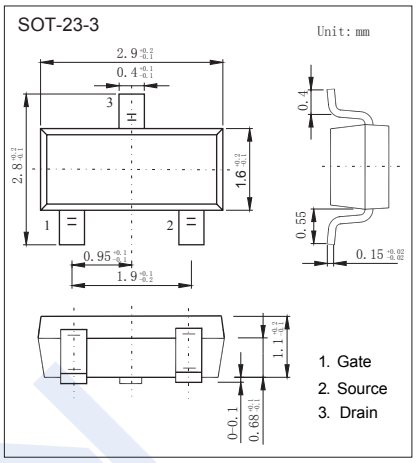
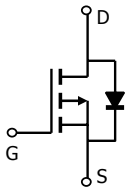
P-Channel MOSFET

AO3415 (KO3415)



■ Features

- $V_{DS\ (V)}$ =-20V
- I_D =-5 A (V_{GS} =-4.5V)
- $R_{DS(ON)}$ < 43mΩ (V_{GS} =-4.5V)
- $R_{DS(ON)}$ < 55mΩ (V_{GS} =-2.5V)
- $R_{DS(ON)}$ < 75mΩ (V_{GS} =-1.8V)
- $R_{DS(ON)}$ < 100mΩ (V_{GS} =-1.5V)



■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±8	
Continuous Drain Current	T_A=25°C	I_D	-5	A
	T_A=70°C		-4	
Pulsed Drain Current		I_{DM}	-30	
Power Dissipation	T_A=25°C	P_D	1.5	W
	T_A=70°C		1	
Thermal Resistance.Junction- to-Ambient	t ≤ 10s	R_{thJA}	80	℃/W
	Steady-State		100	
Thermal Resistance.Junction- to-Lead		R_{thJL}	52	
Junction Temperature		T_J	150	℃
Junction Storage Temperature Range		T_{stg}	-55 to 150	

P-Channel MOSFET

AO3415 (KO3415)

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=-250μA, V_{GS}=0V	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V			-1	uA
		V_{DS}=-20V, V_{GS}=0V, T_J=55℃			-5	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±8V			±0.1	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=-250μA	-0.3		-0.9	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-4A			43	mΩ
		V_{GS}=-4.5V, I_D=-4A T_J=125℃			59	
		V_{GS}=-2.5V, I_D=-4A			55	
		V_{GS}=-1.8V, I_D=-2A			75	
		V_{GS}=-1.5V, I_D=-1A			100	
On state drain current	$I_{D(ON)}$	V_{GS}=-4.5V, V_{DS}=-5V	-30			A
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-4 A		20		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-10V, f=1MHz	600		905	pF
Output Capacitance	C_{oss}		80		150	
Reverse Transfer Capacitance	C_{rss}		48		115	
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz	6		20	Ω
Total Gate Charge	Q_g	V_{GS}=-4.5V, V_{DS}=-10V, I_D=-4A	7.4		11	nC
Gate Source Charge	Q_{gs}		0.8		1.2	
Gate Drain Charge	Q_{gd}		1.3		3.1	
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=-4.5V, V_{DS}=-10V, R_L=2.5Ω, R_{GEN}=3Ω		13		ns
Turn-On Rise Time	t_r			9		
Turn-Off DelayTime	$t_{d(off)}$			19		
Turn-Off Fall Time	t_f			29		
Body Diode Reverse Recovery Time	t_{rr}	I_F=-4A, dI/dt=100A/μs	20		32	
Body Diode Reverse Recovery Charge	Q_{rr}		40		62	nC
Maximum Body-Diode Continuous Current	I_S				-2	A
Diode Forward Voltage	V_{SD}	I_S=-1A,V_{GS}=0V			-1	V

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

■ Marking

Marking	AF9T

P-Channel MOSFET

AO3415 (KO3415)

■ Typical Characterisitics

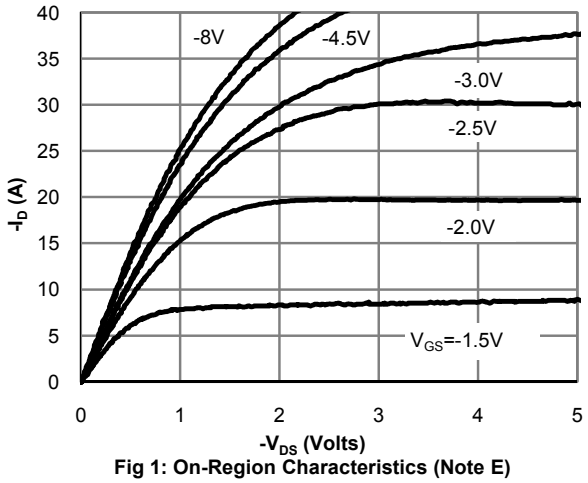


Fig 1: On-Region Characteristics (Note E)

