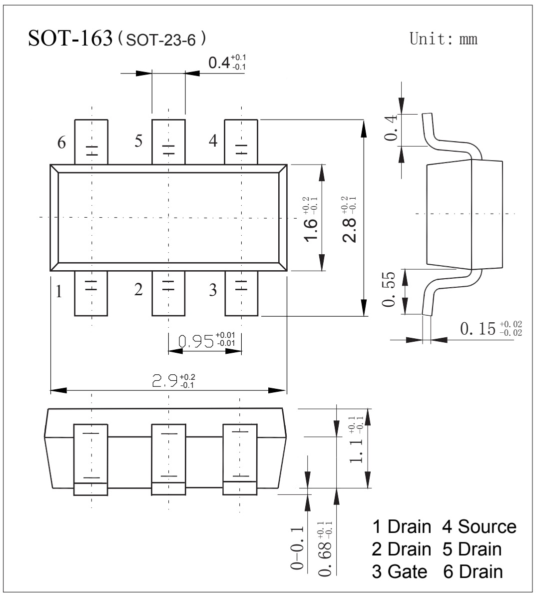
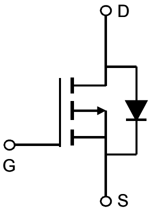
P-Channel MOSFET

AO6405



■ Features

- ● V_{DS} (V) =-30V
- ● I_D =-5 A (V_{GS} =-10V)
- ● $R_{DS(ON)} <$ 52mΩ (V_{GS} =-10V)
- ● $R_{DS(ON)} <$ 87mΩ (V_{GS} =-4.5V)



■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_A=25°C	I_D	-5	A
	T_A=70°C		-4.2	
Pulsed Drain Current		I_{DM}	-20	
Power Dissipation	T_A=25°C	P_D	2	W
	T_A=70°C		1.3	
Thermal Resistance.Junction- to-Ambient	t ≤ 10s	R_{thJA}	62.5	℃/W
	Steady-State		110	
Thermal Resistance.Junction- to-Lead		R_{thJL}	50	
Junction Temperature		T_J	150	℃
Junction Storage Temperature Range		T_{stg}	-55 to 150	

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■ 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			-1	uA
		V_{DS}=-30V, V_{GS}=0V, T_J=55℃			-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		-2.4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-5A			52	mΩ
		V_{GS}=-10V, I_D=-5A T_J=125℃			70	
		V_{GS}=-4.5V, I_D=-4A			87	
On state drain current	$I_{D(ON)}$	V_{GS}=-10V, V_{DS}=-5V	-20			A
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-5A		10		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-15V, f=1MHz		520		pF
Output Capacitance	C_{oss}			100		
Reverse Transfer Capacitance	C_{rss}			65		
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz	3.5		11.5	Ω
Total Gate Charge (10V)	Q_g	V_{GS}=-10V, V_{DS}=-15V, I_D=-5A		9.2	11	nC
Total Gate Charge (4.5V)				4.6	6	
Gate Source Charge	Q_{gs}			1.6		
Gate Drain Charge	Q_{gd}			2.2		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=-10V, V_{DS}=-15V, R_L=3Ω, R_{GEN}=3Ω		7.5		ns
Turn-On Rise Time	t_r			5.5		
Turn-Off DelayTime	$t_{d(off)}$			19		
Turn-Off Fall Time	t_f			7		
Body Diode Reverse Recovery Time	t_{rr}	I_F=-5A, dI/dt=100A/μs		11		
Body Diode Reverse Recovery Charge	Q_{rr}			5.3		nC
Maximum Body-Diode Continuous Current	I_S				-2.5	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	D5**

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■ Typical Characterisitics

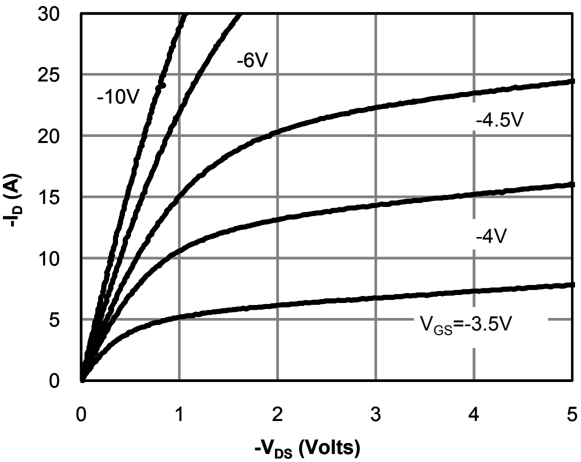

Fig 1: On-Region Characteristics (Note E)

