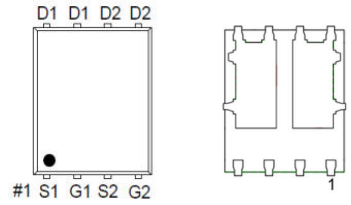
GPM2K1ND10LND

100V Daul N-Channel MOSFET

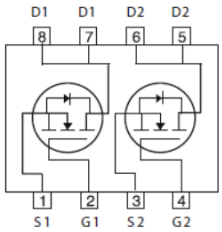
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	188mΩ@10V	3A
	193mΩ@4.5V	

PDFN5×6-8L



Schematic diagram



Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance

Application

- Power Switching Application

MARKING:

M2K1ND10L = Device Code

XX = Date Code

Solid Dot = Green Indicater

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

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	100	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C = 25℃	I_D	3	A
	T_C = 100℃	I_D	2.1	A
Pulsed Drain Current[2]		I_{DM}	12	A
Power Dissipation[4]	T_C = 25℃	P_D	6.9	W
Thermal Resistance from Junction to Ambient[5]		$R_{\theta JA}$	60	℃/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	18	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

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

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80V, V_{GS} = 0V			1	μA
Gate - Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
On Characteristics[3]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.0	1.5	2.5	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 2.0A		188	310	mΩ
		V_{GS} = 4.5V, I_D = 1.0A		193	320	
Forward Transconductance	g_{FS}	V_{DS} = 10V, I_D = 2A		4.3		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 45V, V_{GS} = 0V, f = 1MHz		450		pF
Output Capacitance	C_{oss}			17		
Reverse Transfer Capacitance	C_{rss}			9		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		1.96		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 50V, V_{GS} = 10V, I_D = 2A		11.96		nC
Gate-source Charge	Q_{gs}			1.01		
Gate-drain Charge	Q_{gd}			2.83		
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 50V, V_{GS} = 10V, I_D= 2A R_G = 3Ω		13		ns
Turn-on Rise Time	t_r			52		
Turn-off Delay Ttime	$t_{d(off)}$			17		
Turn-off Fall Time	t_f			11		
Source - Drain Diode Characteristics						
Diode Forward Voltage[4]	V_{SD}	V_{GS} = 0V, I_S = 1.5A			1.2	V

Notes :

1.The maximum current rating is limited by package.And device mounted on a large heatsink

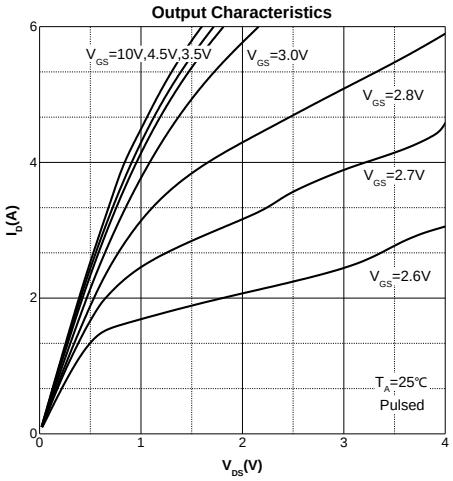
2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.

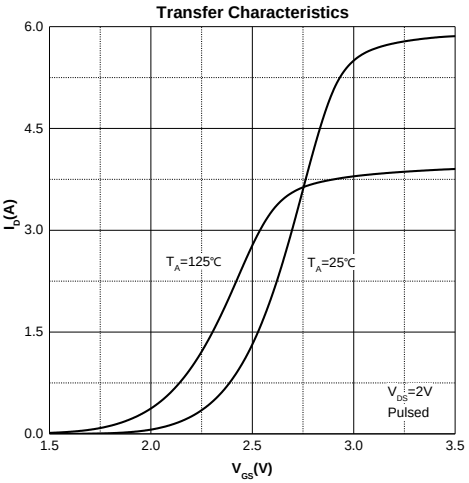
3.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

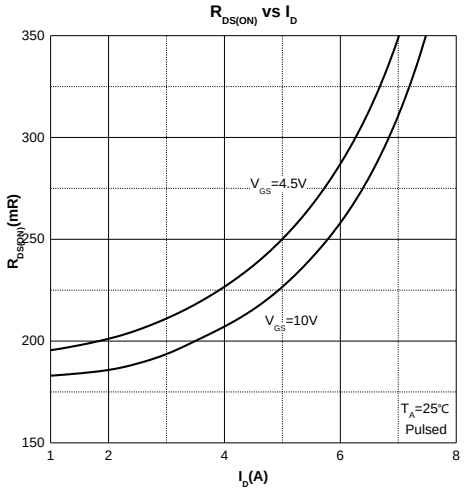
4.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.And device mounted on a large heatsink

