General Description

The WSD2075DN is the highest performance trench Dual P-ch MOSFETs with extreme high cell density , which provide excellent RDSON and gate charge for most of the synchronous buck converter applications .

The WSD2075DN 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

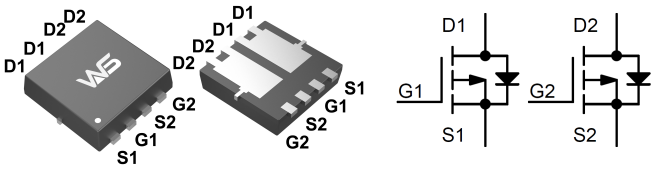
Product Summery

BVDSS	RDSON	ID
-20V	9.5mΩ	-36A

Applications

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

DFN3x3A-8_EP Pin Configuration



Absolute Maximum Ratings @T_A=25℃ unless otherwise noted

Symbol	Parameter		Ratings	Unit
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		±12	V
I_D	Drain Current (Continuous) *AC	T_C=25°C	-36	A
		T_C=100°C	-23	A
I_{DM}	Drain Current (Pulse) *B		-108	A
P_D	Power Dissipation	T_C=25°C	23	W
T_J/T_{STG}	Operating Temperature/ Storage Temperature		-55~150	℃
R_{thJC}	Maximum Junction-to-Ambient		5.4	°C/W

Electrical Characteristics @T_A=25℃ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D= -250μA	-20	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -20V, V_{GS} = 0V	---	---	-1	μA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{GS} = V_{DS}, I_{DS}= 250μA	-0.4	-0.8	-1.2	V
I_{GSS}	Gate Leakage Current	V_{GS}= ±12V, V_{DS}=0V	---	---	±100	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	V_{GS} = -10V, I_D = -6A	---	9.5	12	mΩ
		V_{GS} = -4.5V, I_D = -6A	---	11	14	mΩ
		V_{GS} = -2.5V, I_D = -4A	---	14	18	mΩ
V_{SD}	Diode Forward Voltage	I_{SD}= -1A , V_{GS}=0V	---	-0.73	-1.2	V
I_S	Diode Forward Current *AC	T_C =25°C	---	---	-19	A
Switching						
Q_g	Total Gate Charge	VDS = -10V, VGS = -4.5V, ID = -9.5A	---	28	---	nC
Q_{gs}	Gate-Source Charge		---	3.5	---	nC
Q_{gd}	Gate-Drain Charge		---	5.6	---	nC
$t_{d(on)}$	Turn-on Delay Time	VDD = -10V, RL = 1.3Ω ID ≅ -7.6A, VGEN = -4.5V, Rg = 1Ω	---	30	---	ns
t_r	Turn-on Rise Time		---	54	---	ns
$t_{d(off)}$	Turn-off Delay Time		---	135	---	ns
t_f	Turn-Off Fall Time		---	63	---	ns
Dynamic						
C_{iss}	Input Capacitance	VDS = -10V, VGS = 0 V, f = 1 MHz	---	2565	---	pF
C_{oss}	Output Capacitance		---	260	---	pF
C_{rss}	Reverse Transfer Capacitance		---	240	---	pF

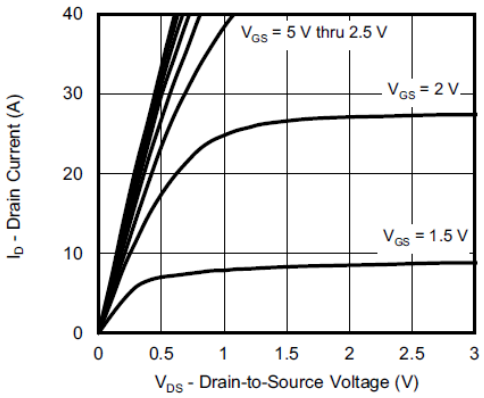
A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in$_2$ FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

The value in any given application depends on the user's specific board design.

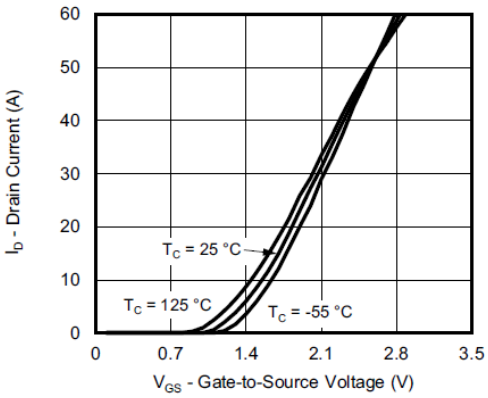
B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating, Wire Bond Limited 10A.