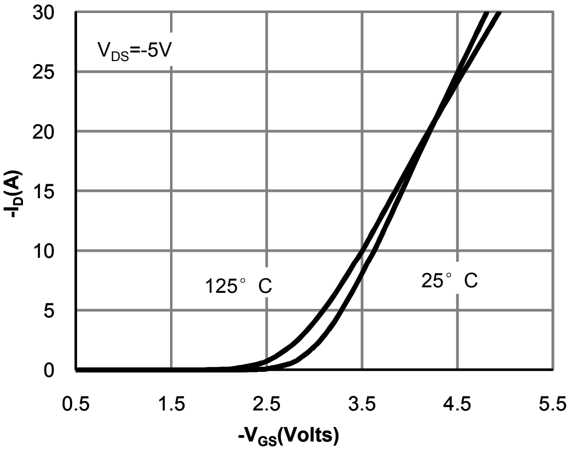

Figure 2: Transfer Characteristics (Note E)

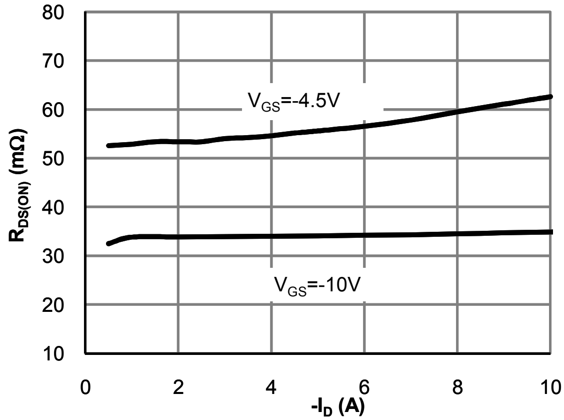

Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

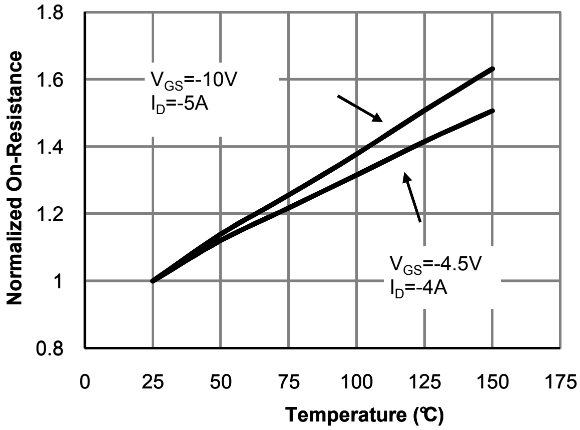

Figure 4: On-Resistance vs. Junction Temperature (Note E)

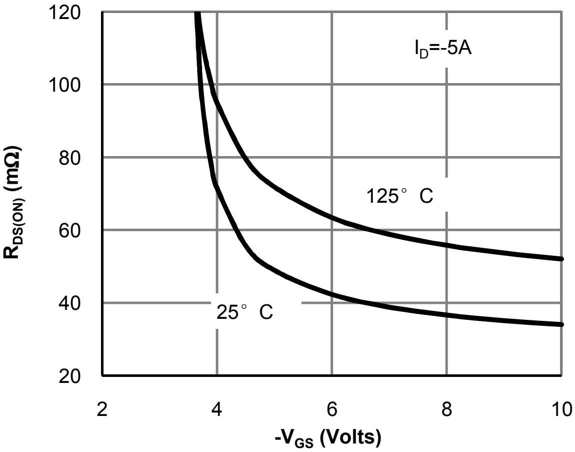

Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

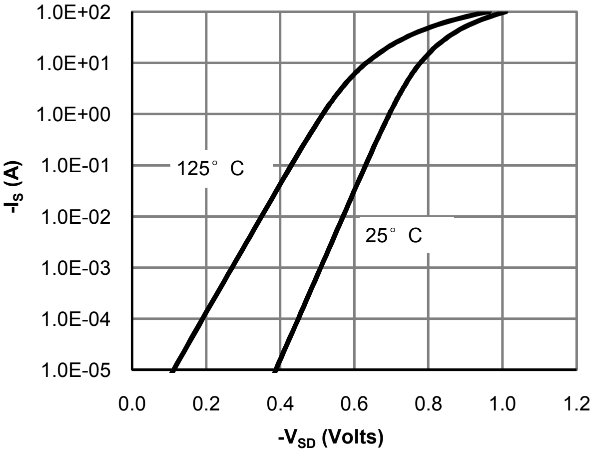

Figure 6: Body-Diode Characteristics (Note E)

