



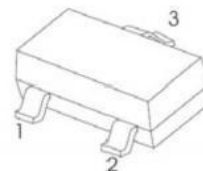
AO3402A

AO3402A N-Channel MOSFET

SOT-23

DESCRIPTION

The 3402 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltage as low as 2.5V. This device is suitable for use as a load switch or in PWM application.



FEATURES

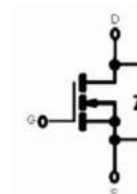
- Lead free product is acquired
- Surface mount package

1.GATE
2.SOURCE
3.DRAIN

APPLICATION

- Load Switch and in PWM applications

Equivalent Circuit



V (BR) DSs	RDs (on) MAX	Ip
30V	52 mΩ @10V	4A
	65mΩ@4. 5V	
	85mΩ@2. 5V	

Maximum ratings(Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	Vos	30	V
Gate-Source Voltage	Vgs	±12	V
Continuous Drain Current	Io	4	A
Pulsed Drain Current (note 1)	IDM	15	A
Power Dissipation	Po	0.35	W
Thermal Resistance from Junction to Ambient(note 2)	ReJA	357	℃/W
Junction Temperature	Tj	150	℃
Storage Temperature	TsTG	-55~+150	℃

Ta=25°C unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	V(BR)DSS	VGs =0V, Ib=250 μ A	30			V
Zero gate voltage drain current	Ibss	VDs =24V, VGs =0V			1	μ A
Gate-body leakage current	IGSs	VGs =±12V, Vos =0V			100	nA
Gate threshold voltage(note 3)	VGS(th)	Vos =VGs, Ib=250 μ A	0.8		1.4	V
Drain-source on-resistance (note 3)	RDS(on)	VGs =10V, Ib=4A			52	mΩ
		VGs =4.5V, Ib=3A			65	mΩ
		VGs =2.5V, Ib=2A			85	mΩ
Forward transconductance (note 3)	gFS	VDs =15V, Ib=4A		8		S
Diode forward voltage (note 3)	Vsp	s=1A, VGs =0V			1	V
DYNAMIC CHARACTERISTICS (note 4)						
Input capacitance	Ciss	Vbs =15V, VGs =0V, f =1MHz		390		pF
Output capacitance	Coss			54.5		pF
Reverse transfer capacitance	Crss			41		Pf
Gate resistance	Rg	VDs =0V, VGs =0V, f =1MHz		3		Ω
SWITCHING CHARACTERISTICS (note 4)						
Turn-on delay time	td(on)	VGs=10V, Vos=15V, RL=3.75 Ω , RGEN=6 Ω		3.3		ns
Turn-on rise time	tr			1		ns
Turn-off delay time	td(off)			21.7		ns
Turn-off fall time	tf			2.1		ns
Total gate charge	Qg	VDs =15V, VGs =4.5V, ID =4A		4.34		nC
Gate-source Charge	Qgs			0.6		nC
Gate-drain Charge	Qgd			1.38		nC
Body diode reverse recovery time	t	I _r =4A, dI/dt=100A/ μ s		1.2		ns
Body diode reverse recovery charge	Q _r			6.3		nC

Notes:

- 1.Repetitive rating:Pulse width limited by junction temperature.
- 2.Surface mounted on FR4 board,t≤10s.
- 3.Pulse Test:Pulse Width≤80μs,Duty Cycle≤0.5%.
- 4.Guaranteed by design,not subject to producing.

