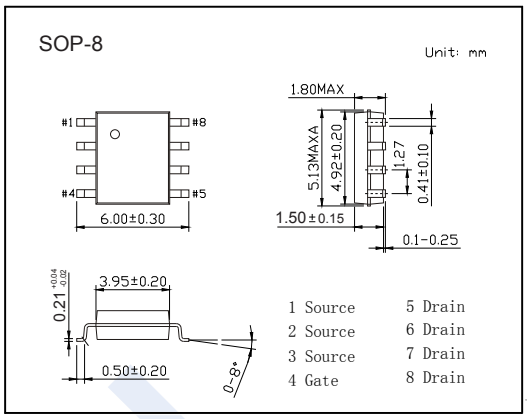
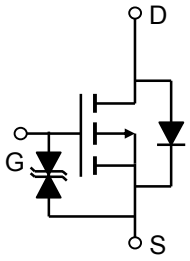
P-Channel MOSFET

AO4447 (KO4447)



■ Features

- $V_{DS\ (V)}$ =-30V
- I_D =-15 A (V_{GS} =-10V)
- $R_{DS(ON)}$ < 7.5mΩ (V_{GS} =-10V)
- $R_{DS(ON)}$ < 12mΩ (V_{GS} =-4.5V)
- ESD Rating: 4KV HBM



■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	Ta = 25℃	I_D	-15	A
	Ta = 70℃		-13.6	
Pulsed Drain Current		I_{DM}	-60	
Avalanche Current		I_{AR}	40	A
Repetitive avalanche energy L=0.3mH		E_{AR}	240	mJ
Power Dissipation	Ta = 25℃	P_D	3.1	W
	Ta = 70℃		2	
Thermal Resistance.Junction- to-Ambient	t ≤10s	R_{thJA}	40	℃/W
	Steady-State		75	
Thermal Resistance.Junction- to-Case	Steady-State	R_{thJC}	24	
Junction Temperature		T_J	150	℃
Junction 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	-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℃			-10	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±10	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=-250μA	-0.9	-1.25	-1.6	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-15A		6.7	7.5	mΩ
		V_{GS}=-10V, I_D=-15A T_J=125℃		9.4	12	
		V_{GS}=-4V, I_D=-13A		9.2	12	
On state drain current	$I_{D(ON)}$	V_{GS}=-10V, V_{DS}=-5V	-60			A
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-15A		60		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-15V, f=1MHz		5500	6600	pF
Output Capacitance	C_{oss}			745		
Reverse Transfer Capacitance	C_{rss}			473		
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz		3.1	4	Ω
Total Gate Charge	Q_g	V_{GS}=-4.5V, V_{DS}=-15 V, I_D=-15A		88.8	120	nC
		V_{GS}=-10V, V_{DS}=-15V, I_D=-15A		45.2	60	
Gate Source Charge	Q_{gs}			10.1		
Gate Drain Charge	Q_{gd}			19.4		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=-10V, V_{DS}=-15V, R_L=1.7Ω,R_G=3Ω		12		ns
Turn-On Rise Time	t_r			11.5		
Turn-Off DelayTime	$t_{d(off)}$			100		
Turn-Off Fall Time	t_f			40		
Body Diode Reverse Recovery Time	t_{rr}	I_F=-15A, dI/dt=100A/μs		46.6	60	
Body Diode Reverse Recovery Charge	Q_{rr}			67.7		nC
Maximum Body-Diode Continuous Current	I_S				-5.5	A
Diode Forward Voltage	V_{SD}	I_S=-1A,V_{GS}=0V		-0.69	-1	V

