

N-Channel Enhancement Mode Field Effect Transistor KO3416

Features

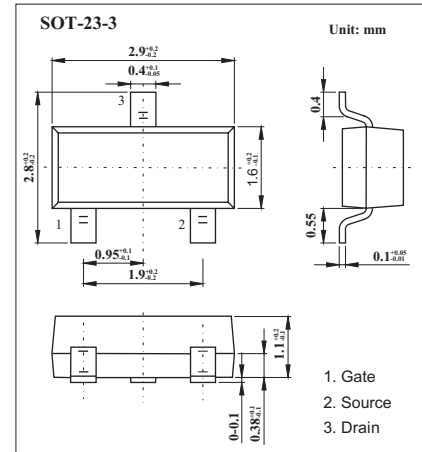
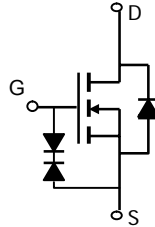
$V_{DS} (V) = 20V$

$I_D = 6.5 A$

$R_{DS(ON)} < 22m$ ($V_{GS} = 4.5V$)

$R_{DS(ON)} < 26m$ ($V_{GS} = 2.5V$)

$R_{DS(ON)} < 34m$ ($V_{GS} = 1.8V$)



Absolute Maximum Ratings $T_a = 25$

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current *1 $T_A=25$ $T_A=70$	I_D	6.5	A
		5.2	
Pulsed Drain Current *2	I_{DM}	30	
Power Dissipation *1 $T_A=25$ $T_A=70$	P_D	1.4	W
		0.9	
Thermal Resistance.Junction-to-Ambient *1 $t = 10s$	R_{JA}	90	/W
Maximum Junction-to-Lead *3	R_{JL}	60	/W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	

*1: The value of R_{JA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^{\circ}C$. The value in any a given application depends on the user's specific board design. The current rating is based on the $t = 10s$ thermal resistance rating.

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

*3. The R_{JA} is the sum of the thermal impedance from junction to lead R_{JL} and lead to ambient.

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Electrical Characteristics Ta = 25

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250 μA, V _{GS} =0V	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =16V, V _{GS} =0V			1	μA
		V _{DS} =16V, V _{GS} =0V, T _J =55			5	
Gate-Body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±8V			±10	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =250 μA	0.4	0.6	1	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =6.5A		18	22	m
		V _{GS} =4.5V, I _D =6.5A T _J =125		25	30	
		V _{GS} =2.5V, I _D =5.5A		21	26	m
		V _{GS} =1.8V, I _D =5A		26	34	m
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 =6.5A		29		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =10V, f=1MHz		1160		pF
Output Capacitance	C _{oss}			187		pF
Reverse Transfer Capacitance	C _{rss}			146		pF
Gate resistance	R _g		V _{GS} =0V, V _{DS} =0V, f=1MHz		1.5	
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =10V, I _D =6.5A		16		nC
Gate Source Charge	Q _{gs}			0.8		nC
Gate Drain Charge	Q _{gd}			3.8		nC
Turn-On DelayTime	t _{D(on)}		V _{GS} =5V, V _{DS} =10V, R _L =1.5 Ω, R _{GEN} =3 Ω		6.2	
Turn-On Rise Time	t _r			12.7		ns
Turn-Off DelayTime	t _{D(off)}			51.7		ns
Turn-Off Fall Time	t _f			16		ns
Body Diode Reverse Recovery Time	t _{rr}	I _F =6.5A, di/dt=100A/μs			17.7	
Body Diode Reverse Recovery Charge	Q _{rr}	I _F =6.5A, di/dt=100A/μs		6.7		nC
Maximum Body-Diode Continuous Current	I _S				2.5	A
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V		0.76	1	V

Marking

Marking	A08K
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Typical Characteristics

