30V N-channel MOSFET

Features

- Split Gate Trench Technology
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

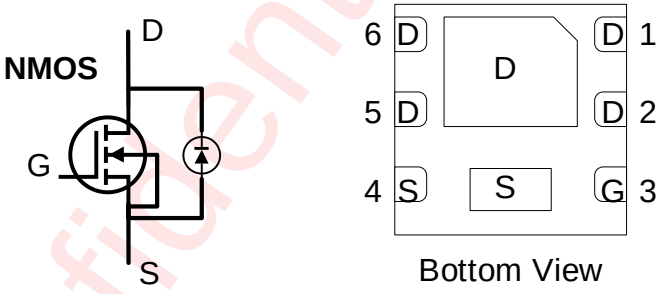
Applications

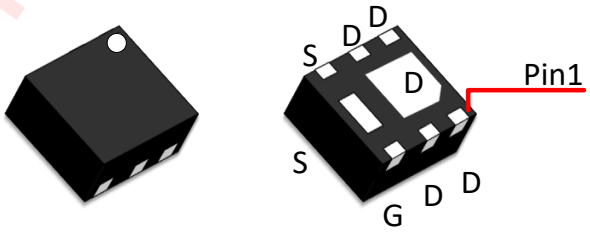
- Power Switching Application

General Description

V_{DS}	$R_{DS(ON)}$ Typ.	I_D
30V	8.5mΩ @ V_{GS} = 10V	16A
	12.0mΩ @ V_{GS} = 4.5V	

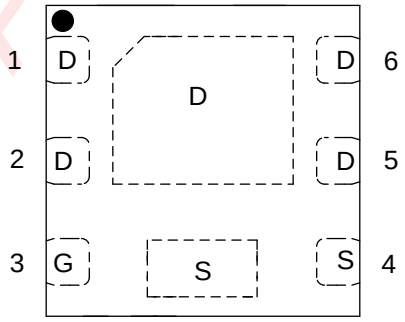
Schematic diagram



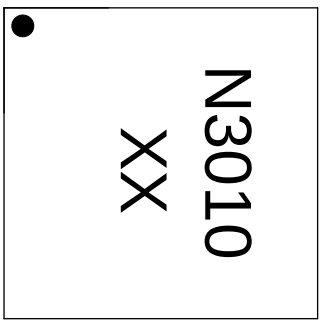


Pin Configuration

AW403058NDNR
(Top View)



AW403058NDNR Marking
(Top View)



N3010 - AW403058NDNR
XX - Date Code

Ordering Information

Part Number	Marking	Package	Environmental Information
AW403058NDNR	N3010	DFN2.0mmX2.0mm-6L	RoHS+HF

Absolute Maximum Ratings

$T_A = T_C = 25°C$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{DS}	Drain - Source Voltage	30	V
V_{GS}	Gate - Source Voltage	±20	V
I_D	Continuous Drain Current (T_A = 25°C)(NOTE 1)	16	A
	Continuous Drain Current (T_A = 55°C)(NOTE 1)	12	A
	Continuous Drain Current (T_A = 100°C)(NOTE 1)	10	A
I_{DM}	Pulsed Drain Current(NOTE 2)	64	A
I_{AS}	Single Pulsed Avalanche Current(NOTE 3)	17	A
E_{AS}	Single Pulsed Avalanche Energy(NOTE 3)	72	mJ
P_D	Power Dissipation (T_A = 25°C) (NOTE 4)	3	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)	42	°C/W

NOTE1: The maximum current rating is limited by package. And device mounted on a large heatsink.

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

NOTE3: E_{AS} condition: V_{DD} = 15V, V_{GS} = 10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°C.

NOTE4: Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

NOTE5: The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C. And device mounted on a large heatsink.

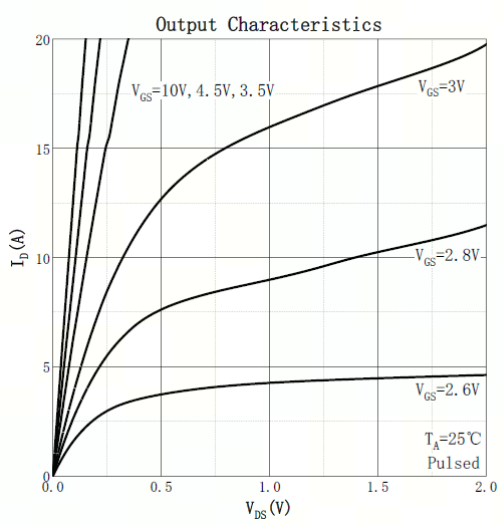
NOTE6: Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