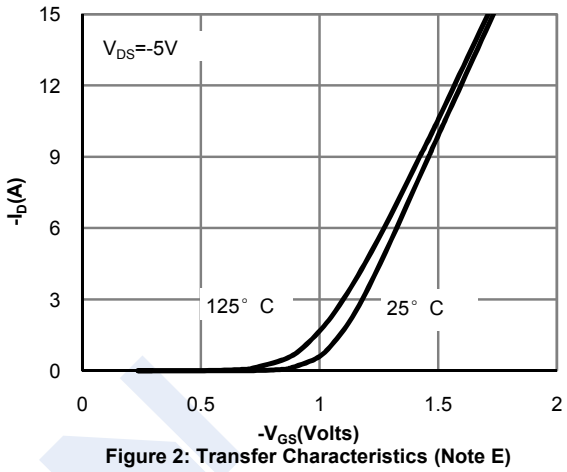


Figure 2: Transfer Characteristics (Note E)

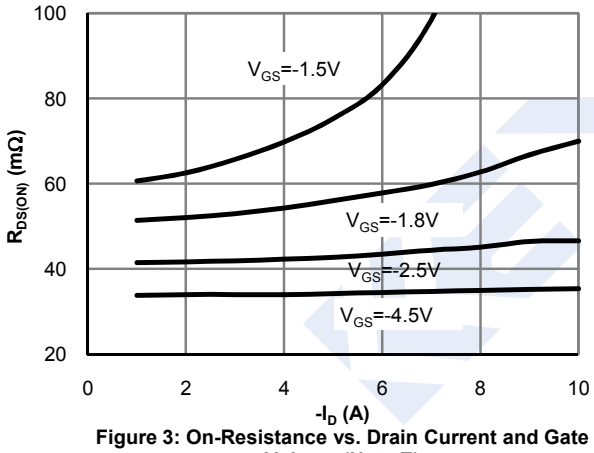


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

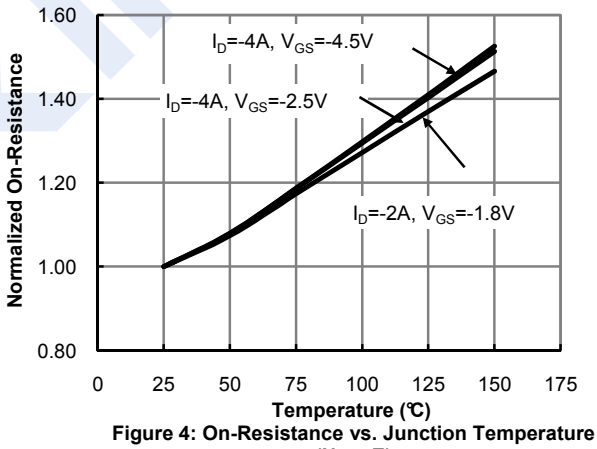


Figure 4: On-Resistance vs. Junction Temperature (Note E)

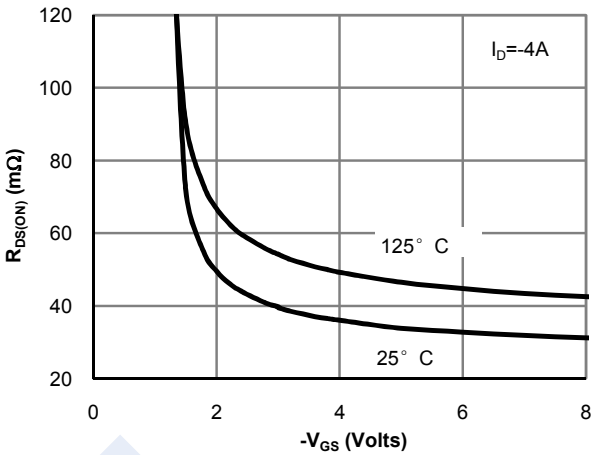


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

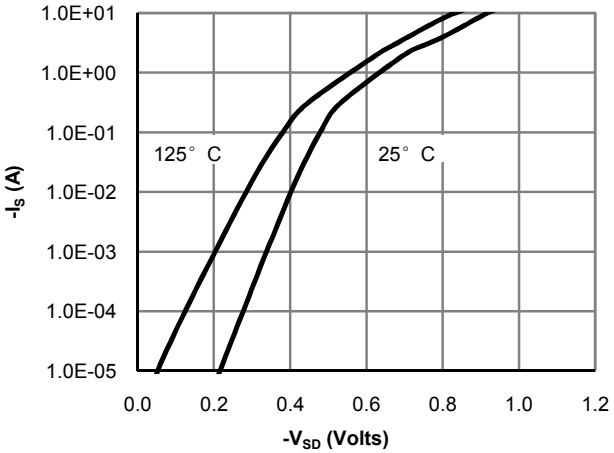


Figure 6: Body-Diode Characteristics (Note E)

P-Channel MOSFET

AO3415 (KO3415)

