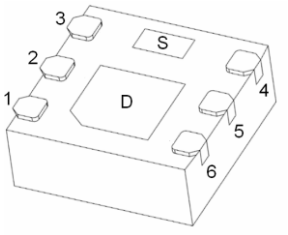
GPMN2012-T

20V N-Channel MOSFET

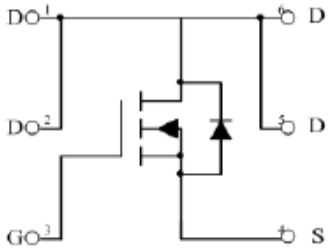
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	10mΩ@4.5V	12A
	14mΩ@2.5V	
	23mΩ@1.8V	

DFN2×2-6L



Schematic diagram



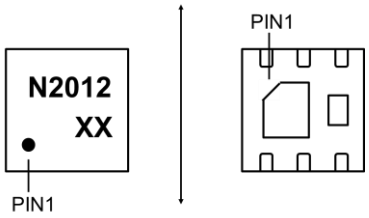
FEATURES

- TrenchFET Power MOSFET
- Small package DFNWB2×2-6L

APPLICATION

- Load Switch for Portable Applications

MARKING:



ABSOLUTE MAXIMUM RATINGS (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current[1,2]	I_D	12	A
Plused Drain Current	I_{DM}	40	A
Power Dissipation	P_D	0.75	W
Thermal Resistance from Junction to Ambient[1,2]	$R_{\theta JA}$	167	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS(Ta=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drainsource breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} = 16V, V_{GS} = 0V			1	μA
Gatebody leakage current	I_{GSS}	V_{GS} = ±10V, V_{DS} = 0V			±100	nA
On Characteristics						
Gate threshold voltage[3]	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.4	0.7	1.0	V
Drainsource onresistance[3]	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 3A		10	15	mΩ
		V_{GS} = 2.5V, I_D = 3A		14	18	
		V_{GS} = 1.8V, I_D = 3A		23	30	
Forward tranconductance[3]	g_{FS}	V_{DS} = 4V, I_D = 10A	10			S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 4V, V_{GS} = 0V, f = 1MHz		1900		pF
Output Capacitance	C_{oss}			700		
Reverse Transfer Capacitance	C_{rss}			480		
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 4V, V_{GS} = 5V, I_D = 10A		20		nC
GateSource Charge	Q_{gs}			2.5		
GateDrain Charge	Q_{gd}			6.5		
Turnon delay time	$t_{d(on)}$	V_{GEN} = 4.5V, V_{DD} = 4V, R_g = 1Ω, R_L = 0.4Ω		15		ns
Turnon rise time	t_r			10		
Turnoff delay time	$t_{d(off)}$			70		
Turnoff fall time	t_f			15		
Source-Drain Diode Characteristics						
Diode Forward Current	I_S				12	A
Diode Forward Voltage	V_{SD}	V_{GS} = 0V, I_{SD} = 1A			1.2	V

Notes :

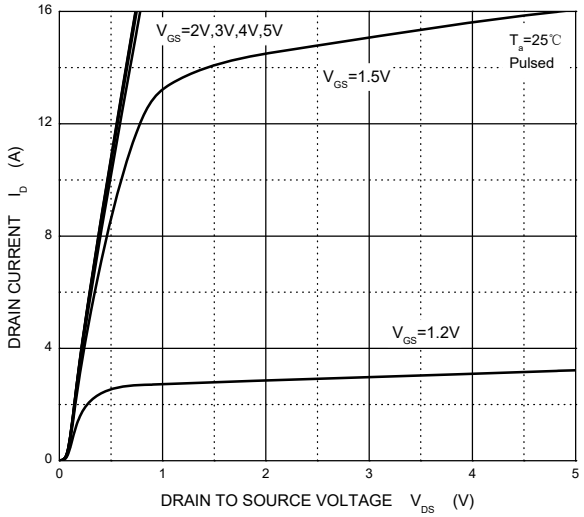
1.$R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR4 board with 1oz. single side copper, in a still air environment with T_A = 25°C.

