



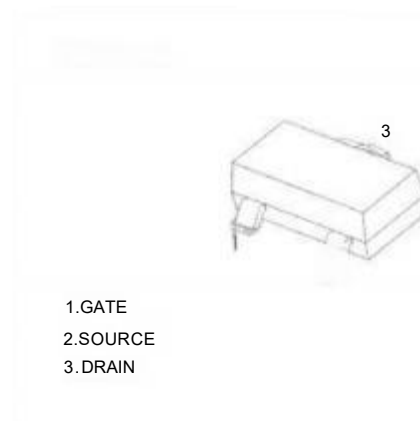
AO3401A

P-Channel Enhancement MOSFET

SOT-23

Features

- $V_{DS}(V) = -30V$
- $I_D = -4.2A (V_{GS} = -10V)$
- $R_{DS(ON)} < 50m\Omega (V_{GS} = -10V)$
- $R_{DS(ON)} < 65m\Omega (V_{GS} = -4.5V)$
- $R_{DS(ON)} < 120m\Omega (V_{GS} = -2.5V)$



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 12	
Continuous Drain Current $T_a = 25^\circ C$ $T_a = 70^\circ C$	I_D	-4.2	A
		-3.5	
Pulsed Drain Current	I_{DM}	-30	
Power Dissipation $T_a = 25^\circ C$ $T_a = 70^\circ C$	PD	1.4	W
		1	
Thermal Resistance, Junction-to-Ambient $t \leq 10s$	R_{thJA}	90	$^\circ C/W$
Thermal Resistance, Junction-to-Ambient		125	
Thermal Resistance, Junction-to-Case	R_{thJC}	60	
Junction Temperature	T_J	150	$^\circ C$
Junction and Storage Temperature Range	T_{stg}	-55 to 150	

Electrical Characteristics Ta=25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	VDSS	Ib=-250 μA, VGs=0V	-30			V
Zero Gate Voltage Drain Current	IDSS	VDs=-24V, VGs=0V			-1	μA
		VDs=-24V, VGs=0V, TJ=55℃			-5	
Gate-Body leakage current	IGSS	VDs=0V, VGs=±12V			±100	nA
Gate Threshold Voltage	VGS(th)	VDs=VGs ID=-250 μA	-0.4		-1.3	V
Static Drain-Source On-Resistance	RDs(on)	VGs=-10V, Ib=-4.2A			50	mΩ
		VGs=-4.5V, Ib=-4A			65	
		VGs=-2.5V, Ib=-1A			120	
On state drain current	ID(ON)	VGs=-4.5V, VDs=-5V	-25			A
Forward Transconductance	gFS	VDs=-5V, ID=-5A	7	11		S
Input Capacitance	Ciss	VGs=0V, VDs=-15V, f=1MHz		954		pF
Output Capacitance	Coss			115		
Reverse Transfer Capacitance	Crss			77		
Gate resistance	Rg	VGs=0V, Vbs=0V, f=1MHz		6		Ω
Total Gate Charge	Qg	VGs=-4.5V, VDs=-15V, Ib=-4A		9.4		nC
Gate Source Charge	Qgs			2		
Gate Drain Charge	Qgd			3		
Turn-On DelayTime	td(on)	VGs=-10V, VDs=-15V, RL=3.6Ω, RGEN=6Ω		6.3		ns
Turn-On Rise Time	tr			3.2		
Turn-Off DelayTime	td(off)			38.3		
Turn-Off Fall Time	tf			12		
Body Diode Reverse Recovery Time	tr	IF=-4A, di/dt=100A/μs		20.2		
Body Diode Reverse Recovery Charge	Qrr	IF=5A, di/dt=100A/μs		11.2		nC
Maximum Body-Diode Continuous Current	Is				-2.2	A
Diode Forward Voltage	VSD	Is=-1A, VGs=0V		-0.75	-1	V

