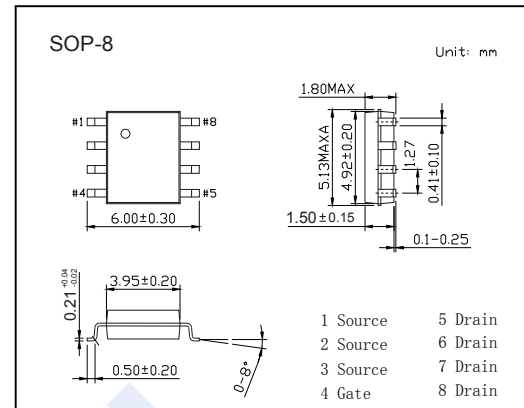
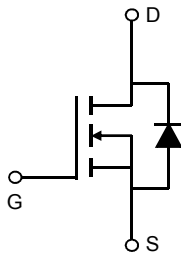


## N-Channel MOSFET

## AO4306 (KO4306)

## ■ Features

- $V_{DS} (V) = 30V$
- $I_D = 13 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 11.5m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 15.5m\Omega (V_{GS} = 4.5V)$

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current	$I_D$	$T_A=25^\circ C$	A
		$T_A=70^\circ C$	
Pulsed Drain Current	$I_{DM}$	100	
Avalanche Current	$I_{AS}$	22	
Avalanche energy	$L=0.1mH$	$E_{AS}$	mJ
Power Dissipation	$P_D$	$T_A=25^\circ C$	W
		$T_A=70^\circ C$	
Thermal Resistance.Junction- to-Ambient	$R_{thJA}$	$t \leq 10s$	$^\circ C/W$
		Steady-State	
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

## AO4306 (KO4306)

## ■ 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 uA, V <sub>GS</sub> =0V	30			V	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	uA	
		V <sub>DS</sub> =30V, 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> =±20V			±100	nA	
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.5		2.5	V	
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =12A			11.5	mΩ	
		V <sub>GS</sub> =10V, I <sub>D</sub> =12A T <sub>J</sub> =125°C			17		
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A			15.5		
On State Drain Current	I <sub>D(ON)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =5V	100			A	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =12A		45		S	
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =15V, f=1MHz		760		pF	
Output Capacitance	C <sub>oss</sub>			125			
Reverse Transfer Capacitance	C <sub>rss</sub>			70			
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz	0.8		2.4	Ω	
Total Gate Charge (10V)	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, I <sub>D</sub> =12A		14	25	nC	
Total Gate Charge (4.5V)				6.6	12		
Gate Source Charge	Q <sub>gs</sub>			2.4			
Gate Drain Charge	Q <sub>gd</sub>			3			
Gate Source Charge	Q <sub>gs</sub>		V <sub>GS</sub> =4.5V, V <sub>DS</sub> =15V, I <sub>D</sub> =12A		2.4		
Gate Drain Charge	Q <sub>gd</sub>				3		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, R <sub>L</sub> =1.25Ω, R <sub>GEN</sub> =3Ω		4.4		ns	
Turn-On Rise Time	t <sub>r</sub>			9			
Turn-Off DelayTime	t <sub>d(off)</sub>			17			
Turn-Off Fall Time	t <sub>f</sub>			6			
Body Diode Reverse Recovery Time	t <sub>rr</sub>		I <sub>F</sub> = 12A, di/dt= 500A/us		7		
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>			8		nC	
Maximum Body-Diode Continuous Current	I <sub>S</sub>				4	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 <300 μs pulses, duty cycle 0.5% max.

## ■ Marking

Marking	4306 KC****
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## N-Channel MOSFET AO4306 (KO4306)

■ Typical Characteristics

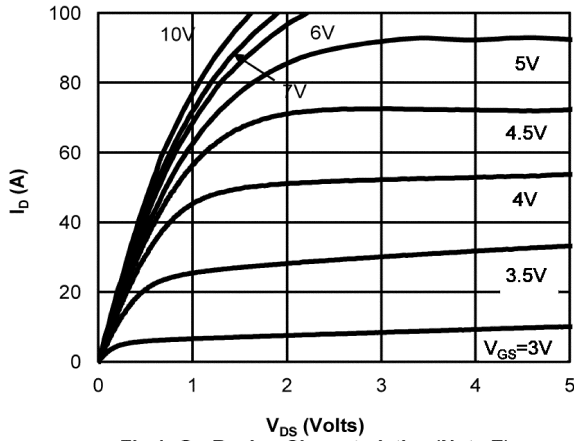


Fig 1: On-Region Characteristics (Note E)