2.$R_{\theta JA}$ is measured in the steady state

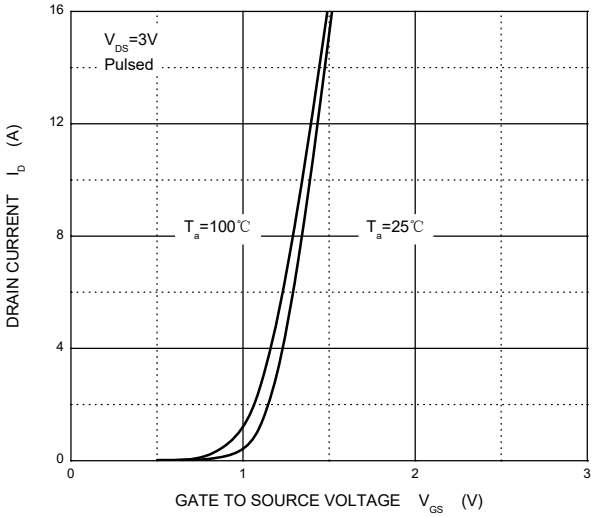
3.Pulse test : Pulse width ≤ 380μs, duty cycle ≤ 2%.

Typical Electrical and Thermal Characteristics

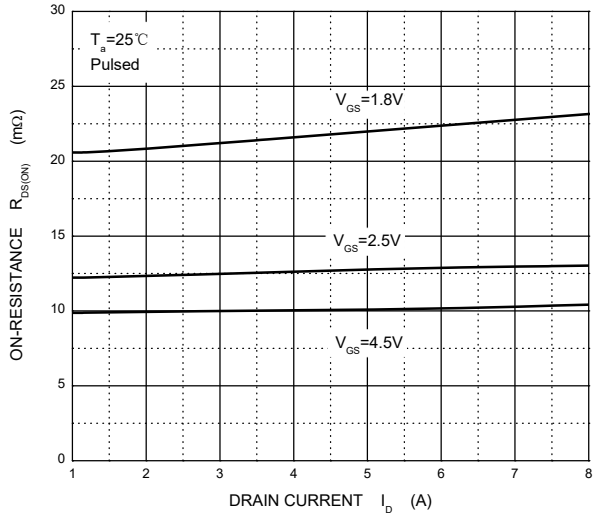
Output Characteristics



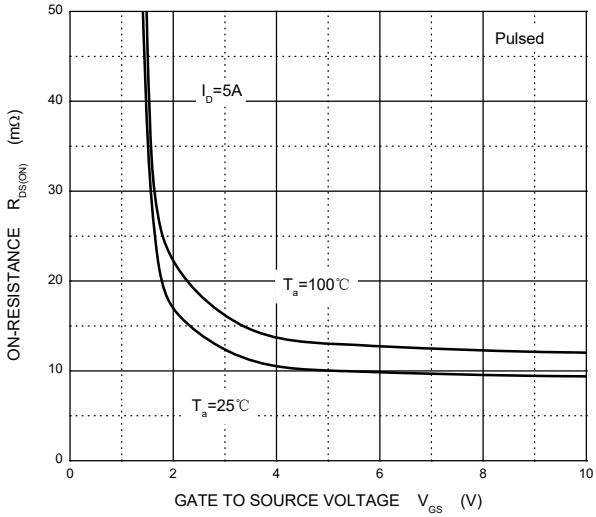
Transfer Characteristics



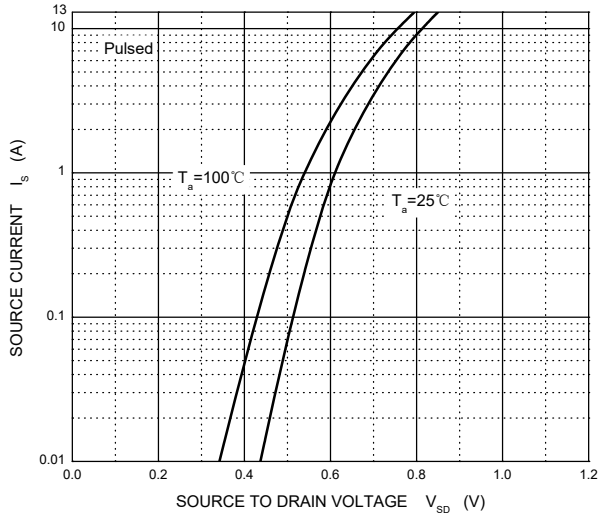
$R_{DS(ON)}$ —— I_D



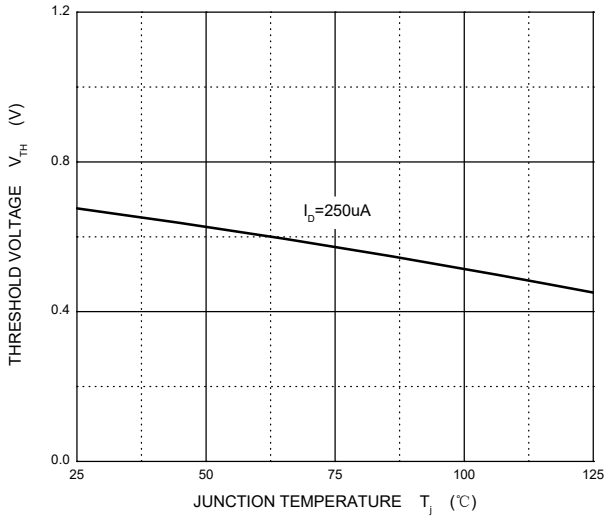
$R_{DS(ON)}$ —— V_{GS}



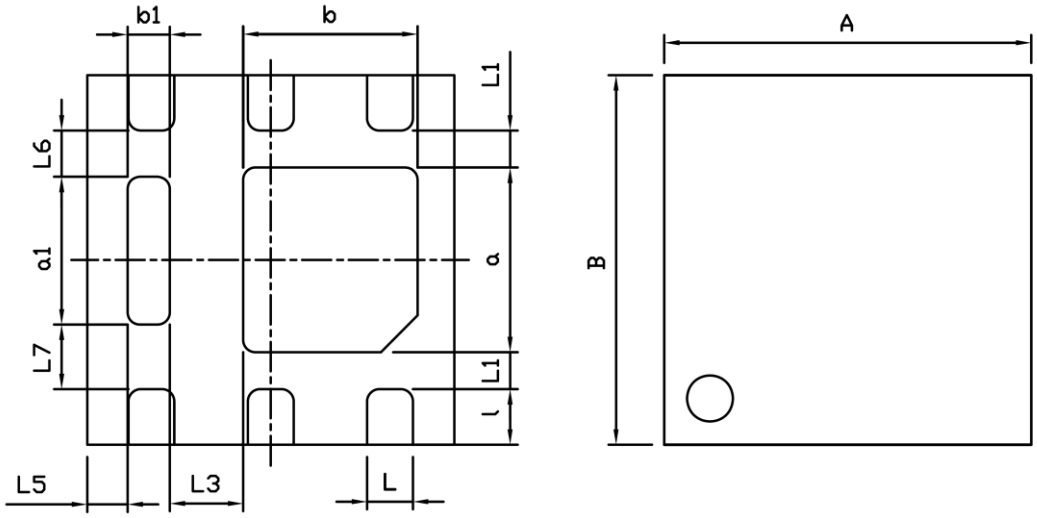
I_S —— V_{SD}

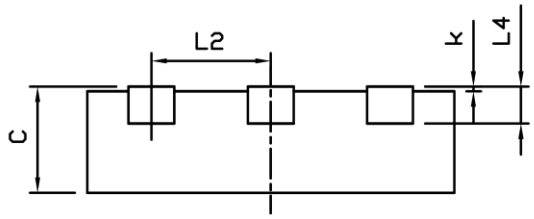


Threshold Voltage



DFN2×2-6L Package Information





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.950	2.050	0.077	0.081
B	1.950	2.050	0.077	0.081
C	0.450	0.550	0.018	0.022
L	0.250	0.350	0.010	0.014
L1	0.100	0.300	0.004	0.012
L2	0.650TYP		0.026TYP	
L3	0.300	0.500	0.012	0.020
L4	0.152TYP		0.006TYP	
L5	0.120	0.320	0.005	0.013
L6	0.150	0.350	0.006	0.014
L7	0.230	0.430	0.009	0.017
a	0.900	1.100	0.035	0.043
a1	0.720	0.920	0.028	0.036
b	0.850	1.050	0.033	0.041
b1	0.130	0.330	0.005	0.013
l	0.250	0.350	0.010	0.014
k	0.000	0.050	0.000	0.002