

General Description

The WSD2073DN 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 WSD2073DN 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

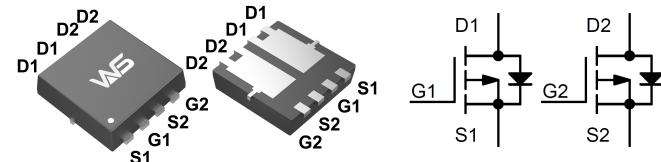
Product Summary

BVDSS	RDSON	ID
-20V	13mΩ	-25A

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 @ $T_A=25^\circ\text{C}$ 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	$T_c=25^\circ\text{C}$	A
		$T_c=100^\circ\text{C}$	A
I_{DM}	Drain Current (Pulse) *B	-90	A
P_D	Power Dissipation	$T_c=25^\circ\text{C}$	31.25
T_J/T_{STG}	Operating Temperature/ Storage Temperature	-55~150	°C
R_{thJC}	Maximum Junction-to-Ambient	4.0	°C/W

Electrical Characteristics @ $T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static						
$V_{(\text{BR})\text{DSS}}$	Drain-Source Breakdown Voltage	$V_{\text{GS}} = 0\text{V}$, $I_{\text{D}} = -250\mu\text{A}$	-20	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{\text{DS}} = -20\text{V}$, $V_{\text{GS}} = 0\text{V}$	---	---	-1	μA
$V_{\text{GS}(\text{TH})}$	Gate Threshold Voltage	$V_{\text{GS}} = V_{\text{DS}}$, $I_{\text{DS}} = 250\mu\text{A}$	-0.4	-0.8	-1.2	V
I_{GSS}	Gate Leakage Current	$V_{\text{GS}} = \pm 12\text{V}$, $V_{\text{DS}} = 0\text{V}$	---	---	± 100	nA
$R_{\text{DS}(\text{on})}$	Drain-Source On-state Resistance	$V_{\text{GS}} = -4.5\text{V}$, $I_{\text{D}} = -11\text{A}$	---	13	17	$\text{m}\Omega$
		$V_{\text{GS}} = -2.5\text{V}$, $I_{\text{D}} = -6\text{A}$	---	18	25	$\text{m}\Omega$
V_{SD}	Diode Forward Voltage	$I_{\text{SD}} = -1\text{A}$, $V_{\text{GS}} = 0\text{V}$	---	-0.73	-1.2	V
I_{S}	Diode Forward Current *AC	$T_c = 25^\circ\text{C}$	---	---	-10	A
Switching						
Q_g	Total Gate Charge	$V_{\text{DS}} = -10\text{V}$, $V_{\text{GS}} = -4.5\text{V}$, $I_{\text{D}} = -11\text{A}$	---	25	---	nC
Q_{gs}	Gate-Source Charge		---	1.5	---	nC
Q_{gd}	Gate-Drain Charge		---	10	---	nC
$t_{\text{d}(\text{on})}$	Turn-on Delay Time	$V_{\text{DD}} = -10\text{V}$, $R_{\text{L}} = 1.3\Omega$ $I_{\text{D}} = -1\text{A}$, $V_{\text{GEN}} = -4.5\text{V}$, $R_{\text{g}} = 6\Omega$	---	9	---	ns
t_r	Turn-on Rise Time		---	13	---	ns
$t_{\text{d}(\text{off})}$	Turn-off Delay Time		---	26	---	ns
t_f	Turn-Off Fall Time		---	160	---	ns
Dynamic						
C_{iss}	Input Capacitance	$V_{\text{DS}} = -10\text{V}$, $V_{\text{GS}} = 0\text{V}$, $f = 1\text{ MHz}$	---	2000	---	pF
C_{oss}	Output Capacitance		---	310	---	pF
C_{rss}	Reverse Transfer Capacitance		---	280	---	pF

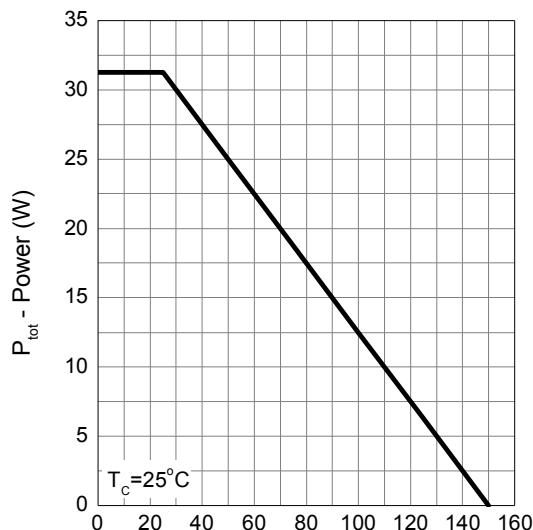
A: The value of R_{SDA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.

