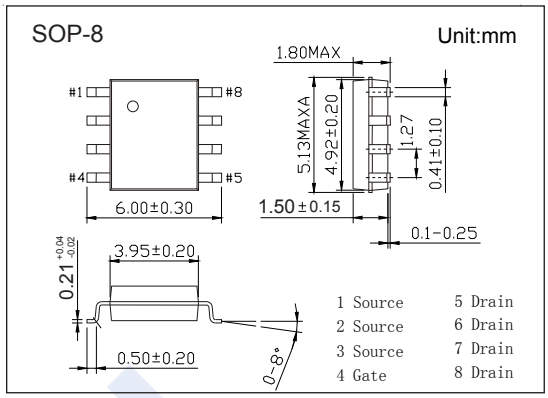
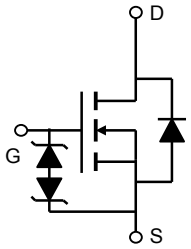
N-Channel MOSFET

AO4480 (KO4480)



■ Features

- $V_{DS\,(V)}$ = 40V
- I_D = 14 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 11.5mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 15.5mΩ (V_{GS} = 4.5V)
- ESD Rating: 4KV HBM



■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_A=25℃	I_D	14	A
	T_A=70℃		11	
Pulsed Drain Current		I_{DM}	70	
Avalanche Current		I_{AR}	30	
Repetitive Avalanche Energy	L=0.3mH	E_{AR}	135	mJ
Power Dissipation	T_A=25℃	P_D	3.1	W
	T_A=70℃		2	
Thermal Resistance.Junction- to-Ambient	t ≤ 10s	R_{thJA}	40	℃/W
	Steady-State		75	
Thermal Resistance.Junction- to-Lead		R_{thJL}	24	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=32V, V_{GS}=0V			1	uA
		V_{DS}=32V, V_{GS}=0V, T_J=55℃			5	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250uA	1		3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=14A			11.5	mΩ
		V_{GS}=10V, I_D=14A T_J=125℃		13		
		V_{GS}=4.5V, I_D=5A			15.5	
On State Drain Current	$I_{D(ON)}$	V_{GS}=10V, V_{DS}=5V	70			A
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=5A	50			S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=20V, f=1MHz		1600	1920	pF
Output Capacitance	C_{oss}			320		
Reverse Transfer Capacitance	C_{rss}			100		
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz		3.4		Ω
Total Gate Charge (10V)	Q_g	V_{GS}=10V, V_{DS}=20V, I_D=14A		22		nC
Total Gate Charge (4.5V)				10.5		
Gate Source Charge	Q_{gs}			4.2		
Gate Drain Charge	Q_{gd}			4.8		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=10V, V_{DS}=20V, R_L=1.5Ω, R_{GEN}=3Ω		3.5		ns
Turn-On Rise Time	t_r			6		
Turn-Off DelayTime	$t_{d(off)}$			13.2		
Turn-Off Fall Time	t_f			3.5		
Body Diode Reverse Recovery Time	t_{rr}	I_F= 14A, dI/dt= 100A/us		31		
Body Diode Reverse Recovery Charge	Q_{rr}			33		nC
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 <300 us pulses, duty cycle 0.5% max.

