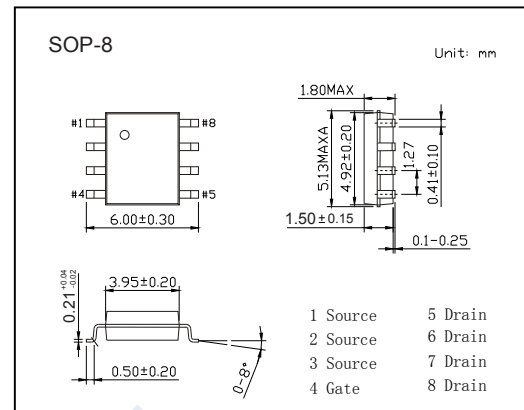
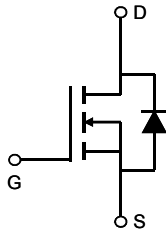


## N-Channel MOSFET

### AO4312 (KO4312)

#### ■ Features

- $V_{DS} = 36V$
- $I_D = 23 A$  ( $V_{GS} = 10V$ )
- $R_{DS(ON)} < 4.5m\Omega$  ( $V_{GS} = 10V$ )
- $R_{DS(ON)} < 6.2m\Omega$  ( $V_{GS} = 4.5V$ )



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	36	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_A=25^\circ C$	23
		$T_A=70^\circ C$	18
Pulsed Drain Current	$I_{DM}$	264	A
Avalanche Current	$I_{AS}, I_{AR}$	45	
Avalanche energy	$L=0.1mH$	$E_{AS}, E_{AR}$	101
Power Dissipation	$P_D$	$T_A=25^\circ C$	4.2
		$T_A=70^\circ C$	2.7
Thermal Resistance.Junction- to-Ambient	$R_{thJA}$	$t \leq 10s$	30
		Steady-State	60
Thermal Resistance.Junction- to-Lead	$R_{thJL}$	15	$^\circ C/W$
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55 to 150	$^\circ C$

## N-Channel MOSFET

### AO4312 (KO4312)

#### ■ 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 μA, V <sub>GS</sub> =0V	36			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =36V, V <sub>GS</sub> =0V			1	μA
		V <sub>DS</sub> =36V, 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> =250μA	1.3		2.3	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A			4.5	mΩ
		V <sub>GS</sub> =10V, I <sub>D</sub> =20A, T <sub>J</sub> =125°C			6.9	
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A			6.2	
On State Drain Current	I <sub>D(ON)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =5V	264			A
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =20A		110		S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =18V, f=1MHz	1560		2345	pF
Output Capacitance	C <sub>oss</sub>		475		890	
Reverse Transfer Capacitance	C <sub>rss</sub>		14		85	
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz	0.5		1.6	Ω
Total Gate Charge (10V)	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =18V, I <sub>D</sub> =20A	22		34	nC
Total Gate Charge (4.5V)			10		17	
Gate Source Charge	Q <sub>gs</sub>			4.3		
Gate Drain Charge	Q <sub>gd</sub>			4.7		
Turn-On DelayTime	t <sub>d(on)</sub>		V <sub>GS</sub> =10V, V <sub>DS</sub> =18V, R <sub>L</sub> =0.9Ω, R <sub>GEN</sub> =3Ω		7	
Turn-On Rise Time	t <sub>r</sub>			3.1		
Turn-Off DelayTime	t <sub>d(off)</sub>			26		
Turn-Off Fall Time	t <sub>f</sub>			4.5		
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 20A, di/dt= 500A/μs	13		21	nA
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>		30		47	
Maximum Body-Diode Continuous Current	I <sub>S</sub>				5.5	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 <300 μs pulses, duty cycle 0.5% max.

#### ■ Marking

Marking	4312 KC****
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## N-Channel MOSFET AO4312 (KO4312)

■ Typical Characteristics

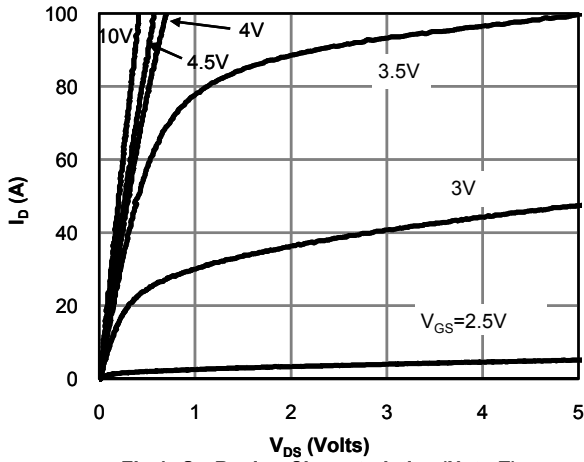


Figure 1: On-Region Characteristics (Note E)