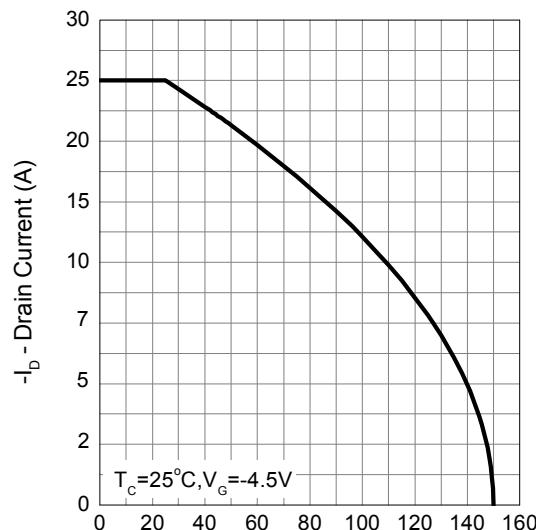
The value in any given application depends on the user's specific board design.

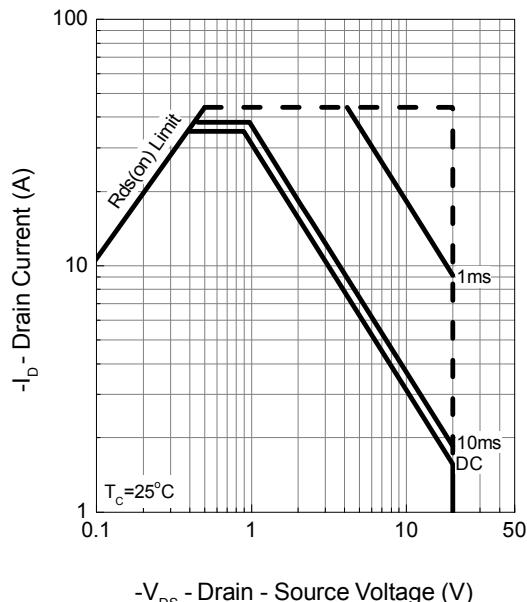
B: Repetitive rating, pulse width limited by junction temperature.

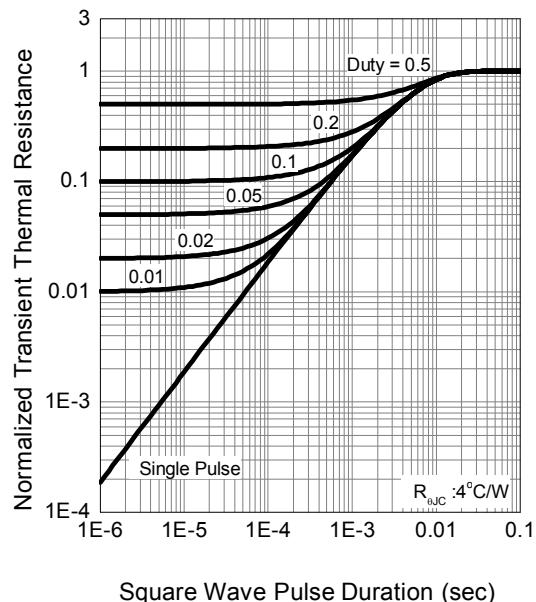
C: The current rating is based on the $t \leq 10\text{s}$ junction to ambient thermal resistance rating, Wire Bond Limited 25A.

Typical Operating Characteristics

Power Dissipation

 T_j - Junction Temperature (°C)

Drain Current

 T_j - Junction Temperature (°C)

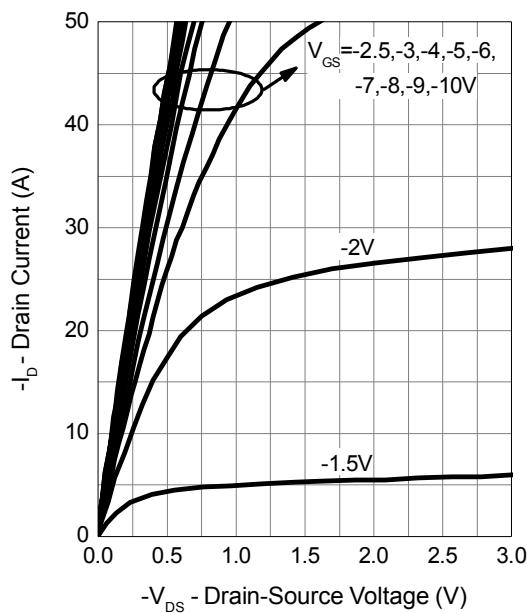
Safe Operation Area

 $-V_{DS}$ - Drain - Source Voltage (V)