Typical Characteristics

AO3402A

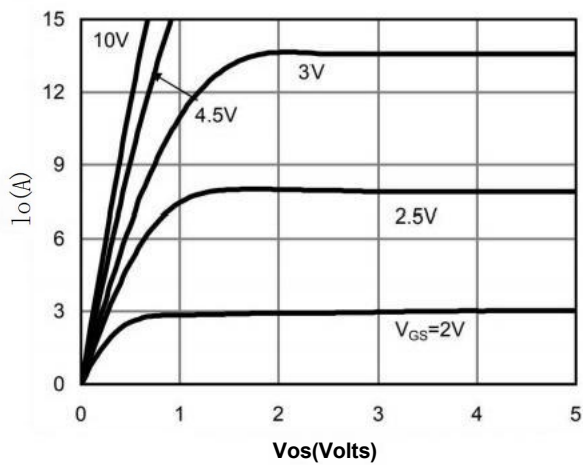


Fig 1: On-Region Characteristics

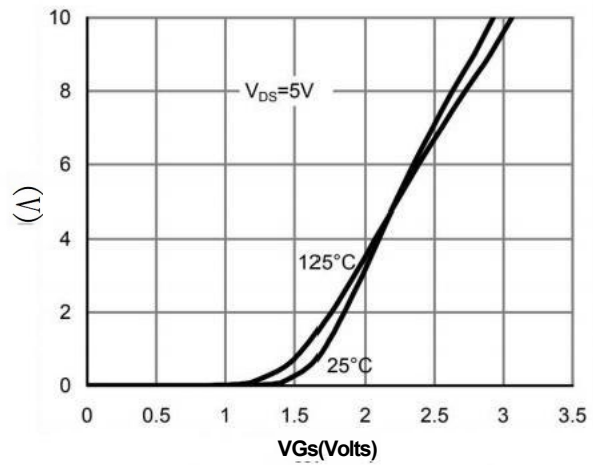


Figure 2: Transfer Characteristics

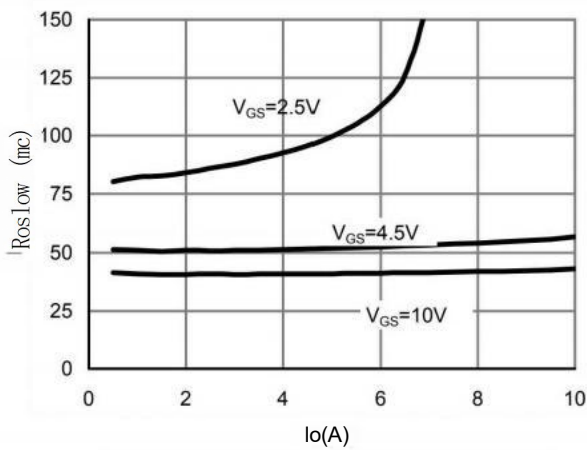


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

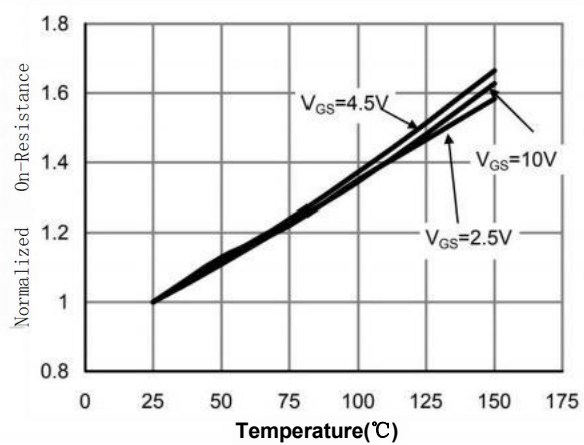


Figure 4: On-Resistance vs. Junction Temperature

