

-30V 43mΩ P-channel MOSFET

Features

- Trench Technology Power MOSFET
- Exceptional on-resistance and maximum DC current capability

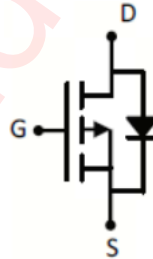
General Description

V_{DS}	$R_{DS(ON)}$ Typ.	I_D
-30V	43mΩ @ $V_{GS} = -10.0V$	-4.2A
	52mΩ @ $V_{GS} = -4.5V$	
	72mΩ @ $V_{GS} = -2.5V$	

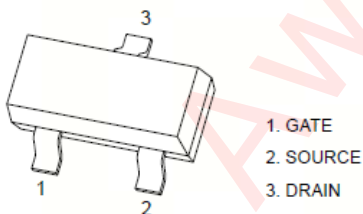
Applications

- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

Schematic diagram



Pin Configuration



Ordering Information

Part Number	Marking	Package	Environmental Information
AW403052PSTR	R1	SOT-23	RoHS+HF

Absolute Maximum Ratings

$T_A = T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Drain Current-Continuous ($T_A = 25^\circ\text{C}$)	-4.2	A
P_D	Power Dissipation ($T_A = 25^\circ\text{C}$)	0.35	W
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Value	Units
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient Steady State	357	$^\circ\text{C/W}$

NOTE1: Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$

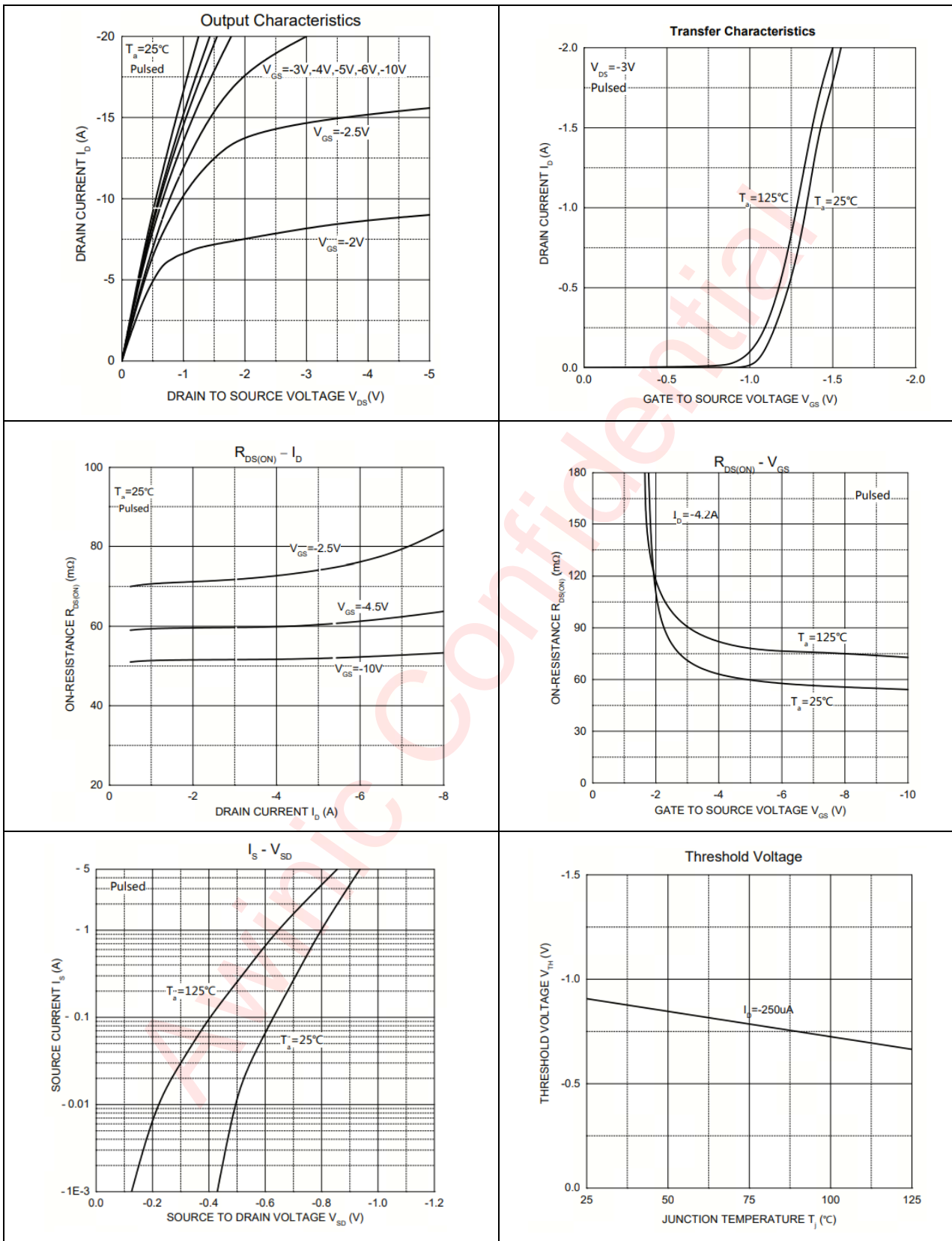
NOTE2: Guaranteed by design, not subject to production testing

