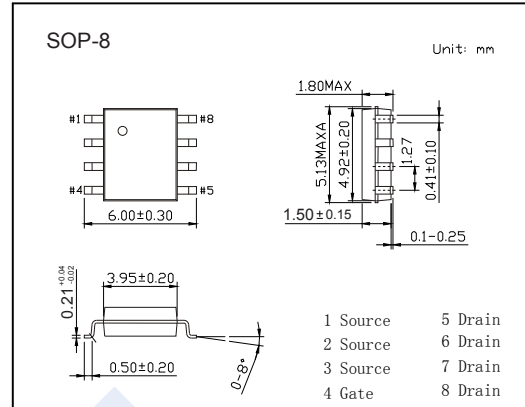
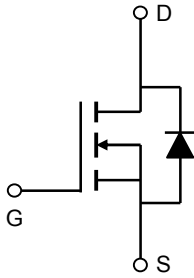


## N-Channel MOSFET

### AO4420 (KO4420)

#### ■ Features

- $V_{DS} (V) = 30V$
- $I_D = 13.7 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 10.5m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 12m\Omega (V_{GS} = 4.5V)$



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current	$I_D$	$T_A=25^\circ C$	13.7
		$T_A=70^\circ C$	9.7
Pulsed Drain Current	$I_{DM}$	60	A
Power Dissipation	$P_D$	$T_A=25^\circ C$	3.1
		$T_A=70^\circ C$	2
Thermal Resistance.Junction- to-Ambient	$R_{thJA}$	$t \leq 10s$	40
		Steady-State	75
Thermal Resistance.Junction- to-Lead	$R_{thJL}$	30	$^\circ C/W$
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55 to 150	$^\circ C$

## N-Channel MOSFET

## AO4420 (KO4420)

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> =250 μ A, V <sub>GS</sub> =0V	30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V			1	μ A
		V <sub>DS</sub> =24V, V <sub>GS</sub> =0V, T <sub>J</sub> =55°C			5	
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μ A	0.6		2	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =13.7A			10.5	m Ω
		V <sub>GS</sub> =10V, I <sub>D</sub> =13.7A T <sub>J</sub> =125°C			15	
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =12.7A			12	
On State Drain Current	I <sub>D(ON)</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =5V	40			A
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =13.7A	30	37		S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =15V, f=1MHz		3656	4050	pF
Output Capacitance	C <sub>oss</sub>			256		
Reverse Transfer Capacitance	C <sub>rss</sub>			168		
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz		0.86	1.1	Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =15V, I <sub>D</sub> =13.7A		30.5	36	nC
Gate Source Charge	Q <sub>gs</sub>			4.6		
Gate Drain Charge	Q <sub>gd</sub>			8.6		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, R <sub>L</sub> =1.1Ω, R <sub>GEN</sub> =3Ω		5.5	9	ns
Turn-On Rise Time	t <sub>r</sub>			3.4	7	
Turn-Off DelayTime	t <sub>d(off)</sub>			49.8	75	
Turn-Off Fall Time	t <sub>f</sub>			5.9	11	
Body Diode Reverse Recovery Time	t <sub>rr</sub>			22.5	28	
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> = 13.7A, di/dt= 100A/ μ s		12.5	16	nC
Maximum Body-Diode Continuous Current	I <sub>S</sub>				5	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1A, V <sub>GS</sub> =0V			1	V

Note : The static characteristics in Figures 1 to 6 are obtained using <300us pulses, duty cycle 0.5% max.