■ Marking

Marking	4480 KC****

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■ Typical Characterisitics

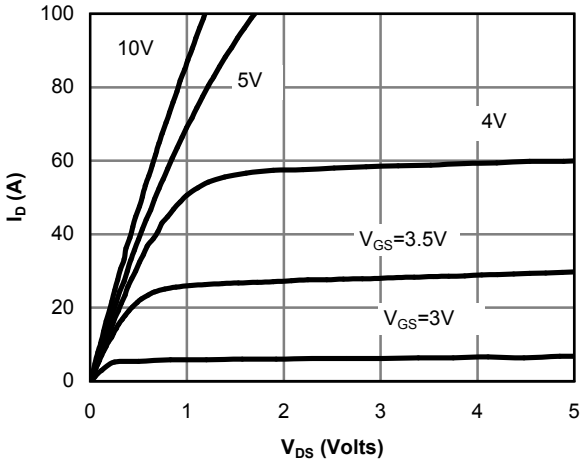

Figure 1: On-Region Characteristics

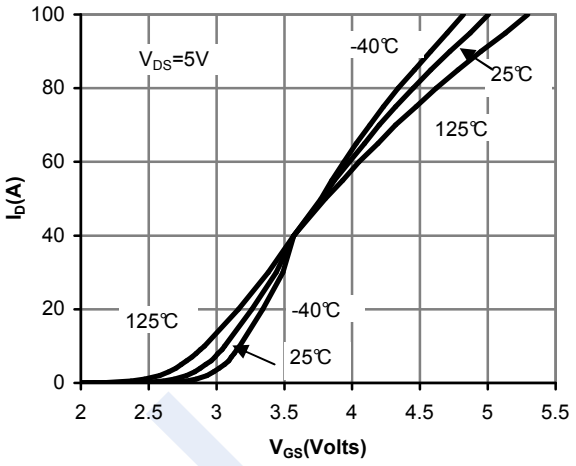

Figure 2: Transfer Characteristics

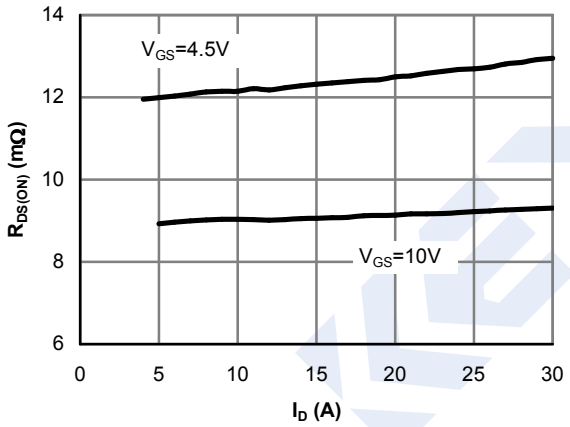

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

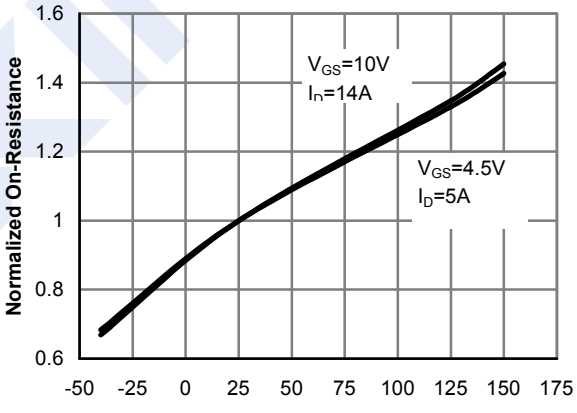

Figure 4: On-Resistance vs. Junction Temperature

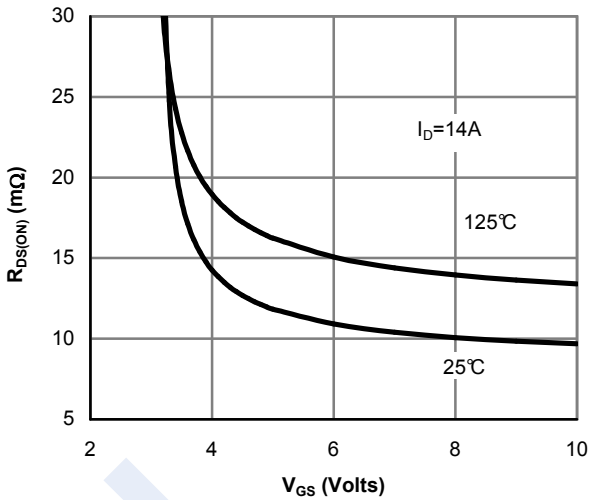

Figure 5: On-Resistance vs. Gate-Source Voltage

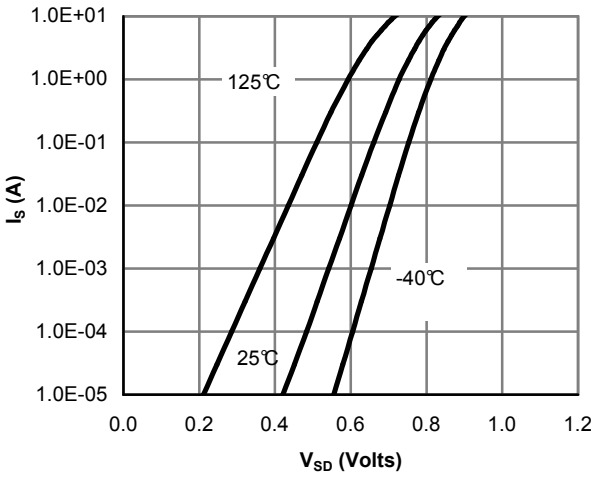