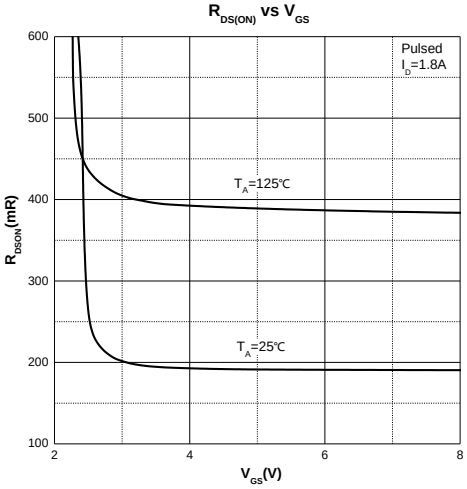
5.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

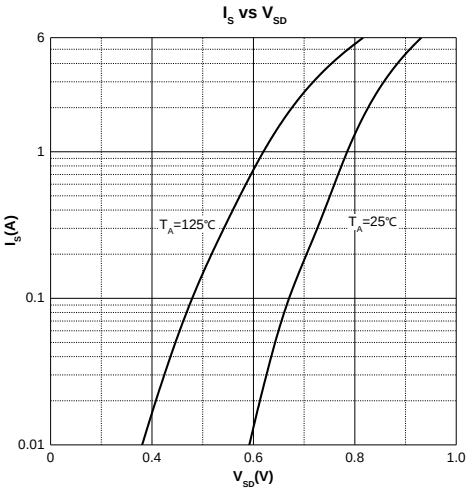
Typical Characteristics

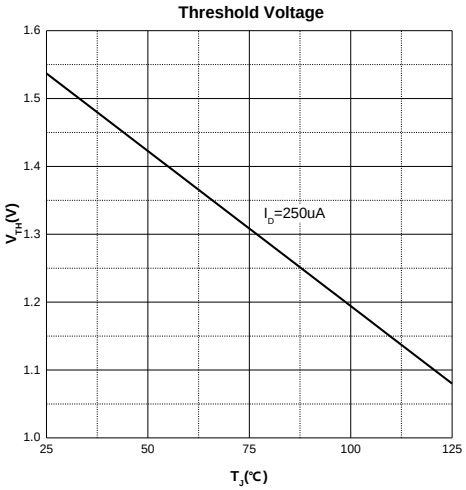


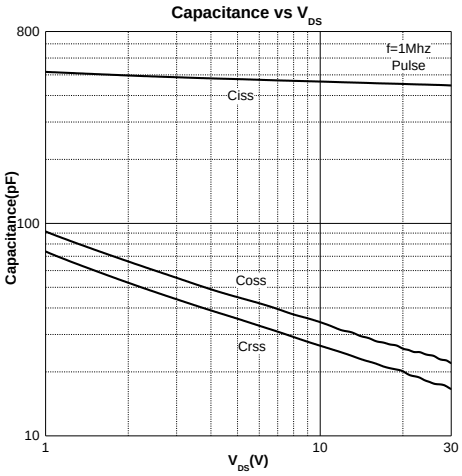


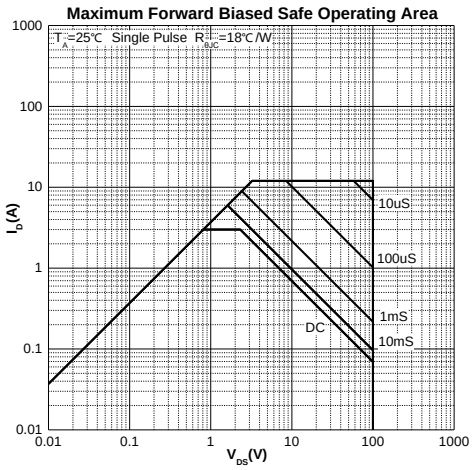


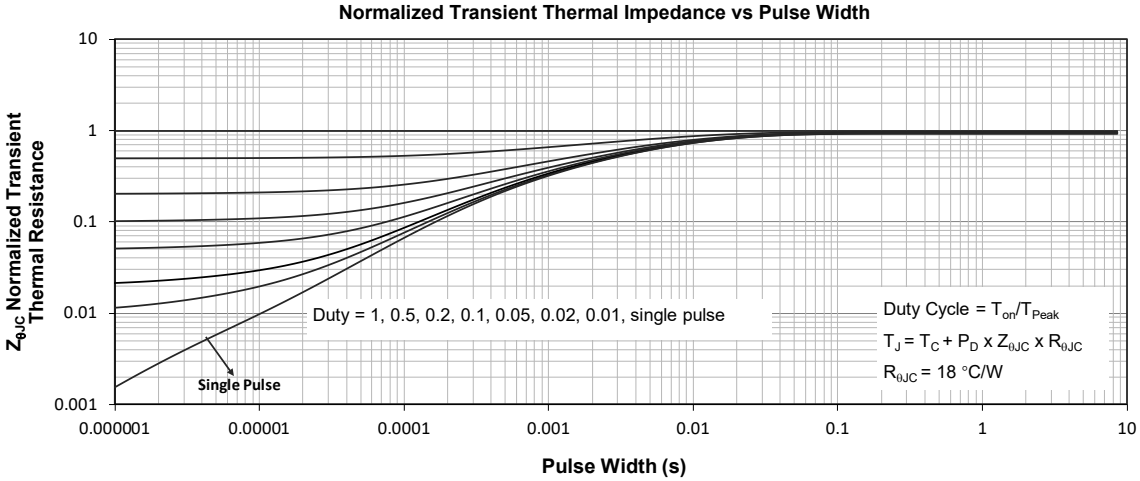




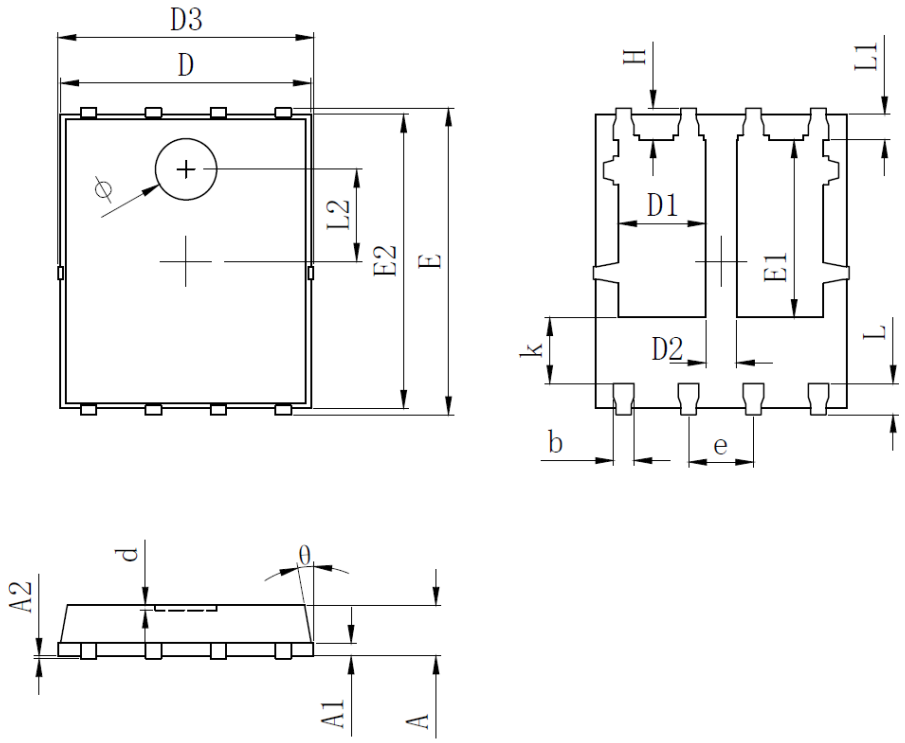



Capacitance vs V_{DS}
f=1Mhz
Pulse
Ciss
Coss
Crss
Capacitance(pF)
800
100
10
1
10
30
V_{DS}(V)


Maximum Forward Biased Safe Operating Area
T_A=25℃ Single Pulse $R_{\theta JC}$=18℃/W
10uS
100uS
1mS
DC
10mS
I_D (A)
1000
100
10
1
0.1
0.01
0.01
0.1
1
10
100
1000
V_{DS}(V)


Normalized Transient Thermal Impedance vs Pulse Width
$Z_{\theta JC}$ Normalized Transient Thermal Resistance
10
1
0.1
0.01
