General Description

The WSD75100DN56 is the highest performance trench 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 WSD75100DN56 meet the RoHS and Green Product requirement , 100% EAS guaranteed with full function reliability approved.

Features

- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

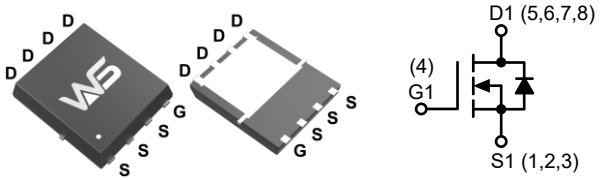
Product Summery

BV_{DSS}	R_{DSON}	I_D
75V	5.3mΩ	100A

Applications

- DC-DC converter switching for Networkong
- General purpose switching

DFN5X6-8L Pin Configuration



Absolute Maximum Ratings (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	75	V
V_{GS}	Gate-Source Voltage	±25	V
T_J	Maximum Junction Temperature	150	°C
I_D	Storage Temperature Range	-55 to 150	°C
I_S	Diode Continuous Forward Current,T_C=25°C	50	A
I_D	Continuous Drain Current, V_{GS}=10V,T_C=25°C	100	A
	Continuous Drain Current, V_{GS}=10V,T_C=100°C	73	A
I_{DM}	Pulsed Drain Current ,T_C=25°C	400	A
P_D	Maximum Power Dissipation,T_C=25°C	155	W
	Maximum Power Dissipation,T_C=100°C	62	W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient ,t =10s`	20	°C
	Thermal Resistance-Junction to Ambient ,Steady State	60	°C
$R_{\theta JC}$	Thermal Resistance-Junction to Case	0.8	°C
I_{AS}	Avalanche Current, Single pulse,L=0.5mH	30	A
E_{AS}	Avalanche Energy, Single pulse,L=0.5mH	225	mJ

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	75	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	0.043	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=25A	---	5.3	6.4	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2.0	3.0	4.0	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-6.94	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=48V , V_{GS}=0V , T_J=25℃	---	---	2	uA
		V_{DS}=48V , V_{GS}=0V , T_J=55℃	---	---	10	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V , I_D=20A	---	50	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.0	2	Ω
Q_g	Total Gate Charge (10V)	V_{DS}=20V , V_{GS}=10V , I_D=40A	---	65	85	nC
Q_{gs}	Gate-Source Charge		---	20	---	
Q_{gd}	Gate-Drain Charge		---	17	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=30V , V_{GEN}=10V , R_G=1Ω, I_D=1A ,RL=15Ω.	---	14	26	ns
T_r	Rise Time		---	27	49	
$T_{d(off)}$	Turn-Off Delay Time		---	37	67	
T_f	Fall Time		---	60	108	
C_{iss}	Input Capacitance	V_{DS}=20V , V_{GS}=0V , f=1MHz	3450	3500	4550	pF
C_{oss}	Output Capacitance		245	395	652	
C_{rss}	Reverse Transfer Capacitance		100	195	250	

Guaranteed Avalanche Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
EAS	Single Pulse Avalanche Energy[5]	V_{DD}=25V , L=0.5mH , I_{AS}=30A	198	---	---	mJ

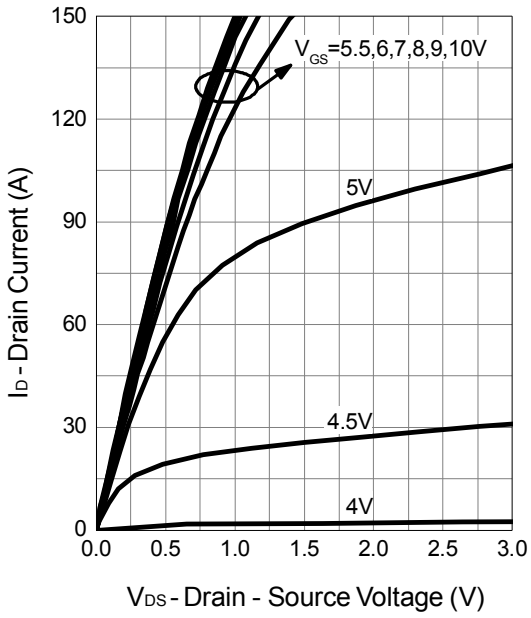
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,6]	V_G=V_D=0V , Force Current	---	---	50	A
I_{SM}	Pulsed Source Current[2,6]		---	---	100	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=20A , T_J=25℃	---	---	1.4	V

