

## 1. Description

The AO3402A 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.

## 2. Features

- $V_{DS}=30V$
- $I_D=4A$
- $R_{DS(ON)}<52m\Omega(V_{GS}=10V)$
- $R_{DS(ON)}<65m\Omega(V_{GS}=4.5V)$
- $R_{DS(ON)}<85m\Omega(V_{GS}=2.5V)$

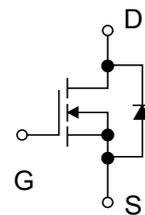
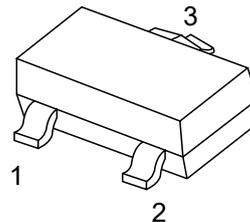
## 3. Application

- Load Switch and in PWM applications

## 4. Pinning information

Pin	Symbol	Description
1	G	GATE
2	S	SOURCE
3	D	DRAIN

SOT-23



## 5. Maximum ratings ( $T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current	$I_D$	4	A
Pulsed Drain Current (note 1)	$I_{DM}$	15	A
Power Dissipation	$P_D$	0.35	W
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	125	$^\circ C/W$
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature	$T_{STG}$	-55~+150	$^\circ C$



## 6. $T_A=25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>STATIC CHARACTERISTICS</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS}=24V, V_{GS}=0V$			1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{GS}=\pm 12V, V_{DS}=0V$			$\pm 100$	nA
Gate threshold voltage (note 3)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.8		1.4	V
Drain-source on-resistance (note 3)	$R_{DS(on)}$	$V_{GS}=10V, I_D=4A$			52	m $\Omega$
		$V_{GS}=4.5V, I_D=3A$			65	m $\Omega$
		$V_{GS}=2.5V, I_D=2A$			85	m $\Omega$
Forward transconductance (note 3)	$g_{FS}$	$V_{DS}=15V, I_D=4A$		8		S
Diode forward voltage (note 3)	$V_{SD}$	$I_S=1A, V_{GS}=0V$			1	V
<b>DYNAMIC CHARACTERISTICS (note 4)</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		390		pF
Output Capacitance	$C_{oss}$			54.5		pF
Reverse Transfer Capacitance	$C_{rss}$			41		pF
Gate resistance	$R_g$	$V_{DS}=0V, V_{GS}=0V, f=1MHz$		3		$\Omega$
<b>SWITCHING CHARACTERISTICS (note 4)</b>						
Turn-On delay time	$t_{D(on)}$	$V_{GS}=10V, V_{DS}=15V,$ $R_L=3.75\Omega, R_{GEN}=6\Omega$		3.3		ns
Turn-On rise time	$t_r$			1		ns
Turn-Off delay time	$t_{D(off)}$			21.7		ns
Turn-Off fall time	$t_f$			2.1		ns
Total Gate Charge	$Q_g$	$V_{DS}=15V, V_{GS}=4.5V, I_D=4A$		4.34		nC
Gate-Source Charge	$Q_{gs}$			0.6		nC
Gate-Drain Charge	$Q_{gd}$			1.38		nC
Body Diode Reverse Recovery Time	$t_{rr}$	$I_F=4A, dI/dt=100A/\mu s$		1.2		ns
Body Diode Reverse Recovery Charge	$Q_{rr}$			6.3		nC