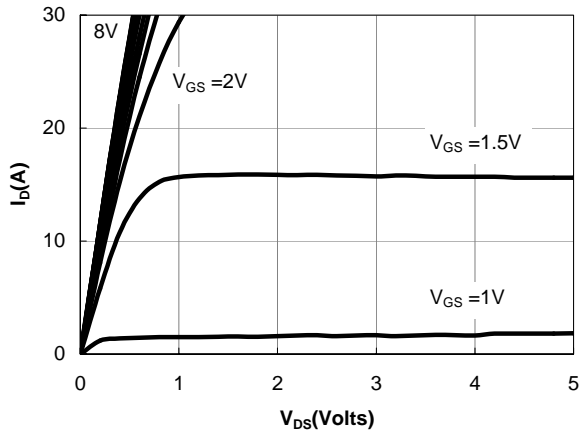


Figure 1: On-Regions Characteristics

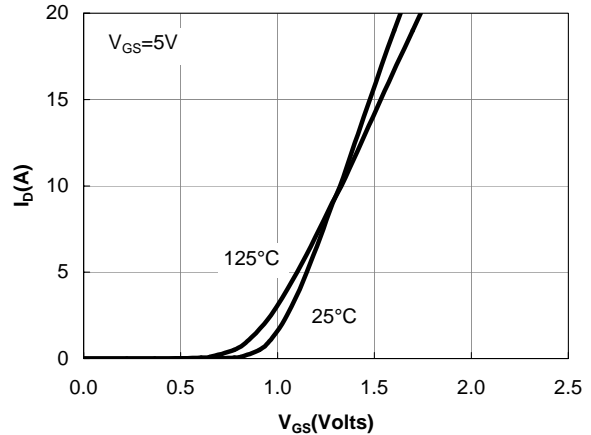


Figure 2: Transfer Characteristics

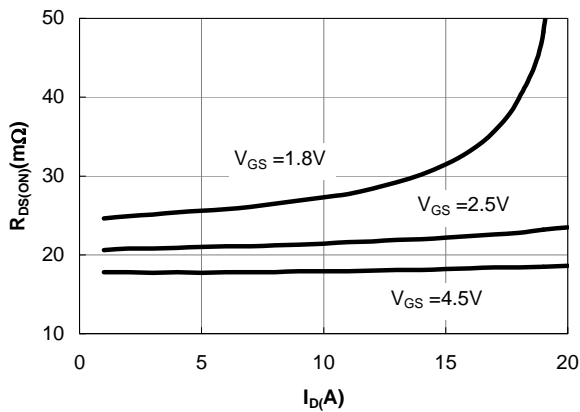


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

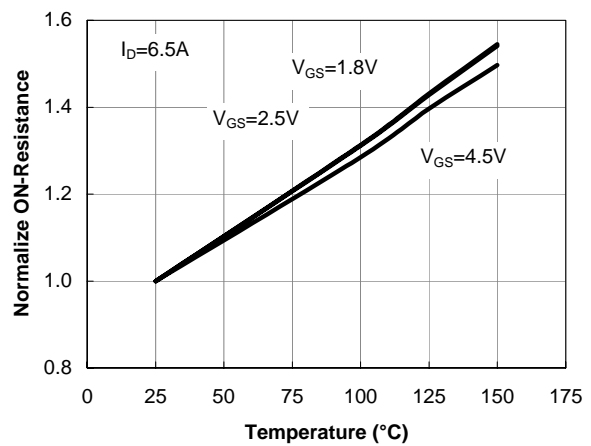


Figure 4: On-Resistance vs. Junction Temperature

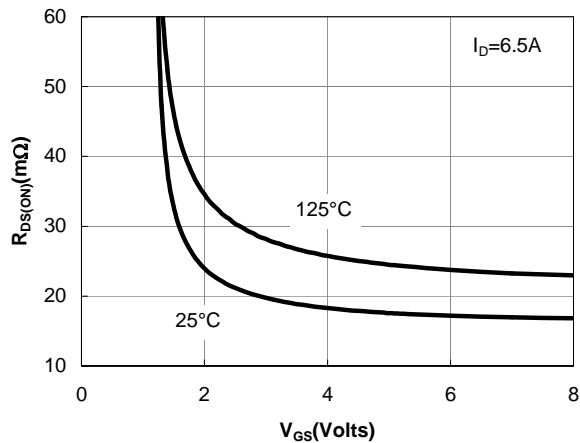


Figure 5: On-Resistance vs. Gate-Source Voltage

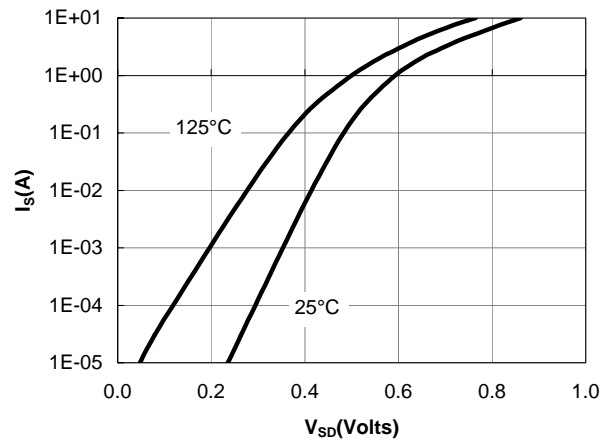


Figure 6: Body-Diode Characteristics

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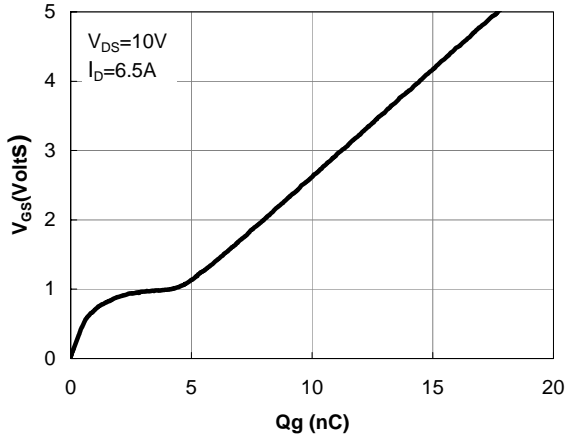


