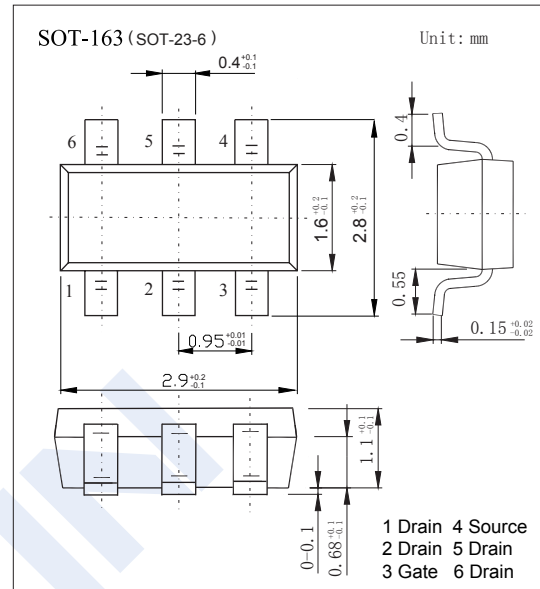
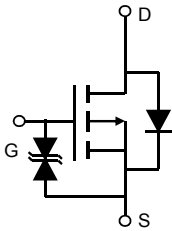


## P-Channel MOSFET

### AO6415-HF (KO6415-HF)

#### ■ Features

- $V_{DS} = -20V$
- $I_D = -3.3A$  ( $V_{GS} = -10V$ )
- $R_{DS(ON)} < 82m\Omega$  ( $V_{GS} = -10V$ )
- $R_{DS(ON)} < 100m\Omega$  ( $V_{GS} = -4.5V$ )
- $R_{DS(ON)} < 140m\Omega$  ( $V_{GS} = -2.5V$ )
- ESD Rating: 2000V HBM
- Pb-Free Package May be Available. The G-Suffix Denotes a Pb-Free Lead Finish



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	
Continuous Drain Current	$I_D$	$T_A = 25^\circ C$	-3.3
		$T_A = 70^\circ C$	-2.7
Pulsed Drain Current	$I_{DM}$	-17	A
Power Dissipation	$P_D$	$T_A = 25^\circ C$	1.25
		$T_A = 70^\circ C$	0.8
Thermal Resistance.Junction- to-Ambient	$R_{thJA}$	$t \leq 10s$	100
		Steady-State	140
Thermal Resistance.Junction- to-Lead	$R_{thJL}$	70	$^\circ C/W$
Junction Temperature	$T_J$	150	$^\circ C$
Junction Storage Temperature Range	$T_{stg}$	-55 to 150	

## P-Channel MOSFET AO6415-HF (KO6415-HF)

### ■ 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	-20			V
Gate-Source breakdown voltage	BV <sub>GSO</sub>	V <sub>DS</sub> =0 V, I <sub>G</sub> =±250μA	±12			
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V			-1	μA
		V <sub>DS</sub> =-20V, 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			±10	μA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250 μA	-0.5		-1.2	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-3.3A			82	mΩ
		V <sub>GS</sub> =-10V, I <sub>D</sub> =-3.3A T <sub>J</sub> =125°C			115	
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2A			100	
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-1A			140	
On state drain current	I <sub>D(ON)</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-5V	-17			A
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-3.3A		8.6		S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-10V, f=1MHz	250		400	pF
Output Capacitance	C <sub>oss</sub>		40		85	
Reverse Transfer Capacitance	C <sub>rss</sub>		22		52	
Gate resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz			17	Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, I <sub>D</sub> =-2A		3.2	4.5	nC
Gate Source Charge	Q <sub>gs</sub>		0.6			
Gate Drain Charge	Q <sub>gd</sub>		0.9			
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, R <sub>L</sub> =5Ω, R <sub>GEN</sub> =3Ω		11		ns
Turn-On Rise Time	t <sub>r</sub>		5.5			
Turn-Off DelayTime	t <sub>d(off)</sub>		22			
Turn-Off Fall Time	t <sub>f</sub>		8			
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =-2A, di/dt=100A/μs		6.1		nC
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>		1.4			
Maximum Body-Diode Continuous Current	I <sub>S</sub>				-1.5	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1A, V <sub>GS</sub> =0V			-1	V

