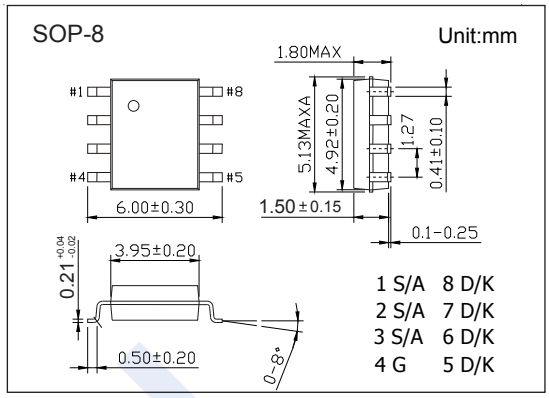
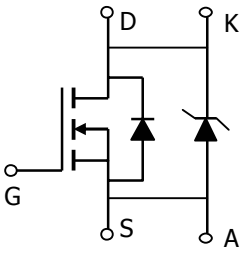
N-Channel MOSFET

AO4704 (KO4704)



■ Features

- $V_{DS\ (V)}$ = 30V
- I_D = 13 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 11.5mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 13mΩ (V_{GS} = 4.5V)
- $V_{DS\ (V)}$ = 30V, I_F = 3A, V_F<0.5V@1A



■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	MOSFET	Schottky	Unit
Drain-Source Voltage		V_{DS}	30		V
Gate-Source Voltage		V_{GS}	±12		
Schottky Reverse Voltage		V_{KA}		30	
Continuous Drain Current	T_A=25℃	I_D	13		A
	T_A=70℃		10.4		
Pulsed Drain Current		I_{DM}	40		
Continuous Forward Current	T_A=25℃	I_F		4.4	
	T_A=70℃			3.2	
Pulsed Diode Forward Current		I_{FM}		30	
Power Dissipation	T_A=25℃	P_D	3.1		W
	T_A=70℃		2		
Thermal Resistance.Junction- to-Ambient	t ≤ 10s	R_{thJA}	40		℃/W
	Steady-State		75		
Thermal Resistance.Junction- to-Lead		R_{thJL}	30		
Junction Temperature		T_J	150		℃
Storage Temperature Range		T_{stg}	-55 to 150		

N-Channel MOSFET

AO4704 (KO4704)

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V			0.05	mA
		V_{DS}=30V, V_{GS}=0V, T_J=125℃			10	
		V_{DS}=30V, V_{GS}=0V, T_J=150℃			20	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±12V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.6		2	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=13A			11.5	mΩ
		V_{GS}=10V, I_D=13A T_J=125℃			16.5	
		V_{GS}=4.5V, I_D=12.2A			13	
On State Drain Current	$I_{D(ON)}$	V_{GS}=4.5V, V_{DS}=5V	40			A
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=13A	30	37		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, f=1MHz		3656	4050	pF
Output Capacitance	C_{oss}			322		
Reverse Transfer Capacitance	C_{rss}			168		
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz		0.86	1.1	Ω
Total Gate Charge (4.5V)	Q_g	V_{GS}=10V, V_{DS}=15V, I_D=13A		30.5	36	nC
Gate Source Charge	Q_{gs}			4.6		
Gate Drain Charge	Q_{gd}			8.6		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=10V, V_{DS}=15V, R_L=1.1Ω, R_{GEN}=0Ω		6.2	9	ns
Turn-On Rise Time	t_r			4.8	7	
Turn-Off DelayTime	$t_{d(off)}$			55	75	
Turn-Off Fall Time	t_f			7.3	11	
Body Diode+Schottky Reverse Recovery Time	t_{rr}	I_F= 13A, dI/dt= 100A/us		20.3	25	
Body Diode+Schottky Reverse Recovery Charge	Q_{rr}			8.4	12.5	nC
Body-Diode + Schottky Continuous Current	I_S				5	A
Diode + Schottky Forward Voltage	V_{SD}	I_S=1A,V_{GS}=0V			0.5	V

