14	mJ
Power Dissipation	P_D	$T_A=25^\circ C$	3.1	W
		$T_A=70^\circ C$	2	
Thermal Resistance.Junction- to-Ambient	R_{thJA}	$t \leq 10s$	40	$^\circ C/W$
		Steady-State	75	
Thermal Resistance.Junction- to-Lead	R_{thJL}	24		
Junction Temperature	T_J	150	$^\circ C$	
Storage Temperature Range	T_{stg}	-55 to 150		

N-Channel MOSFET

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■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250μA, 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} =±25V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1		2	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =9A			19	mΩ
		V _{GS} =10V, I _D =9A, T _J =125°C			30	
		V _{GS} =4.5V, I _D =8A			26	
On State Drain Current	I _{D(ON)}	V _{GS} =10V, V _{DS} =5V	60			A
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =10A		24		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, f=1MHz		466	560	pF
Output Capacitance	C _{oss}			90		
Reverse Transfer Capacitance	C _{rss}			61		
Gate Resistance	R _g		V _{GS} =0V, V _{DS} =0V, f=1MHz		3.7	
Total Gate Charge (10V)	Q _g	V _{GS} =10V, V _{DS} =15V, I _D =9A		9.3	11	nC
Total Gate Charge (4.5V)				4.3	5.2	
Gate Source Charge	Q _{gs}			1		
Gate Drain Charge	Q _{gd}			2.3		
Turn-On DelayTime	t _{d(on)}		V _{GS} =10V, V _{DS} =15V, R _L =1.65Ω, R _{GEN} =3Ω		5	
Turn-On Rise Time	t _r			8		
Turn-Off DelayTime	t _{d(off)}			20		
Turn-Off Fall Time	t _f			5		
Body Diode Reverse Recovery Time	t _{rr}	I _F =9A, di/dt = 500A/μs		7.5	9	nC
Body Diode Reverse Recovery Charge	Q _{rr}			9.8		
Maximum Body-Diode Continuous Current	I _S				4	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.

■ Marking

Marking	4478 KC****
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N-Channel MOSFET

AO4478 (KO4478)

■ Typical Characteristics

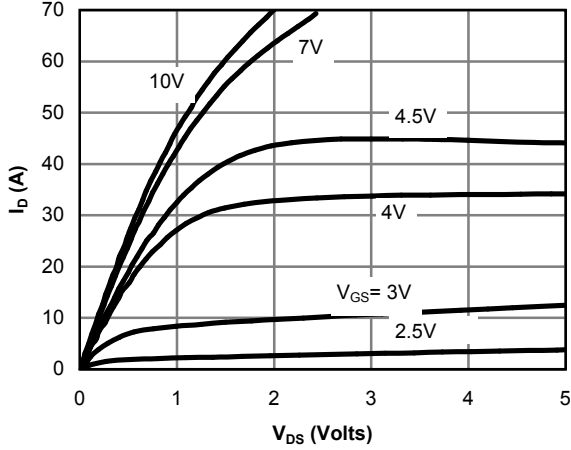


Figure 1: On-Region Characteristics(Note E)

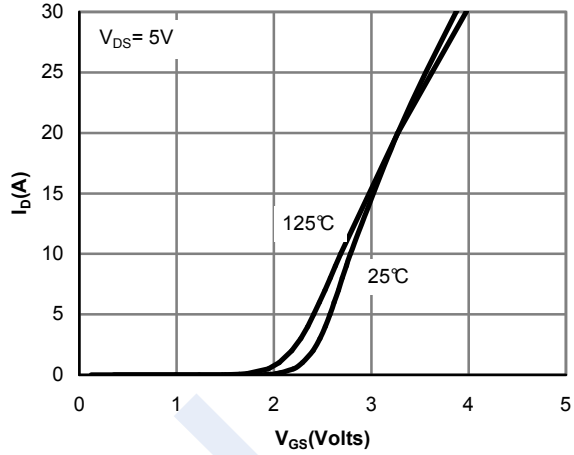


Figure 2: Transfer Characteristics(Note E)

