

WSD3028DN

N-Ch MOSFET

General Description

The WSD3028DN is the highest performance trench N-ch MOSFET with extreme high cell density, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications .

The WSD3028DN meet the RoHS and Green Product requirement 100% EAS guaranteed with full function reliability approved.

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

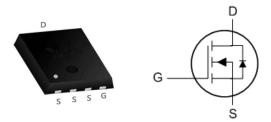
Product Summery

BVDSS	RDSON	ID
30V	25mΩ	19A

Applications

- High Frequency Point-of-Load Synchronous Buck Converter for MB/NB/UMPC/VGA
- Networking DC-DC Power System
- Load Switch

DFN3.3X3.3-8L Pin Configuration



Symbol	Parameter Rating		Units
V _{DS}	Drain-Source Voltage	30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25℃	Continuous Drain Current, V _{GS} @ 10V ¹	25	A
I _D @T _C =100℃	Continuous Drain Current, V _{GS} @ 10V ¹	18	A
I _D @T _A =25℃	Continuous Drain Current, V _{GS} @ 10V ¹	19	A
I _D @T _A =70℃	Continuous Drain Current, V _{GS} @ 10V ¹	15	А
I _{DM}	Pulsed Drain Current ²	40	A
EAS	Single Pulse Avalanche Energy ³	21	mJ
I _{AS}	Avalanche Current	15	A
P _D @T _C =25℃	Total Power Dissipation ⁴	5	W
P _D @T _A =25℃	Total Power Dissipation ⁴	2.5	W
T _{STG}	Storage Temperature Range -55 to 150		°C
TJ	Operating Junction Temperature Range -55 to 150		°C

Thermal Data

Symbol	Parameter	Тур.	Max.	Unit
R _{eja}	Thermal Resistance Junction-Ambient ¹		50	°C/W
R _{θJC}	Thermal Resistance Junction-Case ¹		4	°C/W

Absolute Maximum Ratings



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Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	30			V
$\triangle BV_{DSS} / \triangle T_{J}$	BVDSS Temperature Coefficient	Reference to 25° C , I _D =1mA		0.0232		V/℃
Б	Static Drain-Source On-Resistance ²	V _{GS} =10V , I _D =12A		22	25	
R _{DS(ON)}		V _{GS} =4.5V , I _D =8A		32	35	mΩ
V _{GS(th)}	Gate Threshold Voltage		1.2	1.6	2.5	V
$ riangle V_{GS(th)}$	V _{GS(th)} Temperature Coefficient	$V_{GS} = V_{DS}$, $I_D = 2500A$		-6.08		mV/℃
	Drain Source Lookage Current	$V_{\text{DS}}\text{=}24V$, $V_{\text{GS}}\text{=}0V$, $T_{\text{J}}\text{=}25^\circ\!\mathrm{C}$			1	– uA
I _{DSS}	Drain-Source Leakage Current	$V_{\text{DS}}\text{=}24\text{V}$, $V_{\text{GS}}\text{=}0\text{V}$, $T_{\text{J}}\text{=}55^\circ\!\mathrm{C}$			5	
I _{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm20V$, $V_{DS}=0V$			±100	nA
gfs	Forward Transconductance	V _{DS} =10V , I _D =6A		6.5		S
Rg	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz		2.5	3.3	Ω
Qg	Total Gate Charge (4.5V)			4.1		
Q _{gs}	Gate-Source Charge	V _{DS} =15V , V _{GS} =4.5V , I _D =6A		1		nC
Q _{gd}	Gate-Drain Charge			2.1		
T _{d(on)}	Turn-On Delay Time			2		
Tr	Rise Time	V _{DD} =15V , V _{GEN} =10V , R _G =6Ω I _D =1A ,RL=15Ω		4		
T _{d(off)}	Turn-Off Delay Time			15.8		ns
T _f	Fall Time			4		
C _{iss}	Input Capacitance	V _{DS} =15V , V _{GS} =0V , f=1MHz		360		
C _{oss}	Output Capacitance			55		pF
C _{rss}	Reverse Transfer Capacitance			46		

Guaranteed Avalanche Characteristics

Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
EAS	Single Pulse Avalanche Energy⁵	V _{DD} =25V , L=0.1mH , I _{AS} =23A	21			mJ

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
Is	Continuous Source Current ^{1,6}				5	А
I _{SM}	Pulsed Source Current ^{2,6}	$V_G=V_D=0V$, Force Current			22	А
V _{SD}	Diode Forward Voltage ²	V_{GS} =0V , I_{S} =1A , T_{J} =25 $^{\circ}\mathrm{C}$			1	V
t _{rr}	Reverse Recovery Time			16.5		nS
Qrr	Reverse Recovery Charge	l⊧=20A,dl/dt=100A/µs,TJ=25℃		10		nC

Note :

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, t<10sec.