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

■ Marking

Marking	4704 KC****

N-Channel MOSFET

AO4704 (KO4704)

■ Typical Characterisitics

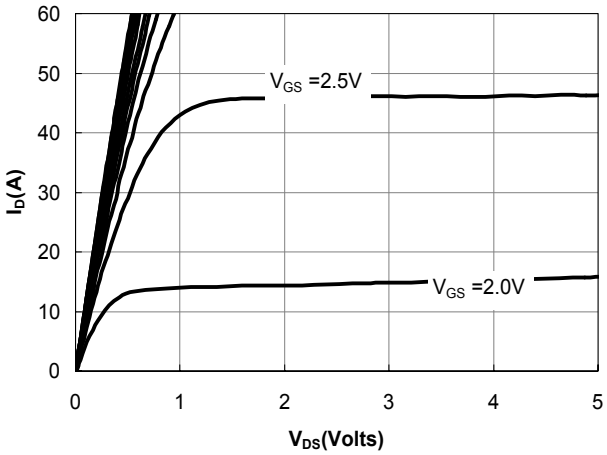


Figure 1: On-Regions CharacteristiCS

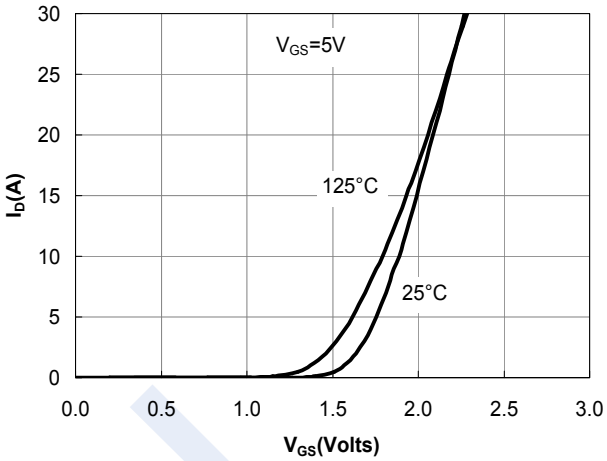


Figure 2: Transfer Characteristics

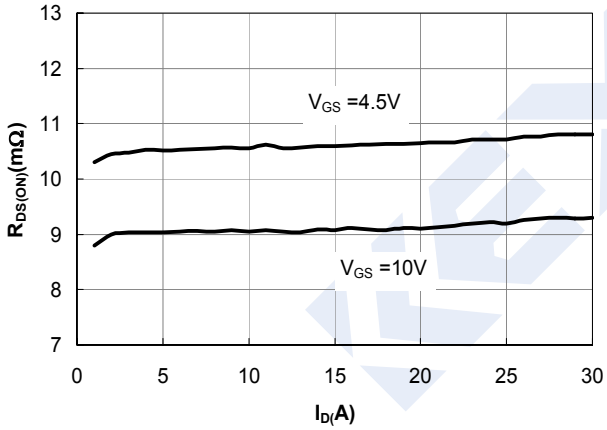