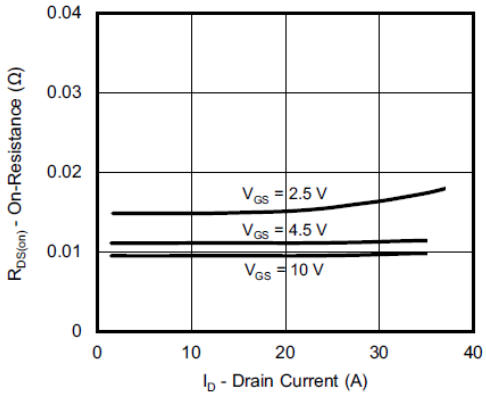
Typical Characteristics



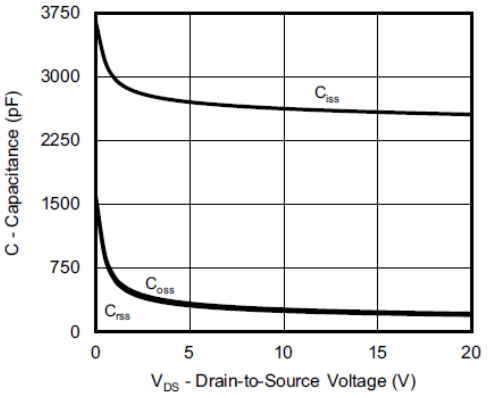
Output Characteristics



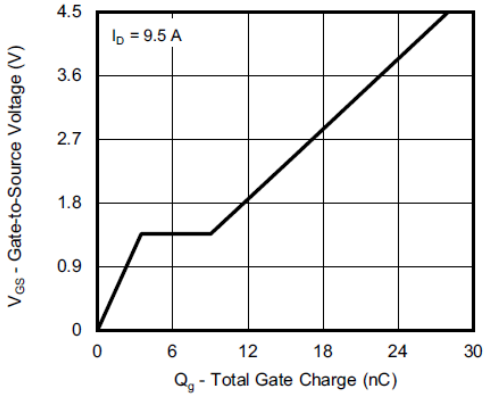
Transfer Characteristics



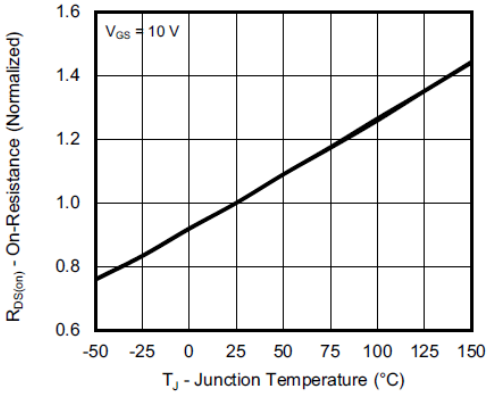
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