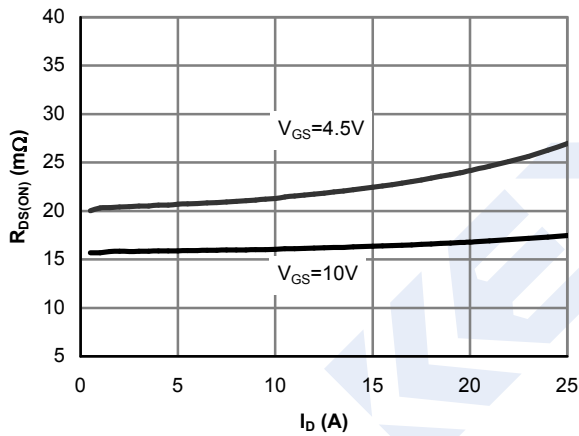


Figure 3: On-Resistance vs. Drain Current and Gate Voltage(Note E)

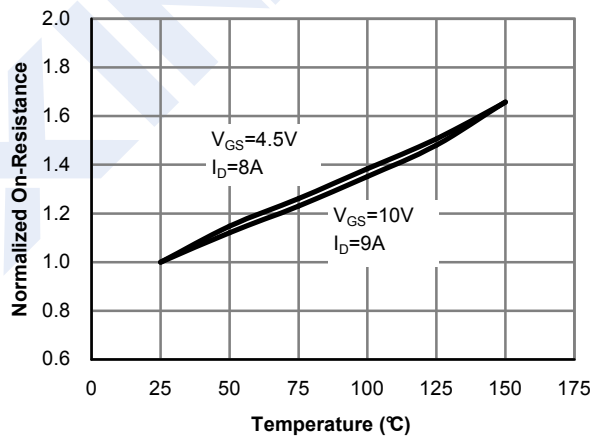


Figure 4: On-Resistance vs. Junction Temperature(Note E)

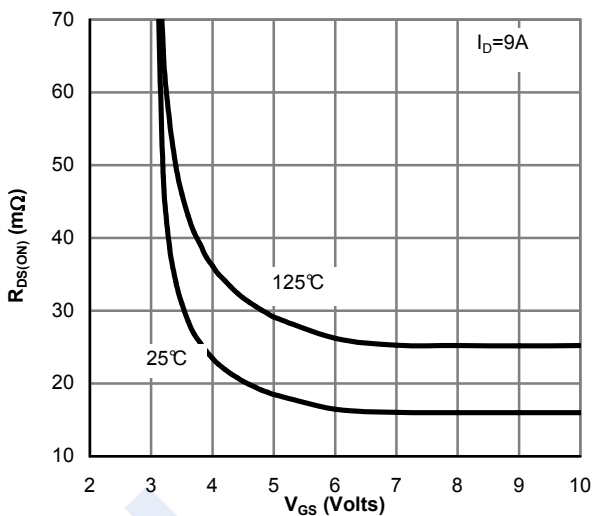


Figure 5: On-Resistance vs. Gate-Source Voltage(Note E)

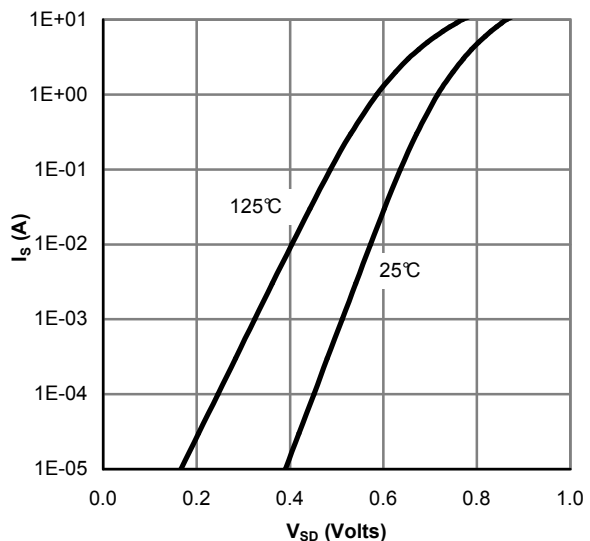


Figure 6: Body-Diode Characteristics(Note E)

