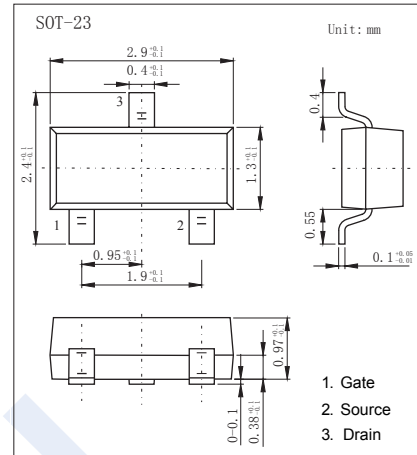
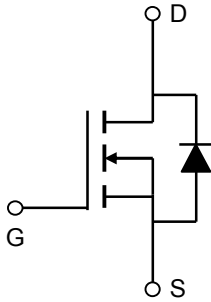


N-Channel MOSFET

AO3438 (KO3438)

■ Features

- $V_{DS} (V) = 20V$
- $I_D = 3 A (V_{GS} = 4.5V)$
- $R_{DS(ON)} < 62m\Omega (V_{GS} = 4.5V)$
- $R_{DS(ON)} < 70m\Omega (V_{GS} = 2.5V)$
- $R_{DS(ON)} < 85m\Omega (V_{GS} = 1.8V)$



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	$T_A=25^\circ C$	3
		$T_A=70^\circ C$	2.5
Pulsed Drain Current	I_{DM}	16	A
Power Dissipation	P_D	$T_A=25^\circ C$	1.4
		$T_A=70^\circ C$	0.9
Thermal Resistance.Junction- to-Ambient	R_{thJA}	$t \leq 10s$	90
		Steady-State	125
Thermal Resistance.Junction- to-Case	R_{thJC}	80	$^\circ C/W$
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55 to 150	$^\circ C$

N-Channel MOSFET

AO3438 (KO3438)

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	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} =20V, V _{GS} =0V			1	μA
		V _{DS} =20V, V _{GS} =0V, T _J =55°C			5	
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±8V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250 μA	0.5		1	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =3A			62	mΩ
		V _{GS} =4.5V, I _D =3A, T _J =125°C			85	
		V _{GS} =2.5V, I _D =2.8A			70	
		V _{GS} =1.8V, I _D =2.5A			85	
On state drain current	I _{D(ON)}	V _{GS} =4.5V, V _{DS} =5V	16			A
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =3A		11		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =10V, f=1MHz		260	320	pF
Output Capacitance	C _{oss}			48		
Reverse Transfer Capacitance	C _{rss}			27		
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz		3	4.5	Ω
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =10V, I _D =3A		2.9	3.8	nC
Gate Source Charge	Q _{gs}			0.4		
Gate Drain Charge	Q _{gd}			0.6		
Turn-On DelayTime	t _{d(on)}	V _{GS} =5V, V _{DS} =10V, R _L =3.3Ω, R _G =6Ω		2.5		ns
Turn-On Rise Time	t _r			3.2		
Turn-Off DelayTime	t _{d(off)}			21		
Turn-Off Fall Time	t _f			3		
Body Diode Reverse Recovery Time	t _{rr}	I _F = 3A, di/dt= 100A/us		14	19	ns
Body Diode Reverse Recovery Charge	Q _{rr}			3.8		
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	B8**
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N-Channel MOSFET AO3438 (KO3438)

