WSD1006GDN22

N-Channel MOSFET

General Description

The WSD1006GDN22 is the highest performance trench N-Channel MOSFET with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The WSD1006GDN22 meet the RoHS and Green Product requirement, 100% E_{AS} guaranteed with full function reliability approved.

Product Summery

BV_{DSS}	$R_{DS(ON)}$	I_D
100V	20mΩ	6.5A

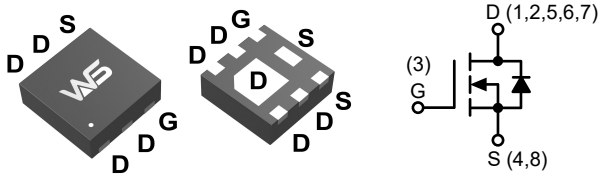
Applications

- Power Management in TV Converter.
- DC-DC Converter
- LED TV Back Light

Features

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

DFN2X2-6L Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	
I_D@T_C=25°C	Continuous Drain Current	6.5	A
I_{DP}	Pulsed Drain Current	42	
E_{AS}	Single Pulse Avalanche Energy	30	mJ
P_D@T_C=25°C	Total Power Dissipation	72	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	

Thermal Data

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	---	45	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case [1]	---	3.74	

Electrical Characteristics (T_J=25°C, Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250μA	100	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance [2]	V_{GS}=10V , I_D=6A	---	20	24	mΩ
		V_{GS}=4.5V , I_D=5A	---	24	27	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250μA	1.0	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=80V , V_{GS}=0V , T_J=25°C	---	---	1.0	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
Q_g	Total Gate Charge	I_D=6A , V_{DS}=50V , V_{GS}=10V	---	11	---	nC
Q_{gs}	Gate-Source Charge		---	2.0	---	
Q_{gd}	Gate-Drain Charge		---	3.0	---	
$T_{d(on)}$	Turn-On Delay Time	V_{GS}=10V , V_{DS}=50V , R_G=2.2Ω , I_D=6A	---	12	---	ns
T_r	Rise Time		---	15	---	
$T_{d(off)}$	Turn-Off Delay Time		---	23.5	---	
T_f	Fall Time		---	6.2	---	
C_{iss}	Input Capacitance	V_{DS}=50V , V_{GS}=0V , f = 1.0MHz	---	580	---	pF
C_{oss}	Output Capacitance		---	165	---	
C_{rss}	Reverse Transfer Capacitance		---	5.1	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	6.5	A
I_{SP}	Pulsed Source Current		---	---	42	
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=12A , T_J=25°C	---	---	1.3	V
t_{rr}	Reverse Recovery Time	I_F=12A , dI/dt=100A/μs , T_J=25°C	---	45.2	---	ns
Q_{rr}	Reverse Recovery Charge		---	88.1	---	nC

Note:

1. Calculated continuous current based on maximum allowable junction temperature.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. P_D is based on max. junction temperature, using junction-case thermal resistance.
4. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.
5. V_{DD}=50V, R_G=25Ω, L=0.3mH, starting T_J=25°C.