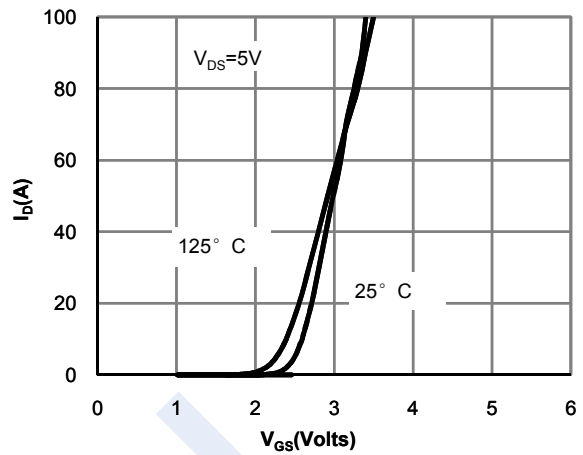


Figure 2: Transfer Characteristics (Note E)

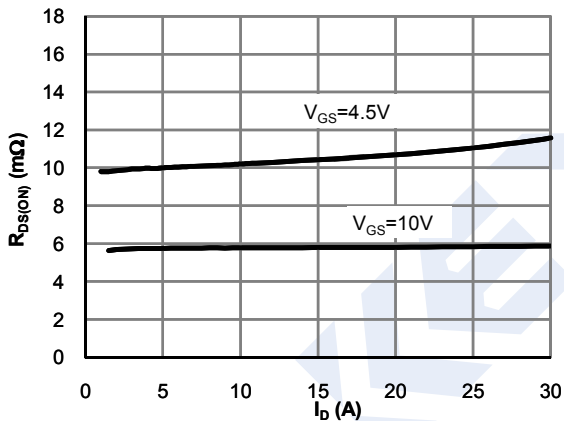


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

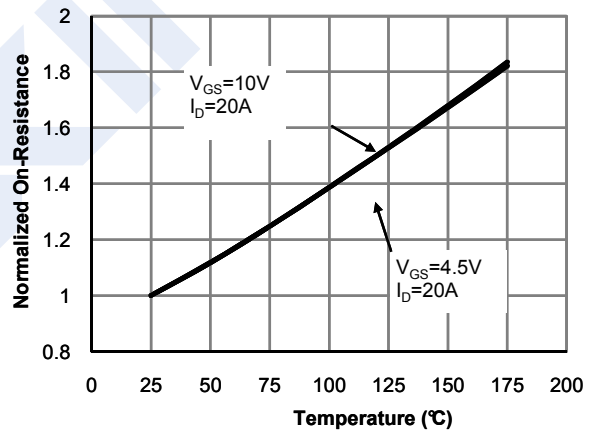


Figure 4: On-Resistance vs. Junction Temperature

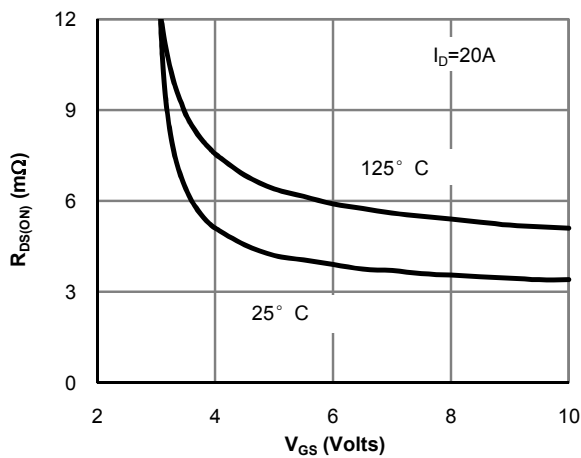


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