## ■ Marking

Marking	4420
	KC****

## N-Channel MOSFET AO4420 (KO4420)

■ Typical Characteristics

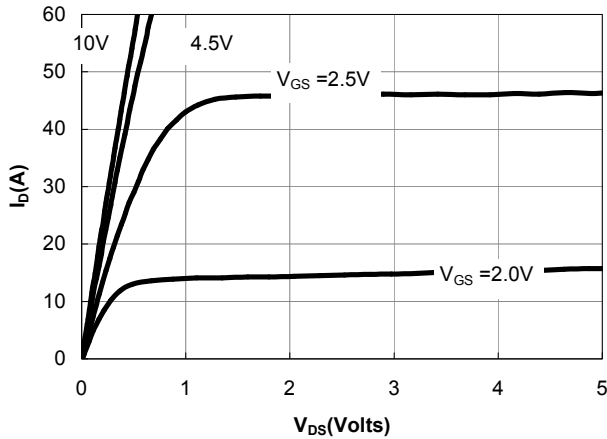


Figure 1: On-Regions Characteristics

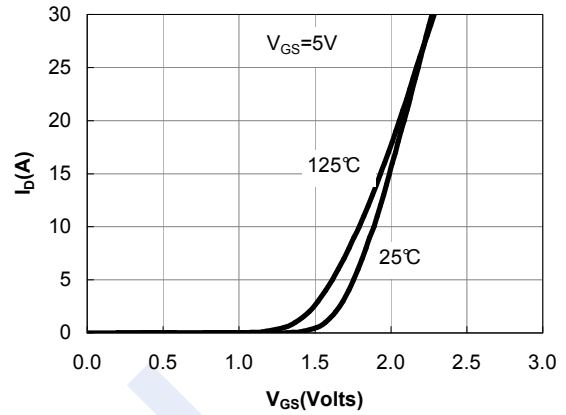


Figure 2: Transfer Characteristics

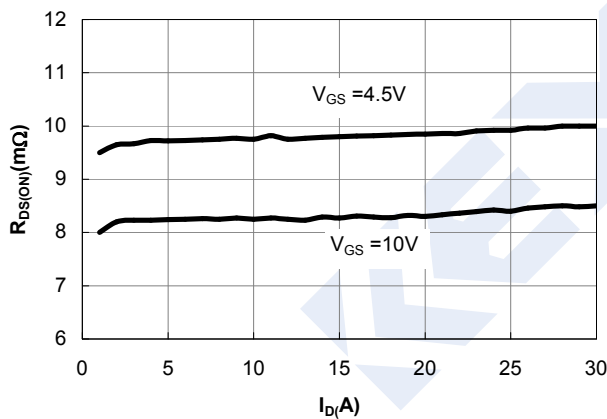


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

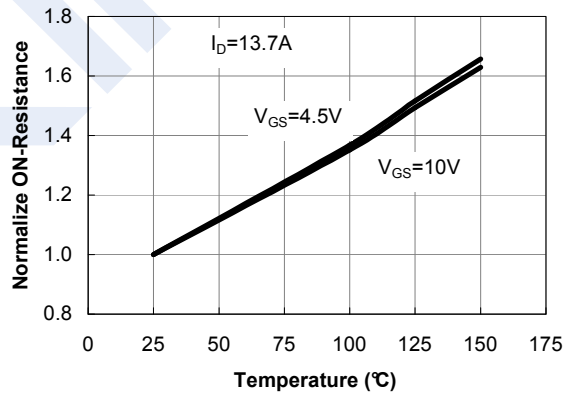


Figure 4: On-Resistance vs. Junction Temperature

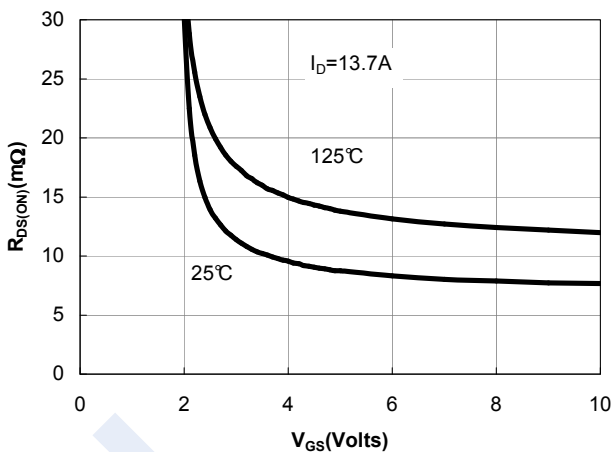


Figure 5: On-Resistance vs. Gate-Source Voltage

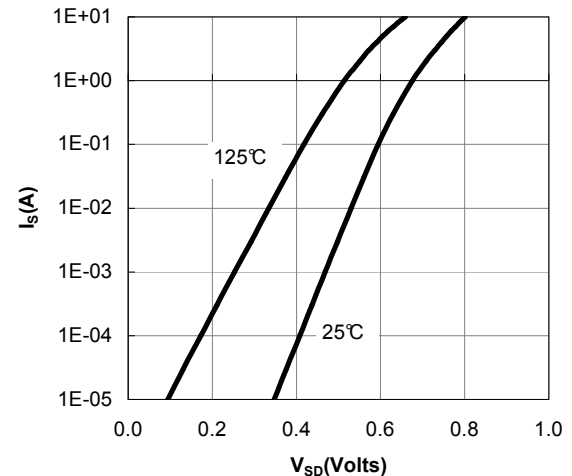