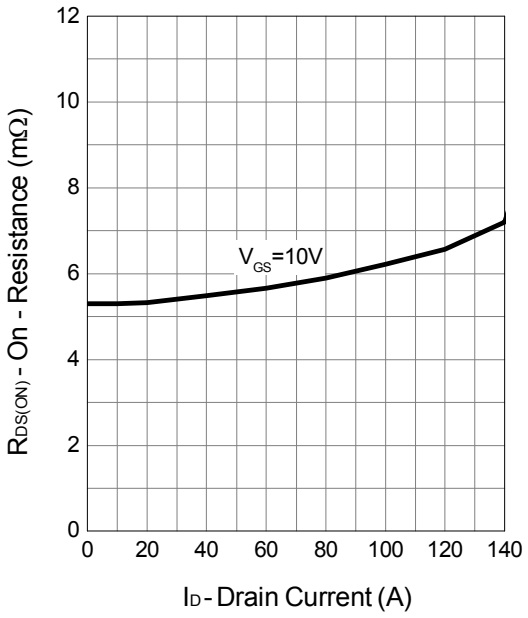
Note :
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper,t<10sec .
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3.The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.5mH,I_{AS}=30A
4.The power dissipation is limited by 150℃ 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.
7.Package limitation current is 100A.

Typical Characteristics