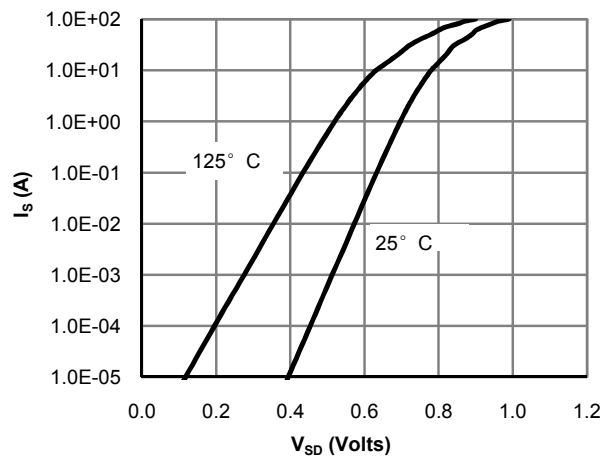


Figure 6: Body-Diode Characteristics (Note E)

## N-Channel MOSFET AO4312 (K04312)

■ Typical Characteristics

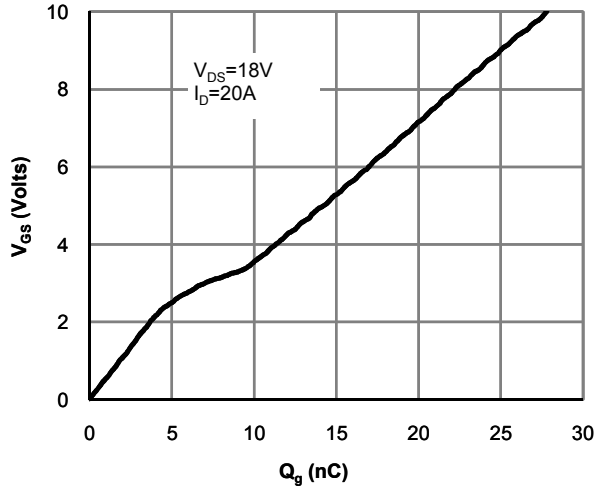


Figure 7: Gate-Charge Characteristics

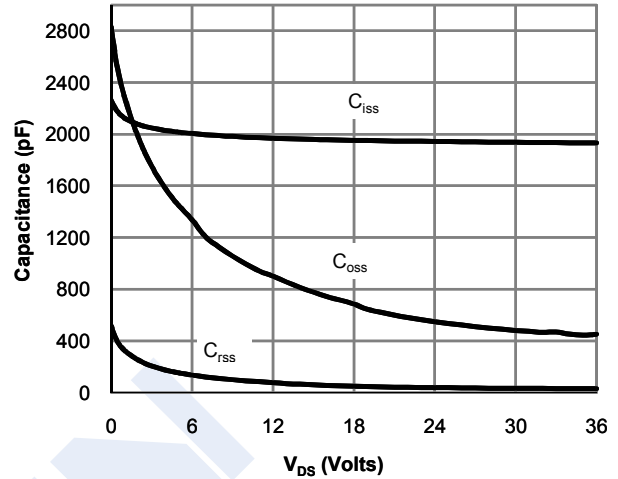


Figure 8: Capacitance Characteristics

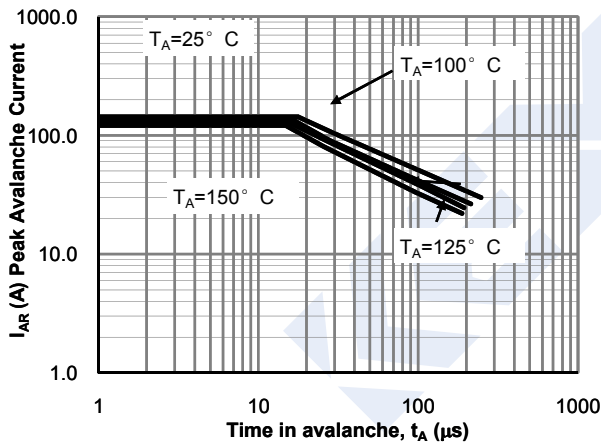


Figure 12: Single Pulse Avalanche capability (Note C)

