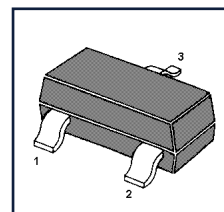


Description

The AO3407 uses advanced Trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

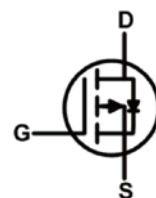
- $V_{DS} = -30V$ $I_D = -4.2A$
- $R_{DS(ON)} < 50m\Omega$ @ $V_{GS} = 10V$



SOT23

Applications

- Battery protection
- Load switch
- Uninterruptible power supply



Equivalent Circuit

Ordering information

Product ID	Pack	Naming rule	Marking	Qty(PCS)
AO3407	SOT23	AO3407 产品名称 product name	3407	3000

Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ -10V^1$	-4.2	A
$I_D @ T_A = 100^\circ C$	Continuous Drain Current, $V_{GS} @ -10V^1$	-2.6	A
I_{DM}	Pulsed Drain Current ²	-16.8	A
$P_D @ T_A = 25^\circ C$	Total Power Dissipation ³	1	W
T_{STG}	Storage Temperature Range	-55 to +150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to +150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance Junction-ambient 1	125	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	135	$^\circ C/W$

Electrical Characteristics (T_A=25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
On/Off States						
B _{VDS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =-250uA	-30	---	---	V
R _{DS(ON)}	Drain-Source on-State Resistance ³	V _{GS} =-10V , I _D =-4A	---	50	58	mΩ
		V _{GS} =-4.5V , I _D =-3A	---	62	75	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1	-1.5	-2.5	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} = -30V, V _{GS} = 0V,	---	---	-1	uA
			---	---		
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V , V _{DS} =0V	---	---	±100	nA
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = -15V, V _{GS} = 0V,f = 1.0MHz	---	520	---	pF
C _{oss}	Output Capacitance		---	70	---	
C _{rss}	Reverse Transfer Capacitance		---	60	---	
Q _g	Total Gate Charge (4.5V)	V _{GS} = -10V, V _{DS} = -15V, I _D = -4.1A	---	12	---	nC
Q _{gs}	Gate-Source Charge		---	3	---	
Q _{gd}	Gate-Drain Charge		---	2	---	
Switching Characteristics						
T _{d(on)}	Turn-On Delay Time	V _{GS} = -10V, V _{DS} = -15V , R _L = 15Ω,R _{GEN} = 2.5Ω	---	5	---	ns
T _r	Rise Time		---	28	---	
T _{d(off)}	Turn-Off Delay Time		---	30	---	
T _f	Fall Time		---	35	---	
Drain-Source Diode Characteristics and Maximum Ratings						
ISM	Maximum Pulsed Drain to Source Diode Forward Current		---	---	-16.4	A
IS	Continuous Source Current	I _S = -4.1A, V _{GS} = 0V	---	---	-4.1	A
VSD	Diode Forward Voltage ³		---	---	-1.2	V

Note :

- 1、 The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3、 The power dissipation is limited by 150℃ junction temperature
- 4、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total-power dissipation.