1. Repetitive rating : Pulse width limited by junction temperature.

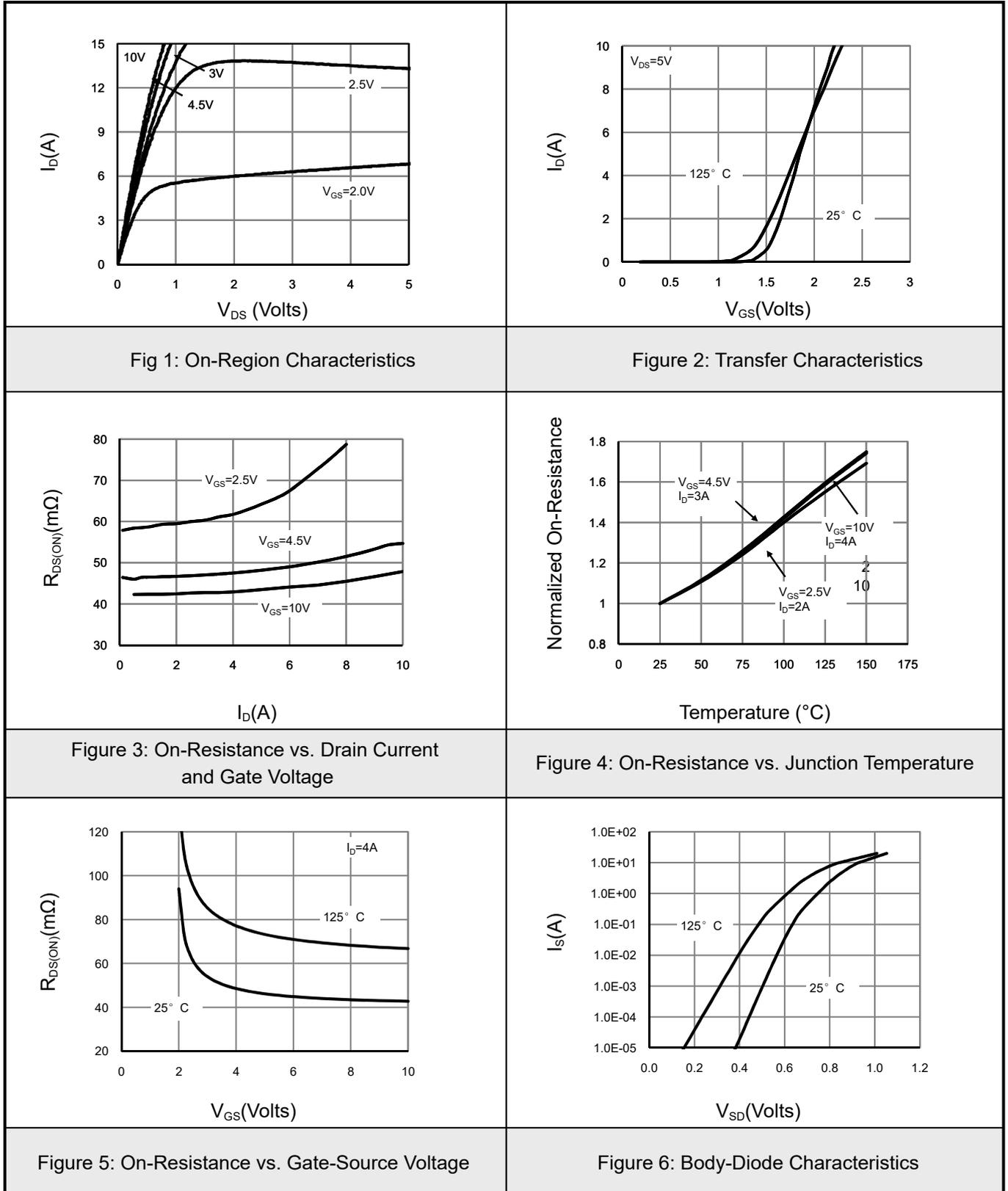
2. Surface mounted on FR4 board ,  $t_s \leq 10s$ .