Figure 6: Body-Diode Characteristics

## N-Channel MOSFET AO4420 (KO4420)

■ Typical Characteristics

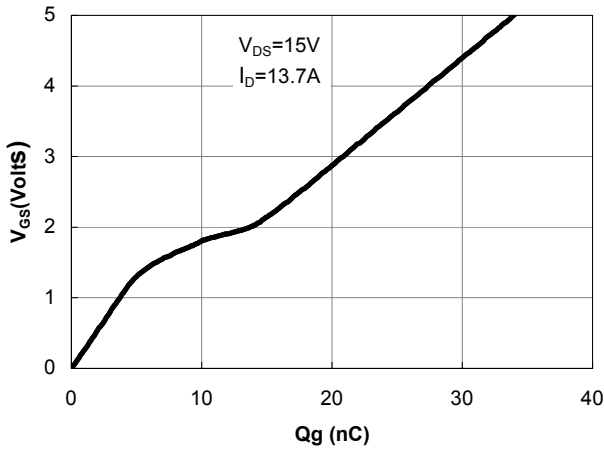


Figure 7: Gate-Charge Characteristics

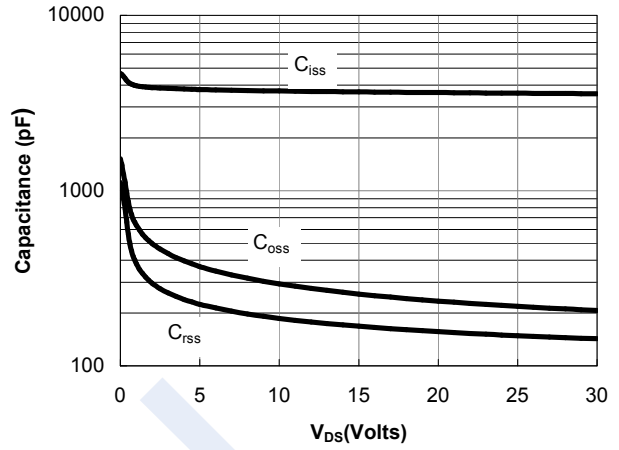


Figure 8: Capacitance Characteristics

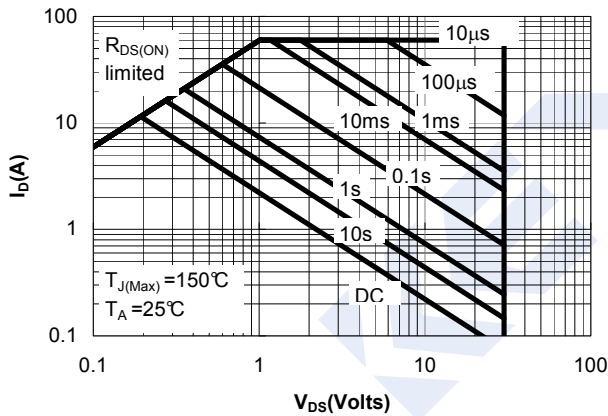


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

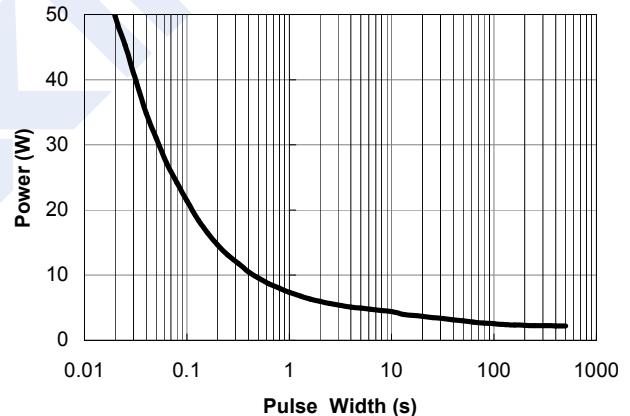


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

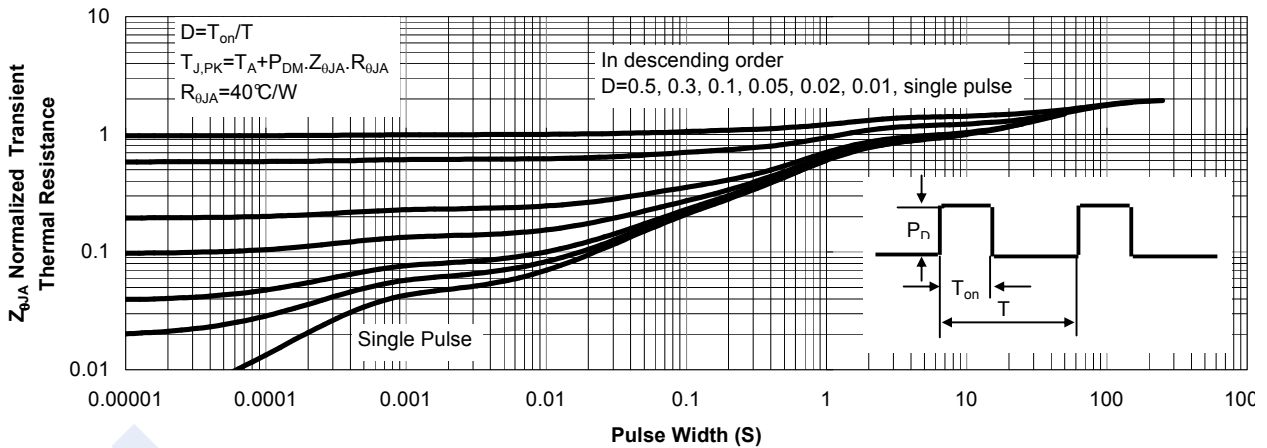


Figure 11: Normalized Maximum Transient Thermal Impedance