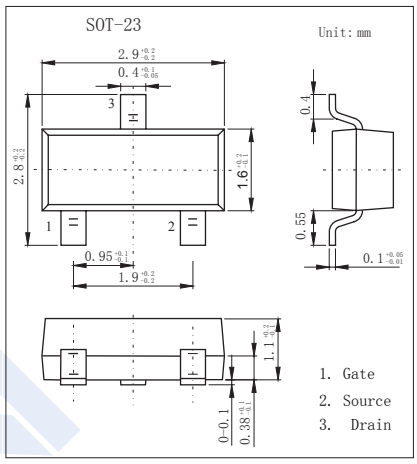
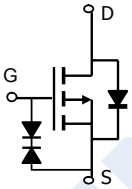
P-Channel Enhancement Mode Field Effect Transistor

AO3423 (KO3423)



Features

- V_{DS} (V) = -20V
- I_D = -2.0 A (V_{GS} = -10V)
- $R_{DS(ON)}$ < 92mΩ (V_{GS} = -10V)
- $R_{DS(ON)}$ < 118mΩ (V_{GS} = -4.5V)
- $R_{DS(ON)}$ < 166mΩ (V_{GS} = -2.5V)
- ESD Rating: 2000V HBM



Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current (Note 1) T_A=25℃ [a]	I_D	-2	A
T_A=70℃ [a]		-2	
Pulsed Drain Current (Note 2)	I_{DM}	-8	
Power Dissipation (Note 1) T_A=25℃	P_D	1.4	W
T_A=70℃		0.9	
Maximum Junction-to-Ambient (Note 1)	$R_{\theta JA}$	125	℃/W
Maximum Junction-to-Lead (Note 3)	$R_{\theta JL}$	60	℃/W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	℃

Notes : 1. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any given application depends on the user's specific board design. The current rating is based on the t≤10s thermal resistance rating.

a. The maximum current rating is limited by bond-wires.

2. Repetitive rating, pulse width limited by junction temperature.

3. The $R_{\theta JA}$ is the sum of the thermal impedence from junction to lead $R_{\theta JL}$ and lead to ambient.

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditions	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}=-16V, V_{GS}=0V			-0.5	μA
		V_{DS}=-16V, V_{GS}=0V ,TJ=55℃			-2.5	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±12V			±10	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=-250μA	-0.7		-1.4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-2A		76	92	mΩ
		V_{GS}=-4.5V, I_D=-2A		94	118	mΩ
		V_{GS}=-2.5V, I_D=-1A		128	166	mΩ
On state drain current	$I_{D(ON)}$	V_{GS}=-4.5V, V_{DS}=-5V	-8			A
Forward Transconductance	g_{fs}	V_{DS}=-5V, I_D=-2A		6.8		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-15V, f=1MHz		512	620	pF
Output Capacitance	C_{oss}			77		pF
Reverse Transfer Capacitance	C_{rss}			62		pF
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz			13	Ω
Total Gate Charge	Q_g	V_{GS}=-4.5V, V_{DS}=-10V, I_D=-2A		5.5	6.6	nC
Gate Source Charge	Q_{gs}			0.8		nC
Gate Drain Charge	Q_{gd}			1.9		nC
Turn-On DelayTime	$t_{D(on)}$	V_{GS}=-10V, V_{DS}=-10V, R_L=5Ω,R_{GEN}=3Ω		5		ns
Turn-On Rise Time	t_r			6.7		ns
Turn-Off DelayTime	$t_{D(off)}$			28		ns
Turn-Off Fall Time	t_f			13.5		ns
Body Diode Reverse Recovery Time	t_{rr}	I_F=-2A, dI/dt=100A/μs			12	ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=-2A, dI/dt=100A/μs		2.7		nC
Maximum Body-Diode Continuous Current	I_S				-1.8	A
Diode Forward Voltage	V_{SD}	I_S=-1A,V_{GS}=0V		-0.78	-1	V

