General Description

The WSD3056DN is the highest performance trench Dual N-Ch MOSFET with extreme high cell density,which provide excellent R_{DSON} and gate charge for most of the synchronous buck converter applications .

The WSD3056DN 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

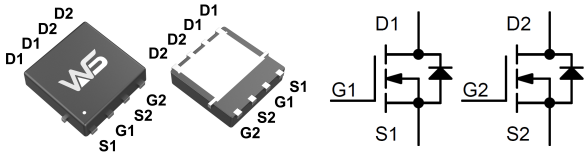
Product Summery

B_{VDSS}	R_{DSON}	I_D
30V	13mΩ	35A

Applications

- POL Applications
- MB / VGA / Vcore
- Load Switch
- SMPS 2nd SR

DFN3X3 Dual Pin Configuration



Absolute Maximum Ratings @TA=25℃ unless otherwise noted

Symbol	Parameter		Rating	Units
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Drain Current (Continuous) *AC	T_C=25°C	35	A
		T_C=100°C	22	
I_{DM}	Drain Current (Pulse) *B		140	A
P_D	Power Dissipation	T_C=25°C	27	W
EAS	Single Pulse Avalanche Energy		13	mJ
RθJA	Thermal Resistance Junction to ambient		62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction to Case		4.6	℃/W
T_J//T_{STG}	Operating Temperature/ Storage Temperature		-55~150	℃

Electrical Characteristics @T_A=25℃ unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 30 V, V_{GS} = 0V			1	μA
I_{GSS}	Gate Leakage Current	V_{GS} = ±20V, V_{DS} = 0V			100	nA
On Characteristics						
$V_{GS(TH)}$	Gate Threshold Voltage	V_{GS} = V_{DS}, I_{DS} = 250μA	1.2	1.8	2.5	V
$R_{DS(on)}$	Drain-Source On-state Resistance	V_{GS} = 10V, I_D = 10A		10	13	mΩ
		V_{GS} = 4.5V, I_D = 8A		14	18	mΩ
gFS	Forward Transconductance	V_{DS} = 5V, I_D= 5A		6		S
Switching						
Qg	Total Gate Charge	V_{GS}=10V, V_{DS}=15V, I_D=5A		7.2		nC
Qgs	Gate-Source Charge			2.3		nC
Qgd	Gate-Drain Charge			3		nC
td (on)	Turn-on Delay Time	V_{GS}=10V, V_{DD}=15V, I_D=1A,R_G=6Ω		3.8		ns
tr	Turn-on Rise Time			10		ns
td(off)	Turn-off Delay Time			22		ns
tf	Turn-off Fall Time			6.6		ns
Rg	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz		2.8		Ω
Dynamic						
Ciss	Input Capacitance	V_{GS}=0V, V_{DS}=15V, f=1MHz		620		pF
Coss	Output Capacitance			85		pF
Crss	Reverse Transfer Capacitance			30		pF
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Continuous Source Current	V_G=V_D=0V , Force Current			35	A
I_{SM}	Pulsed Source Current3				70	A
V_{SD}	Diode Forward Voltage	I_{SD} = 1A , V_{GS}=0V			1.2	V

Note :

1，Repetitive Rating : Pulsed width limited by maximum junction temperature.

2，VDD=25V,VGS=10V,L=0.1mH,IAS=16A.,RG=25 ,Starting TJ=25℃.

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

4，Essentially independent of operating temperature.

