General Description

The WSD4018DN22 is the highest performance trench P-ch MOSFETs with extreme high cell density , which provide excellent RDSON and gate charge for most of the small power switching and load switch applications.

The WSD4018DN22 meet the RoHS and Green Product requirement with full function reliability approved.

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Green Device Available

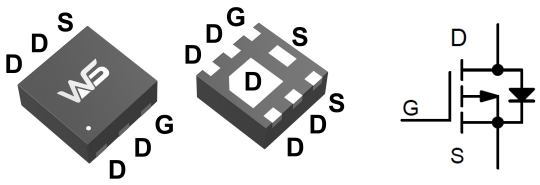
Product Summery

BVDSS	RDSON	ID
-40V	26mΩ	-18A

Applications

- High Frequency Point-of-Load Synchronous Small power switching for MB/NB/UMPC/VGA
- Networking DC-DC Power System
- Load Switch

DFN2X2-6L Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_c=25℃	Continuous Drain Current, V_{GS} @ -10V[1]	-18	A
I_D@T_c=70℃	Continuous Drain Current, V_{GS} @ -10V[1]	-14.6	A
I_{DM}	300μS Pulsed Drain Current,V_{GS}=-4.5V[2]	54	A
P_D@T_c=25℃	Total Power Dissipation[3]	19	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1]	---	36	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	6.5	℃/W

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-40	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BVDSS Temperature Coefficient	Reference to 25℃ , I_D=-1mA	---	-0.01	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-10V , I_D=-8.0A	---	26	34	mΩ
		V_{GS}=-4.5V , I_D=-6.0A	---	31	42	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-1.0	-1.5	-3.0	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	3.13	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-40V , V_{GS}=0V , T_J=25℃	---	---	-1	uA
		V_{DS}=-40V , V_{GS}=0V , T_J=55℃	---	---	-5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
Q_g	Total Gate Charge (-4.5V)	V_{DS}=-20V , V_{GS}=-10V , I_D=-1.5A	---	27	---	nC
Q_{gs}	Gate-Source Charge		---	2.5	---	
Q_{gd}	Gate-Drain Charge		---	6.7	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=-20V , V_{GS}=-10V , R_G=3Ω , R_L=10Ω	---	9.8	---	ns
T_r	Rise Time		---	11	---	
$T_{d(off)}$	Turn-Off Delay Time		---	54	---	
T_f	Fall Time		---	7.1	---	
C_{iss}	Input Capacitance	V_{DS}=-20V , V_{GS}=0V , f=1MHz	---	1560	---	pF
C_{oss}	Output Capacitance		---	116	---	
C_{rss}	Reverse Transfer Capacitance		---	97	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,4]	V_G=V_D=0V , Force Current	---	---	-18	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=-1A , T_J=25℃	---	---	-1.2	V

Note :

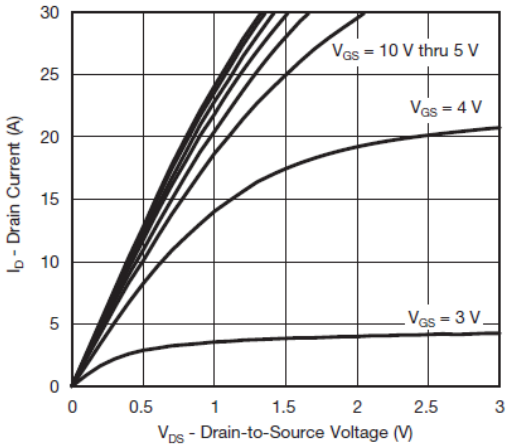
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper, t≦10sec.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

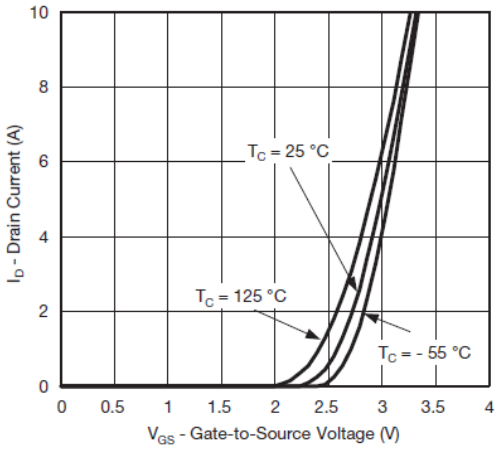
3.The power dissipation is limited by 150℃ junction temperature

4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

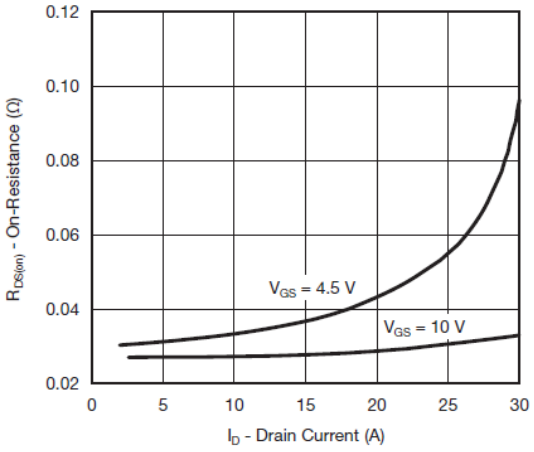
Typical Performance Characteristics（(TJ = 25 ℃, unless otherwise noted)）



