

● **Features**

V_{DS} 20V, V_{GS} 8V, I_D 2.2A,

$R_{DS(ON)} = 75m\Omega$ @ $V_{GS} = 4.5V$.

$R_{DS(ON)} = 90m\Omega$ @ $V_{GS} = 2.5V$.

Advanced trench process technology

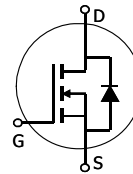
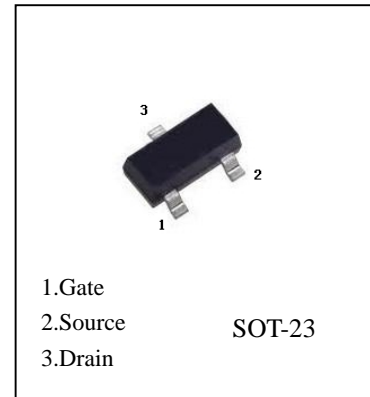
High-density cell design for ultra low on-resistance

Compact and low profile SOT23 package

● **General Description**

AO3420 is produced with high cell density DMOS trench technology, which is especially used to minimize on-state resistance. This device particularly suits low voltage applications such as portable equipment, power management and other battery powered circuits, and low in-line power

AO3420
N-Channel MOSFET



● **Absolute Maximum Ratings** @ $T_A = 25^\circ C$ unless otherwise specified

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source Voltage		V_{GSS}	± 8	V
Drain Current	Continuous	I_D	2.2	A
	Pulsed		10	
Power Dissipation ⁽¹⁾		P_D	350	mW
Operating and Storage Junction Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ C$

AO3420

● **Electrical Characteristics** @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain–Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 10\mu\text{A}$	20	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}$	--	--	1	μA
Gate–Body Leakage	I_{GSS}	$V_{GS} = \pm 8\text{ V}, V_{DS} = 0\text{ V}$	--	--	± 100	nA
ON CHARACTERISTICS⁽²⁾						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 50\mu\text{A}$	0.4	0.75	2.0	V
Static Drain–Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 4.5\text{ V}, I_D = 3.6\text{ A}$	--	70	85	m Ω
		$V_{GS} = 2.5\text{ V}, I_D = 3.1\text{ A}$	--	90	115	
Forward Transconductance	g_{FS}	$V_{DS} = 5\text{ V}, I_D = 3.6\text{ A}$	2	7.7	14	S
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	$V_{DS} = 10\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$	--	450	--	pF
Output Capacitance	C_{oss}		--	70	--	
Reverse Transfer Capacitance	C_{rss}		--	43	--	
SWITCHING CHARACTERISTICS						
Turn–On Delay Time	$t_{d(on)}$	$V_{DD} = 5\text{ V}, I_D = 3.6\text{ A},$ $V_{GS} = 4.5\text{ V}, R_{GEN} = 6\ \Omega$	--	--	15	nS
Turn–On Rise Time	t_r		--	--	80	
Turn–Off Delay Time	$t_{d(off)}$		--	--	60	
Turn–Off Fall Time	t_f		--	--	25	
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Diode Forward Voltage ⁽²⁾	V_{SD}	$V_{GS} = 0\text{ V}, I_S = 1.1\text{ A}$	0.6	0.8	1.15	V

Notes :

