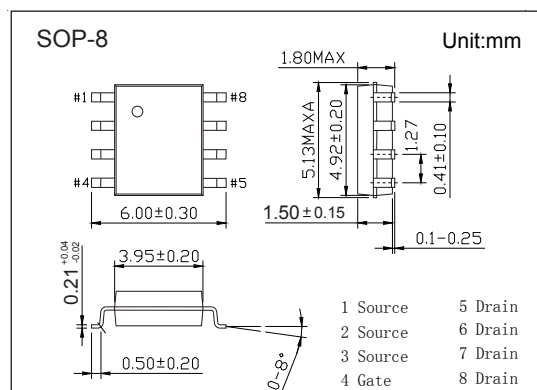
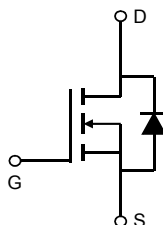


N-Channel MOSFET

AO4578 (KO4578)

■ Features

- $V_{DS} (V) = 30V$
- $I_D = 20 A$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 5.7m\Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 9m\Omega$ ($V_{GS} = 4.5V$)

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	
V_{DS} Spike		V_{SPIKE}	36	
Continuous Drain Current	$T_A = 25^\circ C$	I_D	20	A
	$T_A = 70^\circ C$		15	
Pulsed Drain Current		I_{DM}	120	
Avalanche Current		I_{AS}	40	
Avalanche Energy	$L = 0.1mH$	E_{AS}	8	mJ
Power Dissipation	$T_A = 25^\circ C$	P_D	3.1	W
	$T_A = 70^\circ C$		2	
Thermal Resistance.Junction- to-Ambient	$t \leq 10s$	R_{thJA}	40	$^\circ C/W$
	Steady-State		75	
Thermal Resistance.Junction- to-Lead		R_{thJL}	24	$^\circ C$
Junction Temperature		T_J	150	
Storage Temperature Range		T_{stg}	-55 to 150	

N-Channel MOSFET

AO4578 (KO4578)

■ 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	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
		V _{DS} =30V, V _{GS} =0V, T _J =55°C			5	
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.4		2.2	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A			5.7	mΩ
		V _{GS} =10V, I _D =20A, T _J =125°C			7.8	
		V _{GS} =4.5V, I _D =20A			9	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =20A		62		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, f=1MHz		1128		pF
Output Capacitance	C _{oss}			435		
Reverse Transfer Capacitance	C _{rss}			59		
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz	0.7		2.1	Ω
Total Gate Charge (10V)	Q _g	V _{GS} =10V, V _{DS} =15V, I _D =20A		16.2	25	nC
Total Gate Charge (4.5V)				7.4	15	
Gate Source Charge	Q _{gs}			4.3		
Gate Drain Charge	Q _{gd}			2.3		
Turn-On DelayTime	t _{d(on)}	V _{GS} =10V, V _{DS} =15V, R _L =0.75Ω, R _{GEN} =3Ω		5.5		ns
Turn-On Rise Time	t _r			3		
Turn-Off DelayTime	t _{d(off)}			22.5		
Turn-Off Fall Time	t _f			3		
Body Diode Reverse Recovery Time	t _{rr}	I _F =20A, di/dt=500A/μs		13.3		nC
Body Diode Reverse Recovery Charge	Q _{rr}			25		
Maximum Body-Diode Continuous Current	I _S				4.2	A
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V			1	V

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

■ Marking

Marking	4578 KC****
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N-Channel MOSFET

AO4578 (KO4578)

■ Typical Characteristics

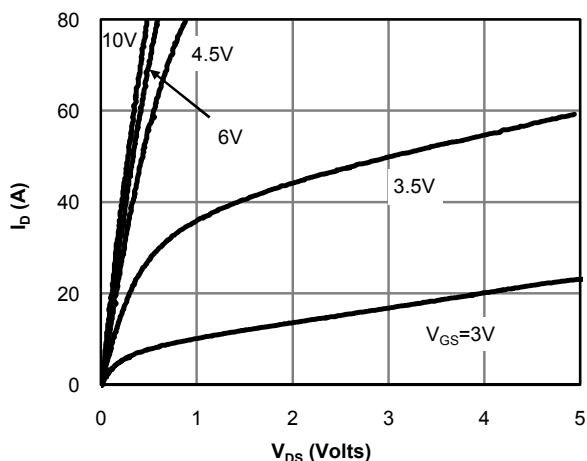


Fig 1: On-Region Characteristics (Note E)

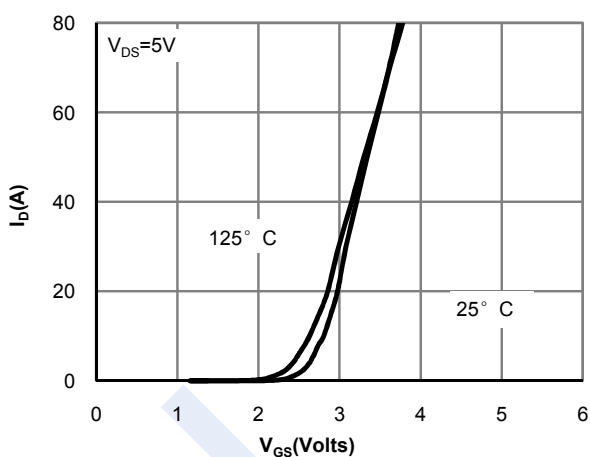


Figure 2: Transfer Characteristics (Note E)