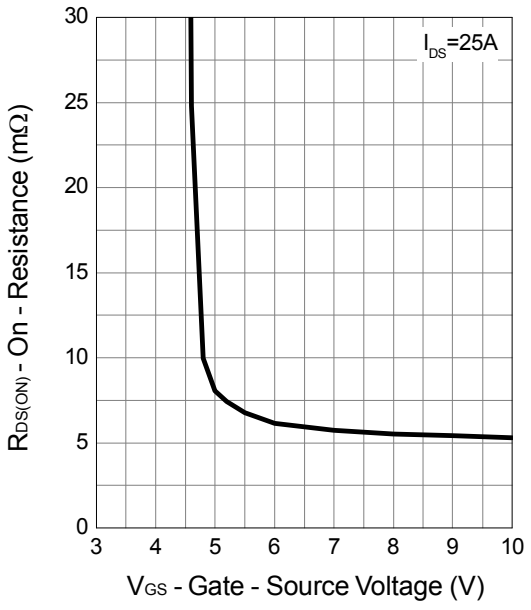
Output Characteristics



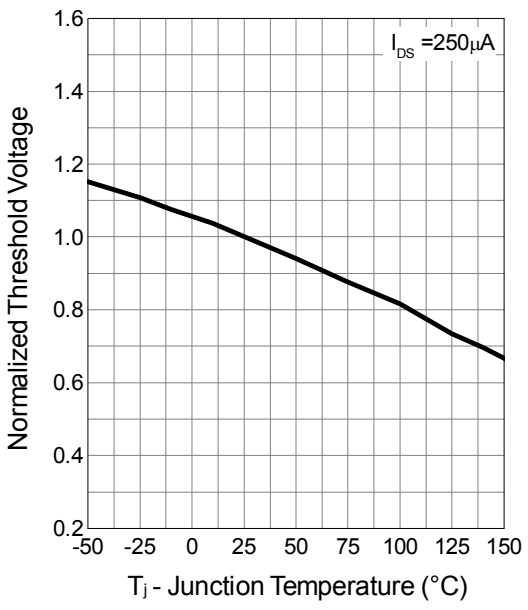
Drain-Source On Resistance



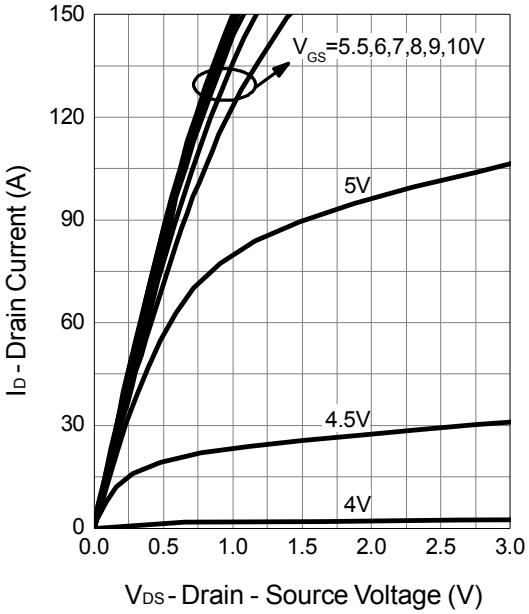
Gate-Source On Resistance



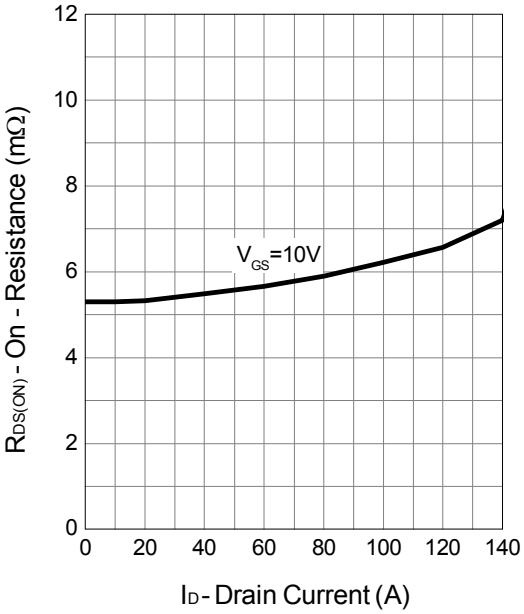
Gate Threshold Voltage



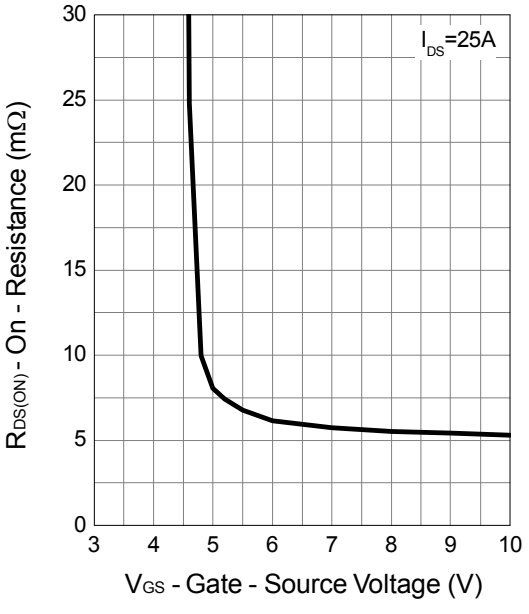
Output Characteristics



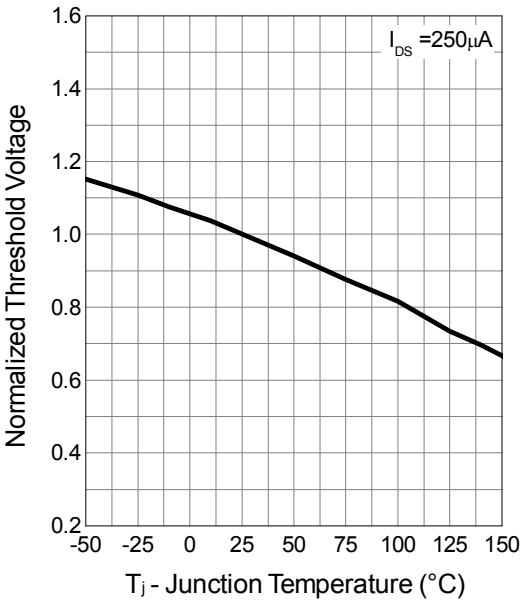
