20V 30mΩ Dual P-Channel MOSFET

Features

- Trench Technology
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance

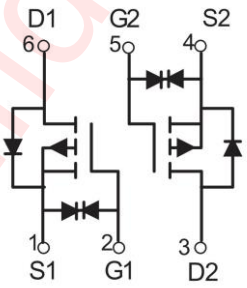
General Description

V_{DS}	$R_{DS(ON)}$ Typ.	I_D
-20V	30mΩ @ V_{GS} = -4.5V	-5A
	40mΩ @ V_{GS} = -2.5V	
	70mΩ @ V_{GS} = -1.8V	

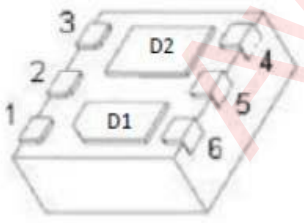
Applications

- DC/DC Converter
- Power Management

Schematic diagram



Pin Configuration



Ordering Information

Part Number	Marking	Package	Environmental Information
AW402037QDNR	P3415	DFN2*2-6L	RoHS+HF

Absolute Maximum Ratings

T_A = T_C = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	±10	V
I_D	Drain Current - Continuous (T_A=25°C) (NOTE 1,5)	-5	A
I_{DM}	Drain Current - Pulsed (NOTE 2)	-20	A
P_D	Power Dissipation (T_A=25°C) (NOTE 5)	2	W
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	°C

Thermal Characteristics

Symbol	Parameter	Value	Units
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient Steady State(NOTE 5)	62.5	°C/W

NOTE1: The maximum current rating is limited by Chip

NOTE2: Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%

NOTE3: Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%

NOTE4: The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C. And device mounted on a large heatsink

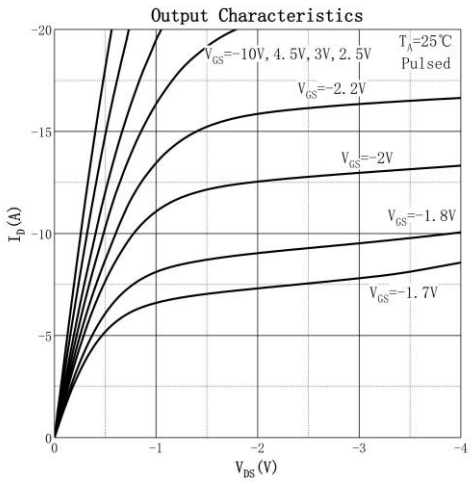
NOTE5: Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C