■ Typical Characteristics

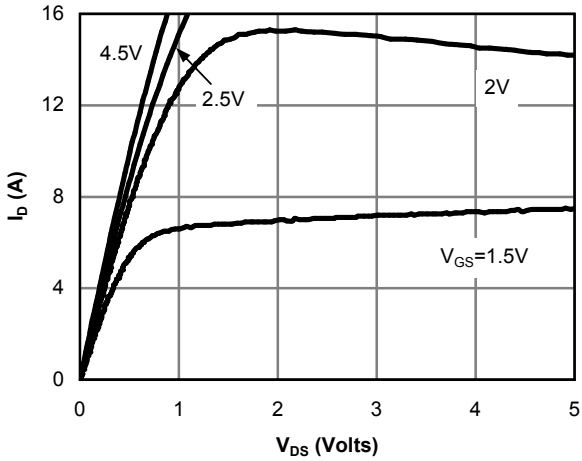


Figure 1: On-Region Characteristics

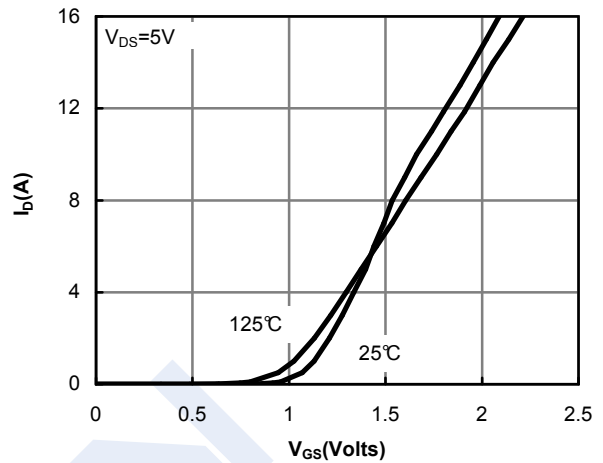


Figure 2: Transfer Characteristics

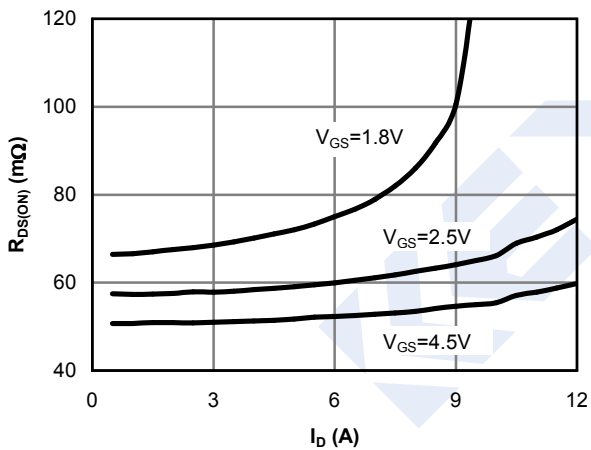


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

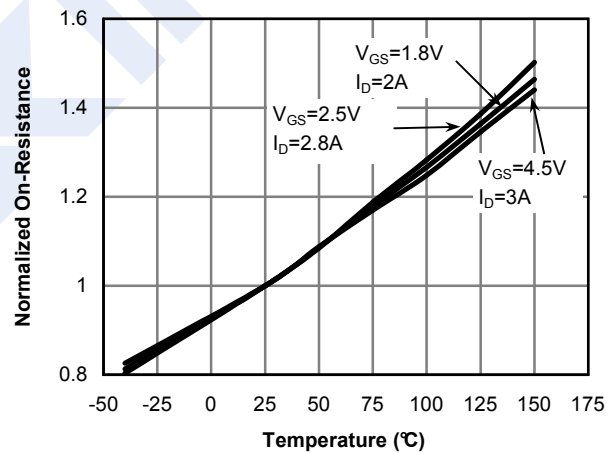


Figure 4: On-Resistance vs. Junction Temperature

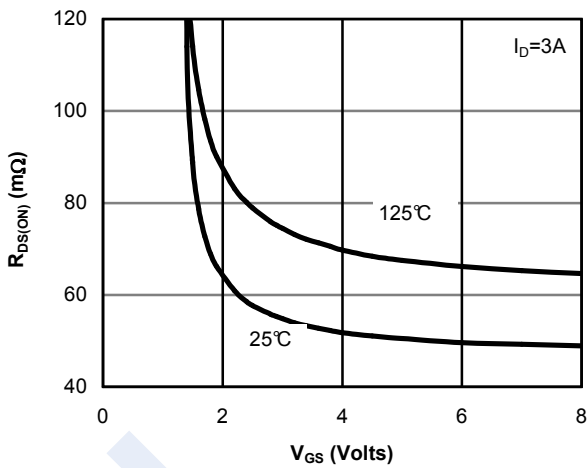


Figure 5: On-Resistance vs. Gate-Source Voltage

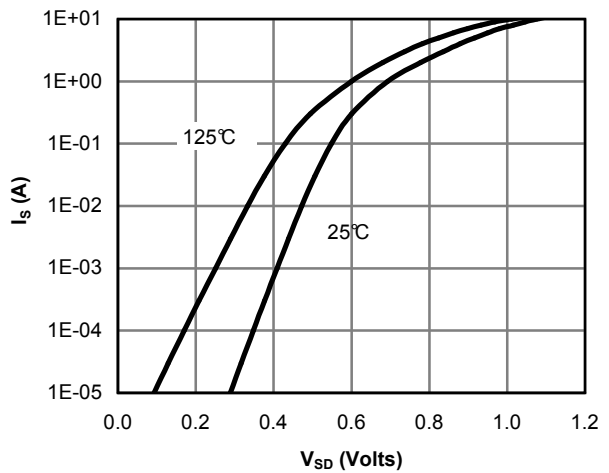


Figure 6: Body-Diode Characteristics