Drain-Source On Resistance



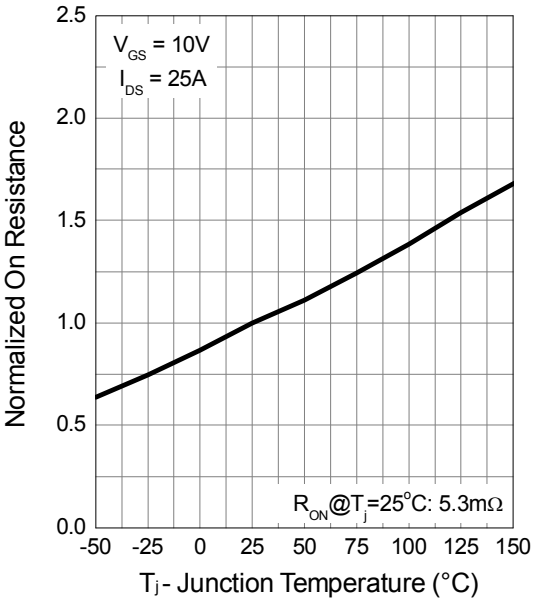
Gate-Source On Resistance



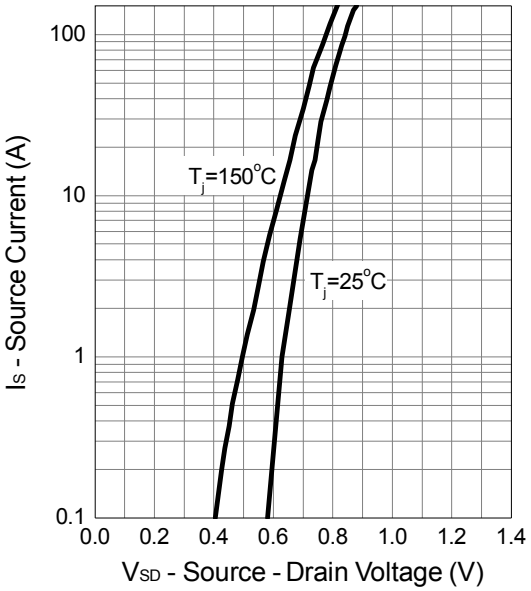
Gate Threshold Voltage



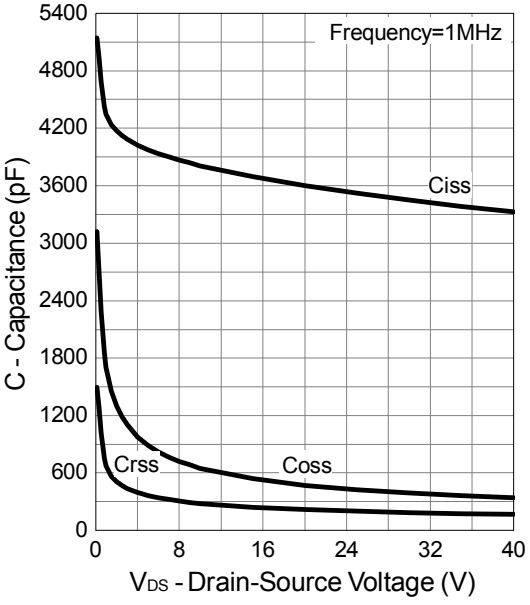
Drain-Source On Resistance



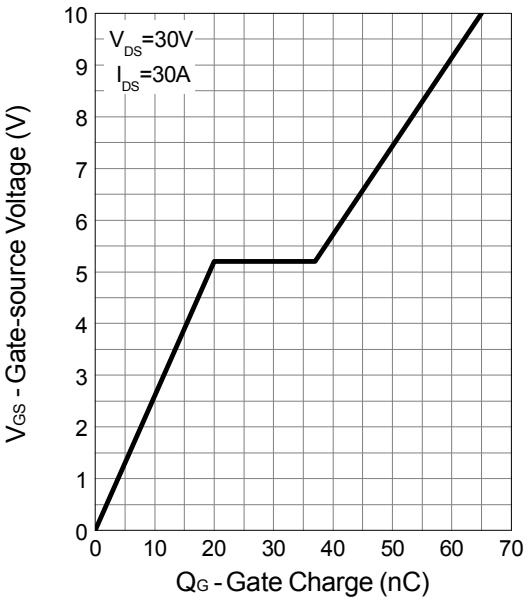
Source-Drain Diode Forward



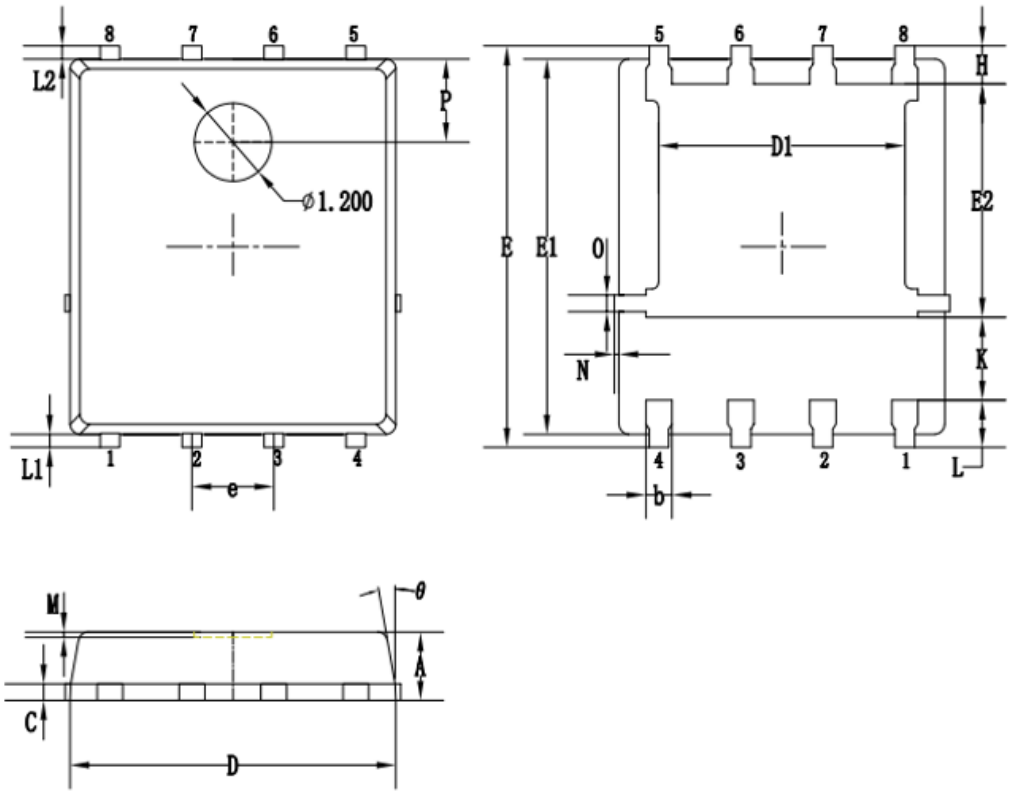
Capacitance



Gate Charge



Packaging information



SYMBOLS	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	1.05	1.20
b	0.35	0.40	0.50
C	0.20	0.25	0.35
D	4.90	5.05	5.20
D1	3.72	3.82	3.92
E	6.00	6.15	6.30
E1	5.60	5.75	5.90
E2	3.47	3.57	3.67
e	1.27 BSC.		
H	0.48	0.58	0.68
K	1.17	1.27	1.37
L	0.64	0.74	0.84
L1/L2	0.20 REF.		
θ	8°	10°	12°
M	0.08 REF.		
N	0	-	0.15
O	0.25 REF.		
P	1.28 REF.		

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