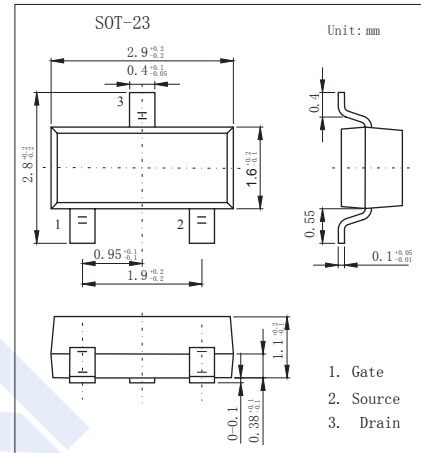
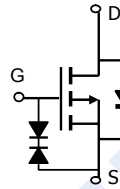


## P-Channel Enhancement Mode Field Effect Transistor AO3423 (KO3423)

### ■ Features

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



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

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

Notes : 1. The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^\circ\text{C}$ . The value in any given application depends on the user's specific board design. The current rating is based on the  $t \leq 10\text{s}$  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 impedance from junction to lead  $R_{\theta JL}$  and lead to ambient.

## AO3423 (K03423)

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	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
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V			-0.5	μA
		V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V, T <sub>J</sub> =55°C			-2.5	
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	-0.7		-1.4	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-2A		76	92	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2A		94	118	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-1A		128	166	mΩ
On state drain current	I <sub>D(on)</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-5V	-8			A
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-2A		6.8		S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-15V, f=1MHz		512	620	pF
Output Capacitance	C <sub>oss</sub>			77		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			62		pF
Gate resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz			13	Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, I <sub>D</sub> =-2A		5.5	6.6	nC
Gate Source Charge	Q <sub>gs</sub>			0.8		nC
Gate Drain Charge	Q <sub>gd</sub>			1.9		nC
Turn-On DelayTime	t <sub>D(on)</sub>	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-10V, R <sub>L</sub> =5 Ω, R <sub>GEN</sub> =3 Ω		5		ns
Turn-On Rise Time	t <sub>r</sub>			6.7		ns
Turn-Off DelayTime	t <sub>D(off)</sub>			28		ns
Turn-Off Fall Time	t <sub>f</sub>			13.5		ns
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =-2A, dI/dt=100A/μs			12	ns
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> =-2A, dI/dt=100A/μs		2.7		nC
Maximum Body-Diode Continuous Current	I <sub>S</sub>				-1.8	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1A, V <sub>GS</sub> =0V		-0.78	-1	V

## ■ Marking

Marking	AS*
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AO3423 (KO3423)