Typical Characteristics

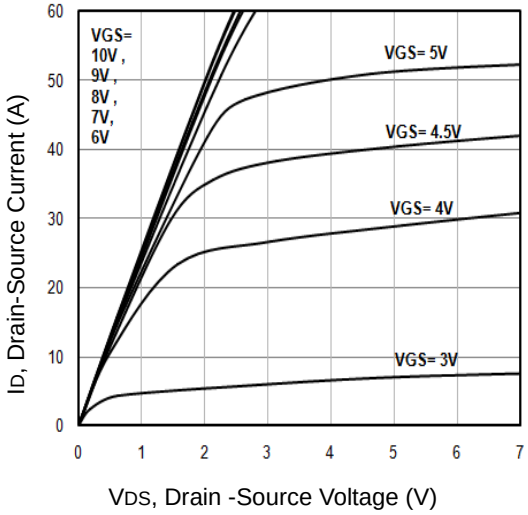


Fig1. Typical Output Characteristics

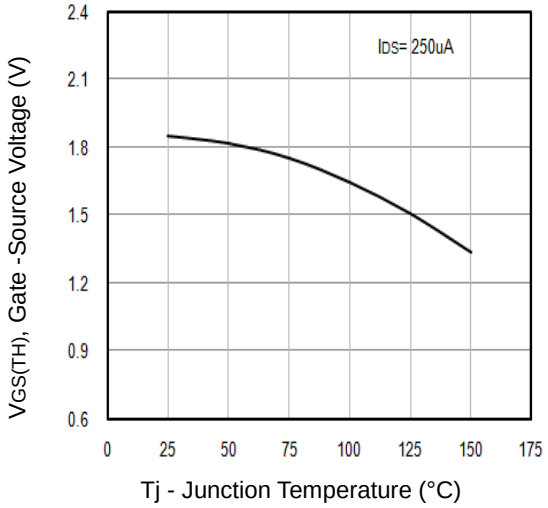


Fig2. Threshold Voltage Vs. Temperature

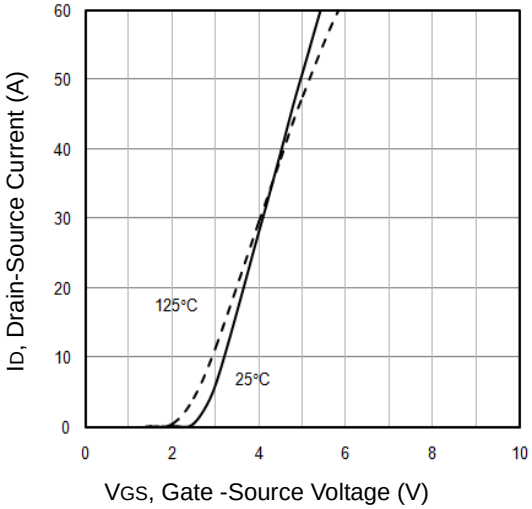


Fig3. Typical Transfer Characteristics

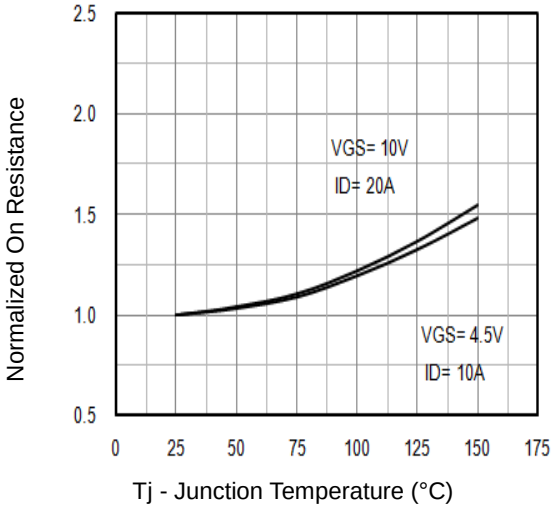


Fig4. Normalized On-Resistance Vs. Temperature

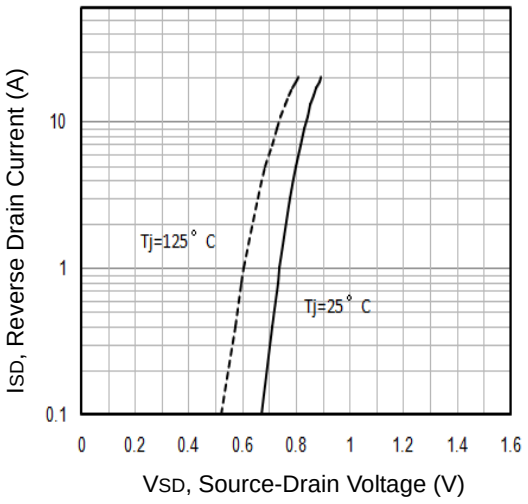


Fig5. Typical Source-Drain Diode Forward Voltage

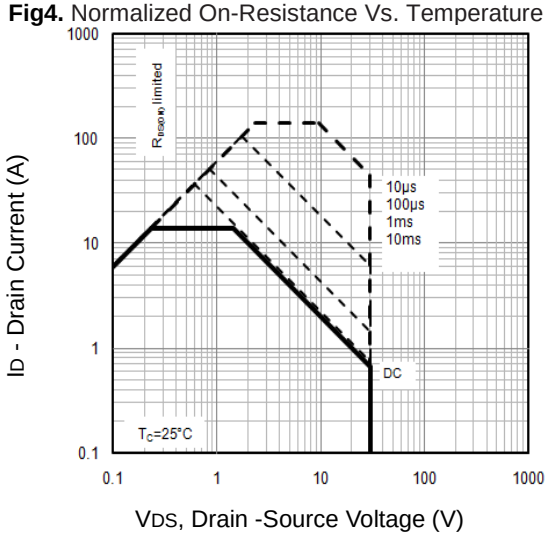


Fig6. Maximum Safe Operating Area

Typical Characteristics

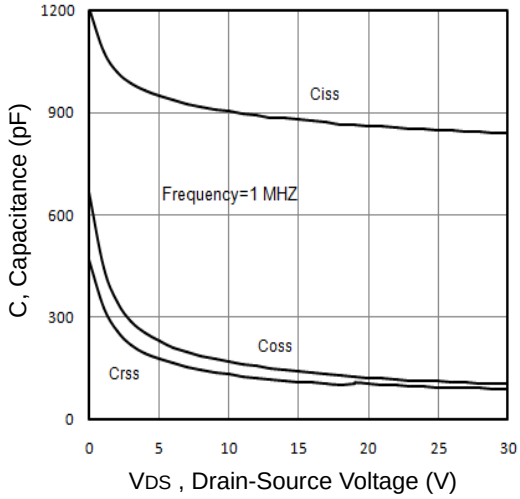


Fig7. Typical Capacitance Vs.Drain-Source Voltage

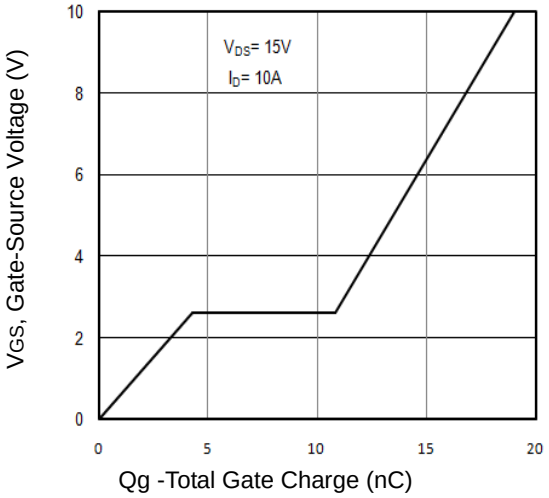


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

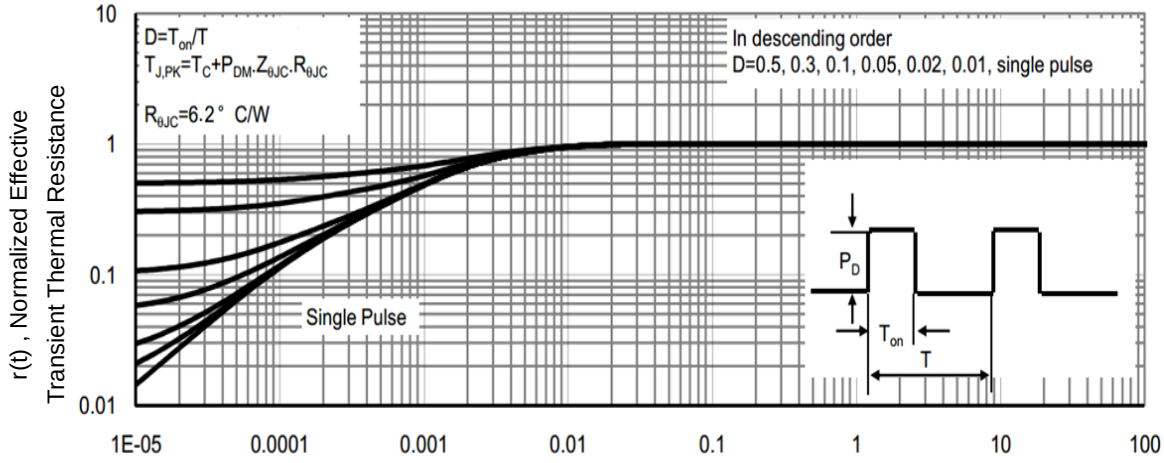


Fig9. T1 ,Transient Thermal Response Curve

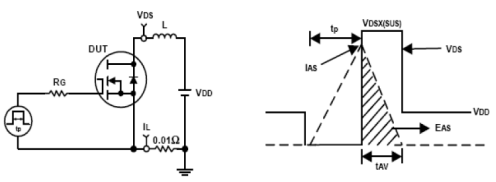


Fig10. Unclamped Inductive Test Circuit and waveforms

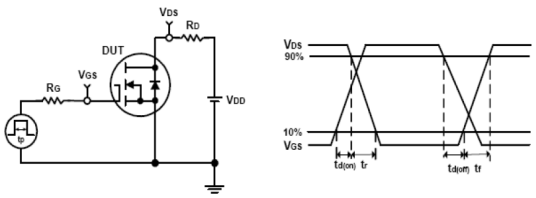


Fig11. Switching Time Test Circuit and waveforms

Attention

1, Any and all Winsok power products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your Winsok power representative nearest you before using any Winsok power products described or contained herein in such applications.

2,Winsok power assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all Winsok power products described or contained herein.

3, Specifications of any and all Winsok power products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

4, Winsok power Semiconductor CO., LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.

5,In the event that any or all Winsok power products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.

7, Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. Winsok power believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

8, Any and all information described or contained herein are subject to change without notice due to product/technology improvement,etc. When designing equipment, refer to the "Delivery Specification" for the Winsok power product that you Intend to use.

9, this catalog provides information as of Sep.2014. Specifications and information herein are subject to change without notice.