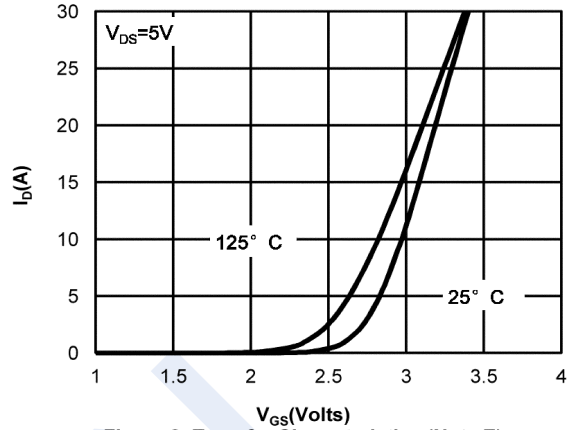


Figure 2: Transfer Characteristics (Note E)

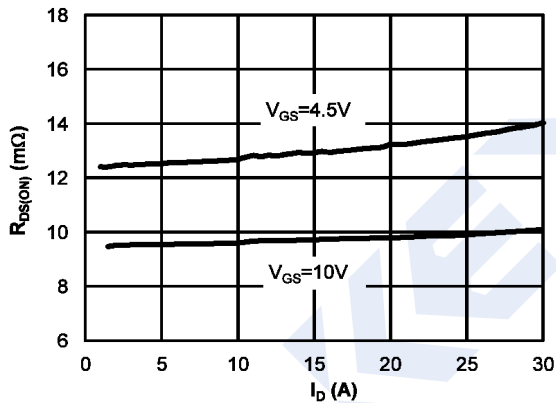


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

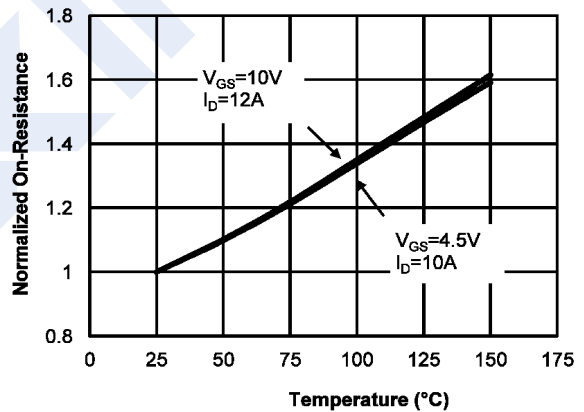


Figure 4: On-Resistance vs. Junction Temperature (Note E)

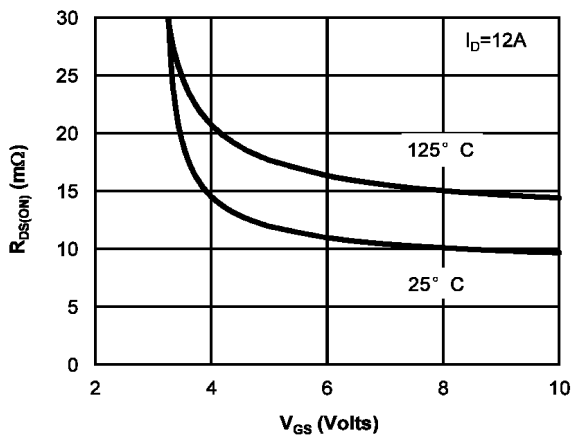


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

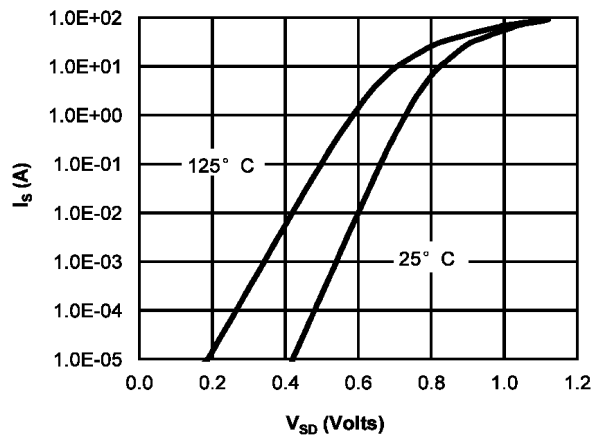


Figure 6: Body-Diode Characteristics (Note E)