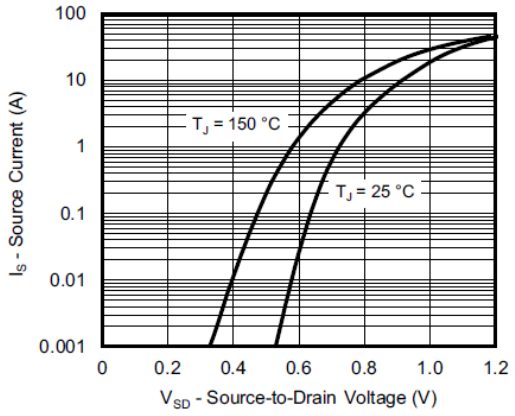


Gate Charge

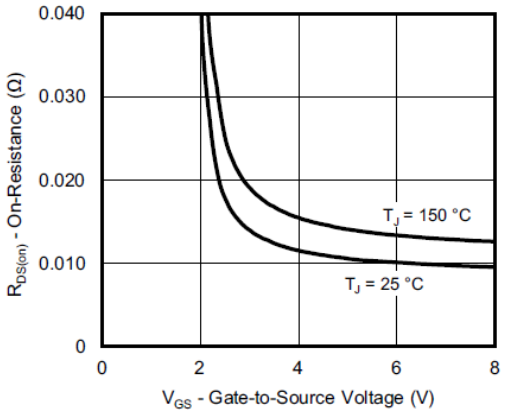


On-Resistance vs. Junction Temperature

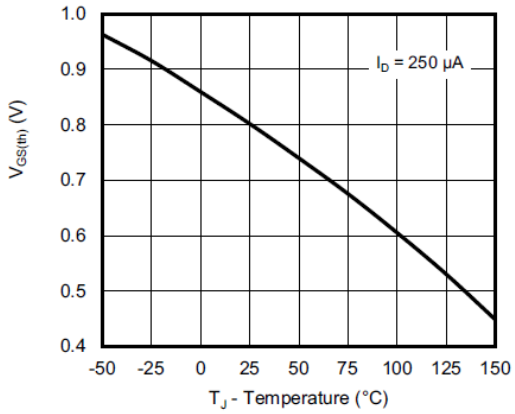
Typical Characteristics



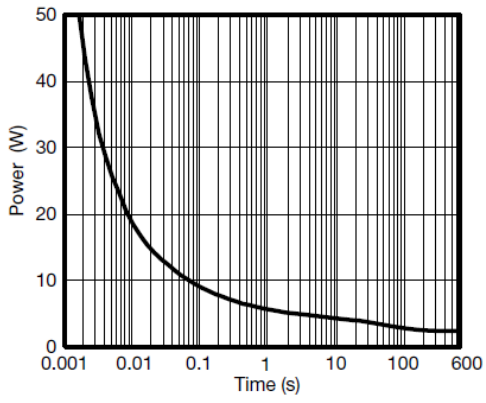
Source-Drain Diode Forward Voltage



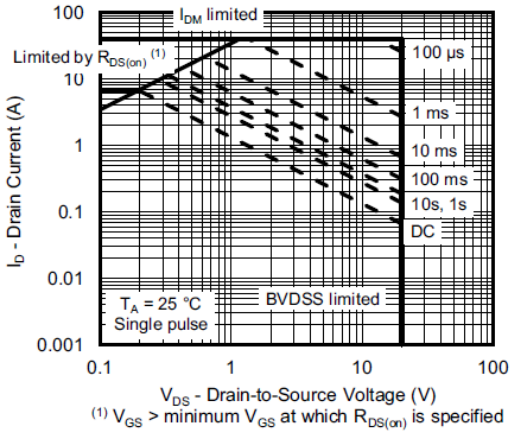
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

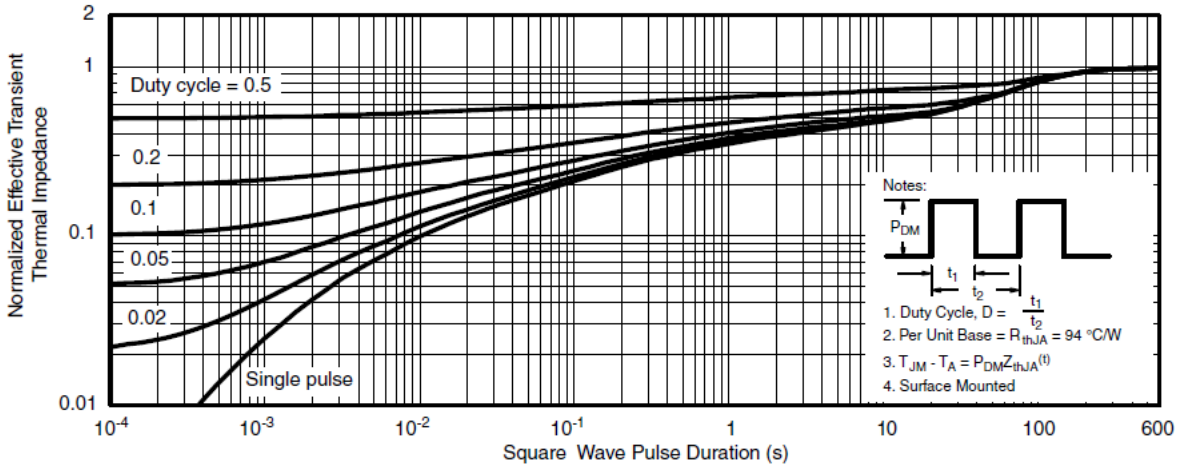


Single Pulse Power, Junction-to-Ambient

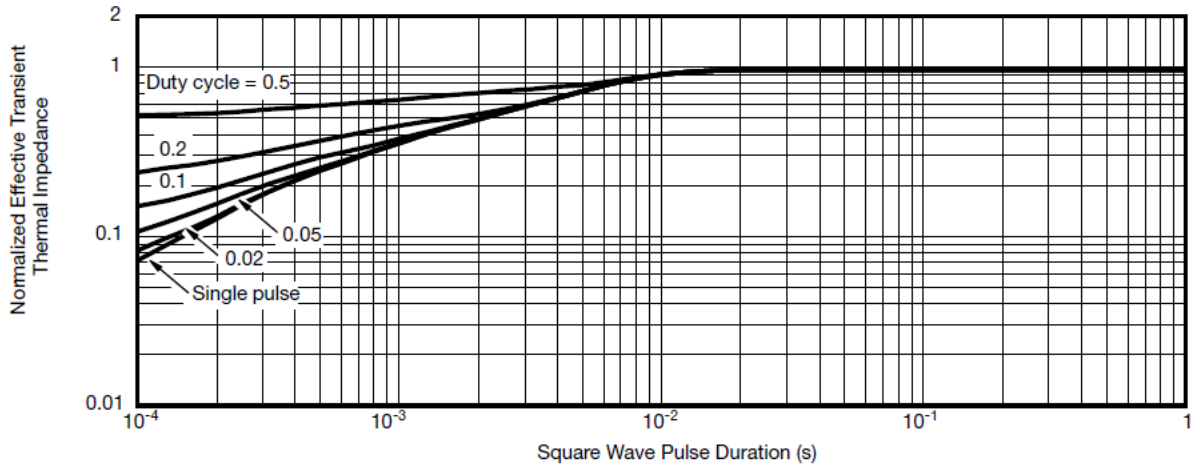


Safe Operating Area, Junction-to-Ambient

Typical Characteristics



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

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