Typical Characteristics

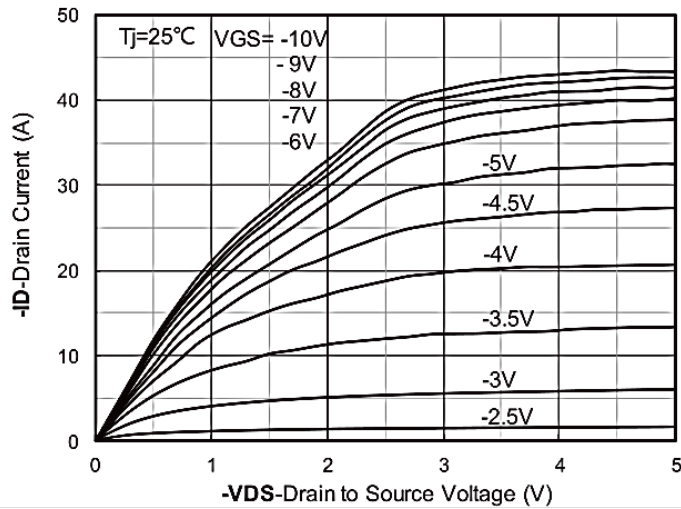


Figure 1. Output Characteristics

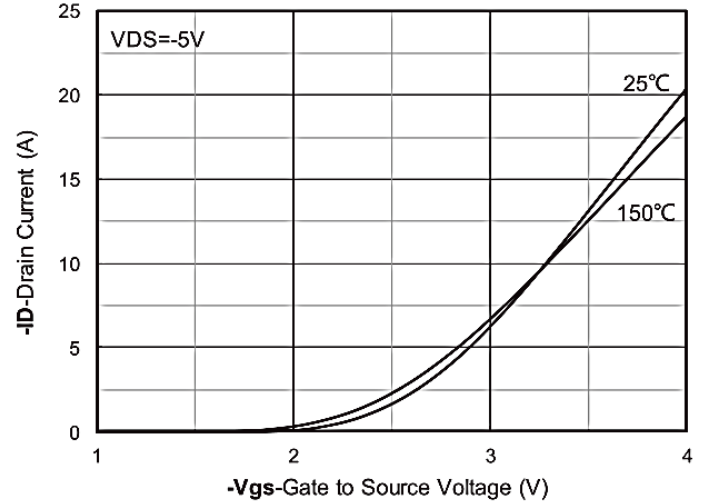


Figure 2. Transfer Characteristics

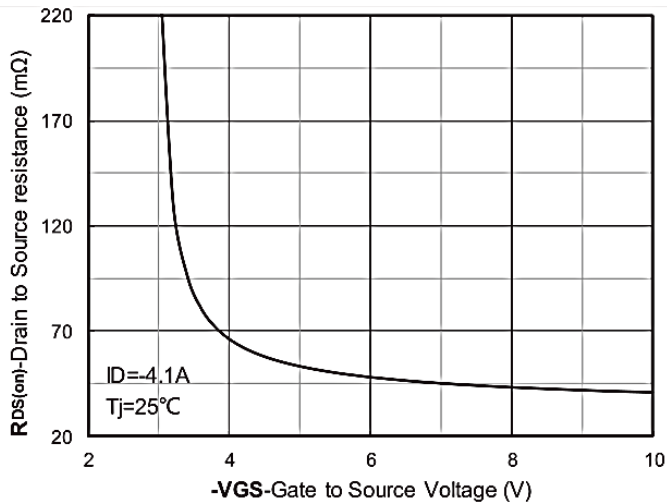


Figure 3. On-Resistance vs Gate to Source Voltage

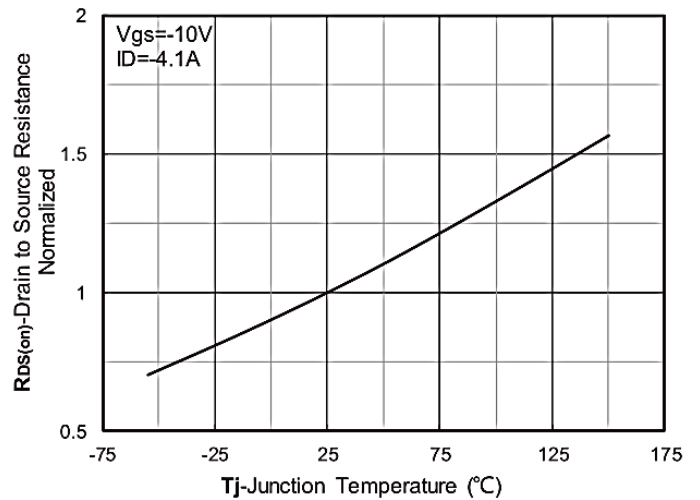


Figure 4. Normalized On-Resistance