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■ Typical Characteristics

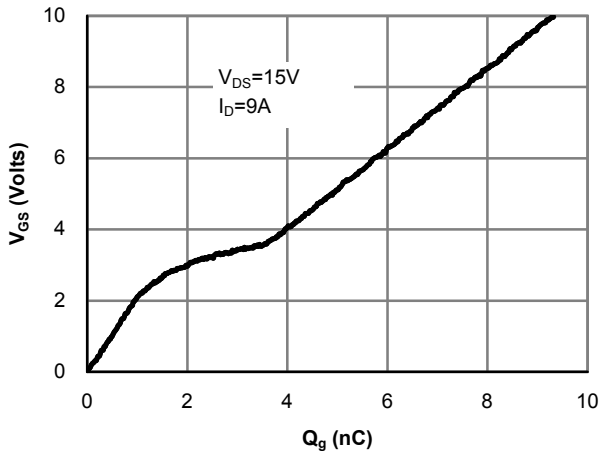


Figure 7: Gate-Charge Characteristics

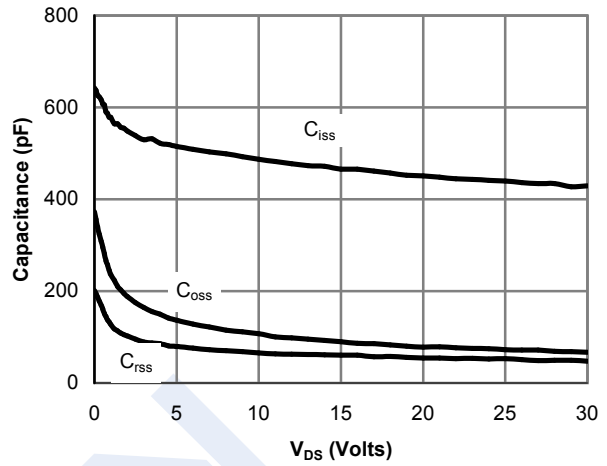


Figure 8: Capacitance Characteristics

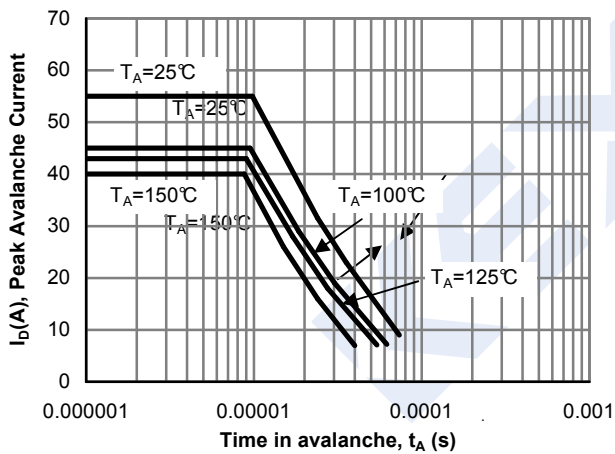


Figure 9: Single Pulse Avalanche capability (Note C)

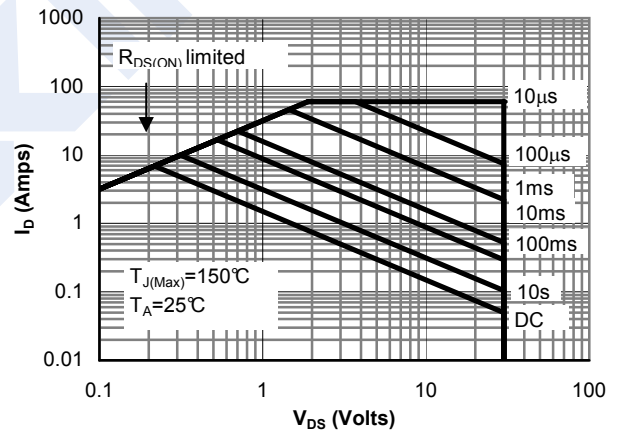


Figure 10: Maximum Forward Biased Safe Operating Area (Note F)