■ Marking

Marking	AS*

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■ Typical Characteristics

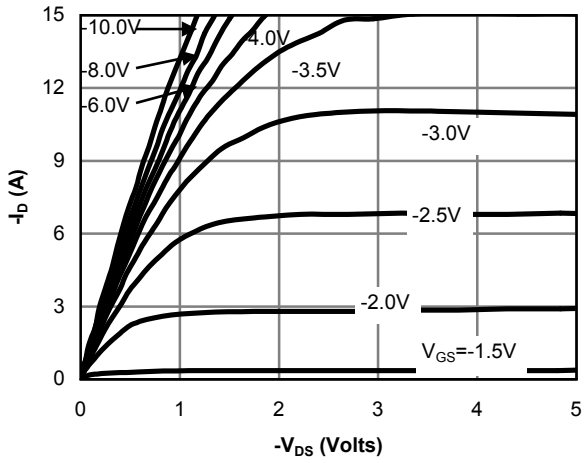

Fig 1: On-Region Characteristics

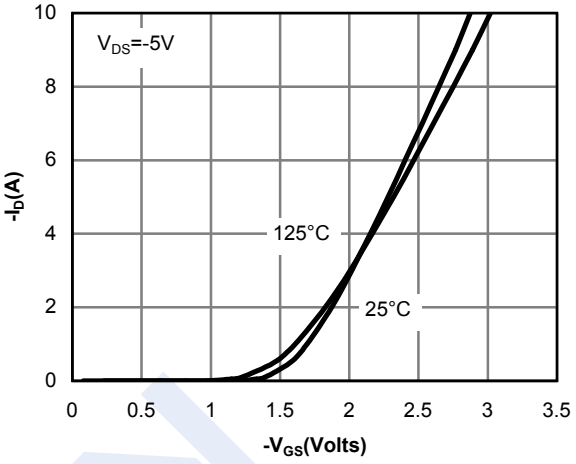

Figure 2: Transfer Characteristics

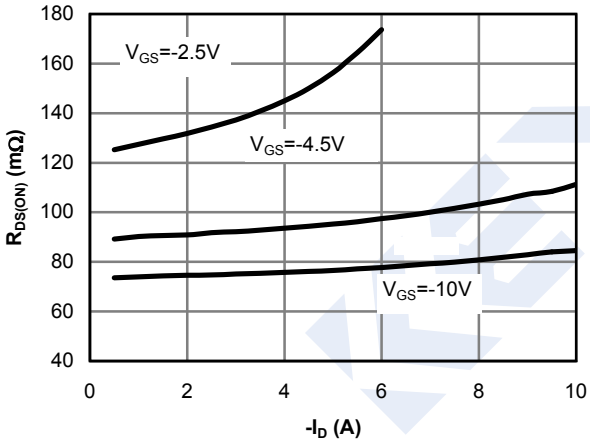

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

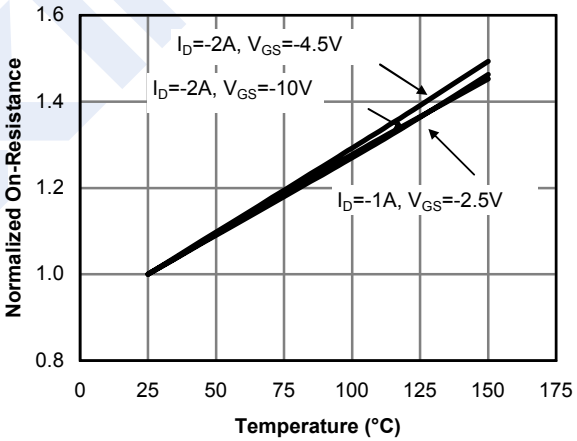

Figure 4: On-Resistance vs. Junction Temperature

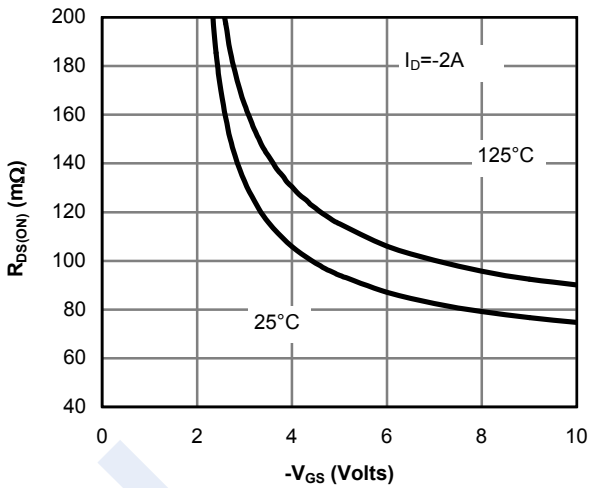

Figure 5: On-Resistance vs. Gate-Source Voltage

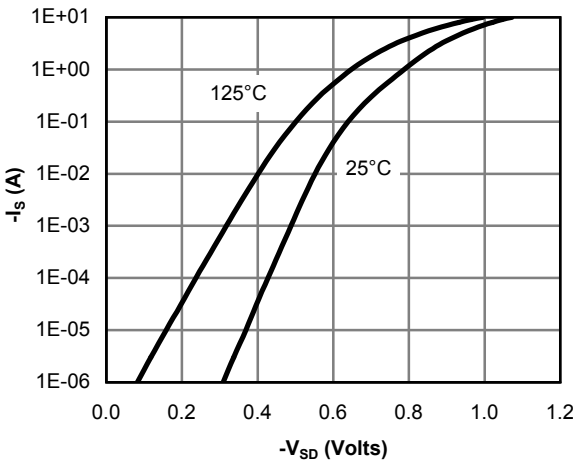