■ Typical Characterisitics

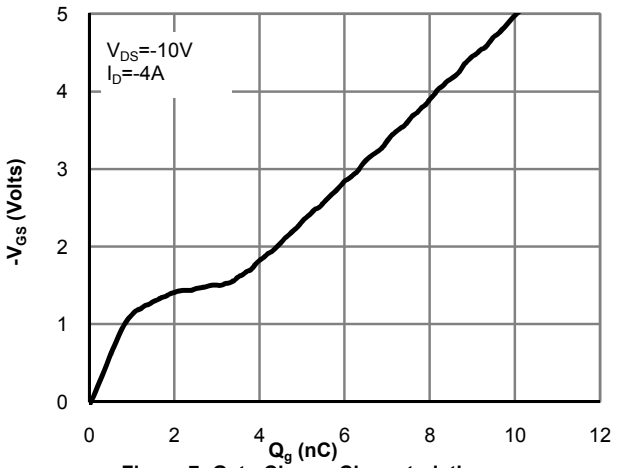


Figure 7: Gate-Charge Characteristics

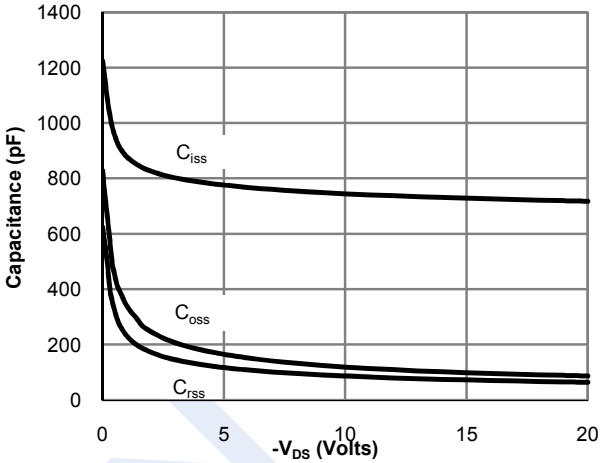


Figure 8: Capacitance Characteristics

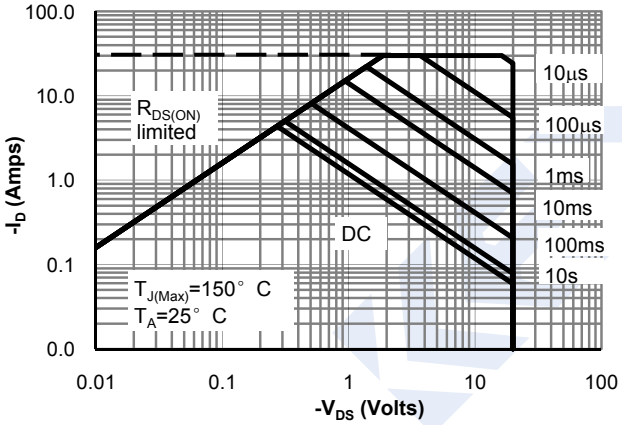


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

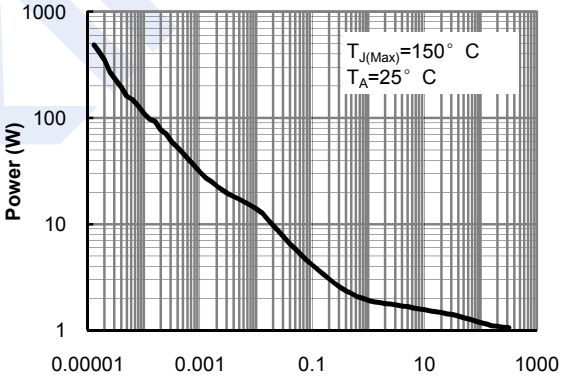


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

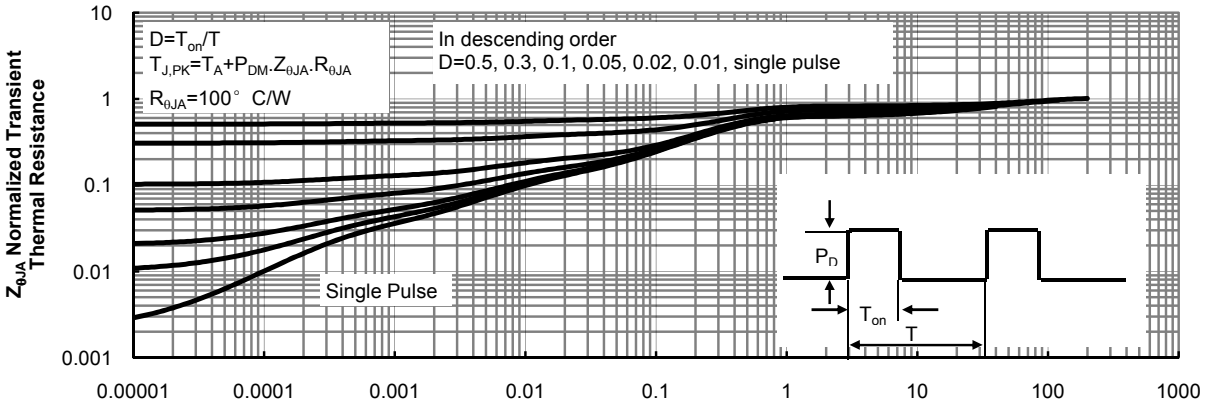


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

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