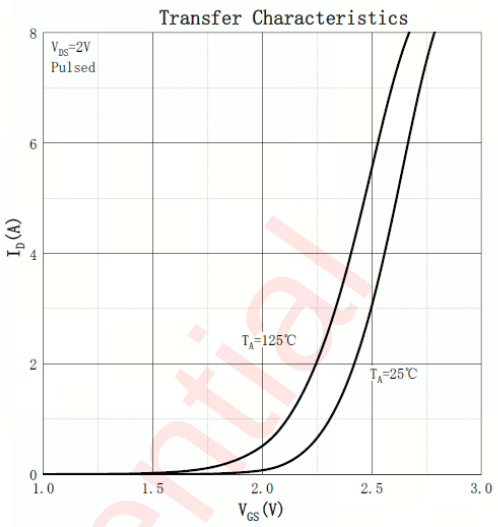
Electrical Characteristics

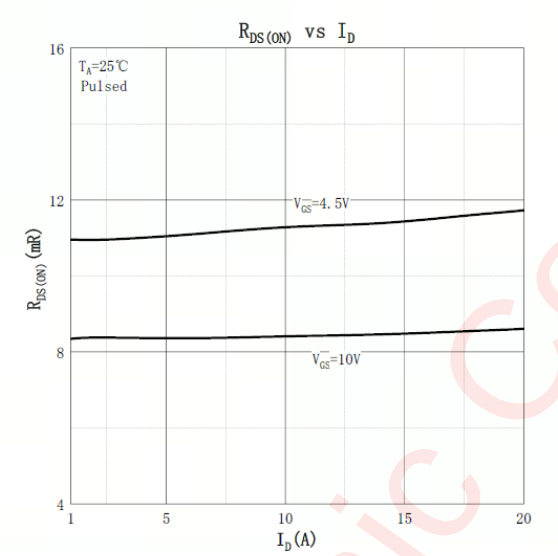
T_A=T_J = 25°C unless otherwise noted

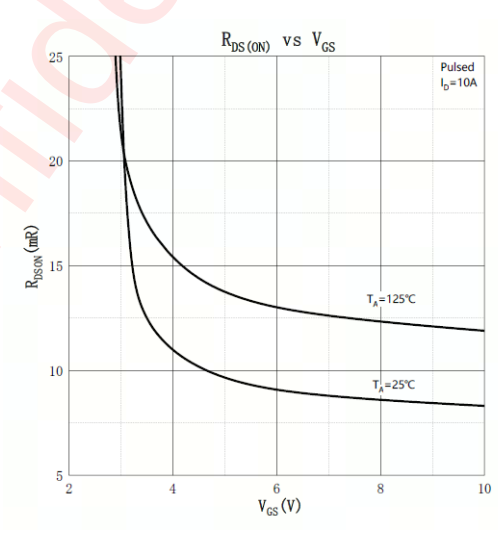
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Static Characteristics						
BV_{DSS}	Drain - Source Breakdown Voltage	V_{GS}= 0V, I_D= 250μA	30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= 24V, V_{GS}= 0V			1	μA
I_{GSS}	Gate Leakage Current	V_{GS}= ±20V, V_{DS}= 0V			±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage(NOTE 3)	V_{DS}= V_{GS}, I_D= 250μA	1.0	1.5	3.0	V
$R_{DS(ON)}$	Drain - Source On-state Resistance(NOTE 3)	V_{GS}= 10V, I_D= 5A		8.5	12.0	mΩ
		V_{GS}= 4.5V, I_D= 5A		12.0	18.0	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}= 15V, V_{GS}= 0V, f= 1 MHz		1265		pF
C_{oss}	Output Capacitance			144		pF
C_{rss}	Reverse Transfer Capacitance			134		pF
R_g	Gate Resistance	V_{DS} = 0V, V_{GS} = 0V, f= 1MHz		1.5		Ω
Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}= 15V, I_D= 10A, V_{GS}= 10V		12		nC
Q_{gs}	Gate - Source Charge			4.7		nC
Q_{gd}	Gate - Drain Charge			3.4		nC
$t_{d(on)}$	Turn On Delay Time	V_{DD}= 15V, V_{GS}= 10V, R_L = 1.5Ω, R_G=3Ω		6.8		ns
t_r	Rise Time			12		
$t_{d(off)}$	Turn Off Delay Time			22		
t_f	Fall Time			7		
Source- Drain Diode Characteristics and Maximum Ratings						
V_{SD}	Diode Forward Voltage (NOTE 3)	V_{GS}= 0V, I_S= 5A			1.2	V