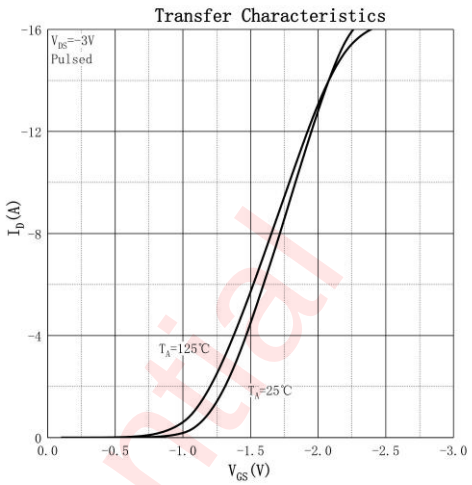
Electrical Characteristics

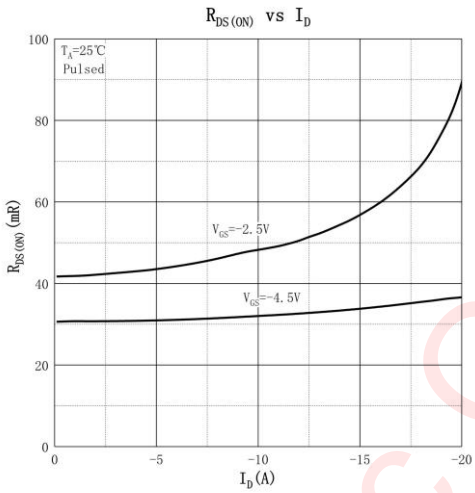
T_J = 25°C unless otherwise noted

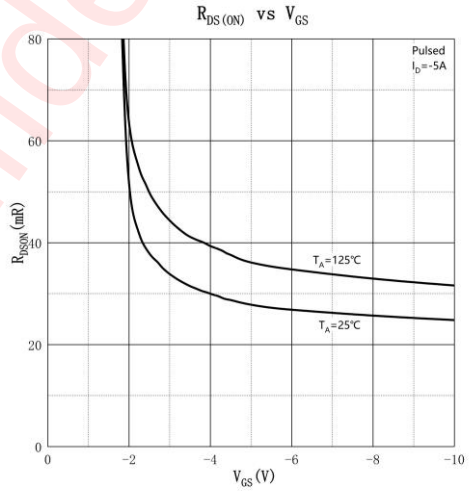
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Static Characteristics						
BV_{DSS}	Drain - Source Breakdown Voltage	V_{GS}= 0V, I_D= -250μA	-20			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= -16V, V_{GS}= 0V			-1	μA
I_{GSS}	Gate Leakage Current	V_{GS}= ±8V, V_{DS}= 0V			±5	μA
$V_{GS(TH)}$	Gate Threshold Voltage(NOTE 3)	V_{DS}= V_{GS}, I_D= -250μA	-0.3	-0.6	-1.0	V
$R_{DS(ON)}$	Drain - Source On-state Resistance(NOTE 3)	V_{GS}= -4.5V, I_D= -4.0A		30	50	mΩ
		V_{GS}= -2.5V, I_D= -4.0A		40	60	
		V_{GS}= -1.8V, I_D= -2.0A		70	100	
g_{FS}	Forward Transconductance(NOTE 3)	V_{DS}= -4.5V, I_D= -4.0A	2			S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}= -10V, V_{GS}= 0V, f= 1MHz		820		pF
C_{oss}	Output Capacitance			138		
C_{rss}	Reverse Transfer Capacitance			123		
R_g	Gate Resistance	V_{DS}= 0V, V_{GS}= 0V, f= 1MHz		5		Ω
Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}= -10V, I_D= -5.0A, V_{GS}= -4.5V		17		nC
Q_{gs}	Gate - Source Charge			1.2		
Q_{gd}	Gate - Drain Charge			4.7		
$t_{d(on)}$	Turn On Delay Time	V_{DS}= -10V, V_{GS}= -4.5V, R_G= 3Ω, R_L= 2Ω		9.4		ns
t_r	Rise Time			18		
$t_{d(off)}$	Turn Off Delay Time			80		
t_f	Fall Time			40		
Source- Drain Diode Characteristics and Maximum Ratings						
V_{SD}	Diode Forward Voltage (NOTE 3)	V_{GS}= 0V, I_S= -1.0A			-1.2	V