## N-Channel MOSFET AO4306 (KO4306)

■ Typical Characteristics

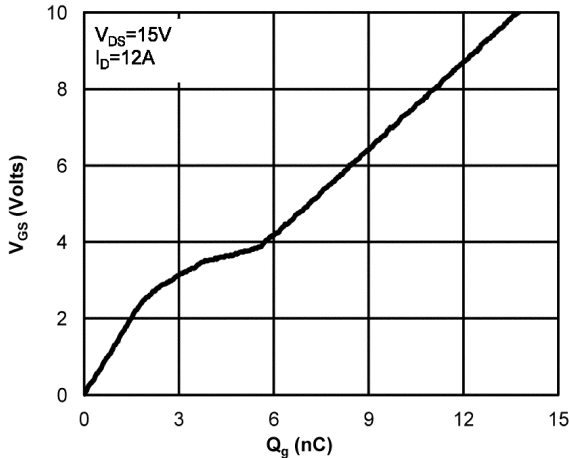


Figure 7: Gate-Charge Characteristics

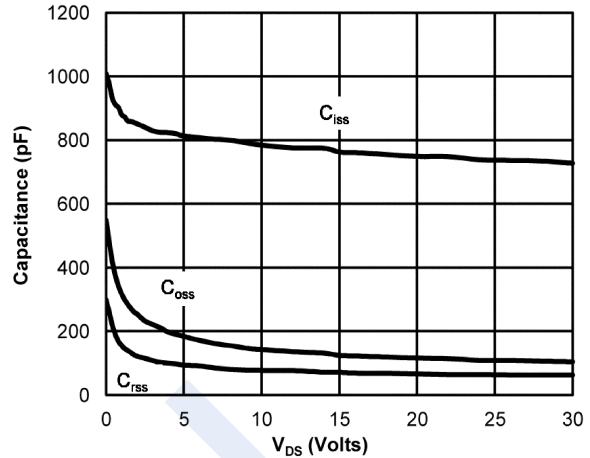


Figure 8: Capacitance Characteristics

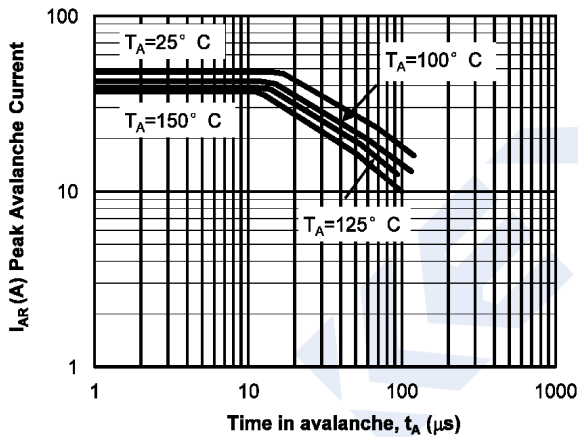


Figure 9: Single Pulse Avalanche capability (Note C)

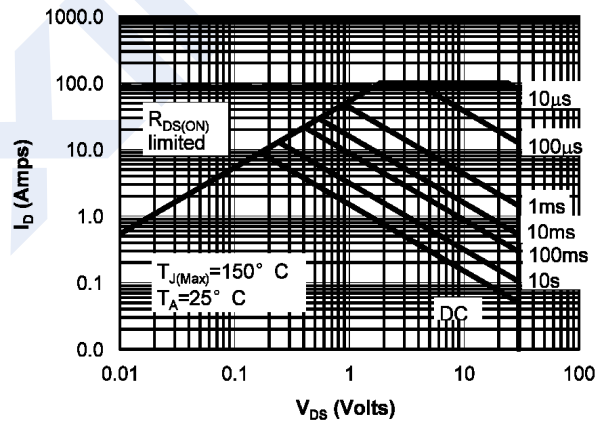


Figure 10: Maximum Forward Biased Safe Operating Area (Note F)

