

12V Dual N-Channel MOSFET

Features

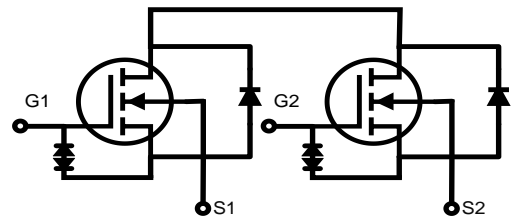
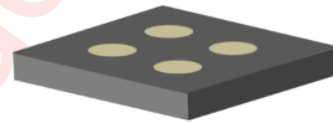
- Low source-source on resistance
 - Typ. $R_{SS(ON)}$ 14.0m Ω ($V_{GS}= 4.5V$)
 - Common-Drain type
 - ESD Diode-Protected Gate
 - Pb-Free, Halogen Free and RoHS compliance
- Applications

Applications

- Battery protection switch
- Mobile device battery charging and discharging

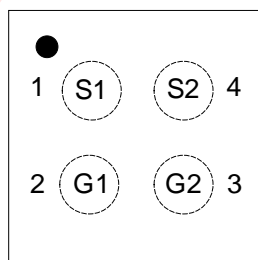
General Description

V_{SS}	$R_{SS(ON)}$ Typ.	I_S
12V	14.0 m Ω @ $V_{GS}= 4.5V$	8A
	14.5 m Ω @ $V_{GS}= 4.0V$	
	15.0 m Ω @ $V_{GS}= 3.8V$	
	16.0 m Ω @ $V_{GS}= 3.1V$	
	19.0 m Ω @ $V_{GS}= 2.5V$	

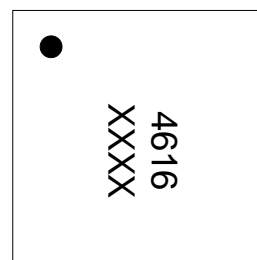


Pin Configuration and Top Mark

AW401038QCSR
(Top View)



AW401038QCSR Marking
(Top View)



4616 - AW401038QCSR
XXXX - LOT NO.

Ordering Information

Part Number	Package	Marking	Environmental Information
AW401038QCSR	WLCSP-4L	4616	RoHS+HF

Absolute Maximum Ratings ^(NOTE 1)

T_A= 25°C unless otherwise noted

Symbol	Parameter	Maximum	Unit
V _{SS}	Source-Source Voltage	12	V
V _{GS}	Gate-Source Voltage	±10	V
I _S	Source Current(DC) ^(NOTE 2)	8	A
I _{SM}	Source Current(Pulse) ^(NOTE 2,3)	60	A
P _D	Power Dissipation	1.5	W
T _J	Junction Temperature	150	°C
T _{STG}	Storage Temperature	-55 to 150	°C

NOTE1: Conditions out of those ranges listed in "absolute maximum ratings" may cause permanent damages to the device. In spite of the limits above, functional operation conditions of the device should within the ranges listed in "recommended operating conditions". Exposure to absolute-maximum-rated conditions for prolonged periods may affect device reliability.

NOTE2: Mounted on FR-4 material with minimum recommended pad layout.

