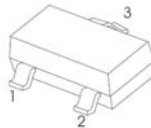


### FEATURE

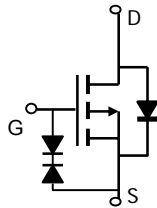
- High density cell design for low  $R_{DS(ON)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability

### SOT-23



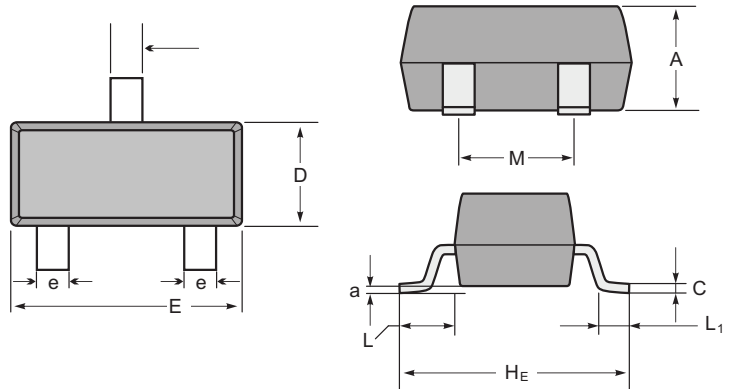
1. GATE
2. SOURCE
3. DRAIN

### Equivalent Circuit



### Marking

Type number	Marking code
AO3415	3415



SOT-23 mechanical data

UNIT	A	C	D	E	H <sub>E</sub>	e	M	L	L <sub>1</sub>	a	
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)	0.0
	min	0.9	0.08	1.2	2.8	2.2	0.3	1.7			0.15
mil	max	43	6	55	118	102	20	77	22 (ref)	14 (ref)	0.0
	min	35	3	47	110	87	12	67			6

### Maximum ratings ( $T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	
Continuous Drain Current ( $t \leq 10\text{s}$ )	$I_D$	-4.0	A
Maximum Power Dissipation ( $t \leq 10\text{s}$ )	$P_D$	1.2	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^\circ\text{C/W}$
Operating Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

# AO3415

$T_a=25\text{ }^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Static Parameters</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.3	-0.56	-1	
Gate-body leakage current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 8V$			$\pm 10$	$\mu A$
		$V_{DS} = 0V, V_{GS} = \pm 4.5V$			$\pm 1$	
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = -16V, V_{GS} = 0V$			-1	
Drain-source on-state resistance(note1)	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -4A$		0.037	0.050	$\Omega$
		$V_{GS} = -2.5V, I_D = -4A$		0.045	0.060	
		$V_{GS} = -1.8V, I_D = -2A$		0.056	0.073	
Forward transconductance(note2)	$g_{FS}$	$V_{DS} = -5V, I_D = -4A$	8			S
Body diode voltage(note2)	$V_{SD}$	$I_S = -1A, V_{GS} = 0V$			-1	V
<b>Dynamic Parameters (note3)</b>						
Input capacitance	$C_{iss}$	$V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$		1450		pF
Output capacitance	$C_{oss}$			205		
Reverse transfer capacitance	$C_{rss}$			160		
Gate resistance	$R_g$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		6.5		$\Omega$
<b>Switching Parameters</b>						
Total gate charge	$Q_g$	$V_{DS} = -10V, V_{GS} = -4.5V, I_D = -4A$		17.2		nC
Gate-Source charge	$Q_{gs}$			1.3		
Gate-drain charge	$Q_{gd}$			4.5		
Turn-on delay time (note3)	$t_{d(on)}$	$V_{DS} = -10V, V_{GS} = -4.5V$ $R_{GEN} = 3\Omega, R_L = 2.5\Omega,$		9.5		ns
Turn-on rise time(note3)	$t_r$			17		
Turn-off delay time(note3)	$t_{d(off)}$			94		
Turn-off fall time(note3)	$t_f$			35		

**Notes:**

1. Repetitive rating, pulse width limited by junction temperature.
2. Pulse Test : Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
3. These parameters have no way to verify.

## RATING AND CHARACTERISTIC CURVES (AO3415)