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

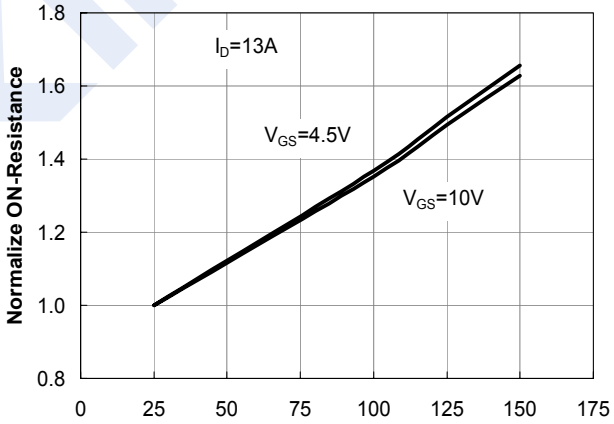


Figure 4: On-Resistance vs. Junction Temperature

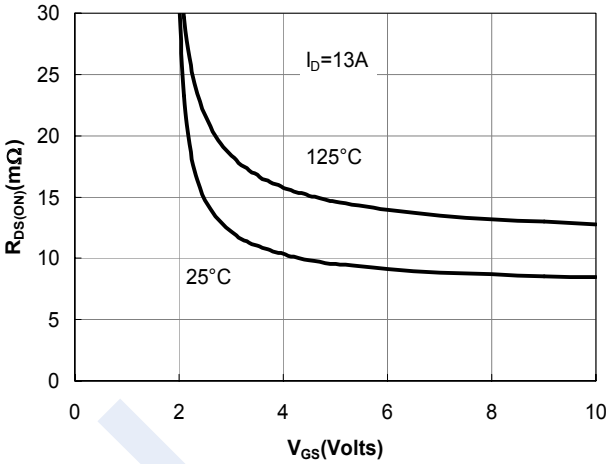


Figure 5: On-Resistance vs. Gate-Source Voltage

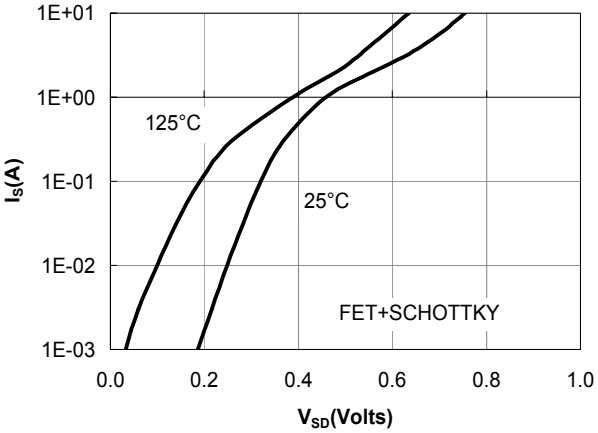


Figure 6: Body-Diode Characteristics (Note F)

N-Channel MOSFET

AO4704 (KO4704)