Typical Characteristics

AO3401A

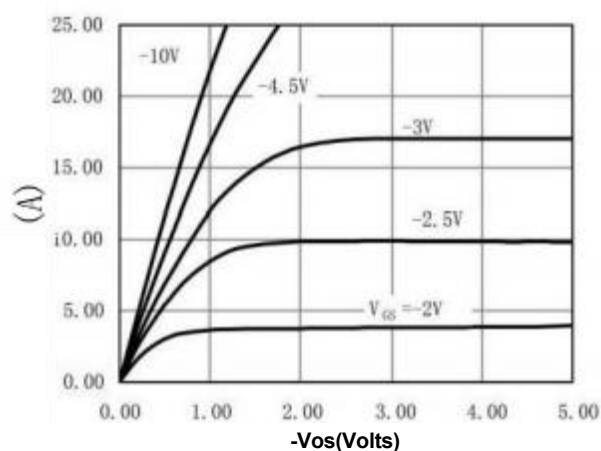


Fig 1: On-Region Characteristics

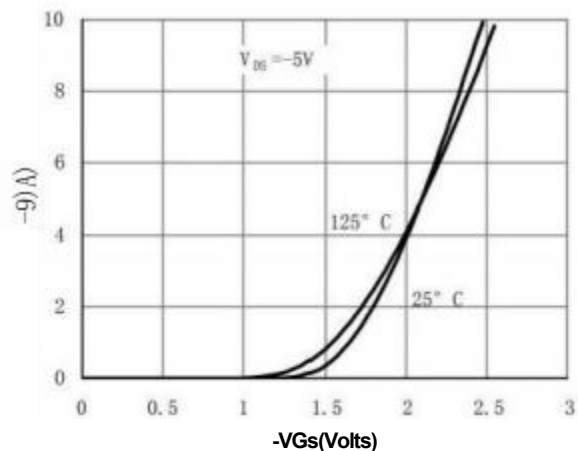


Figure 2: Transfer Characteristics

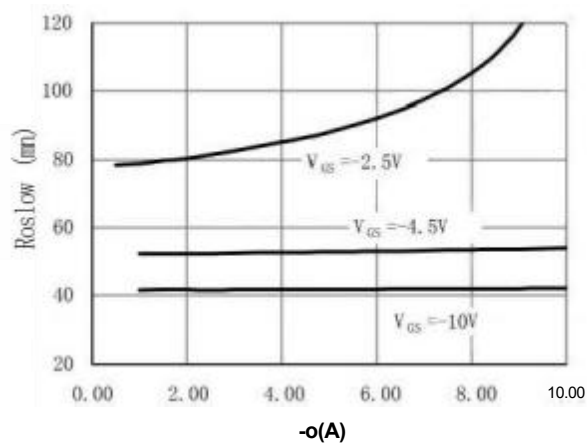


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

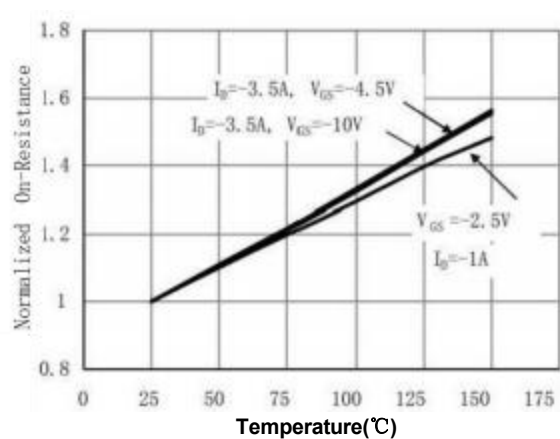


Figure 4: On-Resistance vs. Junction Temperature