Thermal Transient Impedance


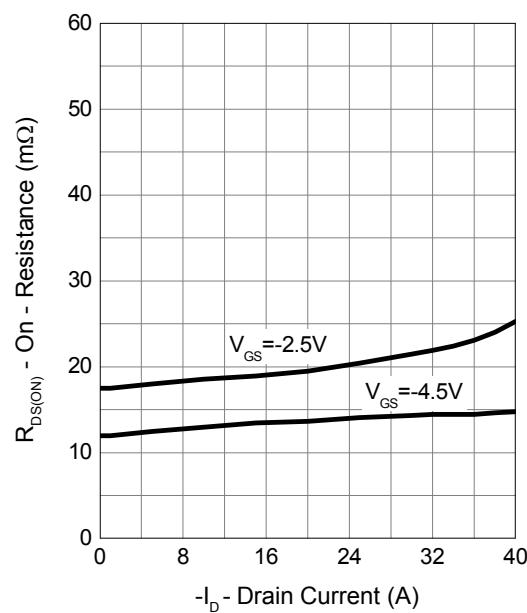
Square Wave Pulse Duration (sec)

Typical Operating Characteristics

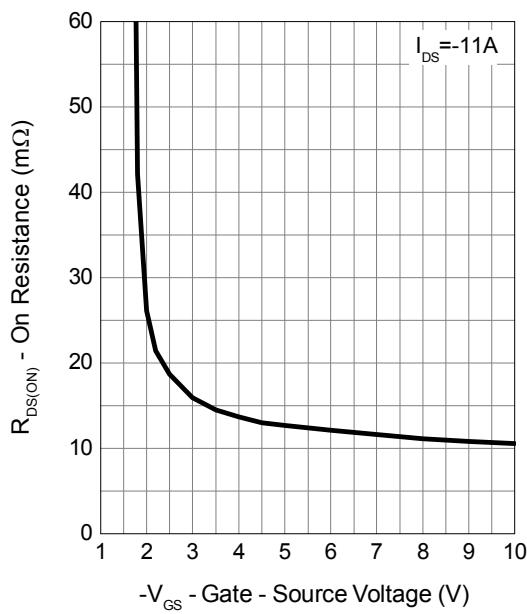
Output Characteristics



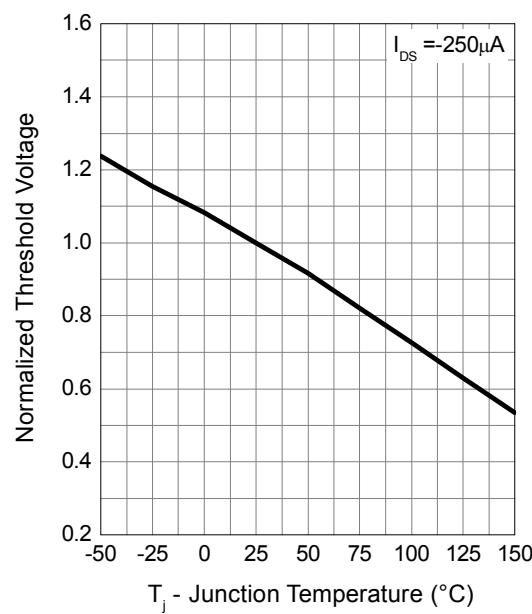
Drain-Source On Resistance



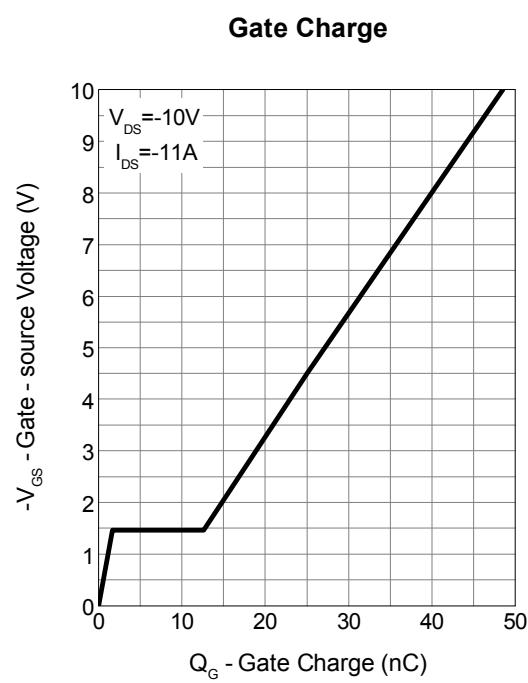
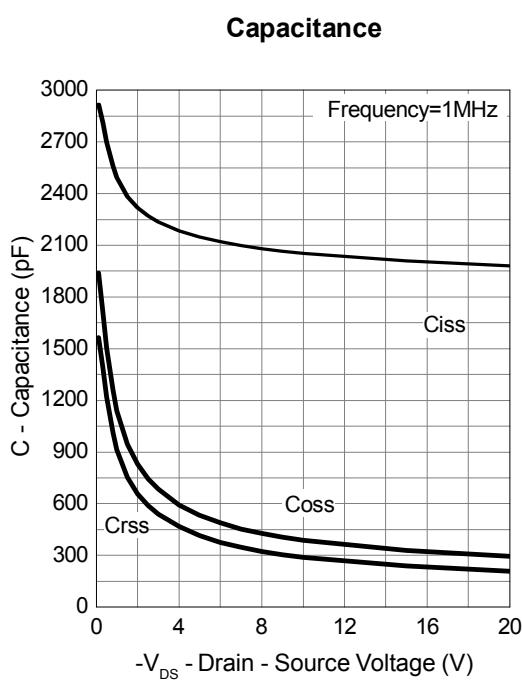
