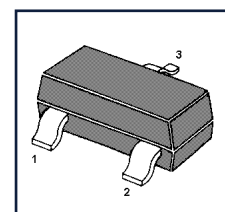


Description

The AO3415 uses advanced trench It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications.

General Features

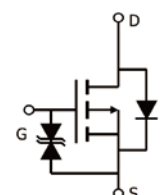
- $V_{DS} = -20V$ $I_D = -4.2A$
- $R_{DS(ON)} < 35m\Omega$ @ $V_{GS} = -4.5V$



SOT23

Applications

- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- 150°C operating temperature



Equivalent Circuit

Ordering information

Product ID	Pack	Naming rule	Marking	Qty(PCS)
AO3415	SOT23	AO3415 产品名称 product name	AF9TF	3000

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	± 8	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	-4.2	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	-2.4	A
I_{DM}	Pulsed Drain Current ²	-30	A
$P_D @ T_A = 25^\circ C$	Total Power Dissipation ³	1.5	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	90	$^\circ C/W$

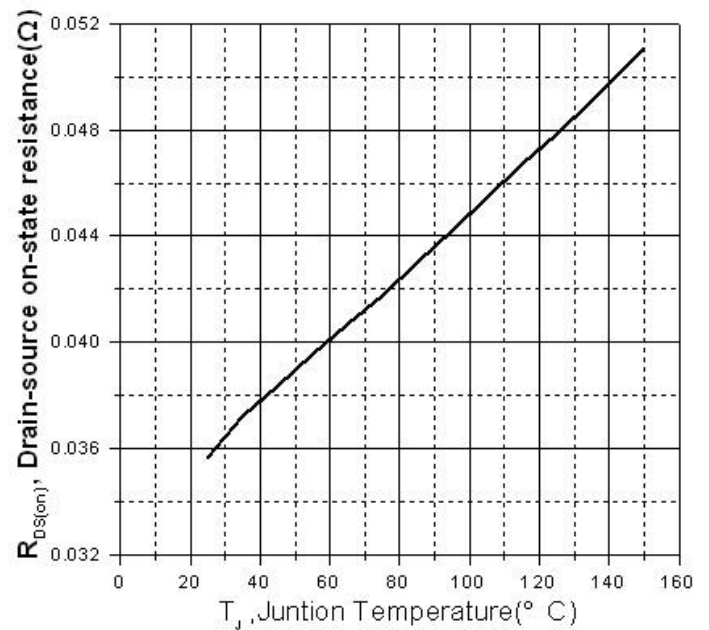
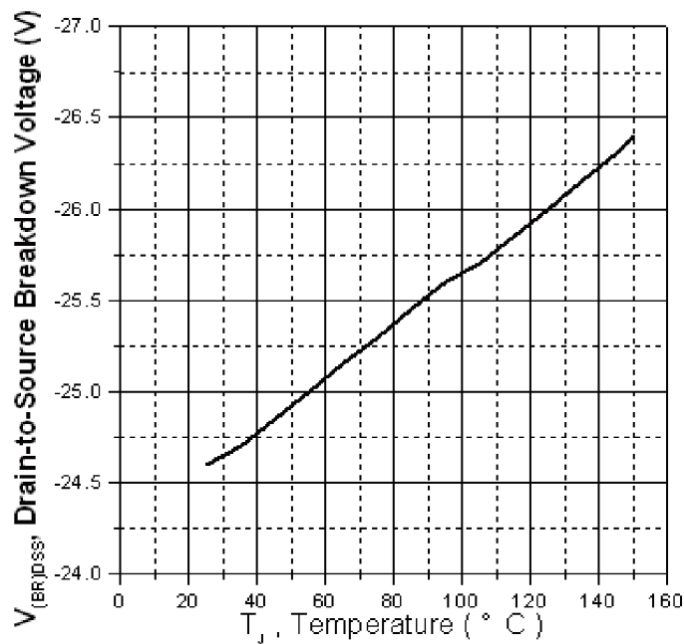
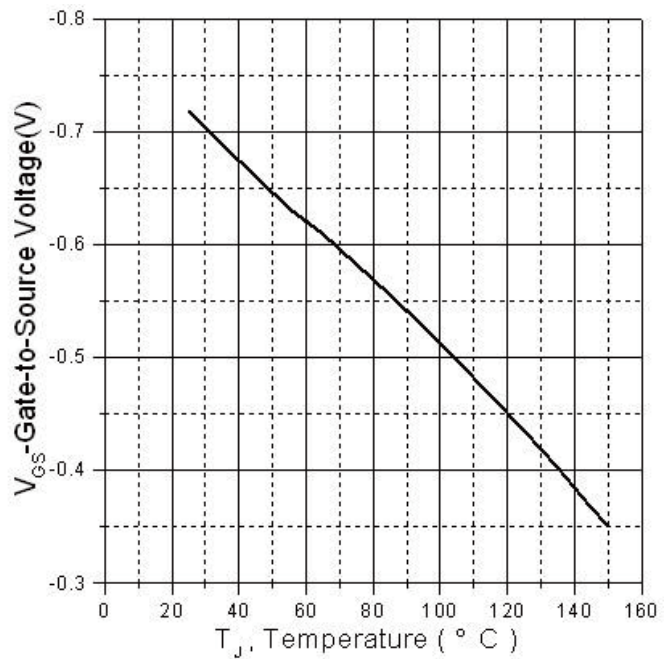
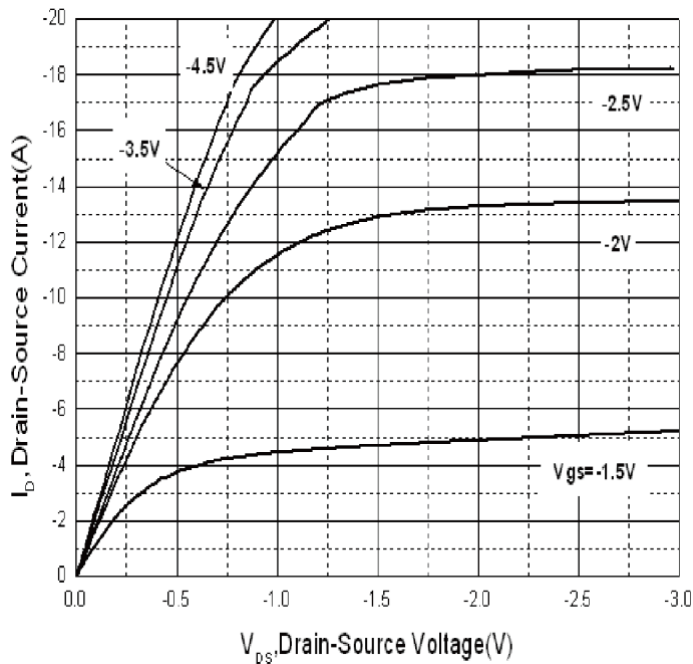
Electrical Characteristics (T_A=25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
On/Off States						
B _{VDS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =-250uA	-20	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance2	V _{GS} =-4.5V , I _D =-4A	---	35	43	mΩ
		V _{GS} =-2.5V , I _D =-4A	---	45	54	