Typical Characteristics

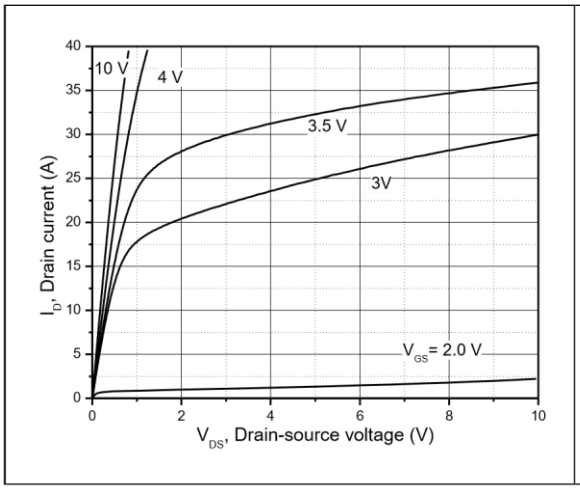


Figure 1, Typ. output characteristics

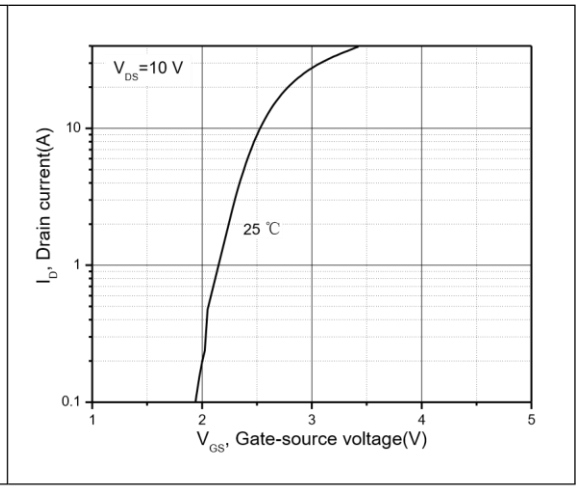


Figure 2, Typ. transfer characteristics

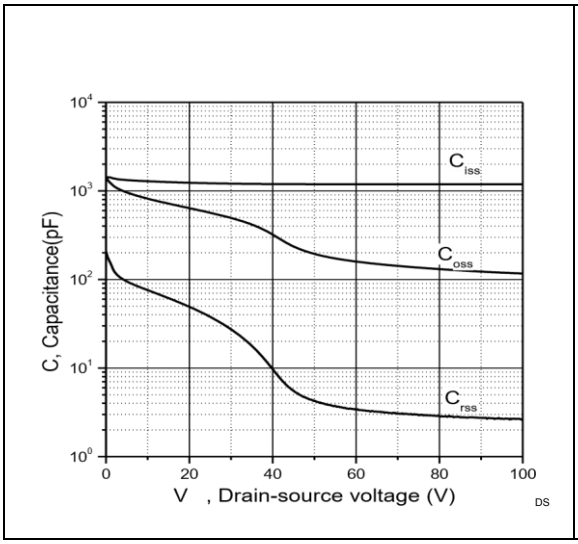


Figure 3, Typ. capacitances

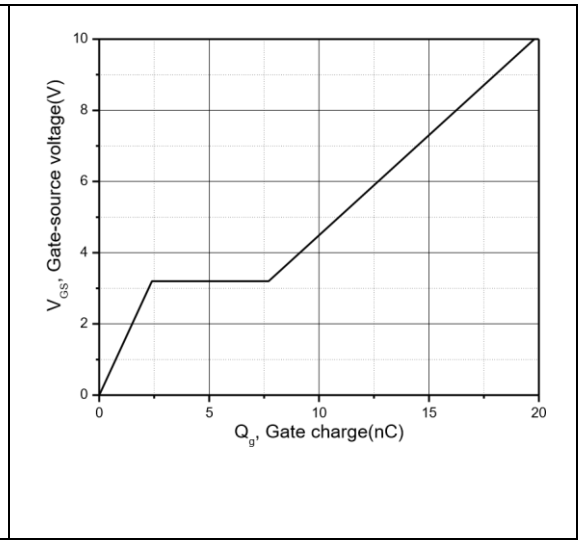


Figure 4, Typ. gate charge

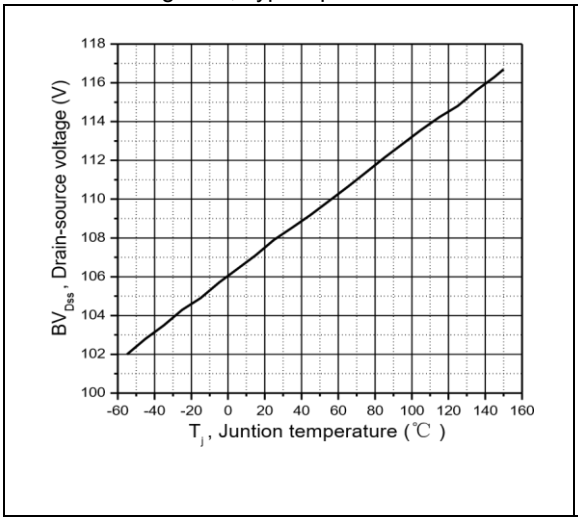


Figure 5, Drain-source breakdown voltage

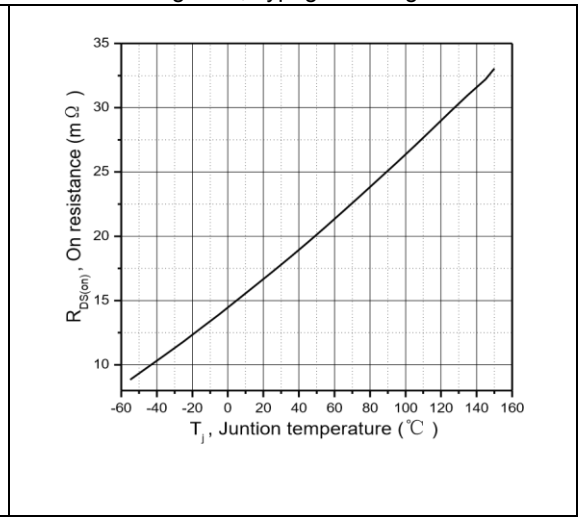


Figure 6, Drain-source on-state resistance

Typical Characteristics (Cont.)