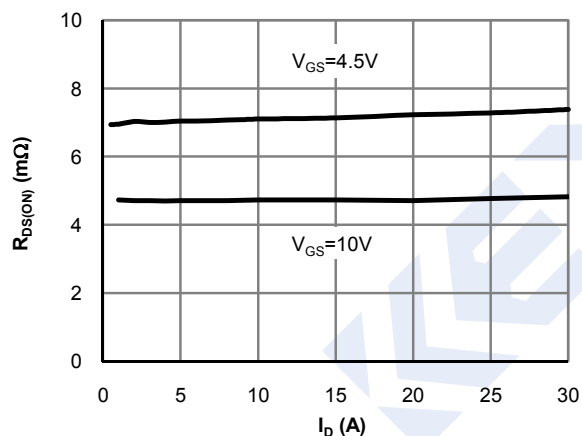


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

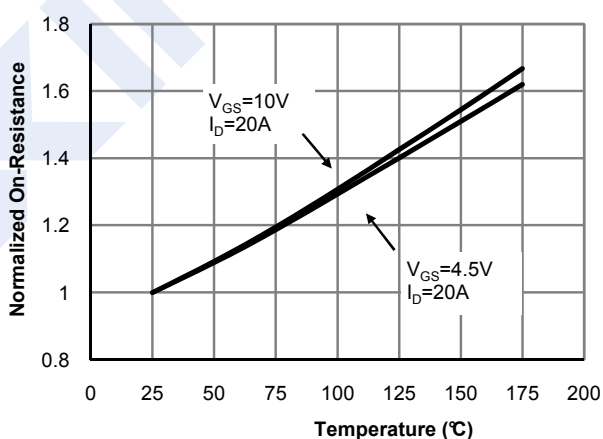


Figure 4: On-Resistance vs. Junction Temperature (Note E)

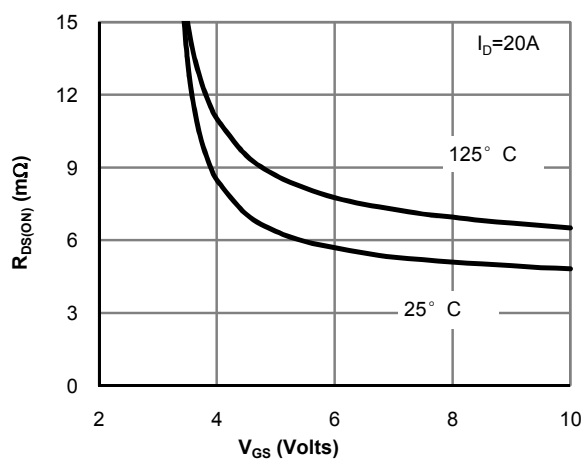


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

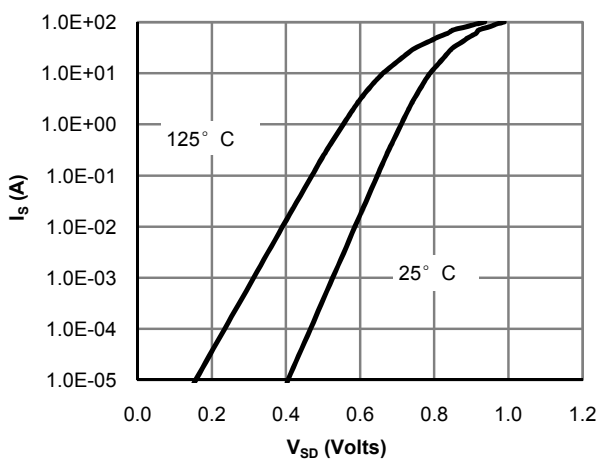


Figure 6: Body-Diode Characteristics (Note E)