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

### ■ Marking

Marking	DF** <sub>F</sub>
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## P-Channel MOSFET AO6415-HF (KO6415-HF)

■ Typical Characteristics

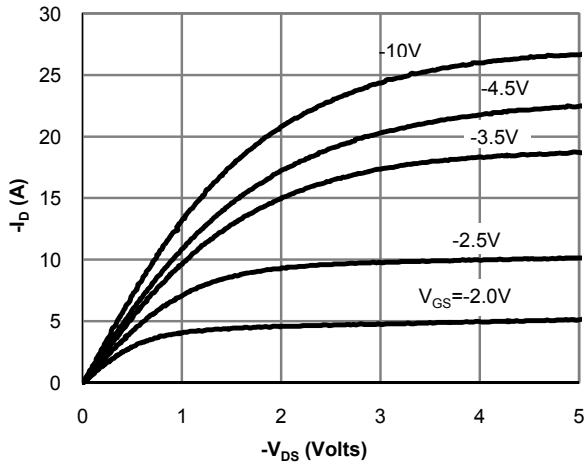


Fig 1: On-Region Characteristics (Note E)

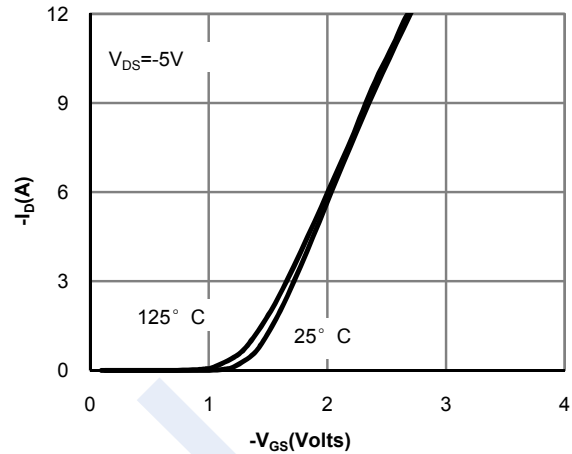


Figure 2: Transfer Characteristics (Note E)

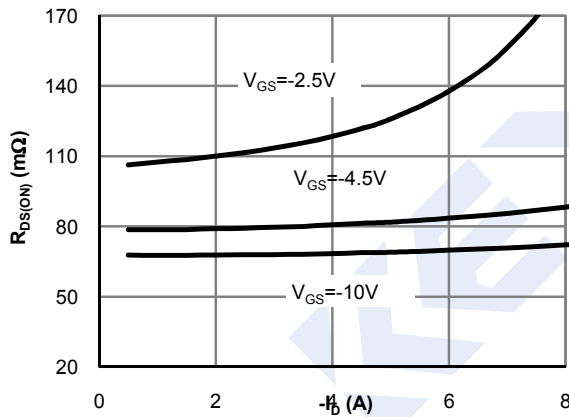


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

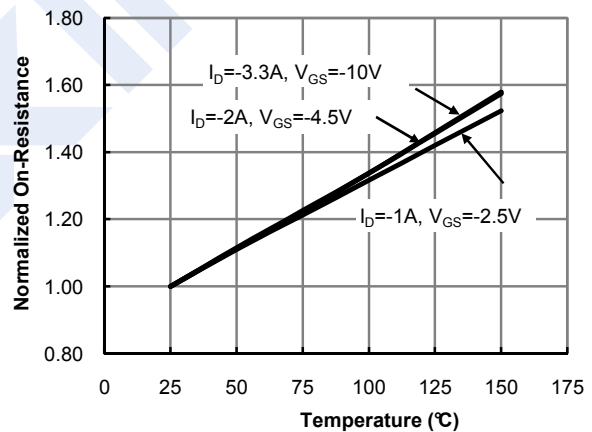


Figure 4: On-Resistance vs. Junction Temperature (Note E)