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■ Typical Characterisitics

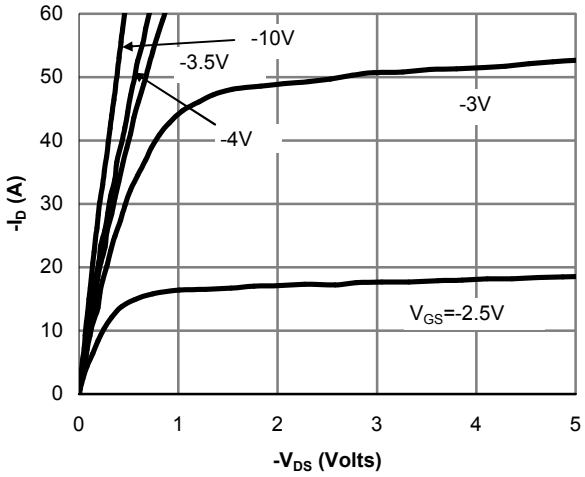

Fig 1: On-Region Characteristics

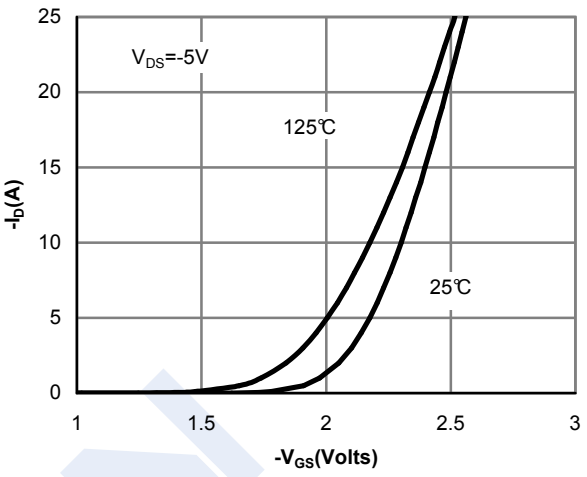

Figure 2: Transfer Characteristics

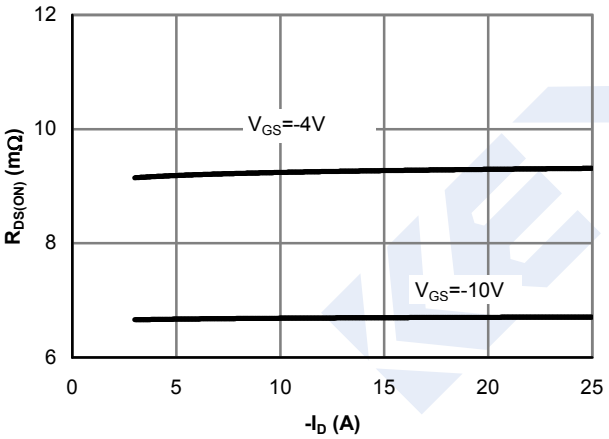

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

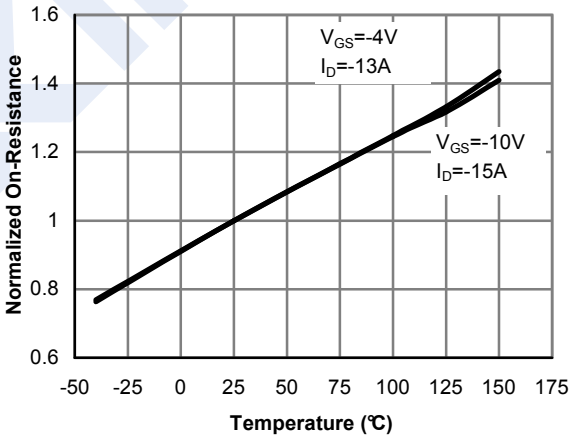

Figure 4: On-Resistance vs. Junction Temperature

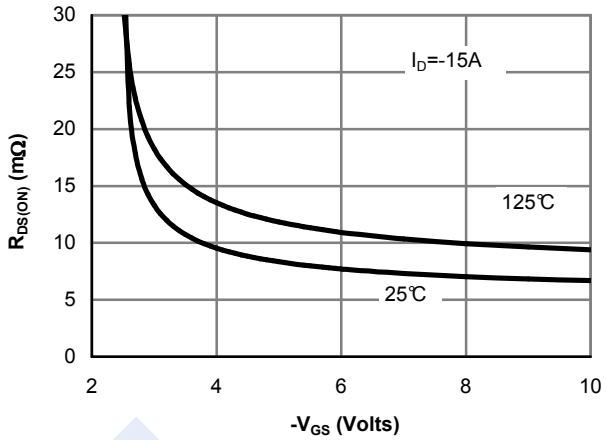

Figure 5: On-Resistance vs. Gate-Source Voltage

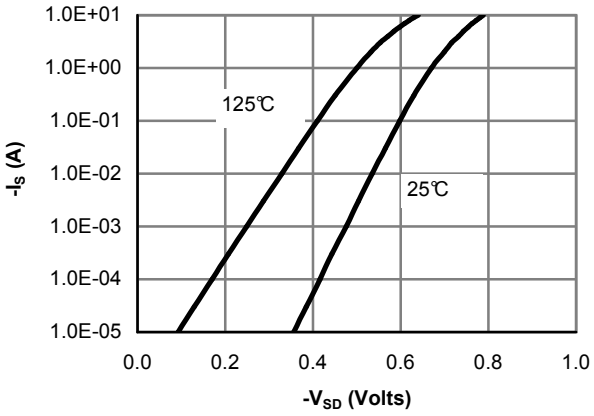