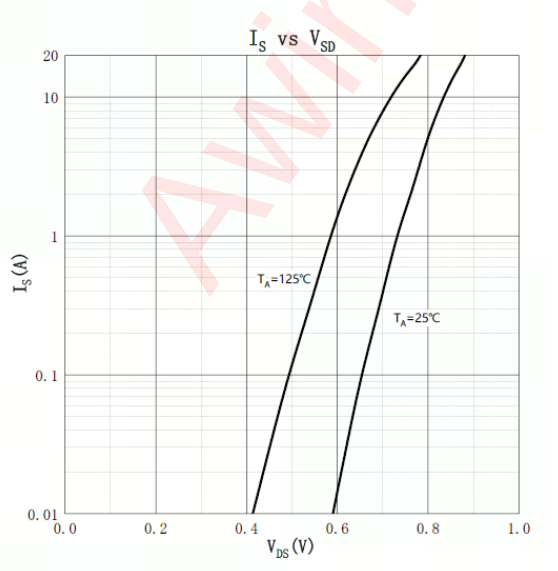
Electrical Characteristics Diagrams

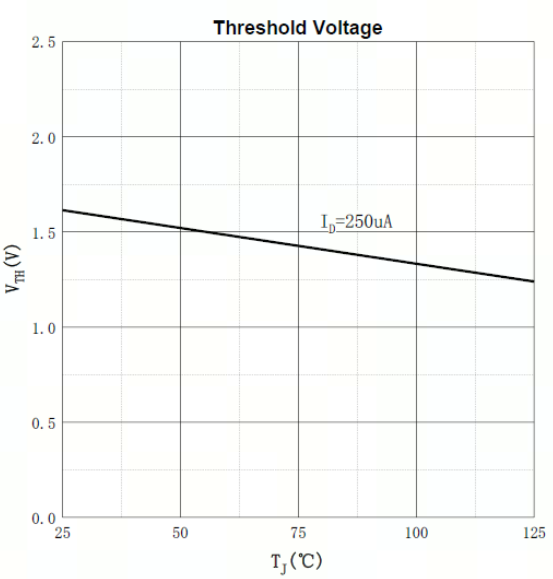




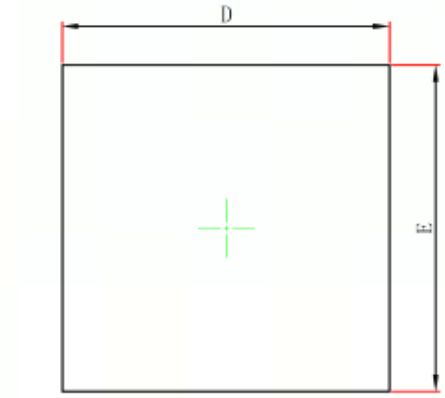




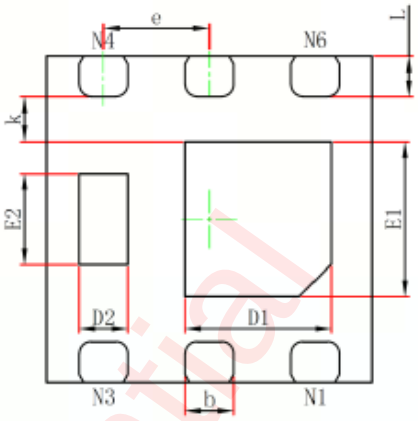




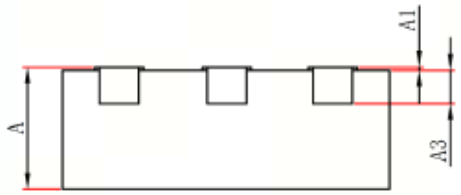
Package Description



TOP VIEW



BOTTOM VIEW



SIDE VIEW

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	0.800	1.000	0.031	0.039
E1	0.850	1.050	0.033	0.041
D2	0.200	0.400	0.008	0.016
E2	0.460	0.660	0.018	0.026
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	Official released

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