3. Pulse Test : Pulse Width  $\leq 80\mu s$ , Duty Cycle  $\leq 0.5\%$ .

4. Guaranteed by design, not subject to producing.

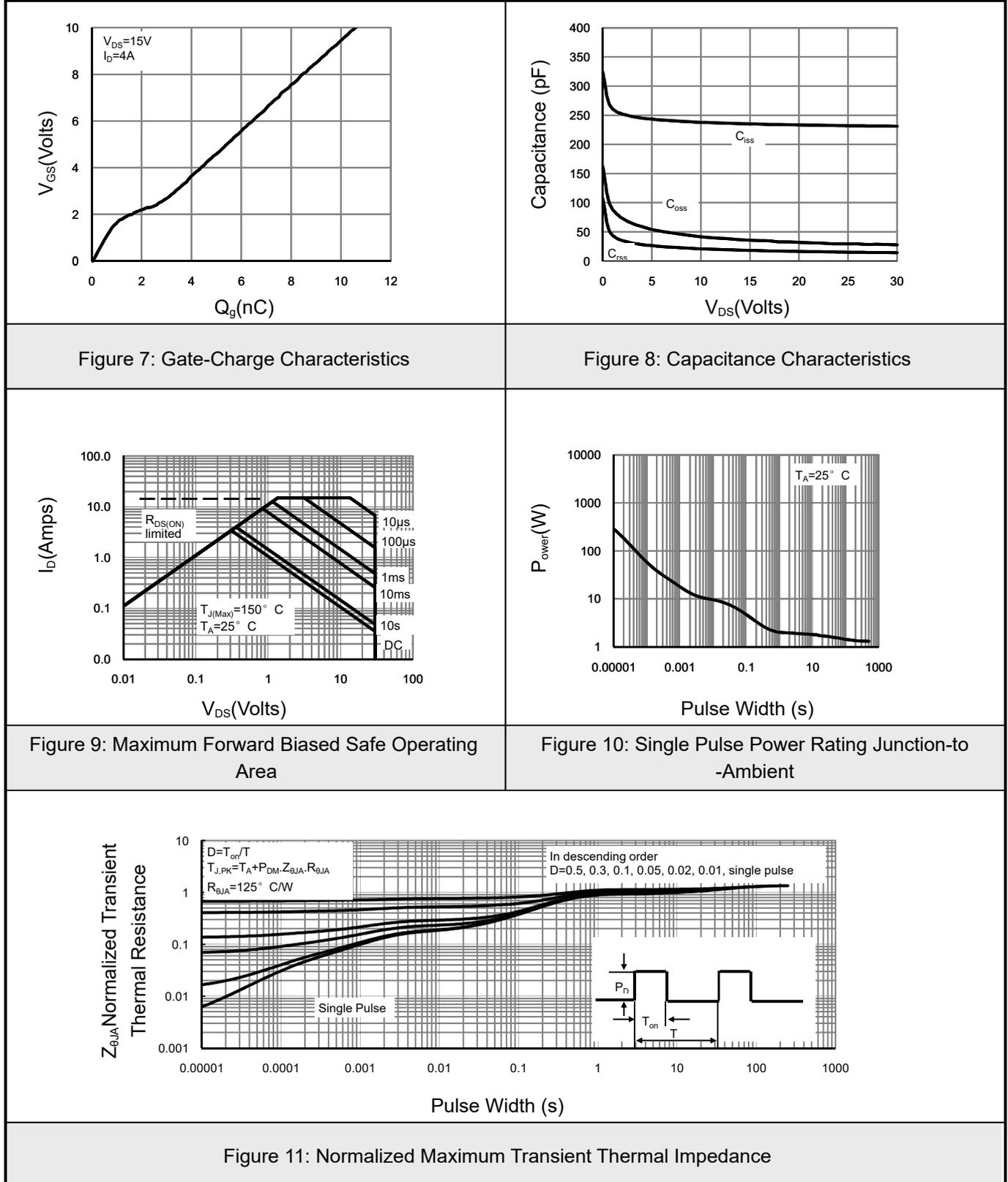


## 7.1 Typical Characteristics



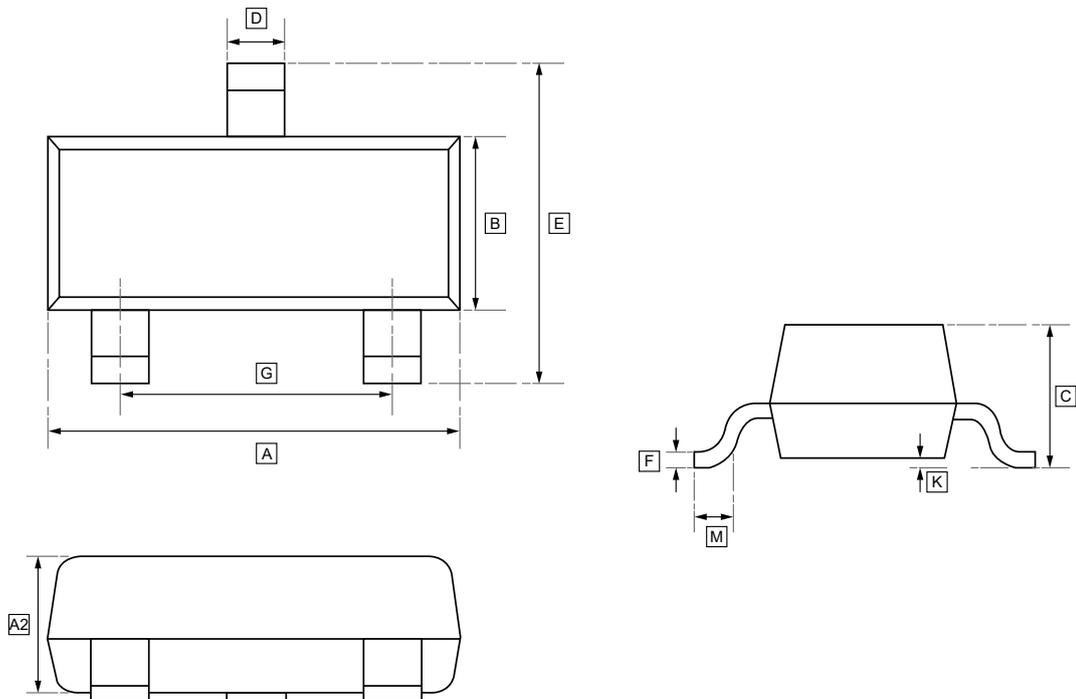


## 7.2 Typical Characteristics





## 8.SOT-23 Package Outline Dimensions

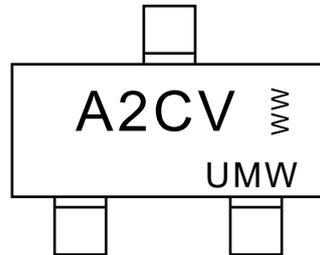


### DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	E	G	K	M	A2	F
Min	2.85	1.20	0.90	0.40	2.25	1.80	0.00	0.30	0.95	0.095
Max	3.04	1.40	1.10	0.50	2.55	2.00	0.10	-	1.05	0.115



## 9. Ordering information



WW: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW AO3402A	SOT-23	3000	Tape and reel



## **10.Disclaimer**

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