Figure 6: Body-Diode Characteristics

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■ Typical Characterisitics

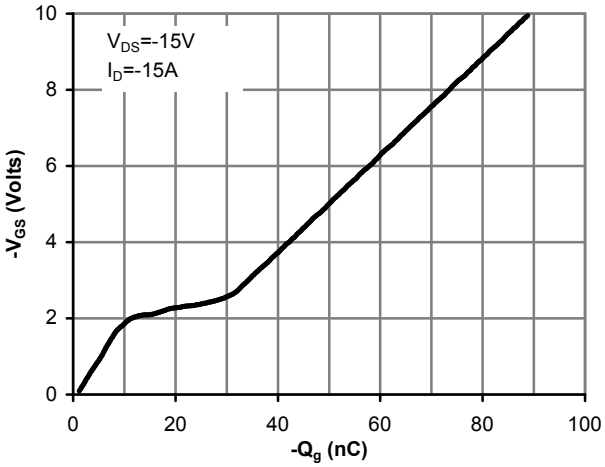

Figure 7: Gate-Charge Characteristics

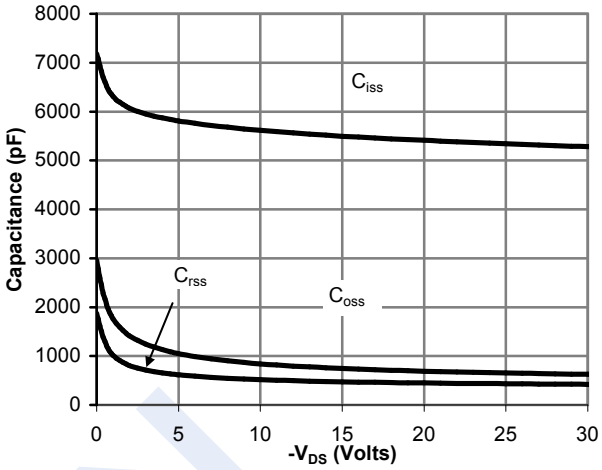

Figure 8: Capacitance Characteristics

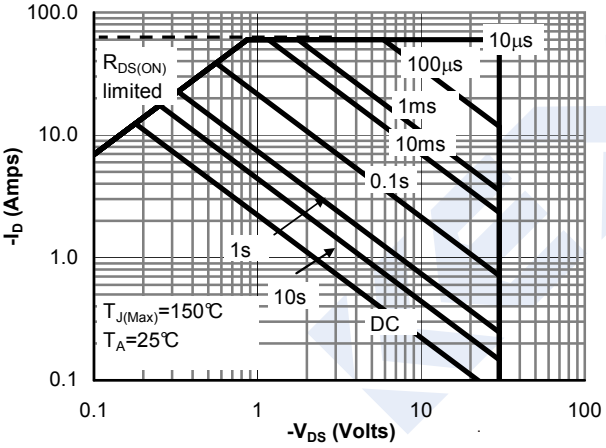

Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

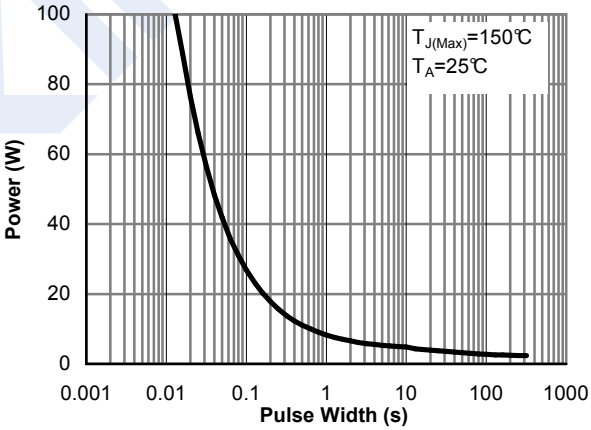

Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

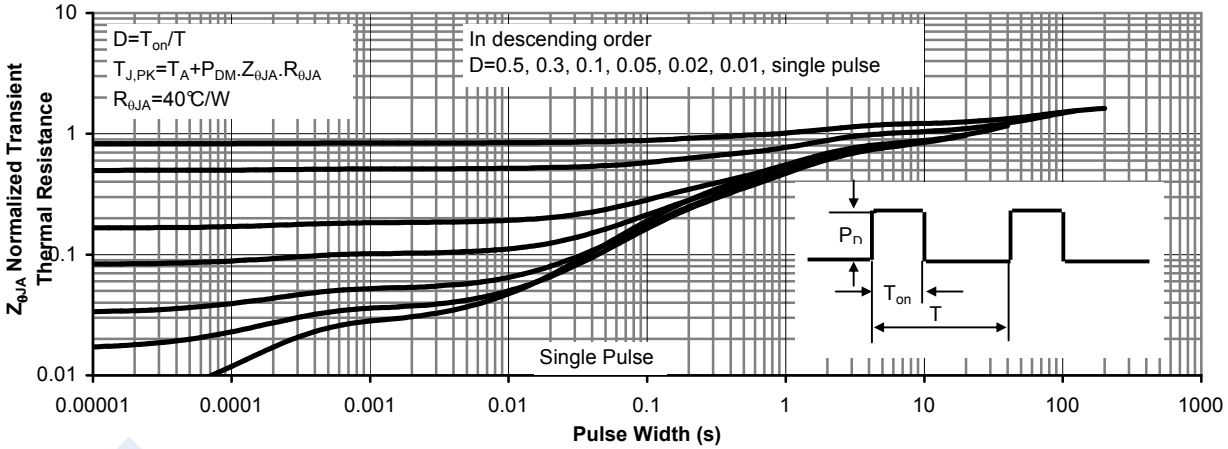

Figure 11: Normalized Maximum Transient Thermal Impedance