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■ Typical Characteristics

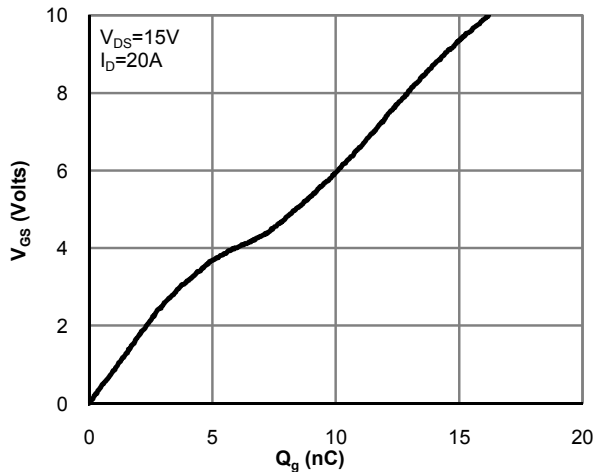


Figure 7: Gate-Charge Characteristics

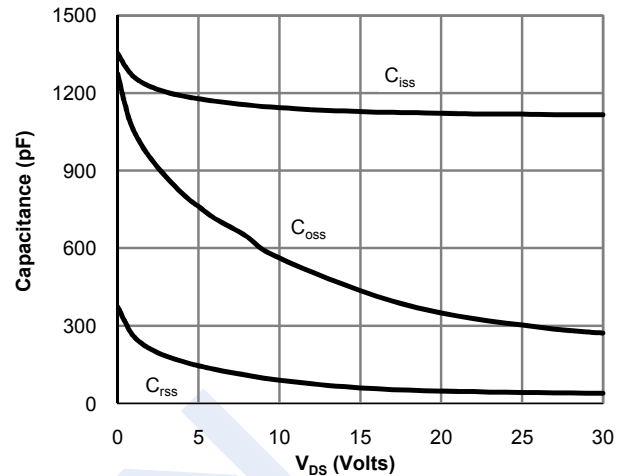


Figure 8: Capacitance Characteristics

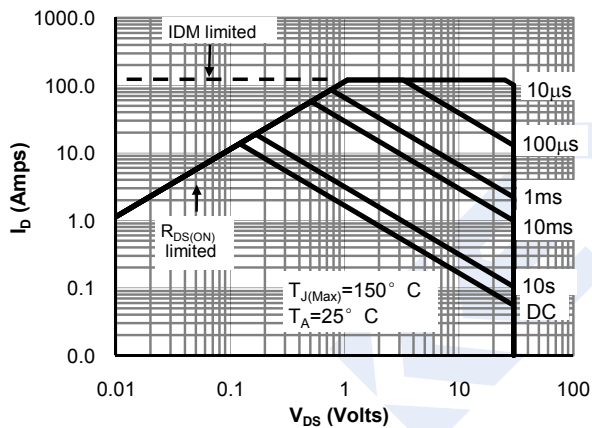


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

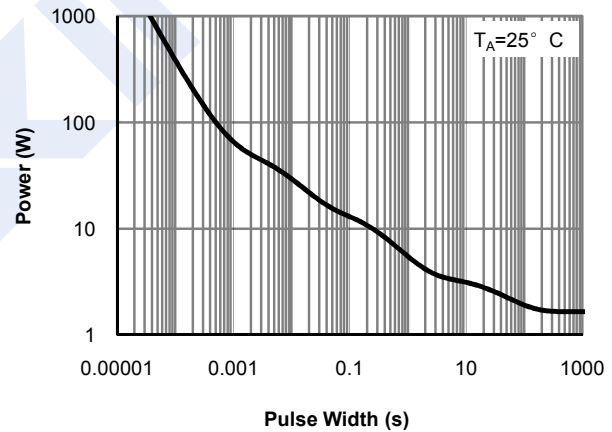


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

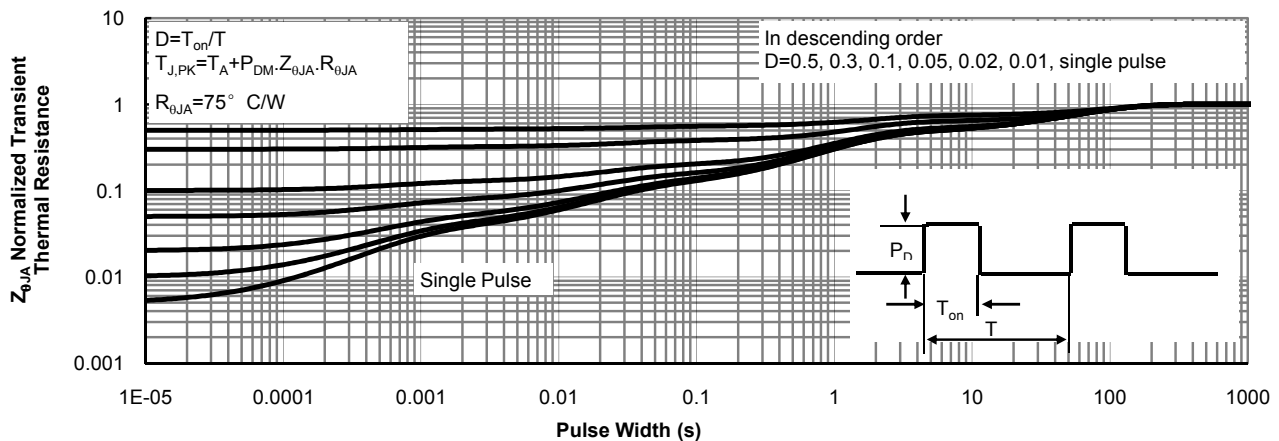


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)