0.001
Duty = 1, 0.5, 0.2, 0.1, 0.05, 0.02, 0.01, single pulse
Single Pulse
Duty Cycle = T_{on}/T_{Peak}
$T_J = T_C + P_D \times Z_{\theta JC} \times R_{\theta JC}$
$R_{\theta JC}$ = 18 °C/W
0.000001
0.00001
0.0001
0.001
0.01
0.1
1
10
Pulse Width (s)

PDFN5×6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.254REF		0.010REF	
A2	0.000	0.050	0.000	0.002
D	4.824	4.976	0.190	0.196
D1	1.605	1.805	0.063	0.071
D2	0.500	0.700	0.020	0.028
D3	4.924	5.076	0.194	0.200
E	5.924	6.076	0.233	0.239
E1	3.375	3.575	0.133	0.141
E2	5.674	5.826	0.223	0.229
b	0.350	0.450	0.014	0.018
e	1.270TYP		0.050TYP	
L	0.534	0.686	0.021	0.027
L1	0.424	0.576	0.017	0.023
L2	1.800REF		0.071REF	
k	1.190	1.390	0.047	0.055
H	0.549	0.701	0.022	0.028
θ	8°	12°	8°	12°
Φ	1.100	1.300	0.043	0.051
d	-	0.100	-	0.004