(1). Surface Mounted on FR4 Board, $t < 10\text{ sec.}$

(2). Pulse Test: Pulse Width $< 300\mu\text{s}$, Duty Cycle $< 2\%$

AO3420

● **Typical Performance Characteristics**

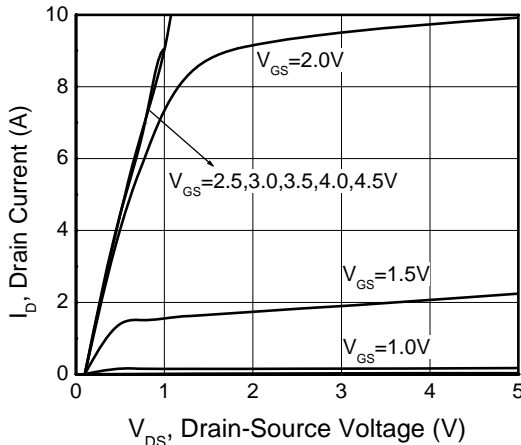


Figure 1. Output Characteristics

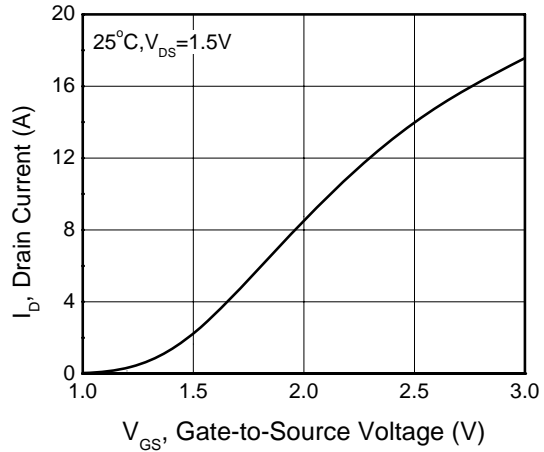


Figure 2. Transfer Characteristics

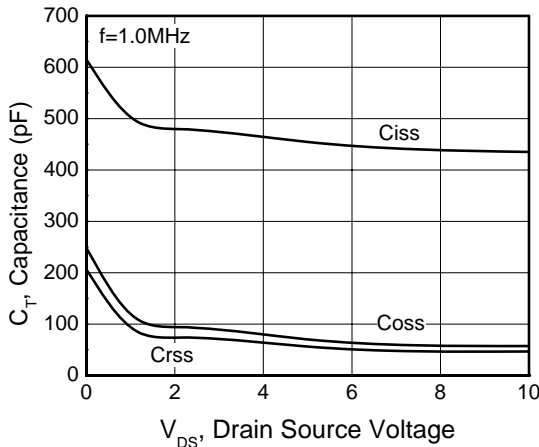


Figure 3. Capacitance

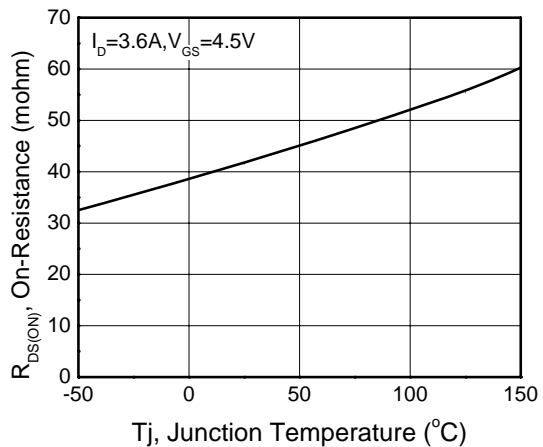


Figure 4. On-Resistance vs. Temperature

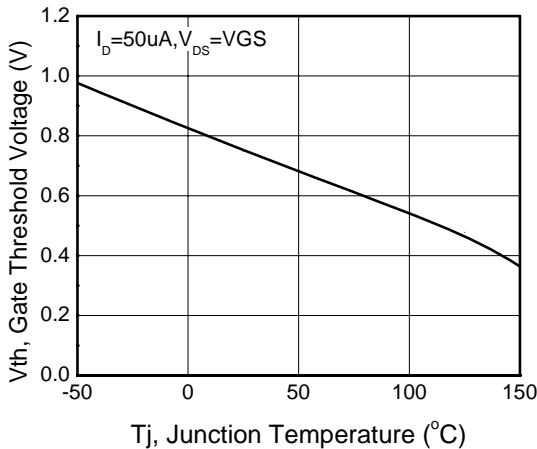


Figure 5. Gate Threshold Vs. Temperature

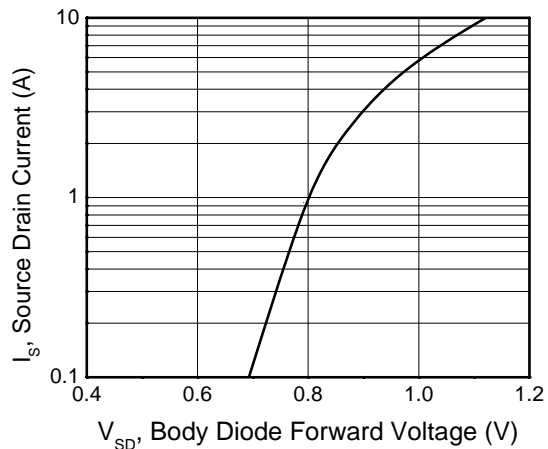


Figure 6. Body Diode Forward Voltage vs. Source Current

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