2.The data tested by pulsed , pulse width $\,\leq\,$ 300us , duty cycle $\,\leq\,$ 2%

3. The EAS data shows Max. rating . The test condition is $V_{\text{DD}}\text{=}25V, V_{\text{GS}}\text{=}10V, L\text{=}0.1\text{mH}, I_{\text{AS}}\text{=}23A$

4.The power dissipation is limited by 150 $^\circ\!\!\mathbb{C}$ junction temperature

5. The Min. value is 100% EAS tested guarantee.

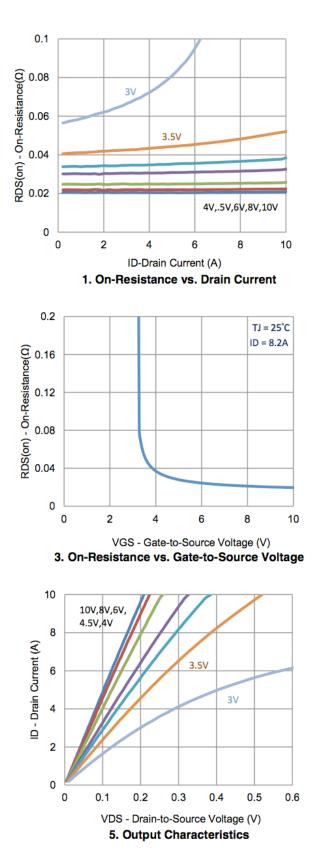
6.The data is theoretically the same as I_{D} and I_{DM} , in real applications , should be limited by total power dissipation.

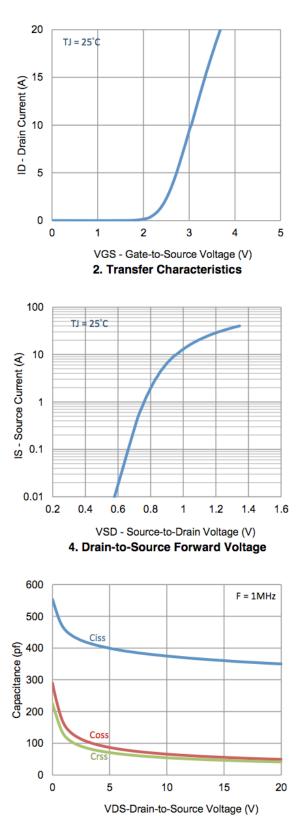


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Typical Characteristics



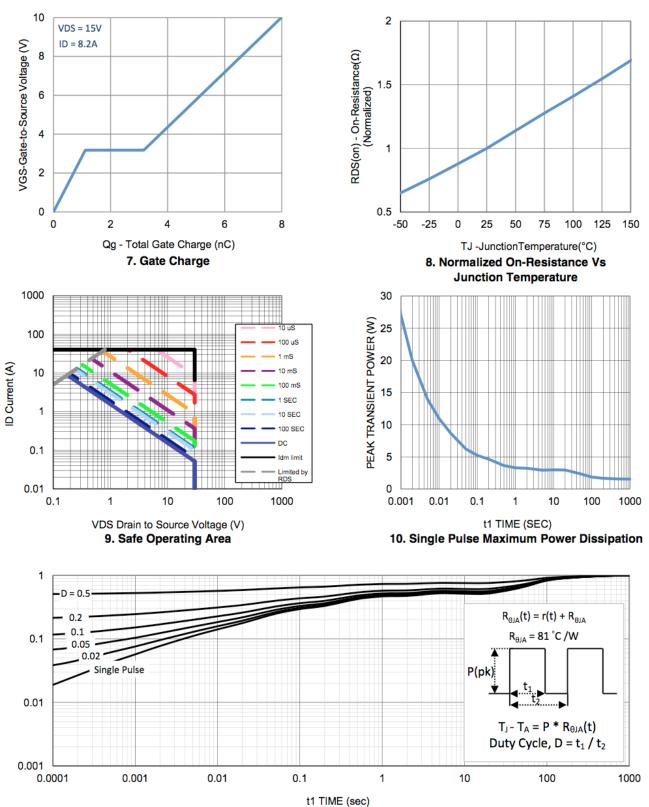


6. Capacitance



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11. Normalized Thermal Transient Junction to Ambient



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