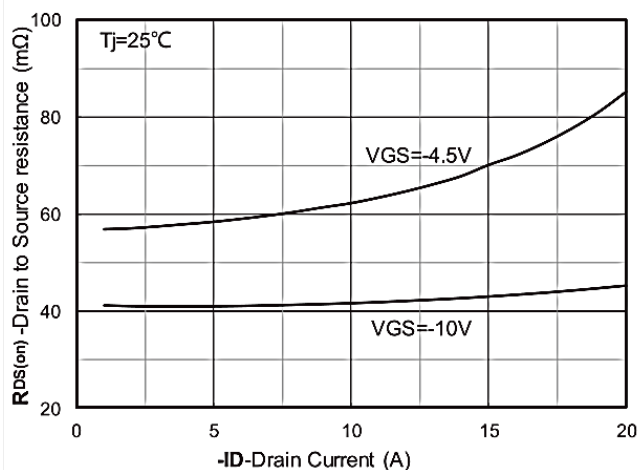


Figure 5. $R_{DS(on)}$ VS Drain Current

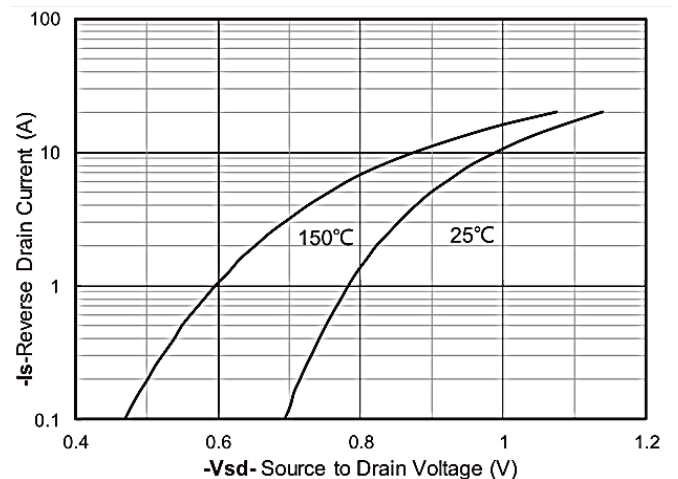


Figure 6. Forward characteristics of reverse diode

Typical Characteristics

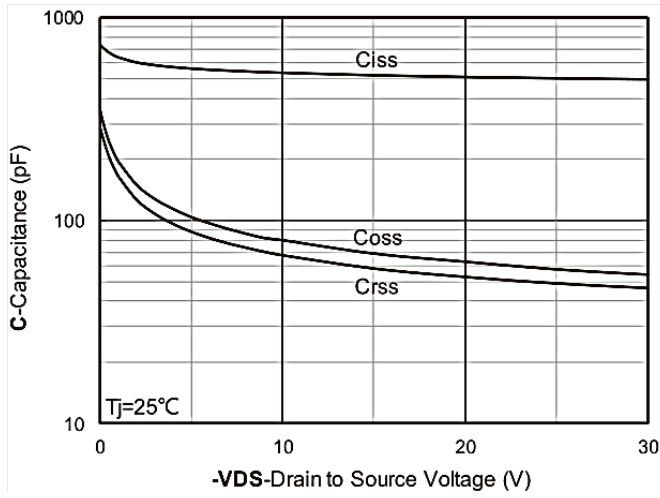


Figure 7. Capacitance Characteristics

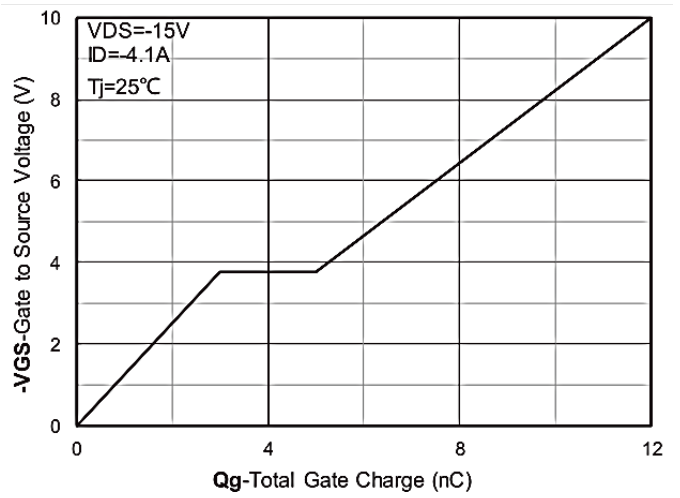


Figure 8. Gate Charge Characteristics