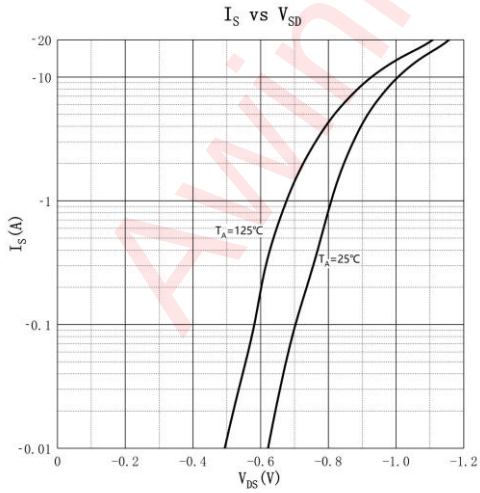
Electrical Characteristics Diagrams

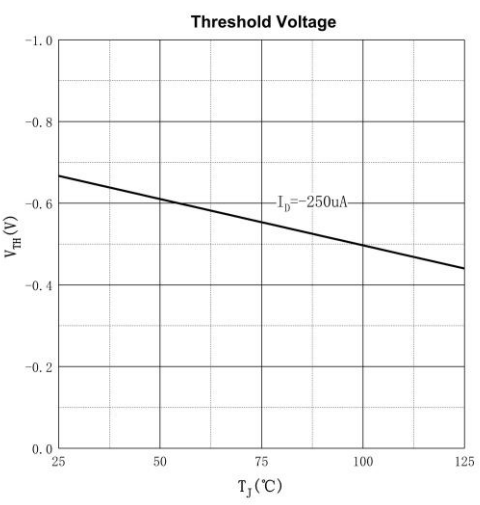




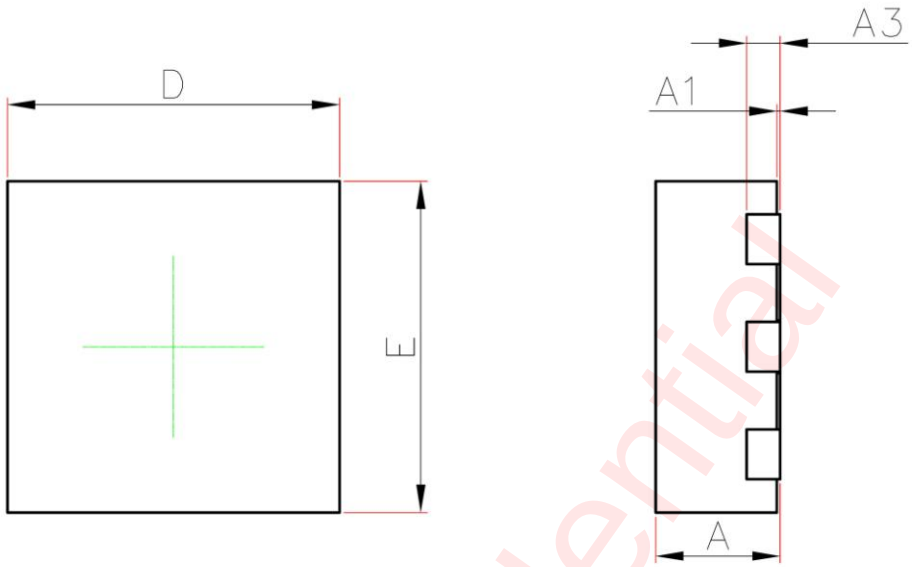


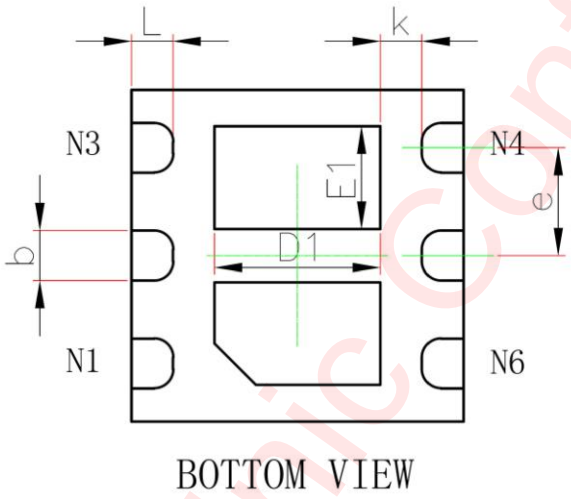






Package Description





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0	0.050	0	0.002
A3	2.03REF		0.008REF	
D	1.900	2.100	0.075	0.083
E	1.900	2.100	0.075	0.083
D1	0.900	1.100	0.035	0.043
E1	0.520	0.720	0.020	0.028
k	0.200MIN		0.008MIN	
b	0.250	0.350	0.010	0.014
e	0.65BSC		0.026TYP	
L	0.174	0.326	0.007	0.013

Revision History

Version	Date	Change Record
V1.0	Nov. 2023	Officially released

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