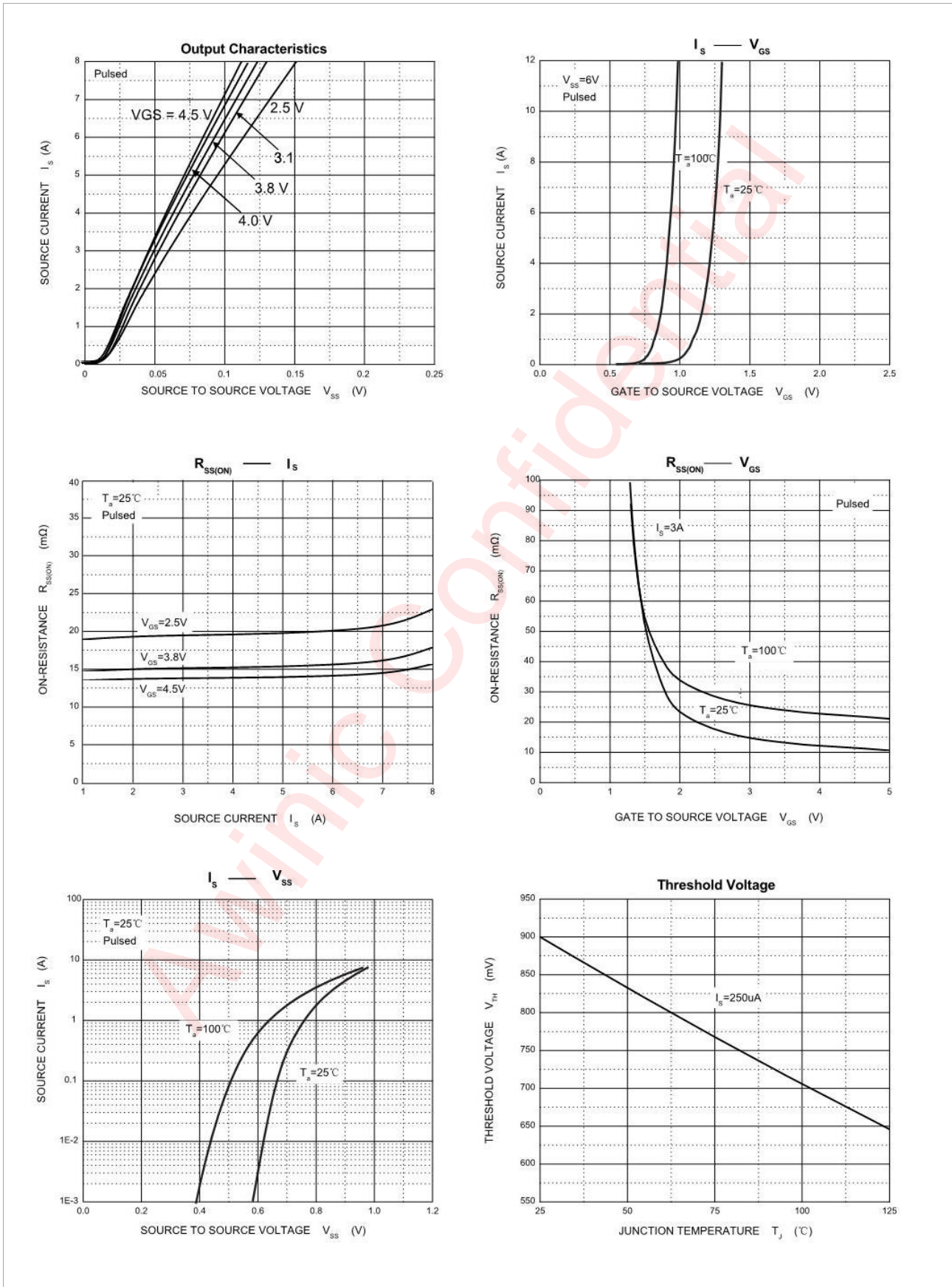
NOTE3: PW < 10μs pulses, duty cycle 1% max.

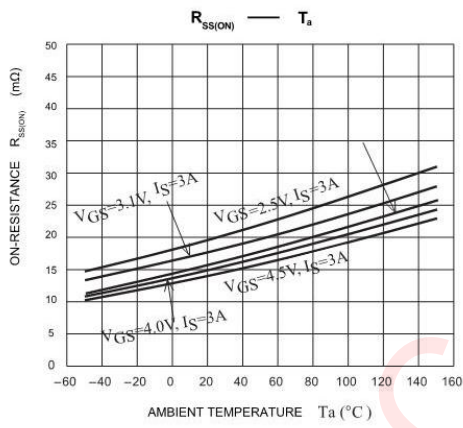
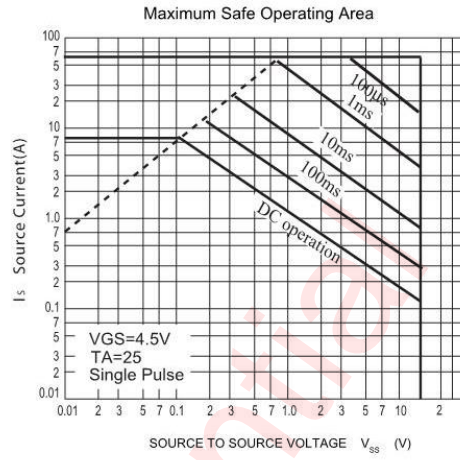
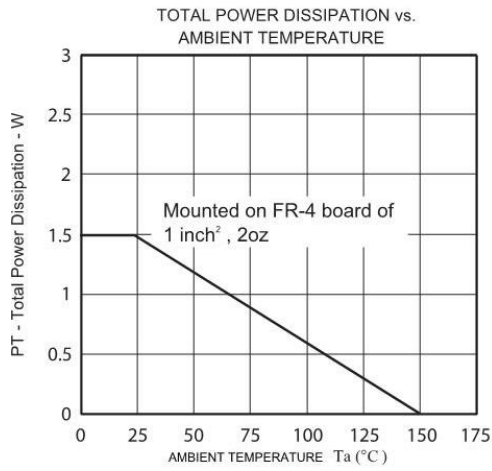
Electrical Characteristics