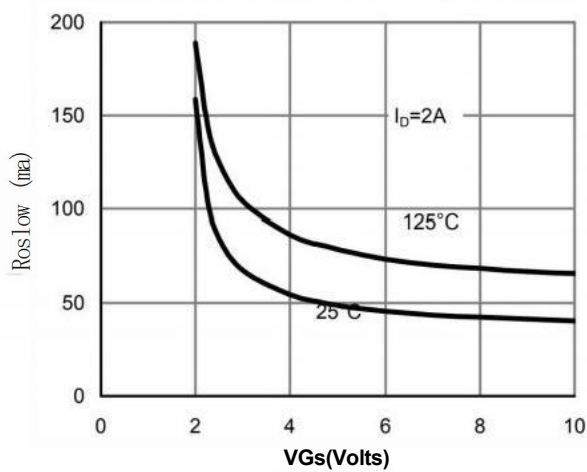


Figure 5: On-Resistance vs. Gate-Source Voltage

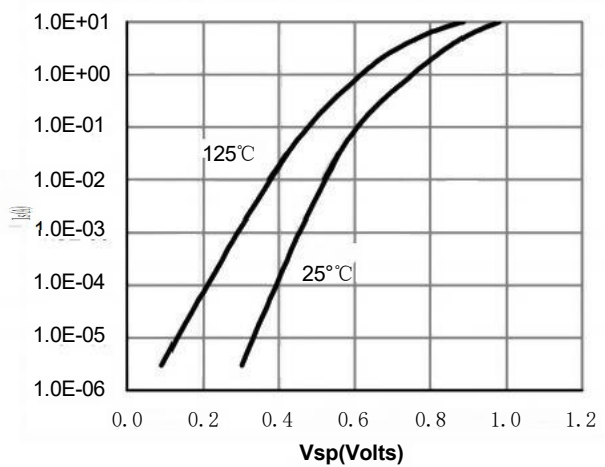


Figure 6: Body-Diode Characteristics

Typical Characteristics

AO3402A

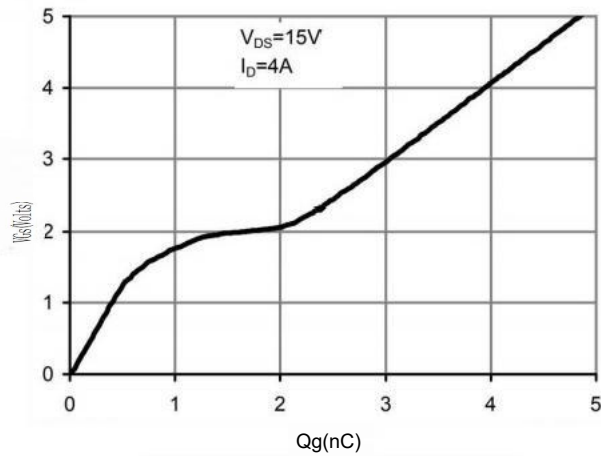


Figure 7: Gate-Charge Characteristics

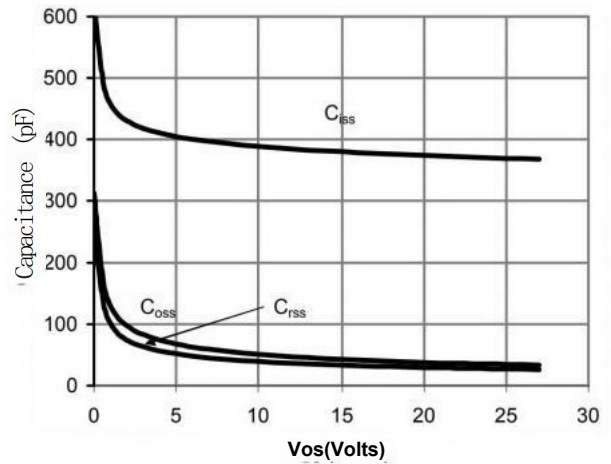


Figure 8: Capacitance Characteristics