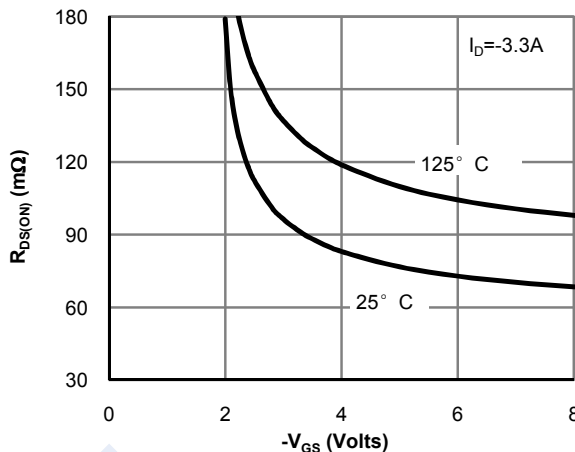


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

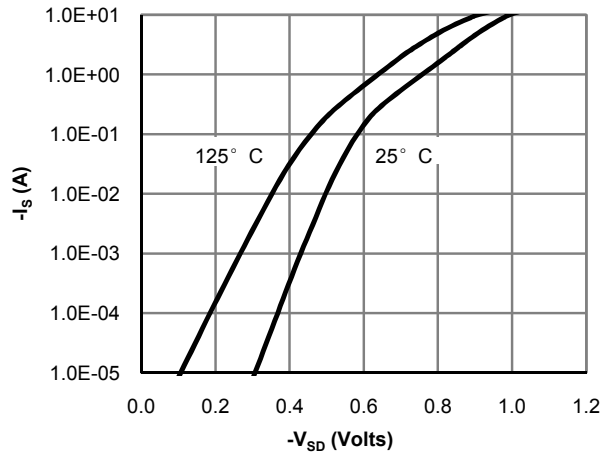


Figure 6: Body-Diode Characteristics (Note E)

