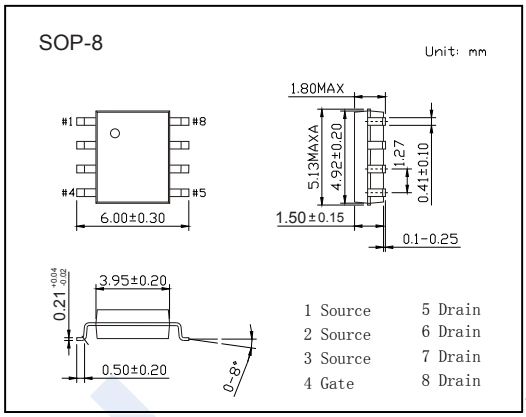
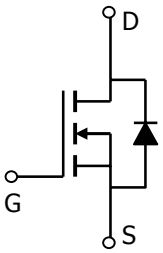
N-Channel MOSFET

AO4442 (KO4442)



■ Features

- V_{DS} (V) = 75V
- I_D = 3.1 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 130mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 165mΩ (V_{GS} = 4.5V)



■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	75	V
Gate-Source Voltage		V_{GS}	±25	
Continuous Drain Current	T_A=25℃	I_D	3.1	A
	T_A=70℃		2.5	
Pulsed Drain Current		I_{DM}	20	
Power Dissipation	T_A=25℃	P_D	2.5	W
	T_A=70℃		1.6	
Thermal Resistance.Junction- to-Ambient	t ≤ 10s	R_{thJA}	50	℃/W
	Steady-State		80	
Thermal Resistance.Junction- to-Lead		R_{thJL}	30	
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=10mA, V_{GS}=0V	75			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
		V_{DS}=60V, V_{GS}=0V, T_J=55℃			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		3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=3.1A			130	mΩ
		V_{GS}=10V, I_D=3.1A T_J=125℃			220	
		V_{GS}=4.5V, I_D=2A			165	
On State Drain Current	$I_{D(ON)}$	V_{GS}=10V, V_{DS}=5V	20			A
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=3.1A		8.2		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=37.5V, f=1MHz		303	350	pF
Output Capacitance	C_{oss}			37		
Reverse Transfer Capacitance	C_{rss}			17		
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz		2.2	3	Ω
Total Gate Charge (10V)	Q_g	V_{GS}=10V, V_{DS}=37.5V, I_D=3.1A		5.2	6.5	nC
Total Gate Charge (4.5V)				2.46	3.5	
Gate Source Charge	Q_{gs}			1		
Gate Drain Charge	Q_{gd}			1.34		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=10V, V_{DS}=37.5V, R_L=12Ω, R_{GEN}=3Ω		4.5		ns
Turn-On Rise Time	t_r			2.3		
Turn-Off DelayTime	$t_{d(off)}$			15.6		
Turn-Off Fall Time	t_f			1.9		
Body Diode Reverse Recovery Time	t_{rr}	I_F= 3.1A, dI/dt= 100A/μs		22	30	
Body Diode Reverse Recovery Charge	Q_{rr}			22		nC
Maximum Body-Diode Continuous Current	I_S				10	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 μs pulses, duty cycle 0.5% max.