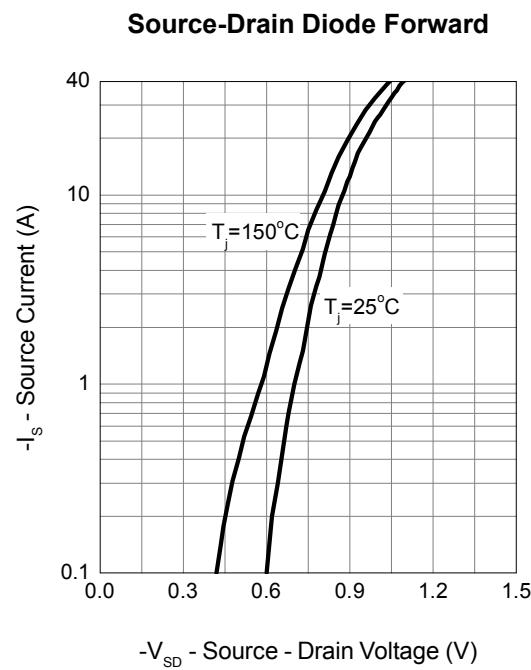
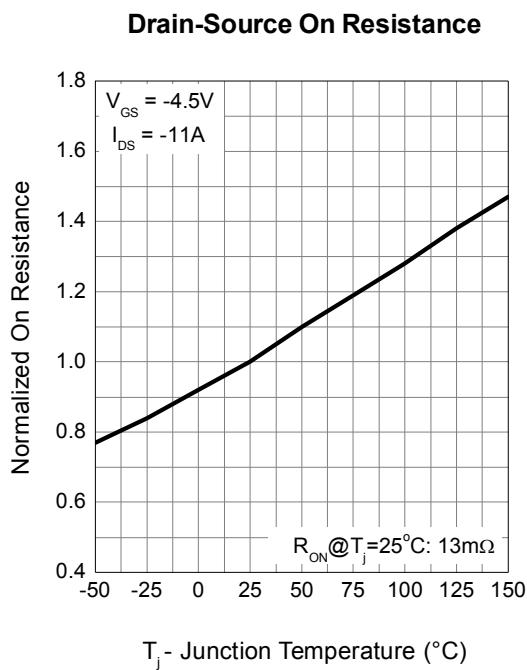
Gate-Source On Resistance



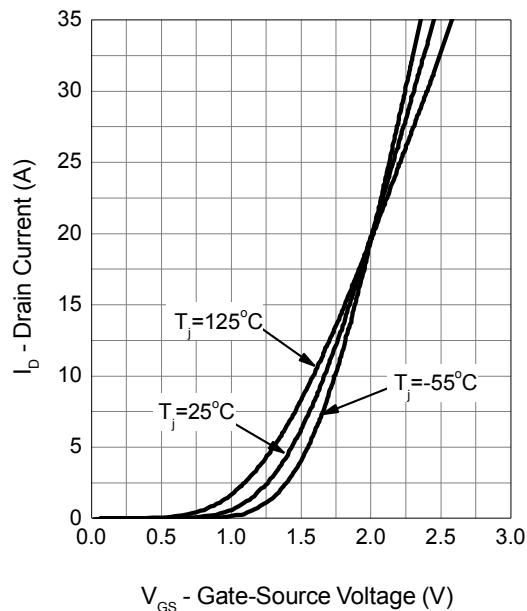
Gate Threshold Voltage



Typical Operating Characteristics



Typical Operating Characteristics

Transfer Characteristics



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