Figure 6: Body-Diode Characteristics

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■ Typical Characterisitics

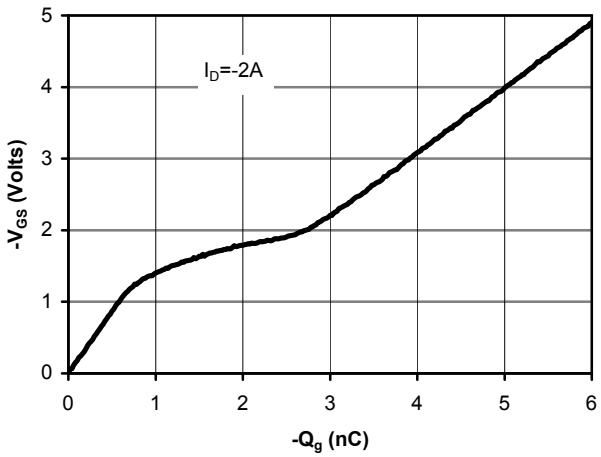

Figure 7: Gate-Charge Characteristics

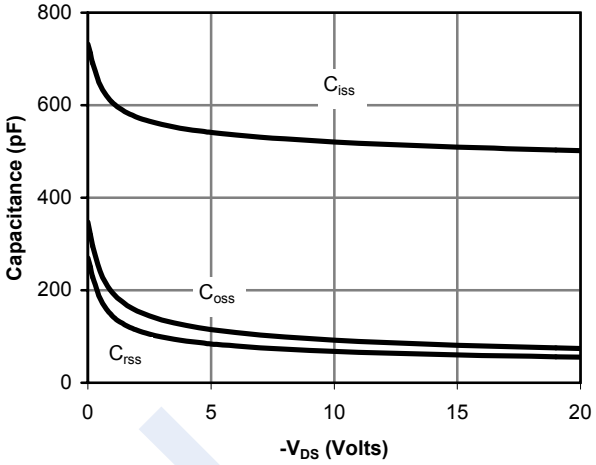

Figure 8: Capacitance Characteristics

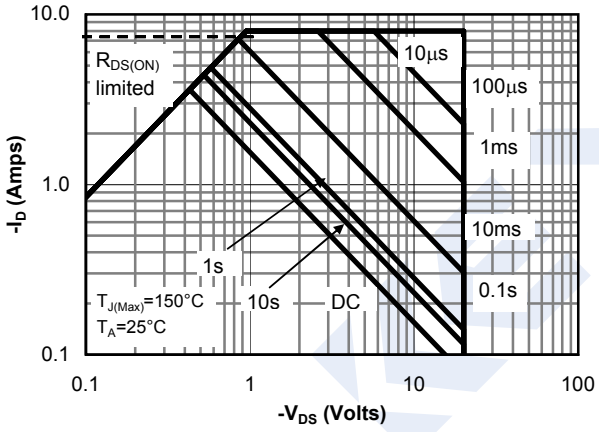

Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

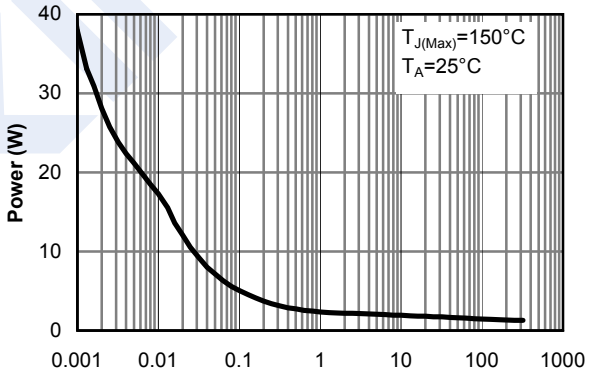

Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

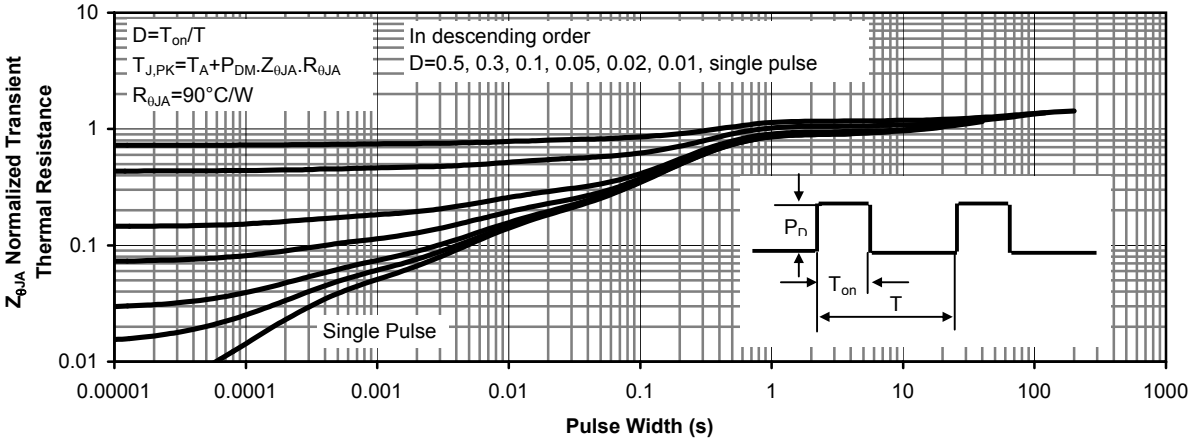

Figure 11: Normalized Maximum Transient Thermal Impedance