■ Marking

Marking	4442 KC****

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■ Typical Characterisitics

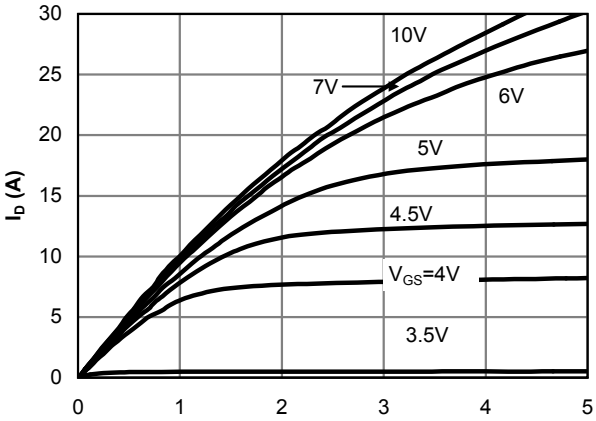

Fig 1: On-Region Characteristics

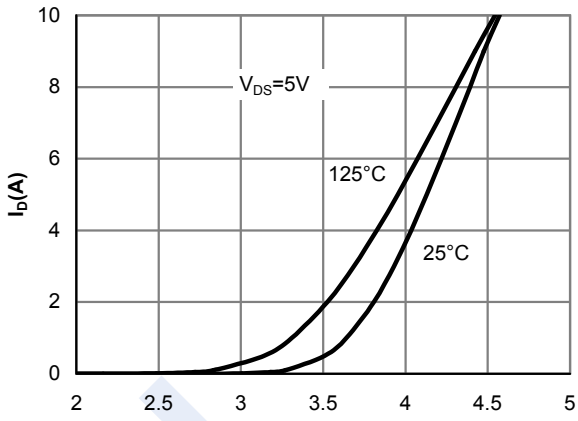

Figure 2: Transfer Characteristics

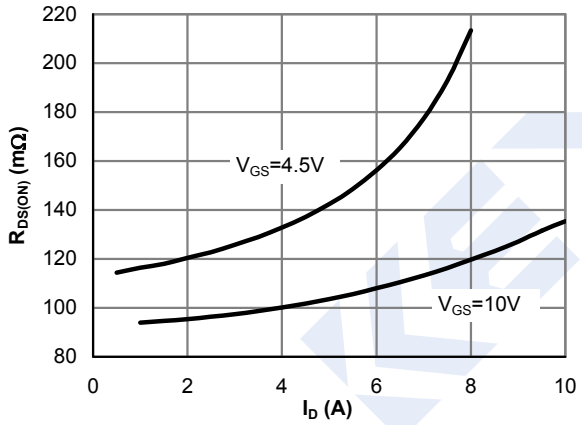

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

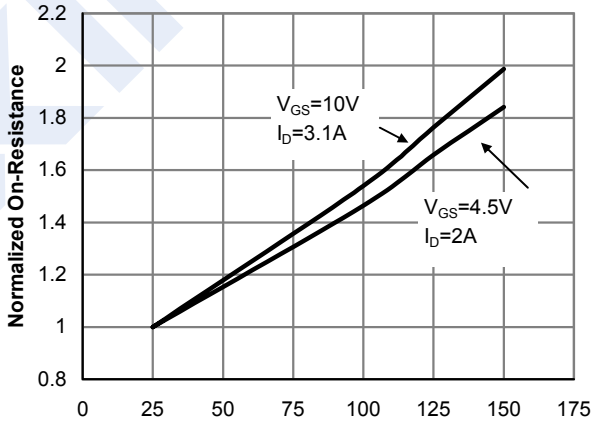

Figure 4: On-Resistance vs. Junction Temperature

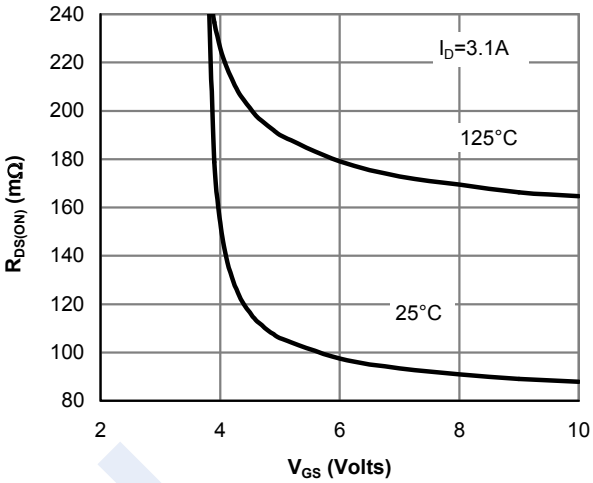

Figure 5: On-Resistance vs. Gate-Source Voltage

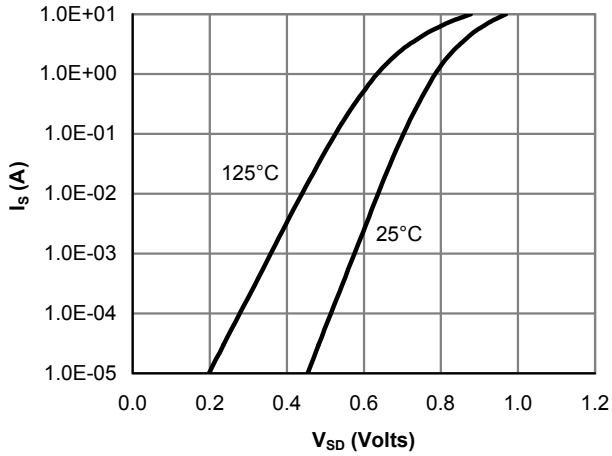