Typical Characteristics

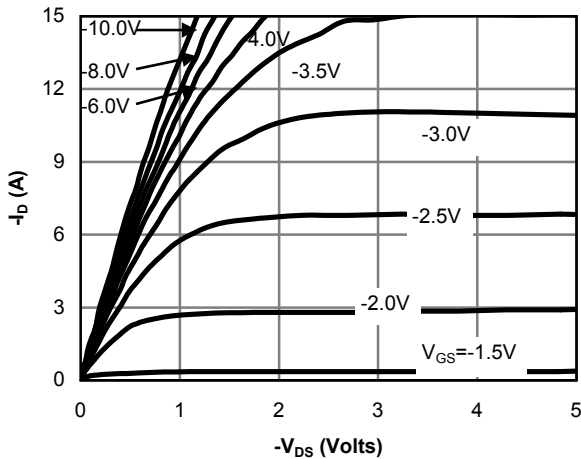


Fig 1: On-Region Characteristics

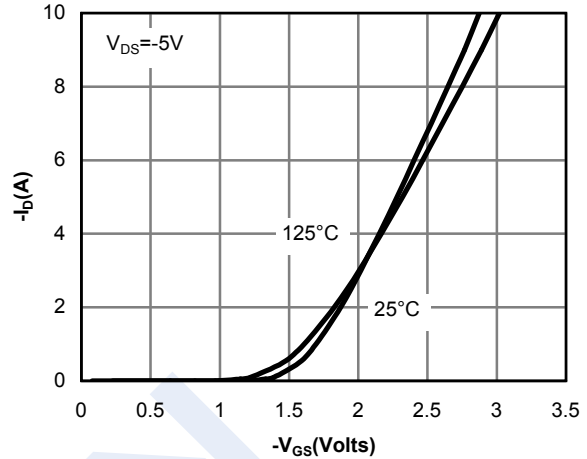


Figure 2: Transfer Characteristics

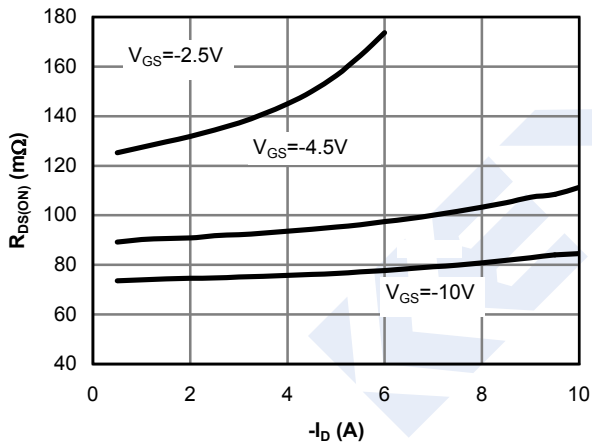


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

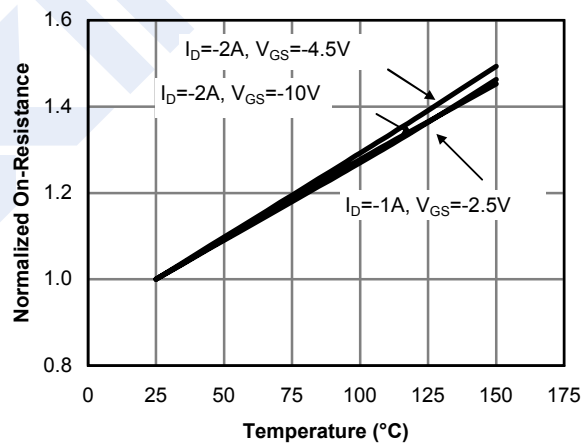


Figure 4: On-Resistance vs. Junction Temperature

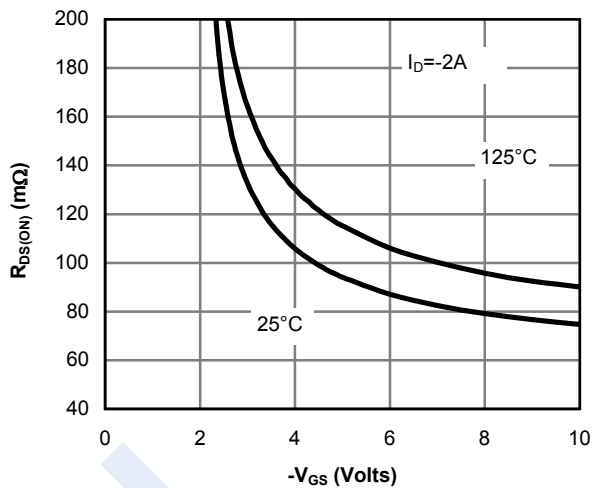


Figure 5: On-Resistance vs. Gate-Source Voltage

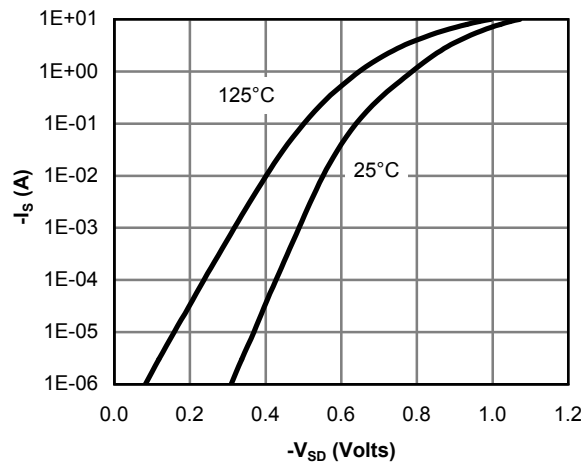


Figure 6: Body-Diode Characteristics

AO3423 (KO3423)