## P-Channel MOSFET AO6415-HF (K06415-HF)

■ Typical Characteristics

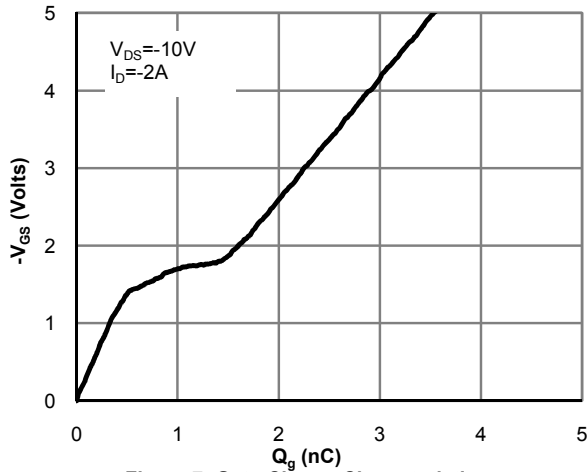


Figure 7: Gate-Charge Characteristics

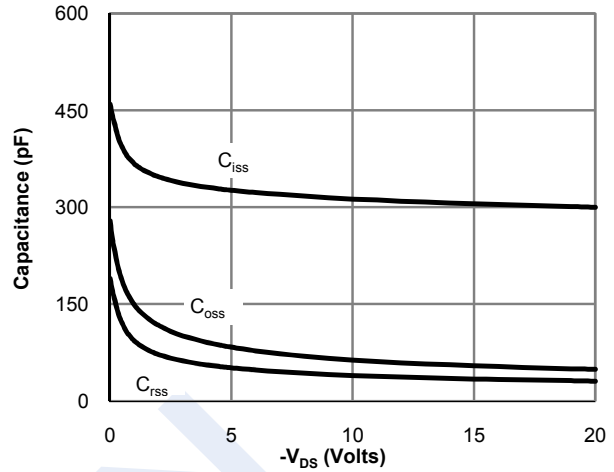


Figure 8: Capacitance Characteristics

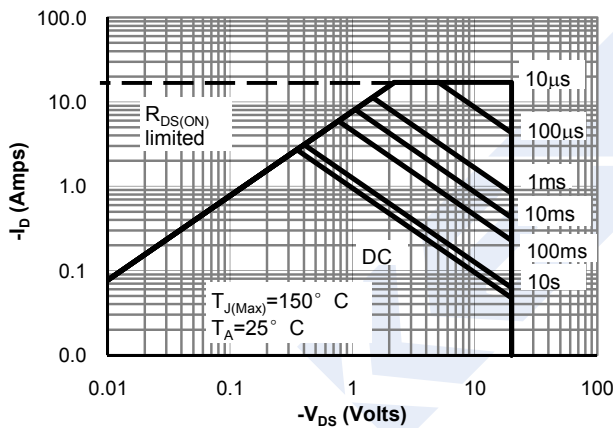


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

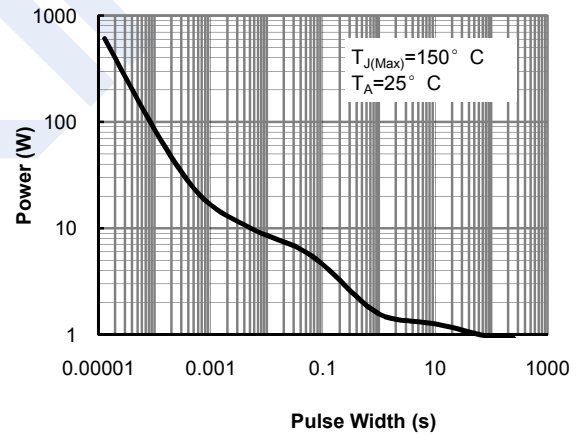


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

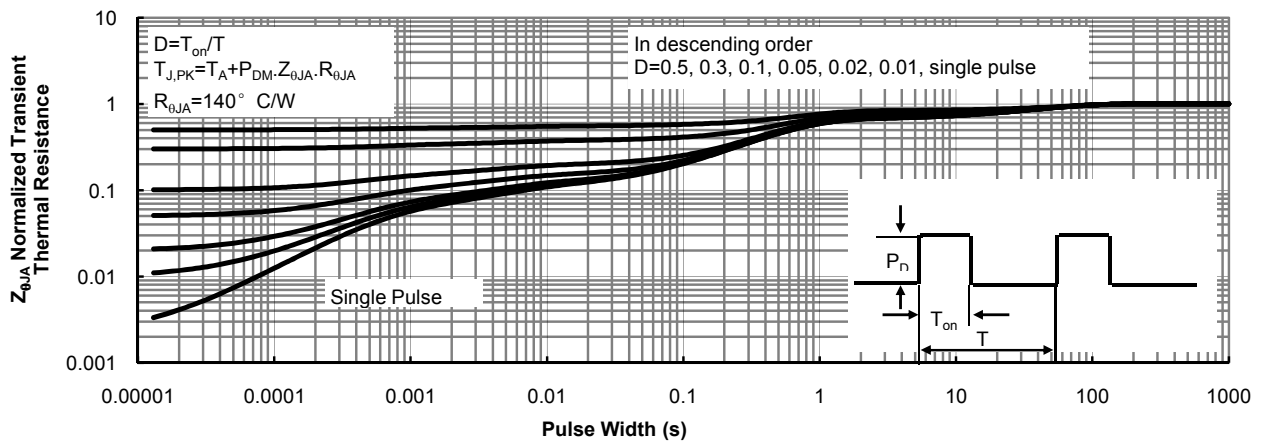


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)