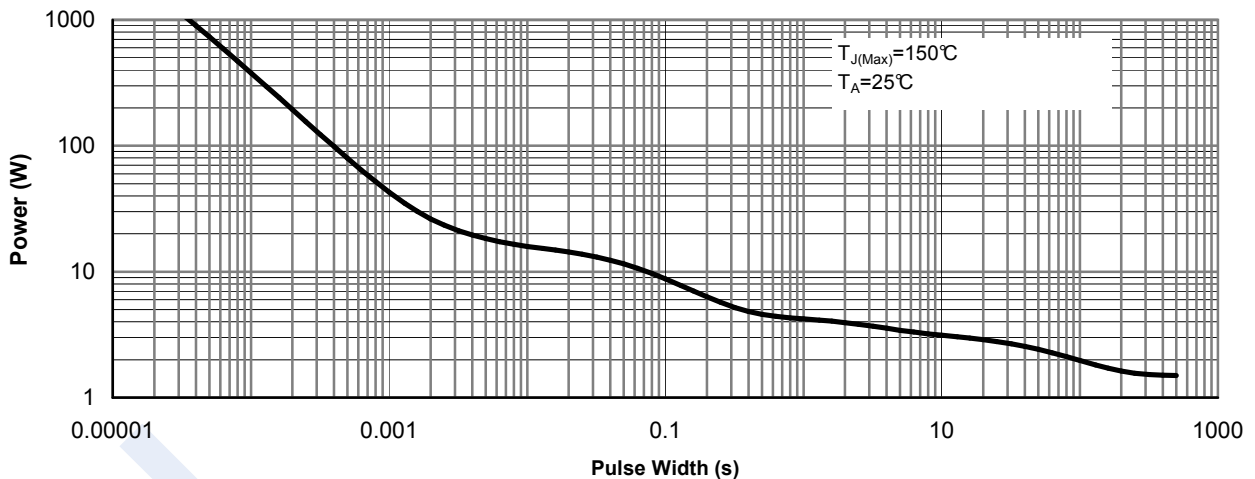


Figure 11: Single Pulse Power Rating Junction-to-Ambient (Note F)

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■ Typical Characteristics

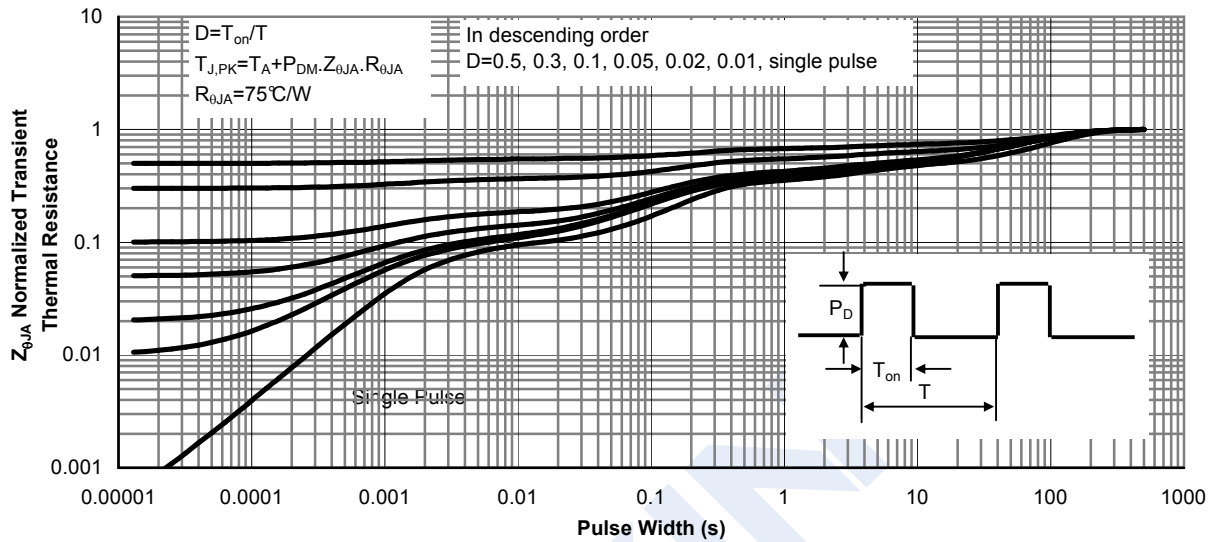


Figure 12: Normalized Maximum Transient Thermal Impedance (Note F)