Figure 7: Gate-Charge Characteristics

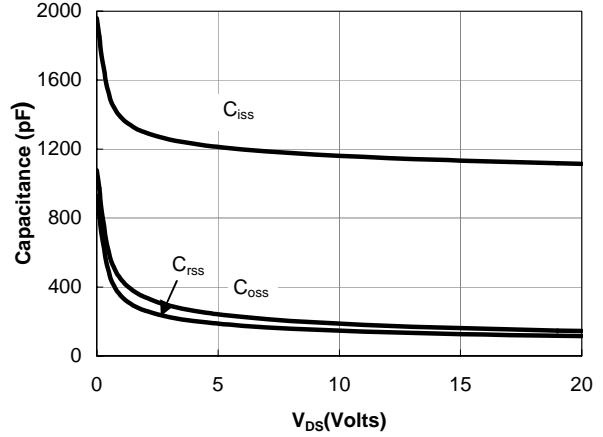


Figure 8: Capacitance Characteristics

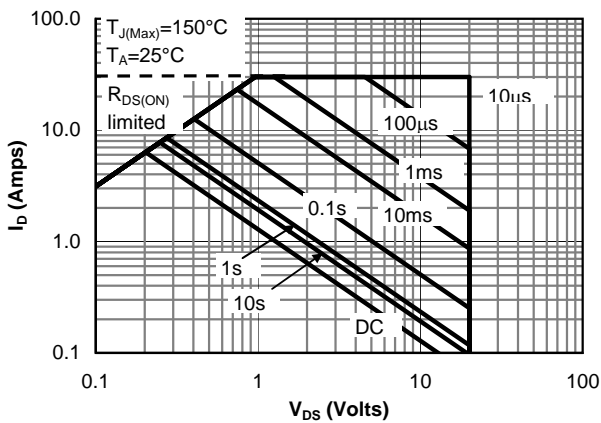


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

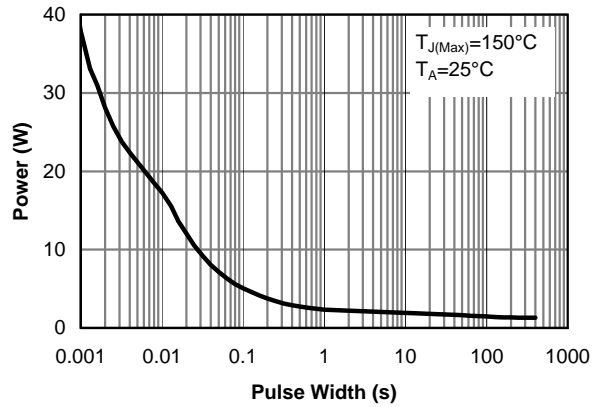


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

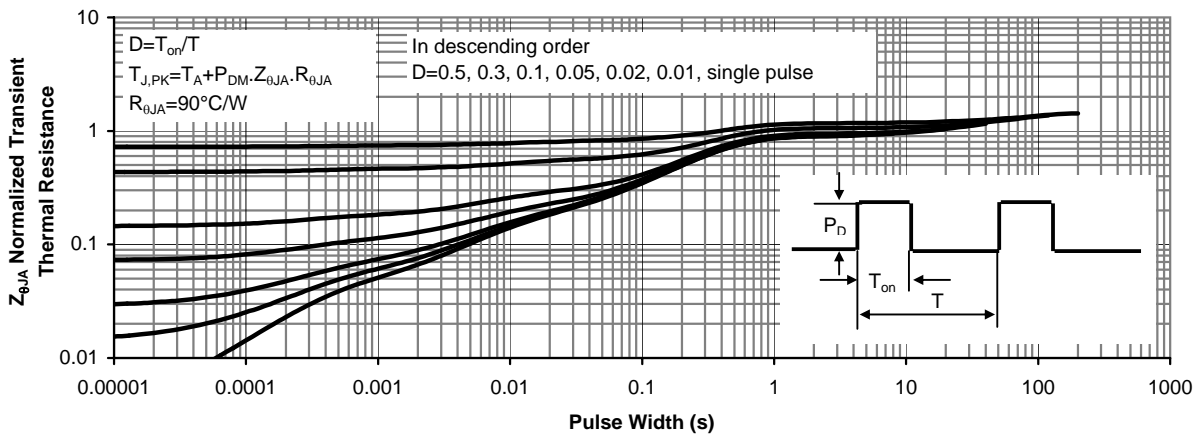


Figure 11: Normalized Maximum Transient Thermal Impedance