T_J= 25°C for typical values (unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
STATIC PARAMETERS						
BV _{SSS}	Source - Source Breakdown Voltage	I _S = 250μA, V _{GS} = 0V	12	-	-	V
I _{SSS}	Zero Gate Voltage Source Current	V _{SS} = 12V, V _{GS} = 0V	-	-	1	μA
I _{GSS}	Gate leakage current	V _{SS} = 0V, V _{GS} = ±8V	-	-	±10	μA
V _{GS(OFF)}	Cut off Voltage	V _{GS} = 6V, I _S = 250μA	0.5	0.8	1.3	V
R _{SS(ON)}	Static Source to Source On-Resistance	V _{GS} = 4.5V, I _S = 3A	10.0	14.0	18.0	mΩ
		V _{GS} = 4.0V, I _S = 3A	10.5	14.5	19.0	mΩ
		V _{GS} = 3.8V, I _S = 3A	11.0	15.0	20.0	mΩ
		V _{GS} = 3.1V, I _S = 3A	12.0	16.0	21.0	mΩ
		V _{GS} = 2.5V, I _S = 3A	13.0	19.0	30.0	mΩ
g _{FS}	Forward Transconductance	V _{SS} = 10V, I _S = 3A	1	9	-	S
V _{FSS}	Forward Source to Source Voltage	I _S = 1A, V _{GS} = 0V	-	-	1.2	V
SWITCHING PARAMETERS						
Q _g	Total Gate Charge	V _{G1S1} = 4.5V, V _{SS} = 10V, I _S = 6A	-	10.8	-	nC
t _{d(on)}	Turn - On Delay Time	V _{G1S1} = 4.5V, V _{SS} = 10V, I _S = 3A	-	0.9	-	μs
t _r	Turn - On Rise Time		-	4.5	-	μs
t _{d(off)}	Turn - Off Delay Time		-	12	-	μs
t _f	Turn - Off Fall Time		-	12	-	μs

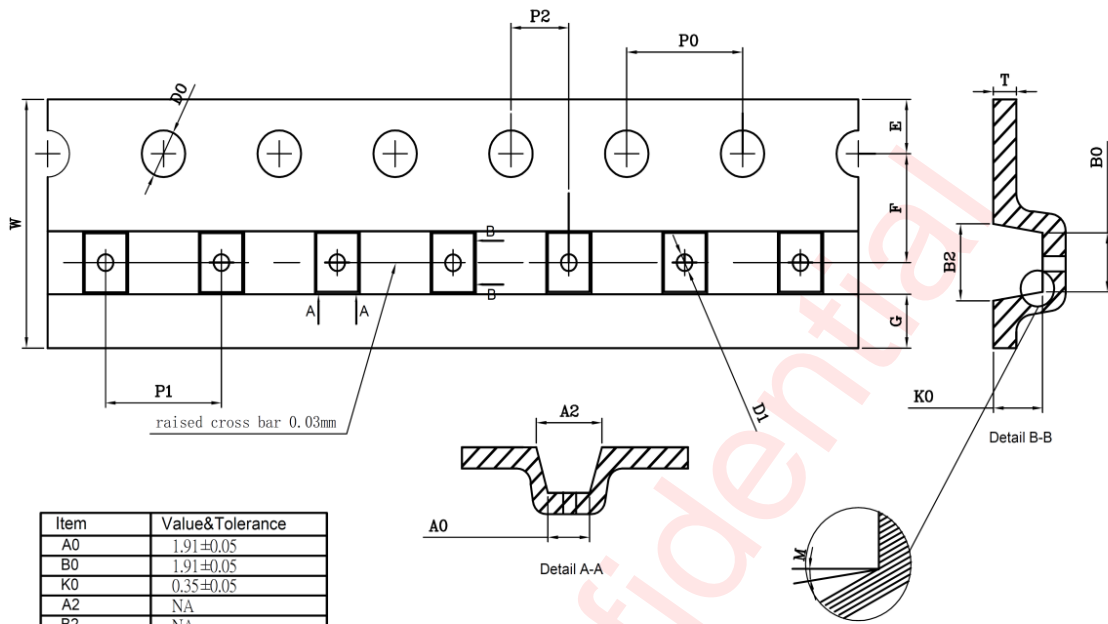
Typical Electrical and Thermal Characteristics