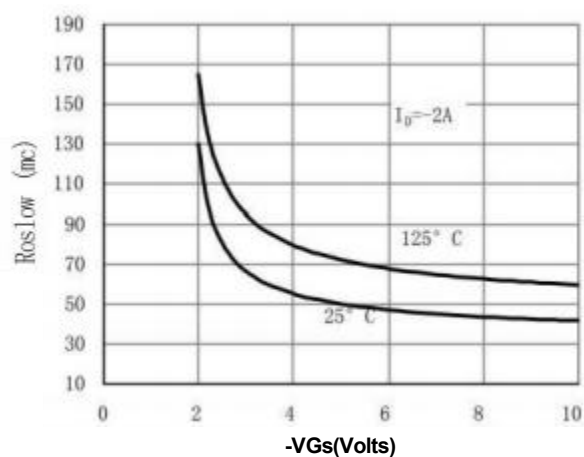


Figure 5: On-Resistance vs. Gate-Source Voltage

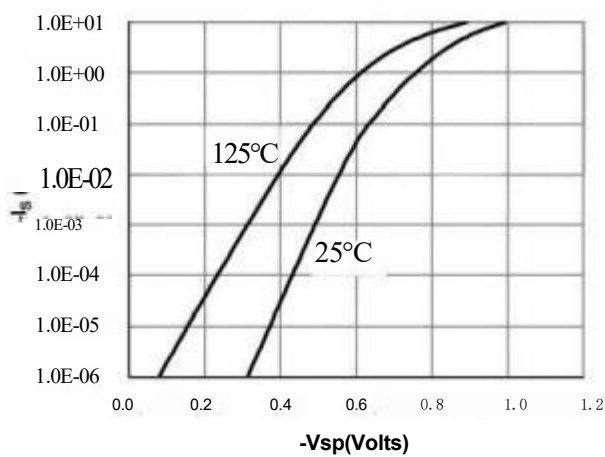


Figure 6: Body-Diode Characteristics

Typical Characteristics

AO3401A

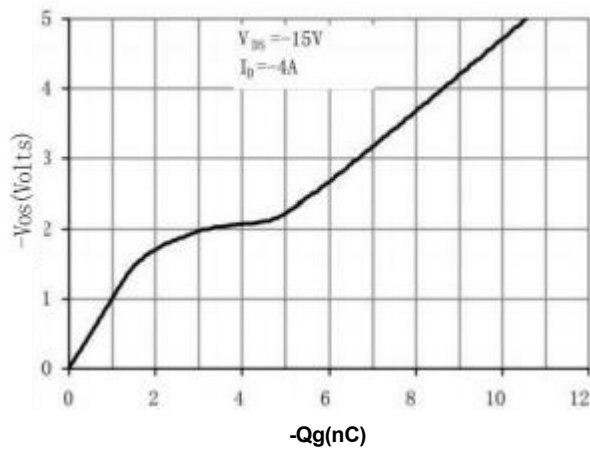


Figure 7: Gate-Charge Characteristics

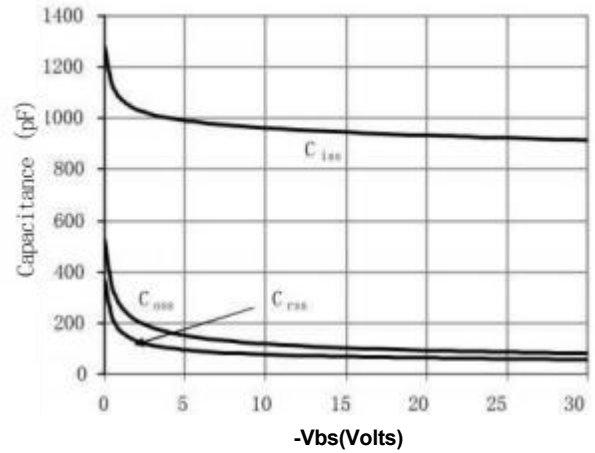


Figure 8: Capacitance Characteristics

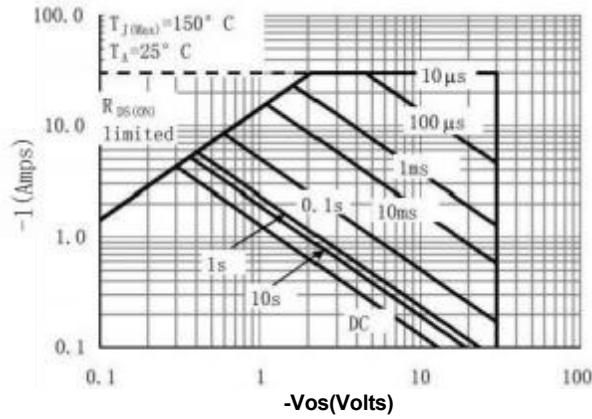