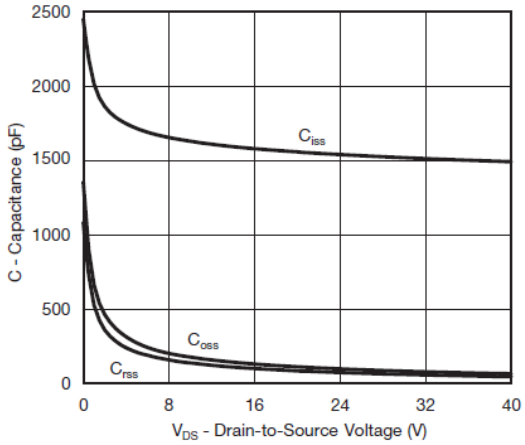
Output Characteristics



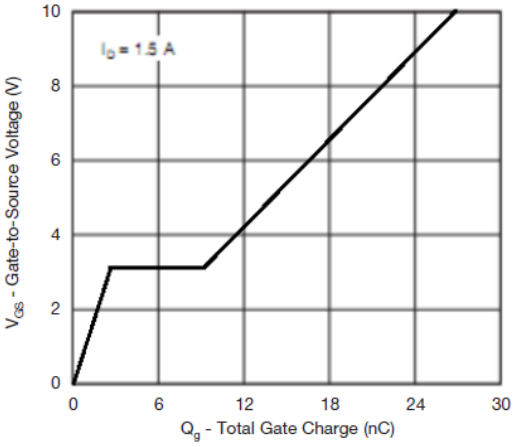
Transfer Characteristics



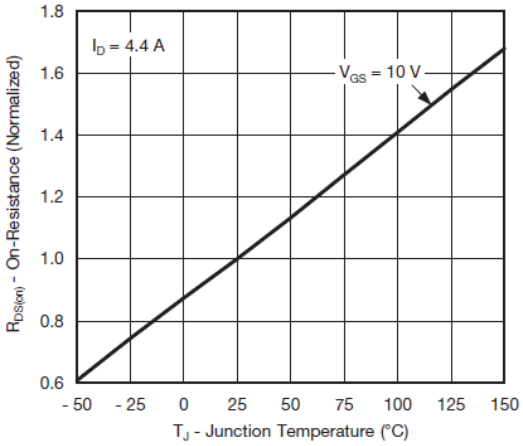
On-Resistance vs. Drain Current and Gate Voltage