Electrical Characteristics

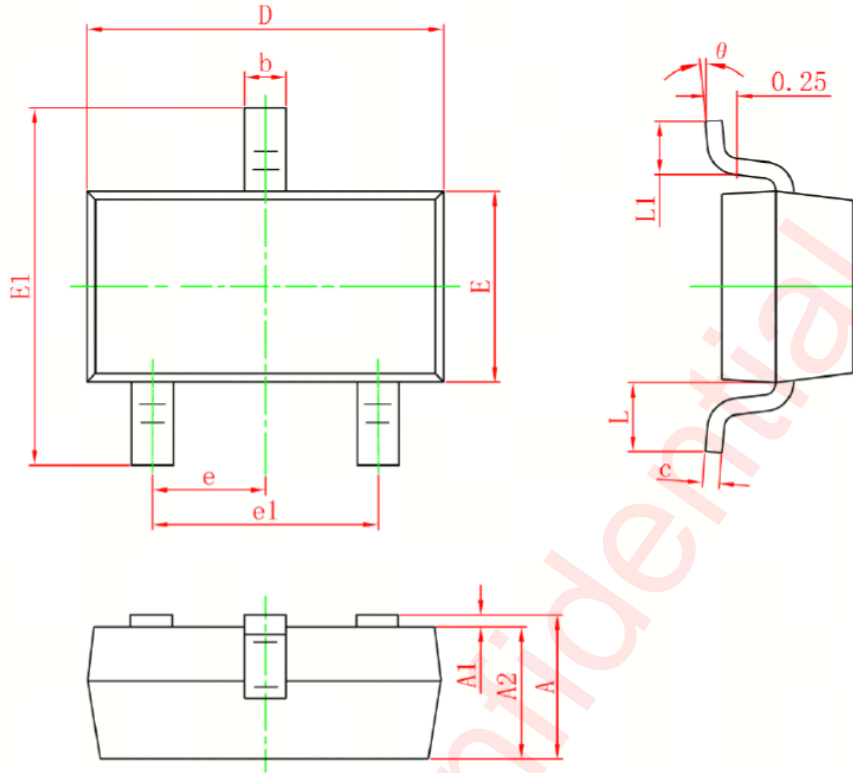
$T_A = T_J = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
I_{DSS}	Zero Gate Voltage Source Current	$V_{DS} = -24V, V_{GS} = 0V$			-1	μA
I_{GSS}	Gate Leakage Current	$V_{GS} = \pm 12V, V_{DS} = 0V$			± 100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.6	-0.9	-1.3	V
$R_{DS(ON)}$	Drain-Source On-state Resistance ^(NOTE 1)	$V_{GS} = -10.0V, I_D = -4.2A$		43	65	m Ω
		$V_{GS} = -4.5V, I_D = -4.0A$		52	75	
		$V_{GS} = -2.5V, I_D = -1.0A$		72	90	
g_{FS}	Forward Transconductance ^(NOTE 1)	$V_{DS} = -5.0V, I_D = -4.2A$		10		S
Dynamic Characteristics ^(NOTE 2)						
C_{iss}	Input Capacitance	$V_{DS} = -15V, V_{GS} = 0V,$ $f = 1MHz$		954		pF
C_{oss}	Output Capacitance			115		pF
C_{rss}	Reverse Transfer Capacitance			77		pF
Switching Characteristics ^(NOTE 2)						
Q_g	Total Gate Charge	$V_{DS} = -15V, I_D = -4.2A,$ $V_{GS} = -10V$		17		nC
Q_{gs}	Gate-Source Charge			1.6		
Q_{gd}	Gate-Drain Charge			2.6		
$t_{d(on)}$	Turn On Delay Time	$V_{DS} = -15V, V_{GS} = -10V$ $R_L = 3.6\Omega, R_{GEN} = 6\Omega$		6.3		ns
t_r	Turn-on Rise Time			3.2		
$t_{d(off)}$	Turn Off Delay Time			38.2		
t_f	Turn-off Fall Time			12		
Source- Drain Diode Characteristics and Maximum Ratings						
I_S	Diode forward current				-2	A
I_{SM}	Diode pulsed forward current				-25	A
V_{SD}	Diode Forward Voltage ^(NOTE 1)	$V_{GS} = 0V, I_S = -4.2A$			-1.2	V

Electrical Characteristics Diagrams



Package Description



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0	0.100	0	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.150	1.500	0.045	0.059
E1	2.250	2.650	0.089	0.104
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Revision History

Version	Date	Change Record
V1.0	Nov 2023	Official released

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