Figure 6: Body-Diode Characteristics

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■ Typical Characterisitics

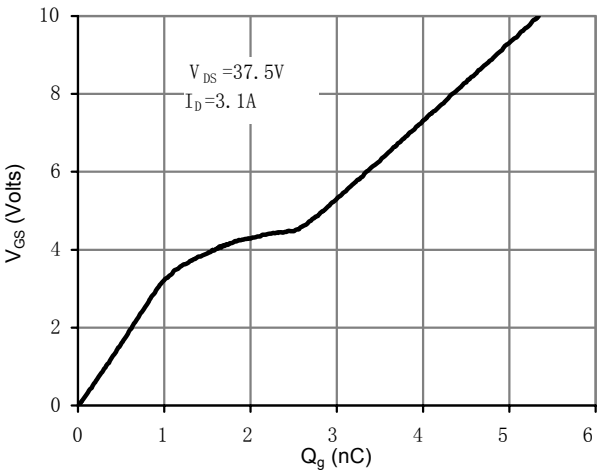

Figure 7: Gate-Charge Characteristics

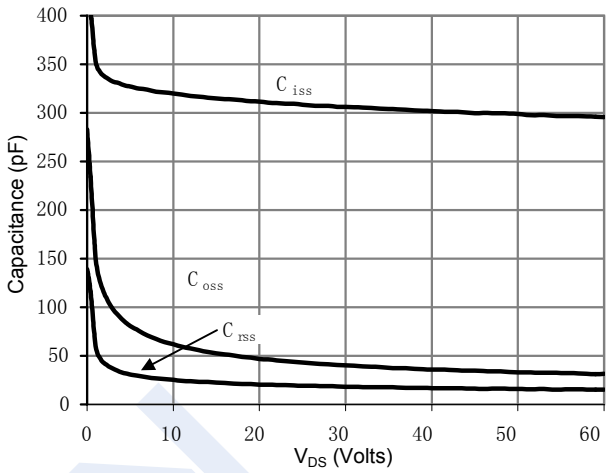

Figure 8: Capacitance Characteristics

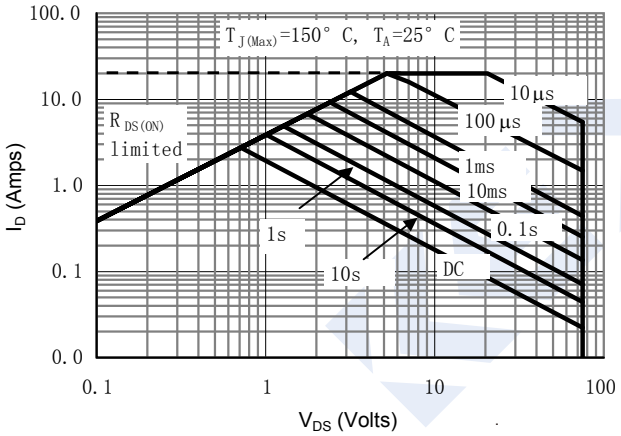

Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

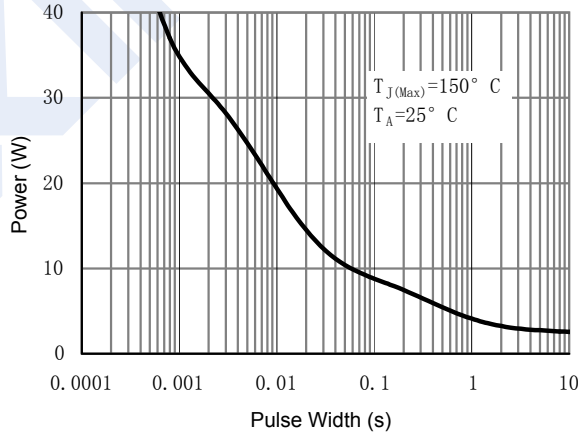

Figure 10: Single Pulse Power Rating Junction-to-Case (Note E)

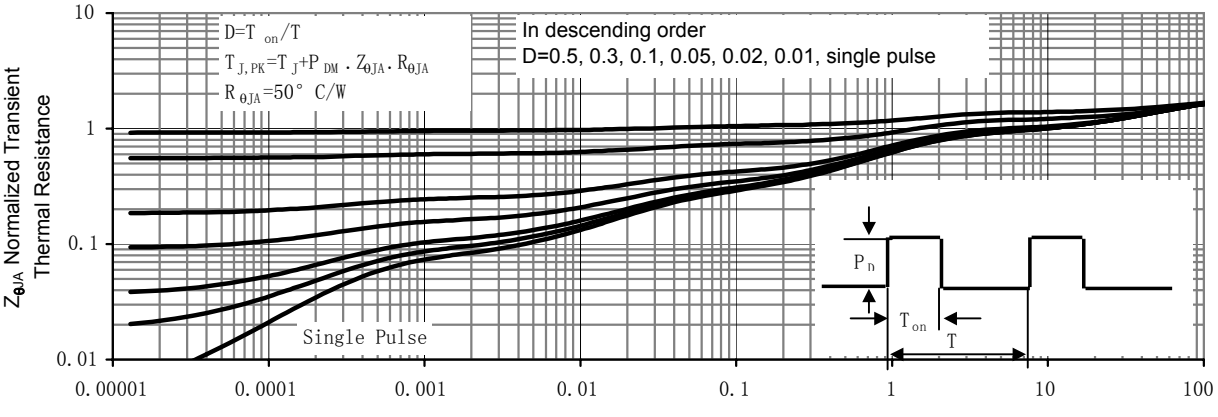

Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)