		V _{GS} =-1.8V , I _D =-2A	---	56	73	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-0.3	---	-1.0	V
		T _J = 125°C	---	-0.44	---	
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-10V , V _{GS} =0V	---	---	-1	uA
		T _J = 125°C	---	---	-50	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±8V	---	---	±10	nA
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-10V , V _{GS} =0V , f=1MHz	---	939	---	pF
C _{OSS}	Output Capacitance		---	130	---	
C _{rss}	Reverse Transfer Capacitance		---	111	---	
Q _g	Total Gate Charge (4.5V)	V _{DS} =-10V , V _{GS} =-4.5V , I _D =-4A	---	10	---	nC
Q _{gs}	Gate-Source Charge		---	0.77	---	
Q _{gd}	Gate-Drain Charge		---	3.5	---	
Switching Characteristics						
T _{d(on)}	Turn-On Delay Time	V _{GS} =-4.5V, V _{DS} =-10V, R _{GEN} =3Ω,	---	10	---	ns
T _r	Rise Time		---	8.6	---	
T _{d(off)}	Turn-Off Delay Time		---	29	---	
T _f	Fall Time		---	13	---	
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Continuous Source Current1,4	V _G =V _D =0V , Force Current	---	---	-4.2	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V , I _S =-1A	---	-0.76	-1.0	V

Note :

- 1、 The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2、 The data tested by pulsed , pulse width Δ 300us , duty cycle Δ 2%
- 3、 The power dissipation is limited by 150°C junction temperature
- 4、 The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics