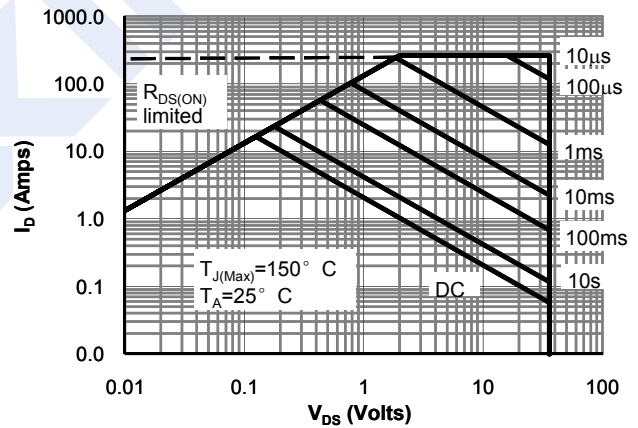


Figure 10: Maximum Forward Biased Safe Operating Area (Note F)

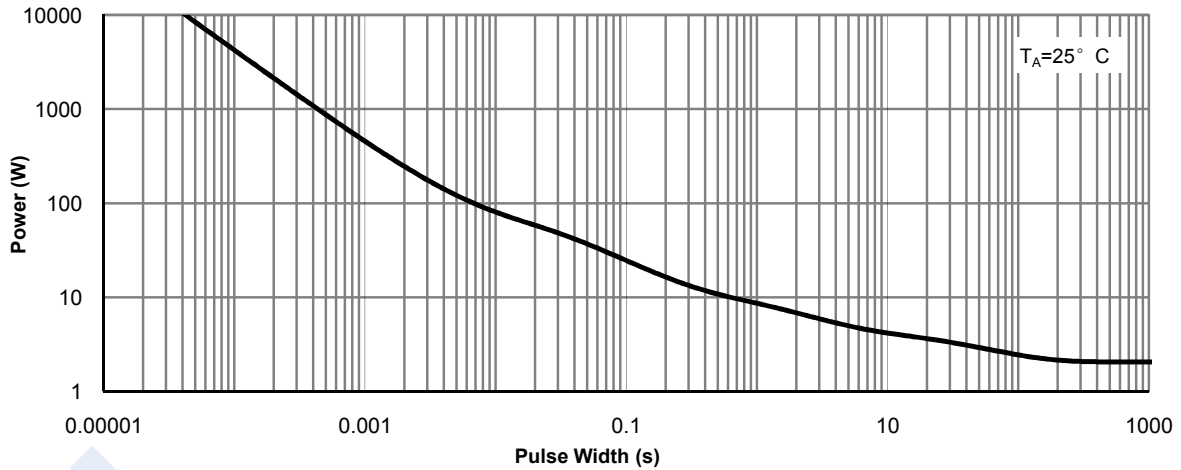


Figure 11: Single Pulse Power Rating Junction-to-Ambient (Note F)

## N-Channel MOSFET AO4312 (KO4312)

■ Typical Characteristics

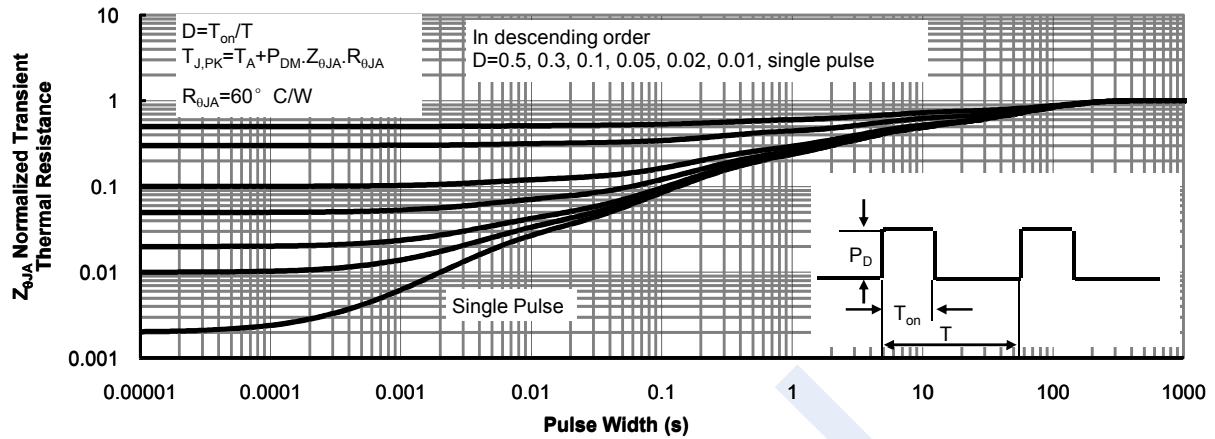


Figure 12: Normalized Maximum Transient Thermal Impedance (Note F)