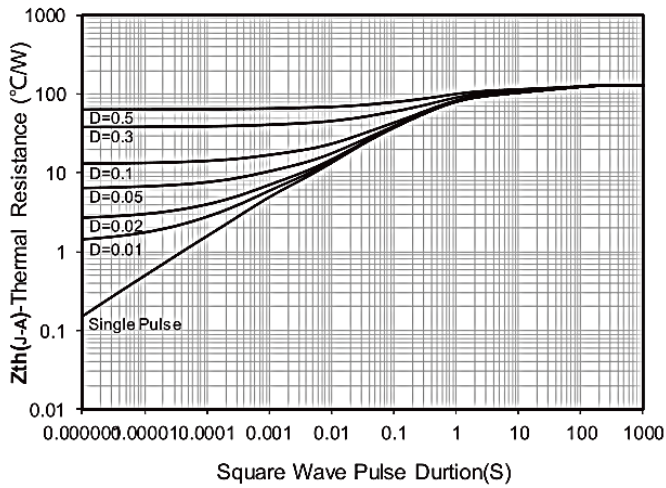


Figure 9. Maximum Transient Thermal Impedance

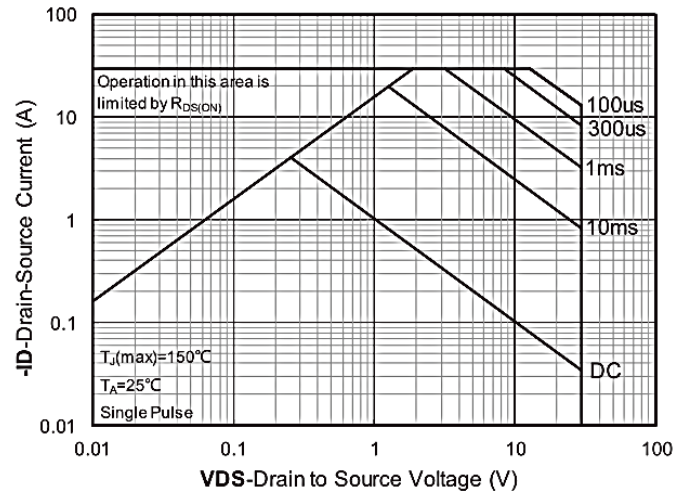
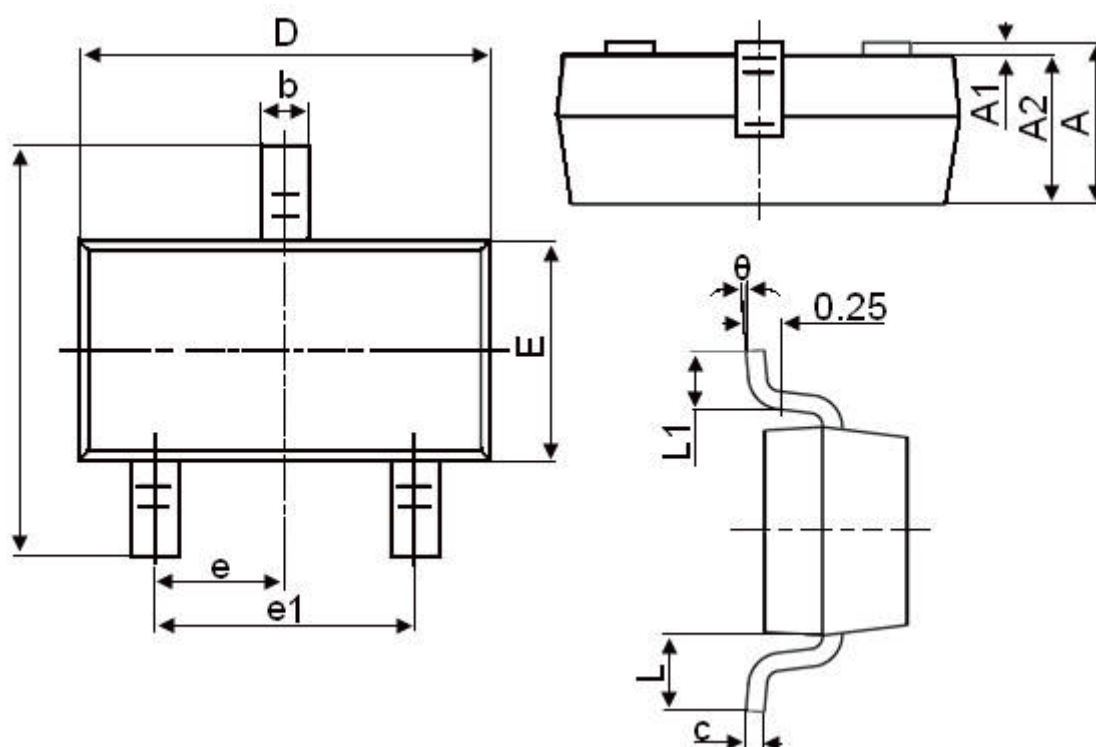


Figure 10. Safe Operation Area

SOT23 Package Outline Dimensions



Symbol	Dimensions in Millimeters	
	mm	
	Min	Max
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°