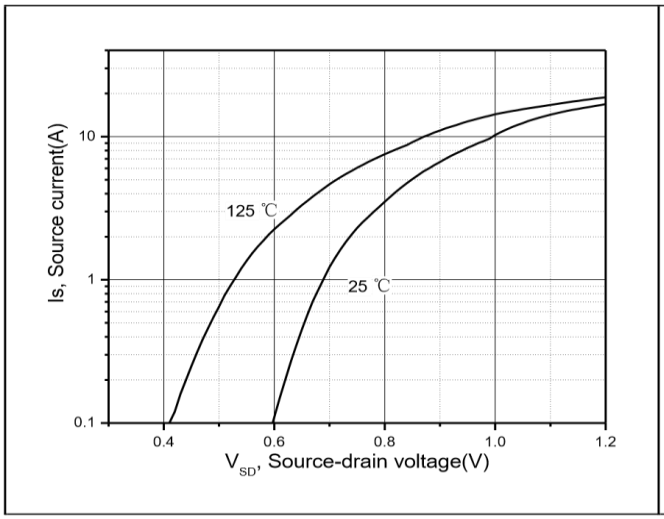


Figure 7, Forward characteristic of body diode

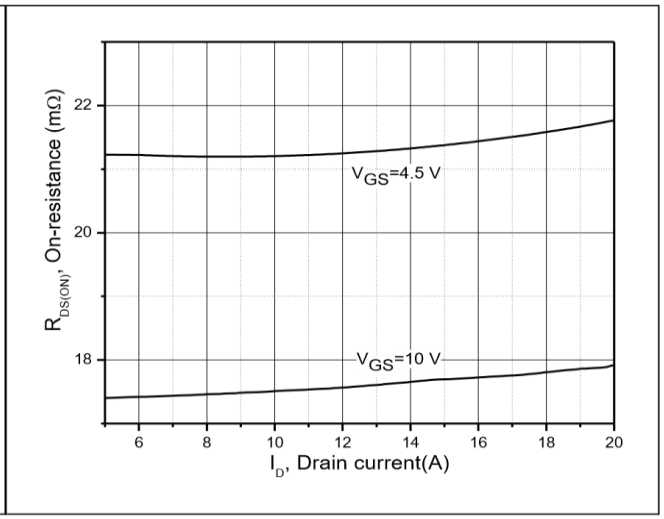


Figure 8, Drain-source on-state resistance

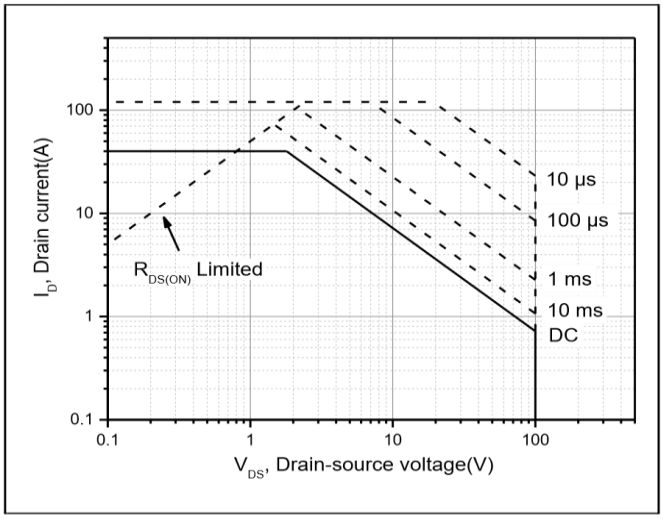
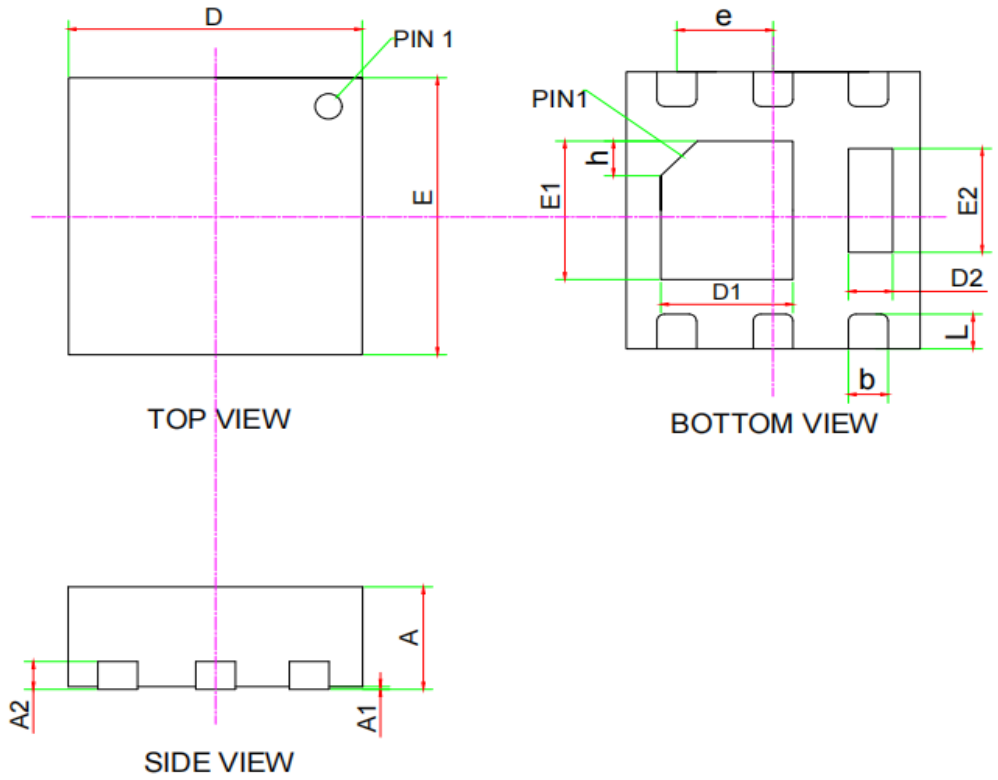


Figure 9, Safe operation area T_C=25 ℃

Packaging information



SYMBOL	MIN	NOM	MAX
A	0.50	0.55	0.60
A1	0.00	0.02	0.05
A2	0.18	0.20	0.25
b	0.25	0.3	0.35
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D1	0.80	0.90	1.00
E1	0.90	1.00	1.10
D2	0.20	0.30	0.40
E2	0.70	0.80	0.90
L	0.20	0.25	0.30
h	0.15	0.20	0.25
e	0.65 BSC		

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