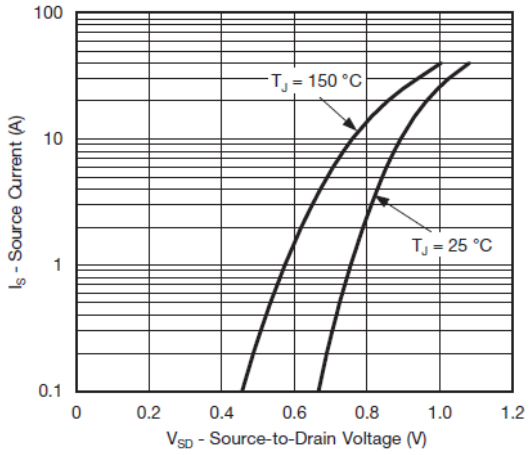
Capacitance



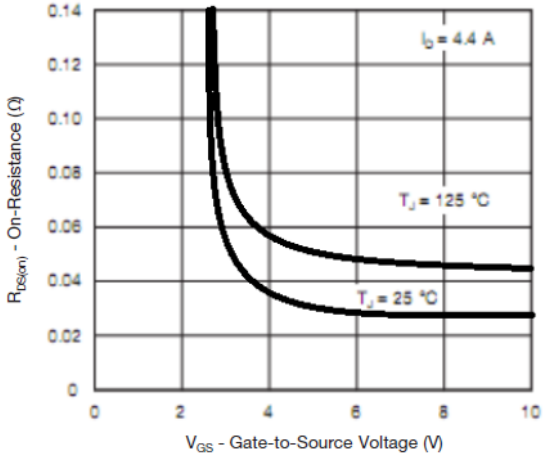
Gate Charge



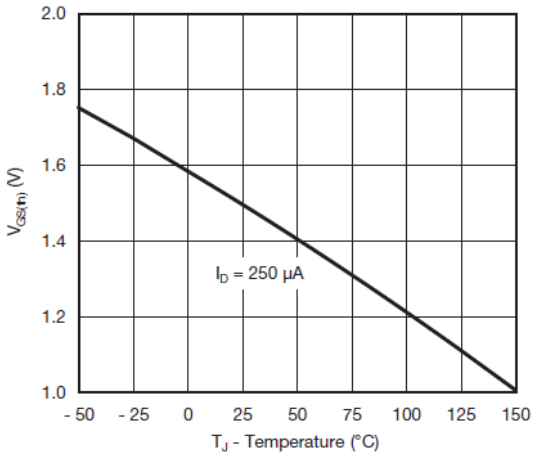
On-Resistance vs. Junction Temperature



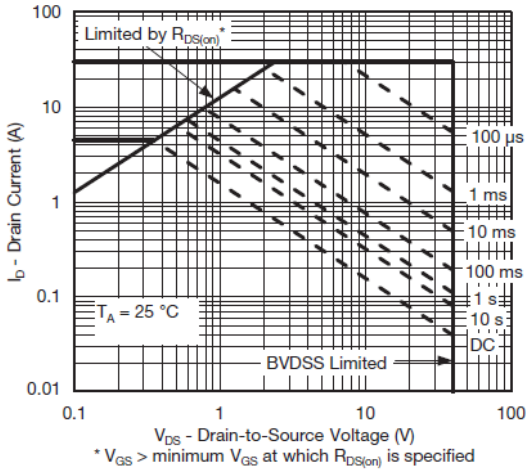
Soure-Drain Diode Forward Voltage



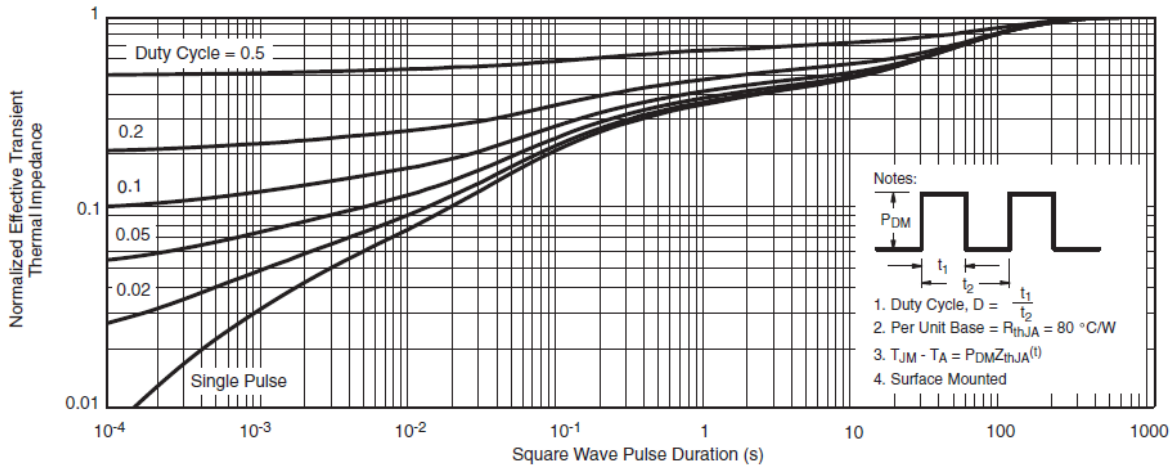
On-Resistance vs. Gate-to-Source Voltage



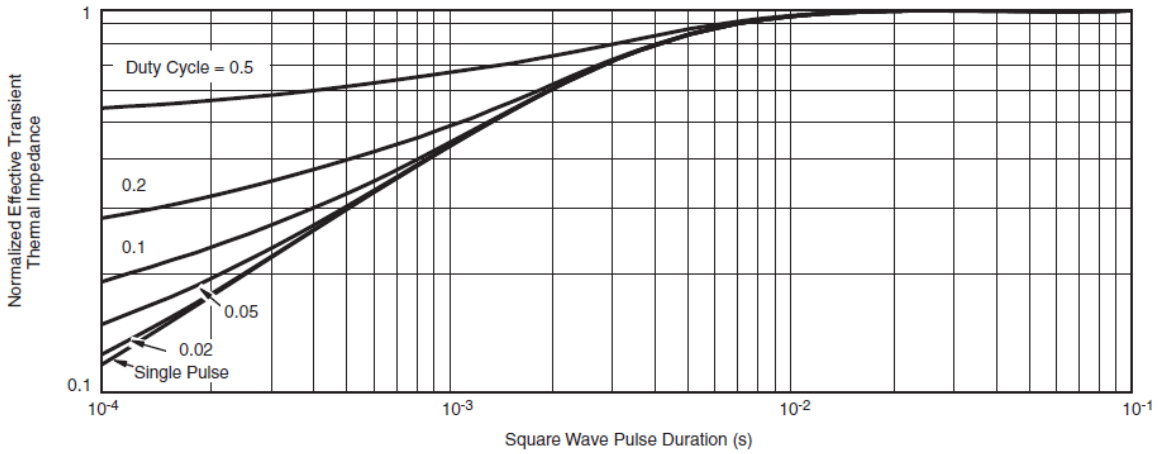
Threshold Voltage



Safe Operating Area, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

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