Typical Characteristics

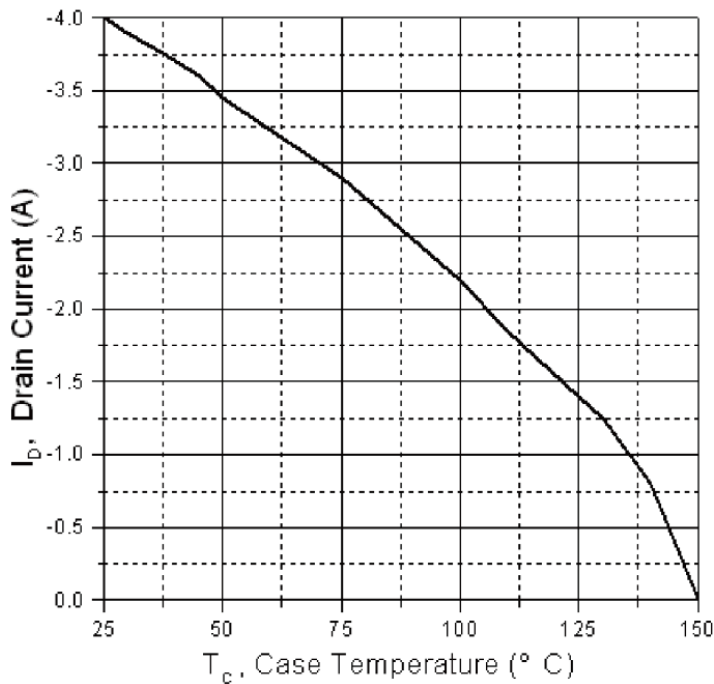


Fig.5 Maximum Drain Current Vs. Case Temperature

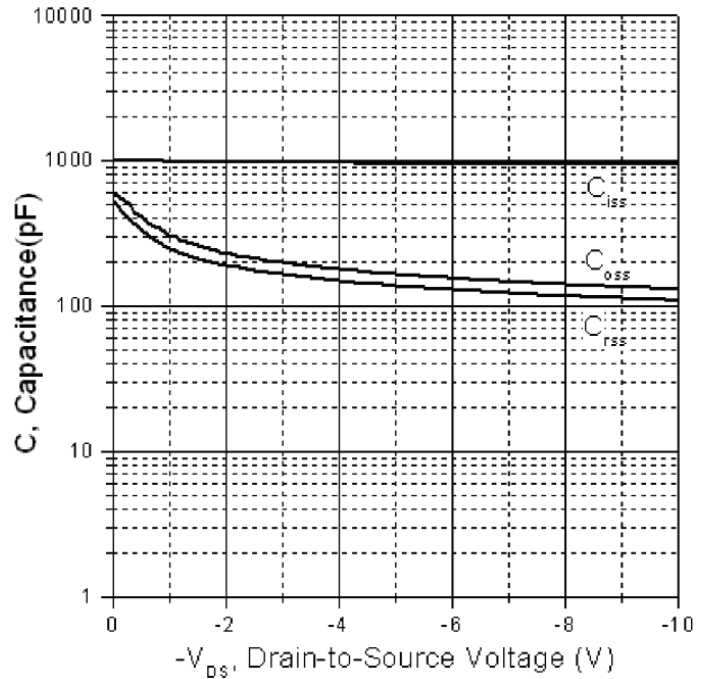


Fig.6 Typical Capacitance Vs. Drain-to-Source Voltage