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■ Typical Characterisitics

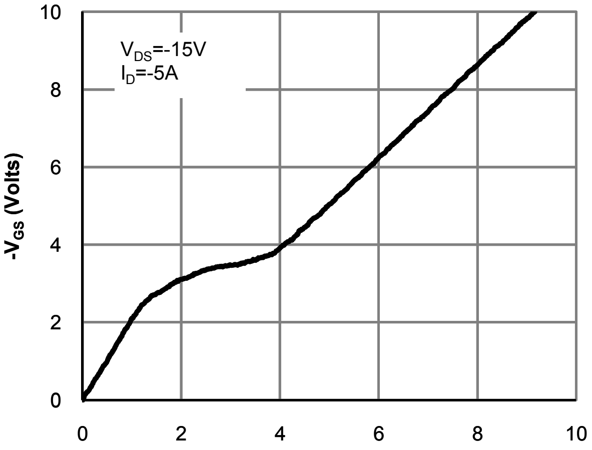

Figure 7: Gate-Charge Characteristics

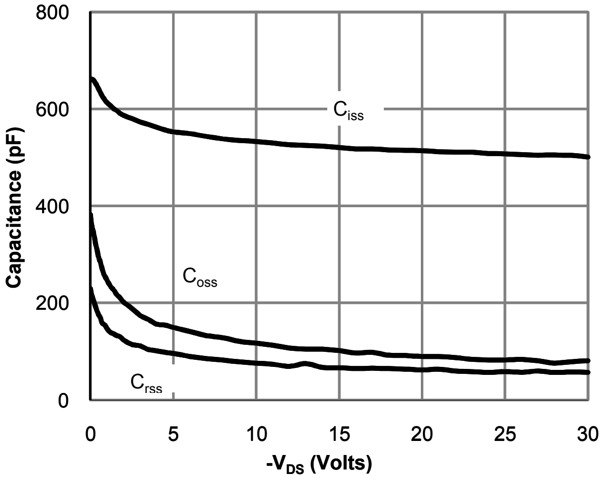

Figure 8: Capacitance Characteristics

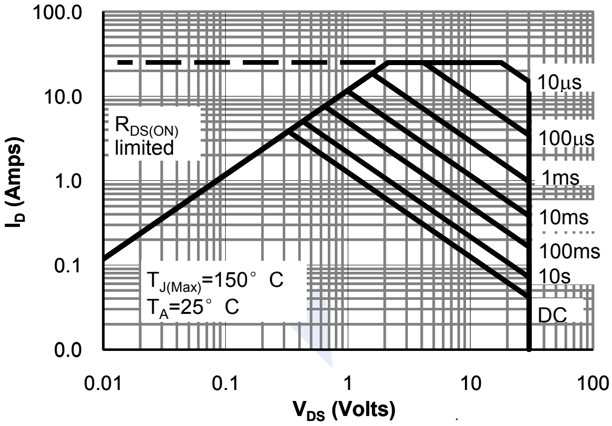

Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

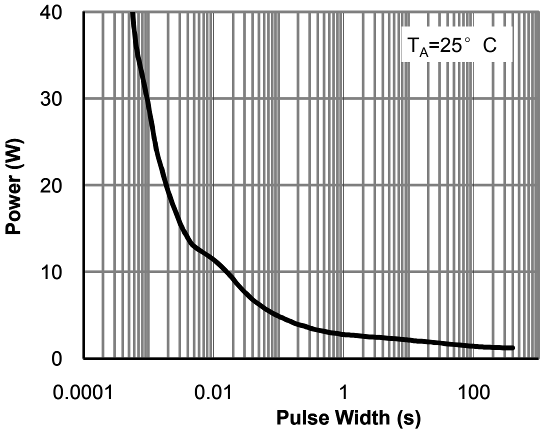

Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

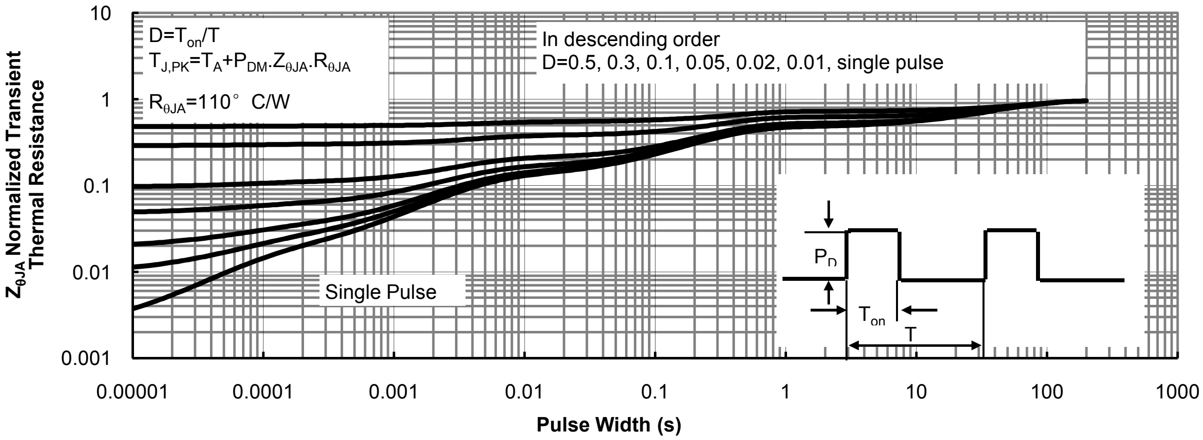

Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)