■ Typical Characterisitics

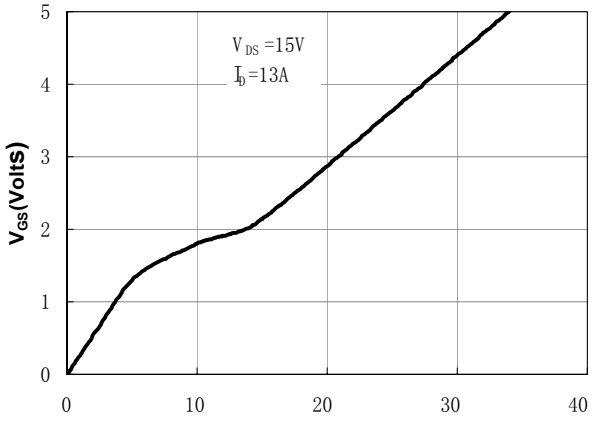


Figure 7: Gate-Charge Characteristics

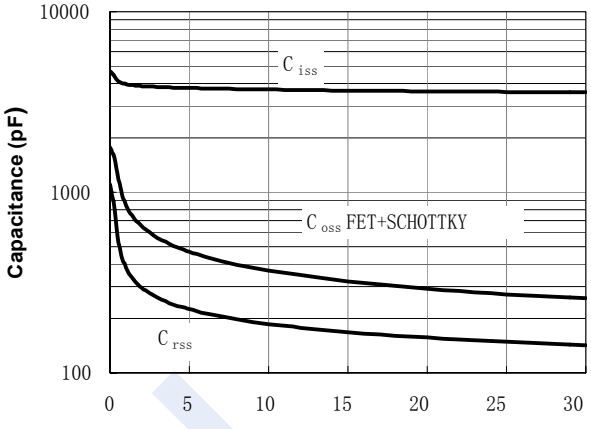


Figure 8: Capacitance Characteristics

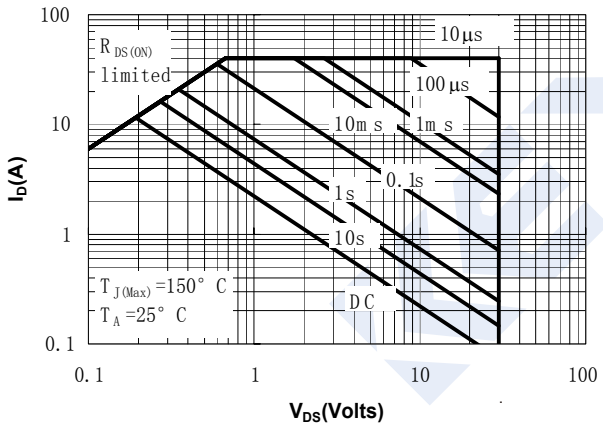


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

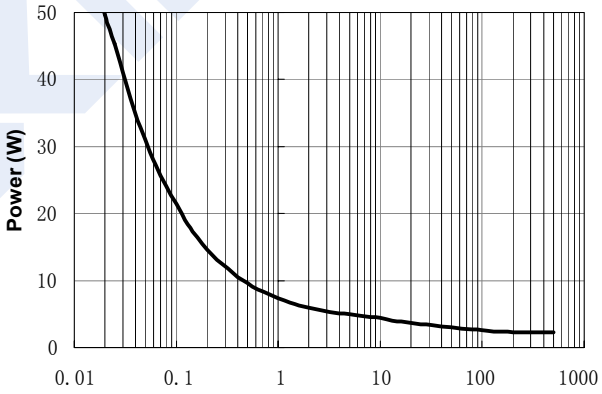


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

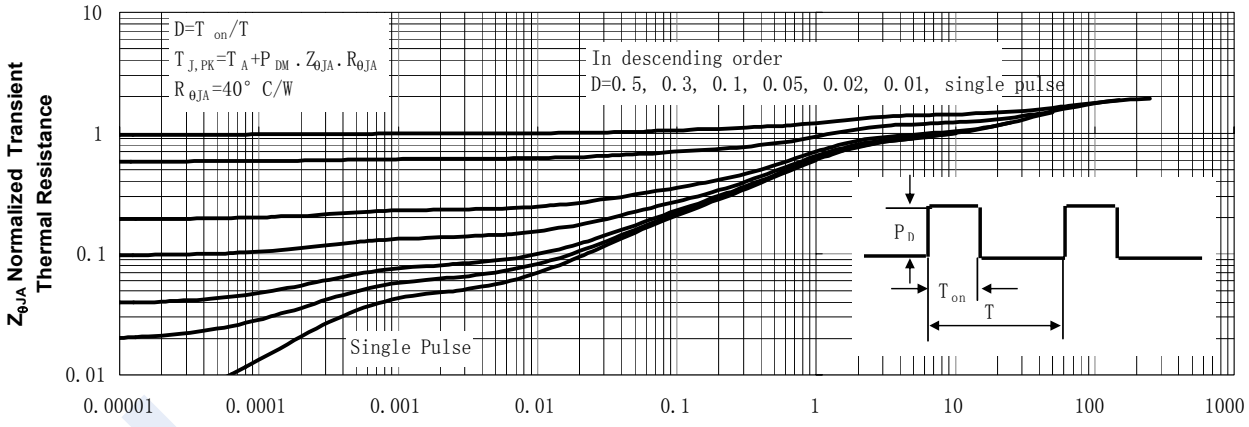


Figure 11: Normalized Maximum Transient Thermal Impedence