Figure 6: Body-Diode Characteristics

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■ Typical Characterisitics

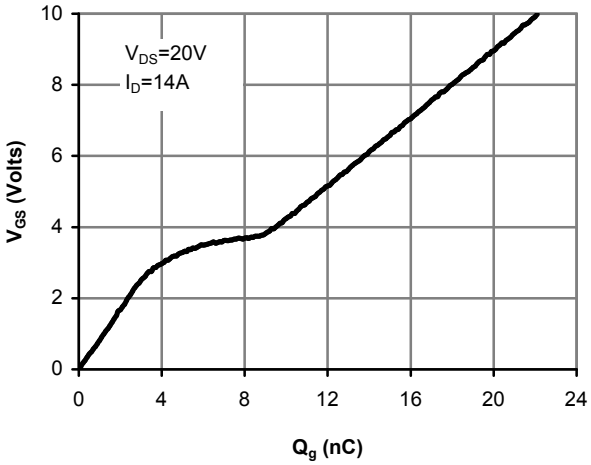

Figure 7: Gate-Charge Characteristics

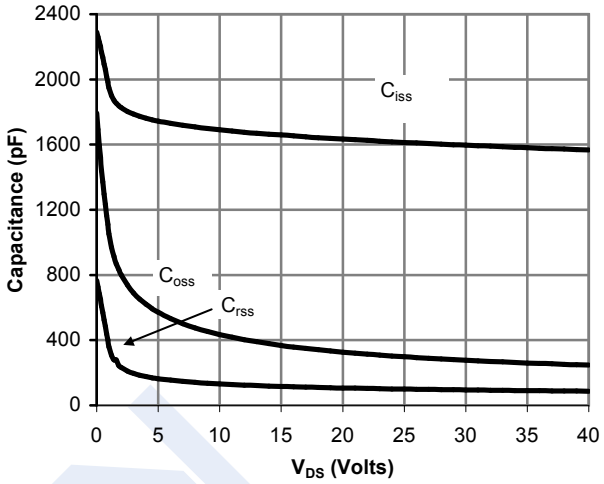

Figure 8: Capacitance Characteristics

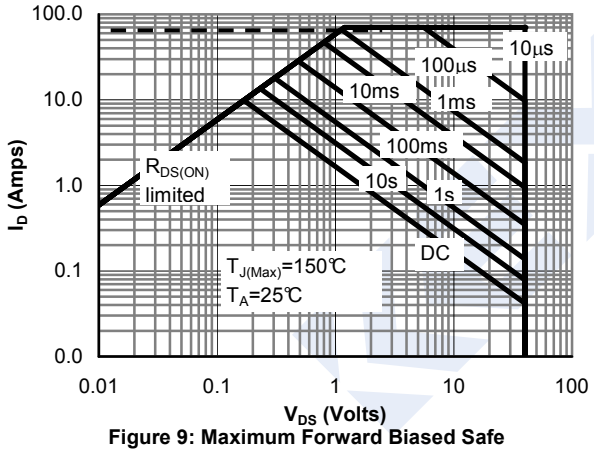

Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

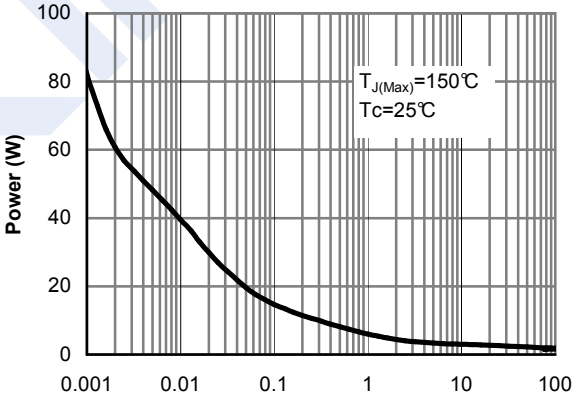

Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

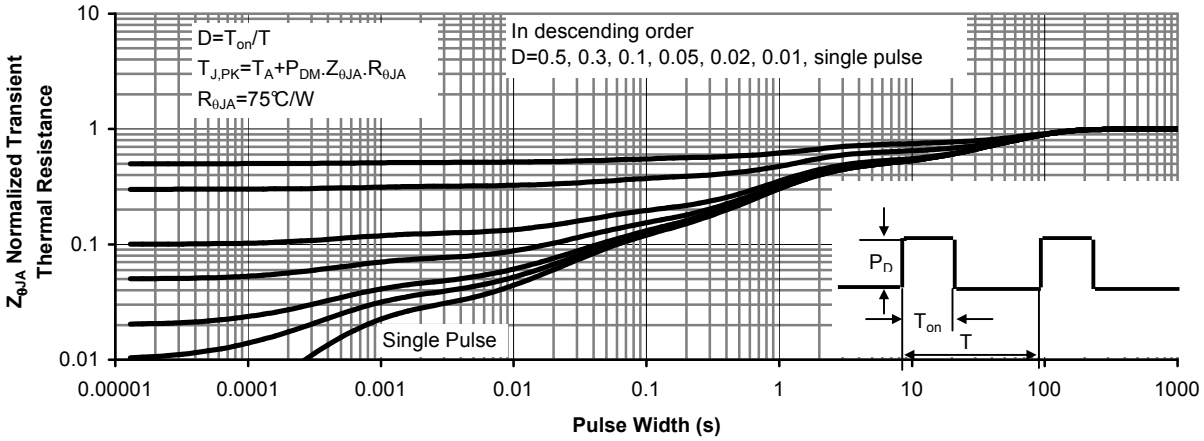

Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)