N-Channel MOSFET

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■ Typical Characteristics

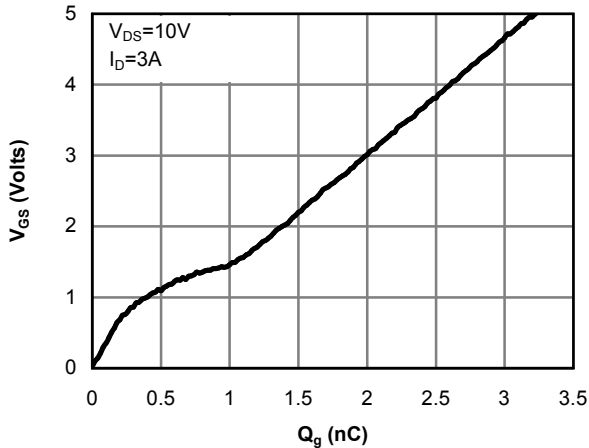


Figure 7: Gate-Charge Characteristics

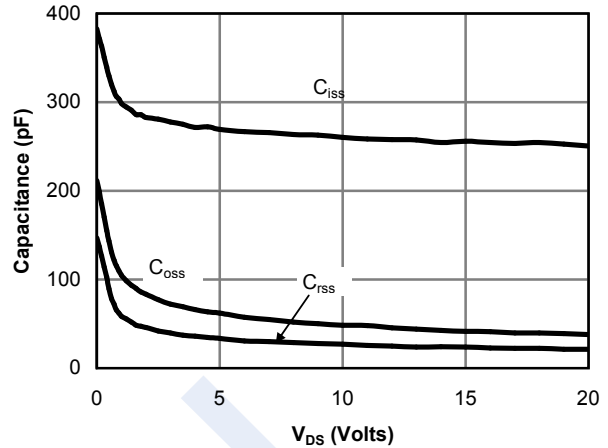


Figure 8: Capacitance Characteristics

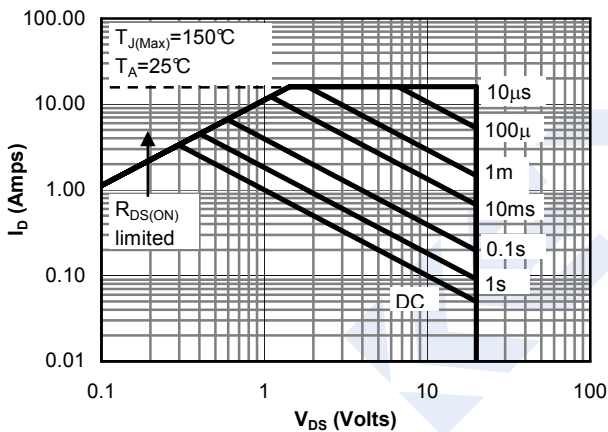


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

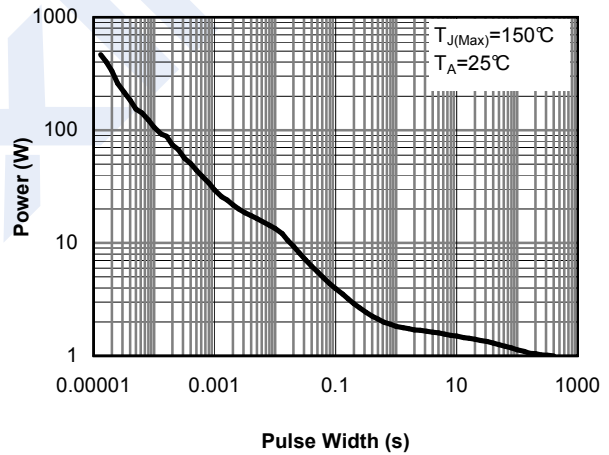


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

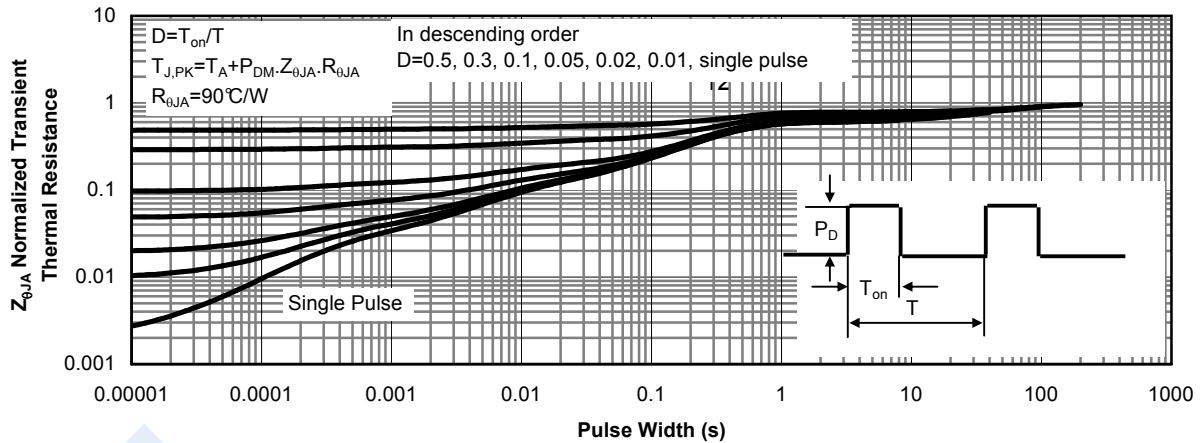


Figure 11: Normalized Maximum Transient Thermal Impedance (Note E)