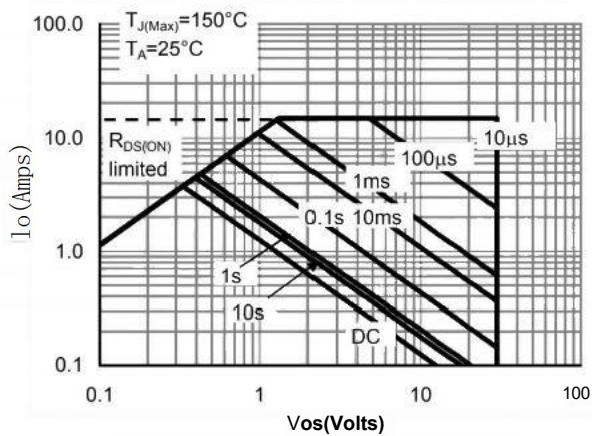


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

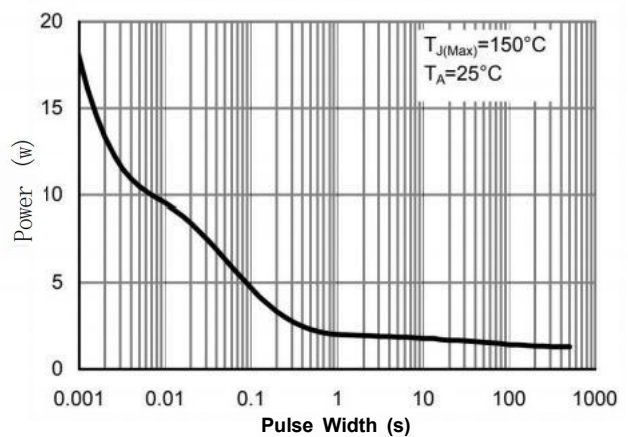


Figure 10: Single Pulse Power Rating (Note E)

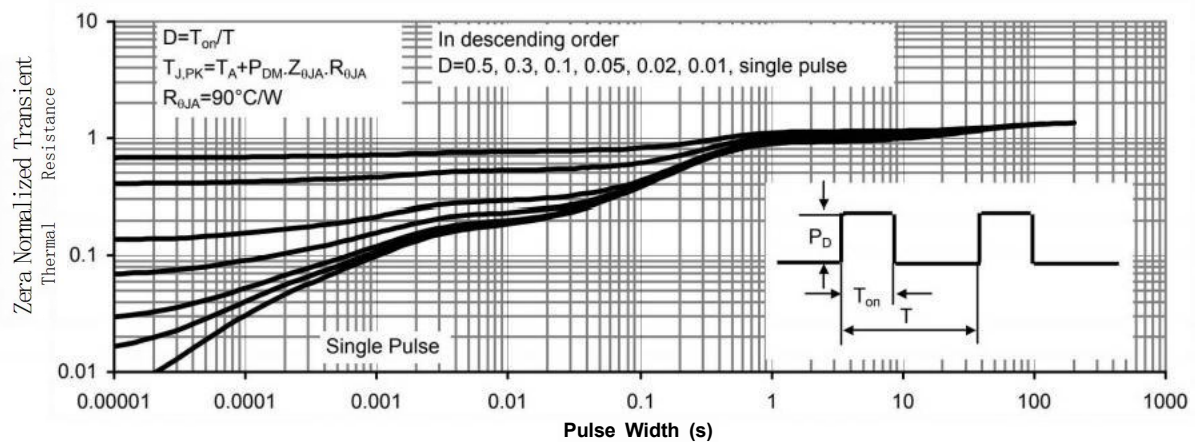
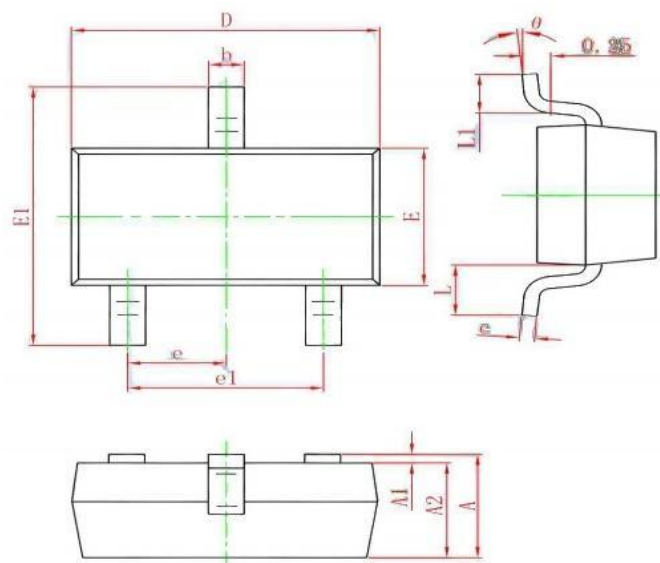


Figure 11: Normalized Maximum Transient Thermal Impedance

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°