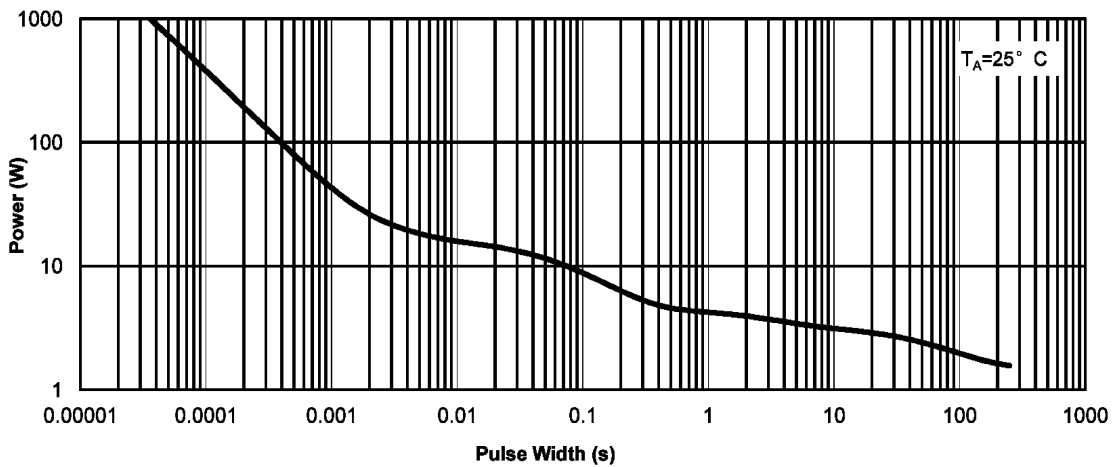


Figure 11: Single Pulse Power Rating Junction-to-Ambient (Note F)

## N-Channel MOSFET AO4306 (KO4306)

■ Typical Characteristics

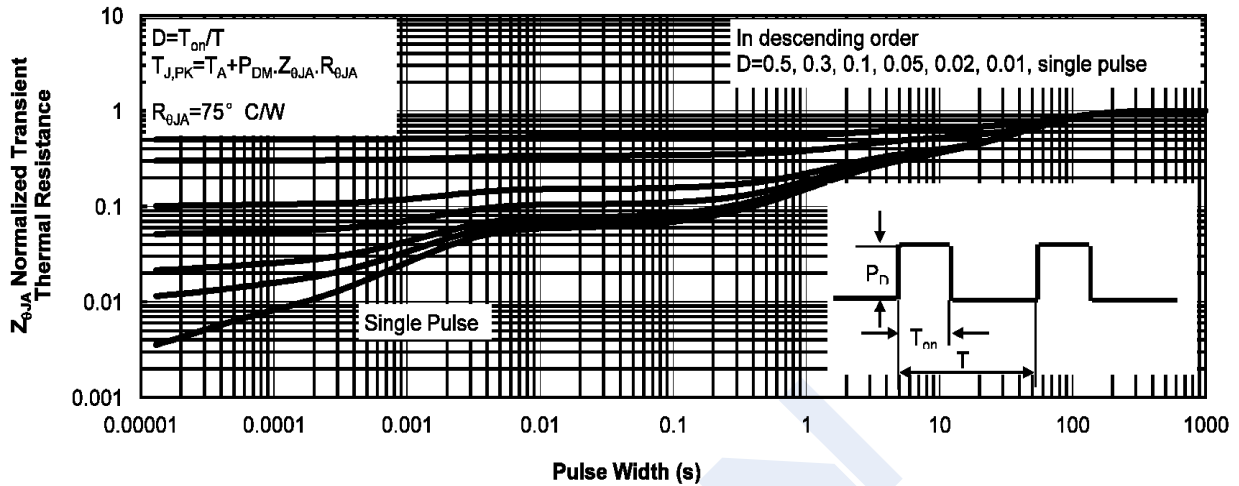


Figure 12: Normalized Maximum Transient Thermal Impedance (Note F)