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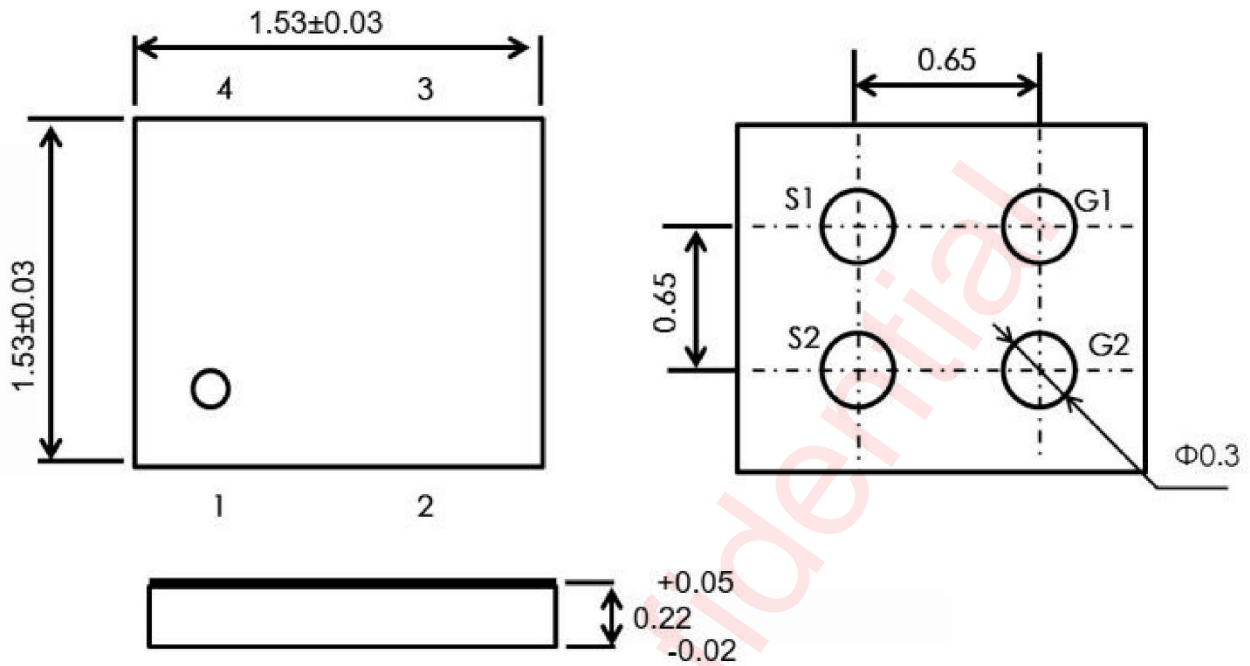
Tape And Reel Information



Item	Value&Tolerance
A0	1.91±0.05
B0	1.91±0.05
K0	0.35±0.05
A2	NA
B2	NA
D0	1.50 +0.10/-0.00
D1	0.50±0.10
P0	4.00±0.10
P1	4.00±0.10
P2	2.00±0.05
E	1.75±0.10
F	3.50±0.05
G	NA
T	0.20±0.03
W	8.00 +0.30/-0.10
M	Max 5°

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Package Description



Revision History

Version	Date	Change Record
V1.0	Nov. 2023	Officially released
V1.1	Dec. 2023	Updated Pin Configuration and Top Mark (Page1)
V1.2	Jul. 2025	Updated Package Description (Page7)

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