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

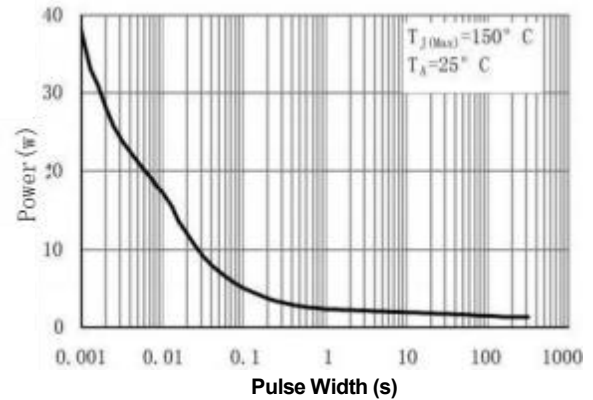


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

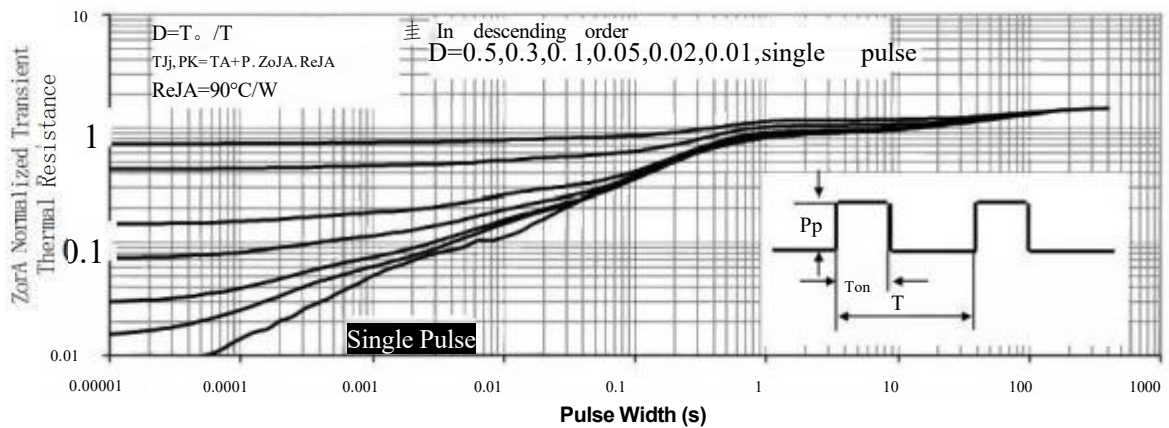
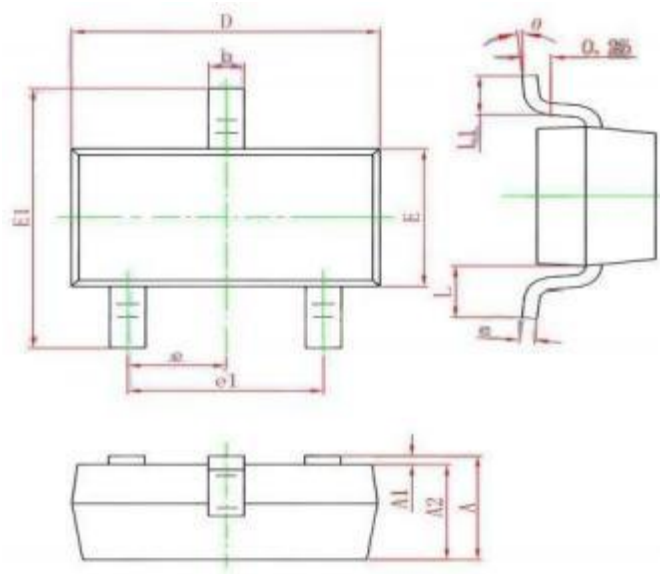


Figure 11: Normalized Maximum Transient Thermal Impedance

SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
C	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°