■ Typical Characteristics

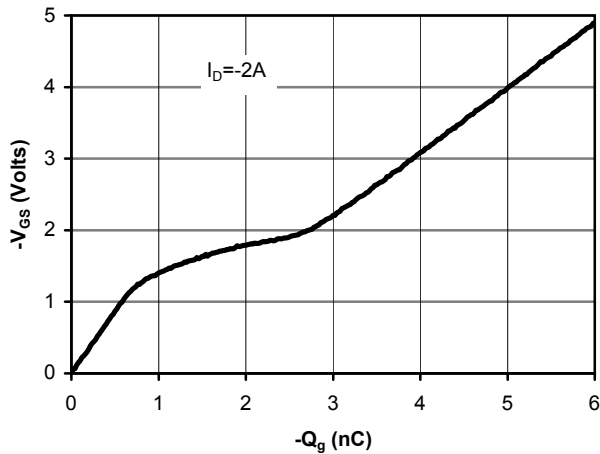


Figure 7: Gate-Charge Characteristics

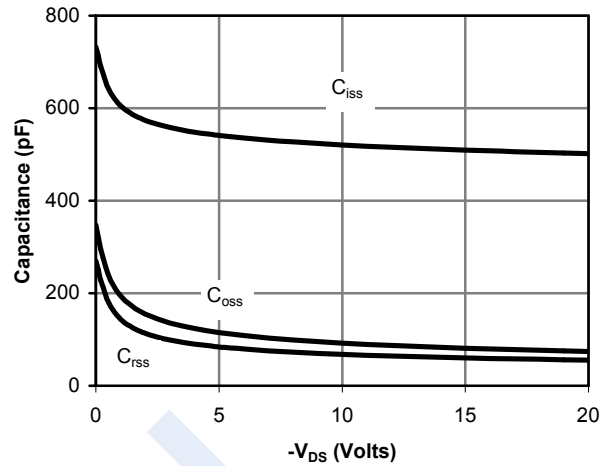


Figure 8: Capacitance Characteristics

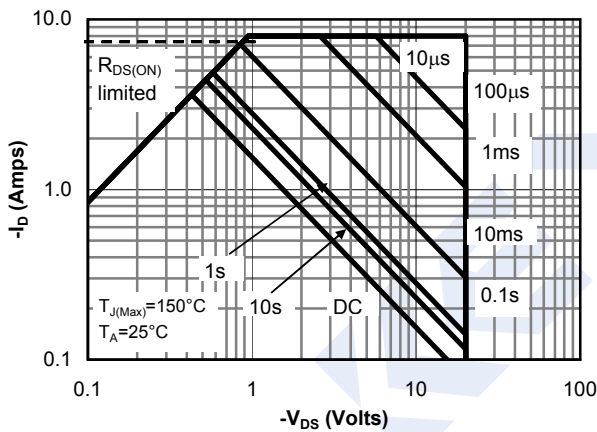


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

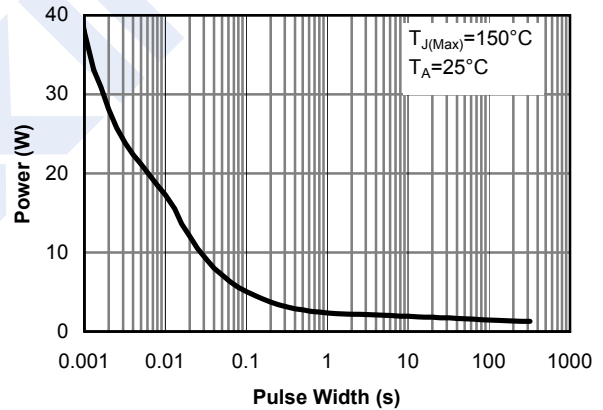


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

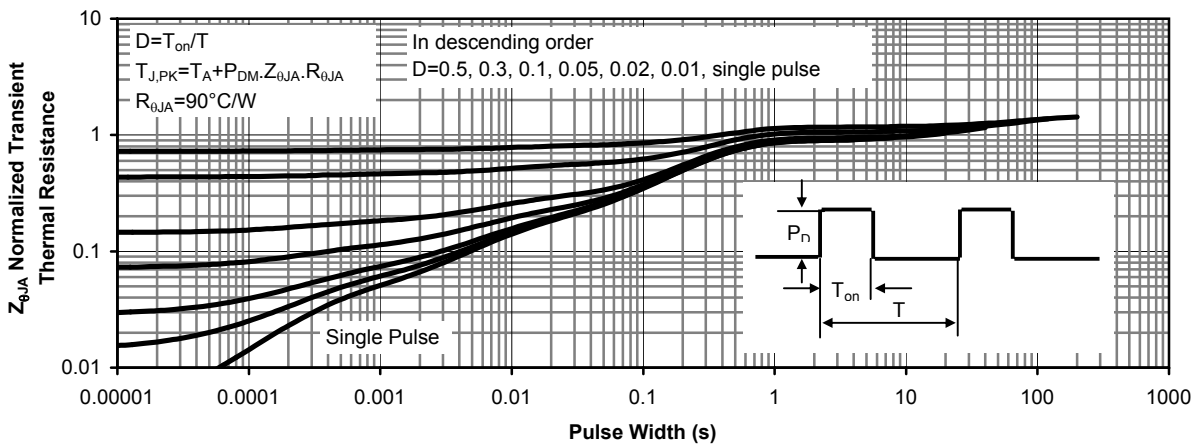


Figure 11: Normalized Maximum Transient Thermal Impedance