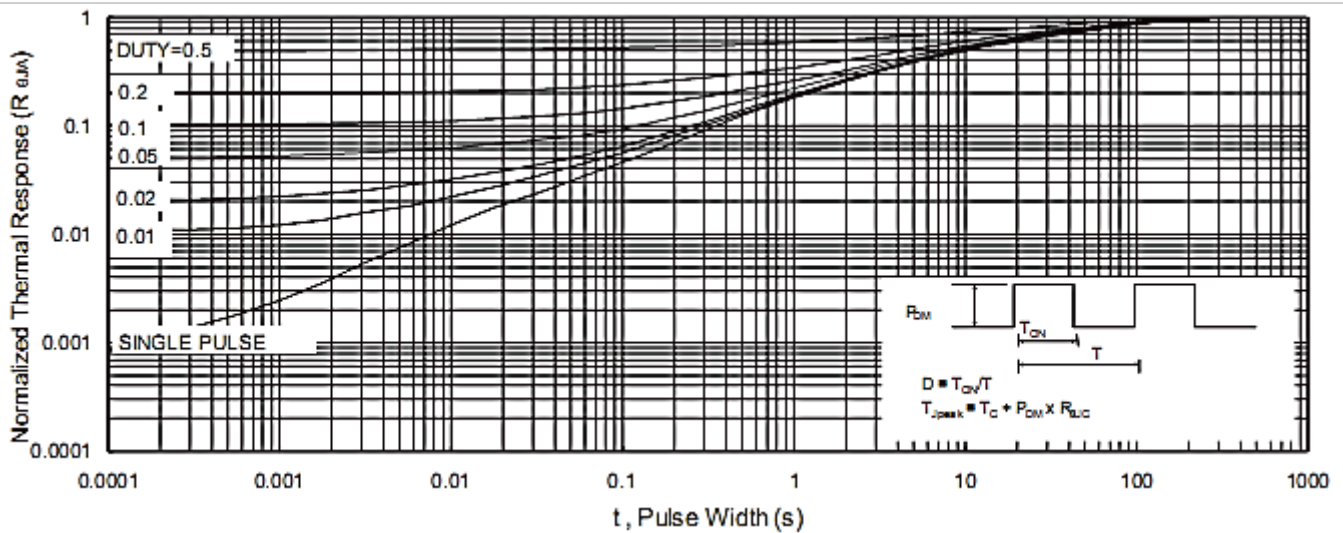
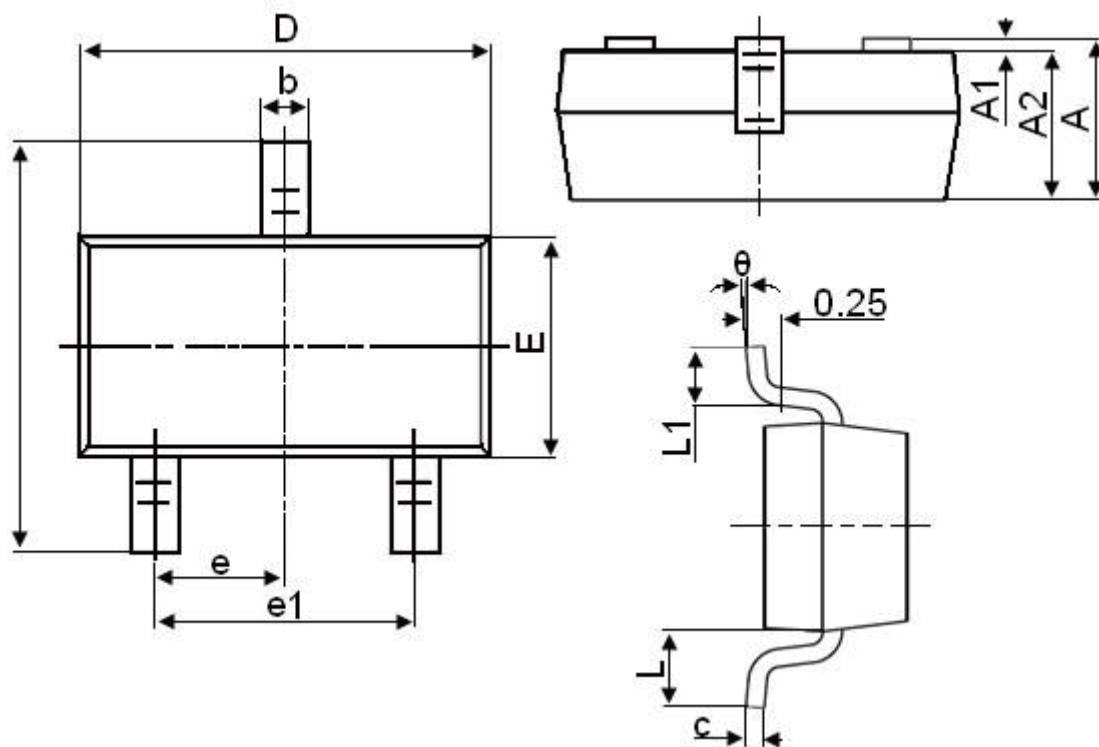


Fig.7 Maximum Effective Transient Thermal Impedance Junction-to-Case

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°