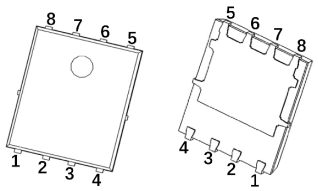
GPM100P04LNC

40V P-Channel MOSFET

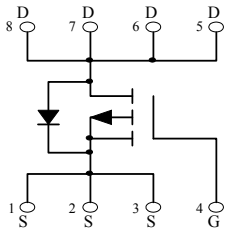
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-40V	10mΩ@-10V	-35A
	14mΩ@-4.5V	

PDFN5X6-8L



Schematic diagram



Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested
- 100% ΔV_{DS} Tested

Application

- Power Switching Application

MARKING:

M100P04L = 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}	-40	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C = 25℃	I_D	-35	A
	T_C = 100℃	I_D	-23	A
Pulsed Drain Current[2]		I_{DM}	-140	A
Single Pulsed Avalanche Current[3]		I_{AS}	-23	A
Single Pulsed Avalanche Energy[3]		E_{AS}	132	mJ
Power Dissipation[5]	T_C = 25℃	P_D	42	W
Thermal Resistance from Junction to Ambient[6]		$R_{\theta JA}$	65	℃/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	3	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T_A = 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	-40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -40V, V_{GS} = 0V			-1	μA
Gate - Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
On Characteristics[4]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1	-1.6	-3	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -18A		10	14	mΩ
		V_{GS} = -4.5V, I_D = -12A		14	19	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = -20V, V_{GS} = 0V, f = 1MHz		2603		pF
Output Capacitance	C_{oss}			254		
Reverse Transfer Capacitance	C_{rss}			220		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		9.8		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = -20V, V_{GS} = -10V, I_D = -20A		51		nC
Gate-source Charge	Q_{gs}			7.2		
Gate-drain Charge	Q_{gd}			11		
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = -20V, V_{GS} = -10V, I_D = -20A, R_G = 3Ω		15		ns
Turn-on Rise Time	t_r			21		
Turn-off Delay Time	$t_{d(off)}$			33		
Turn-off Fall Time	t_f			11		
Source - Drain Diode Characteristics						
Diode Forward Voltage[4]	V_{SD}	V_{GS} = 0V, I_S = -10A			-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%.

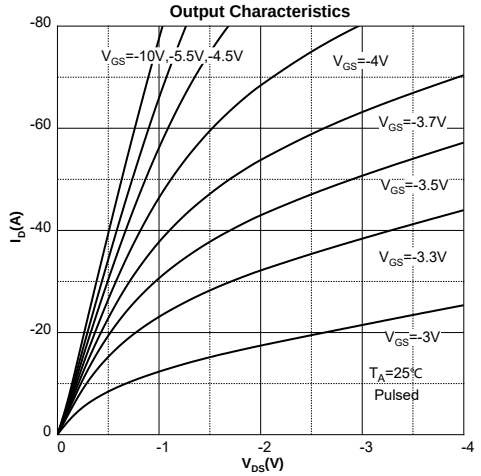
3.E_{AS} condition: V_{DD} = -20V,V_{GS} = -10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°℃.

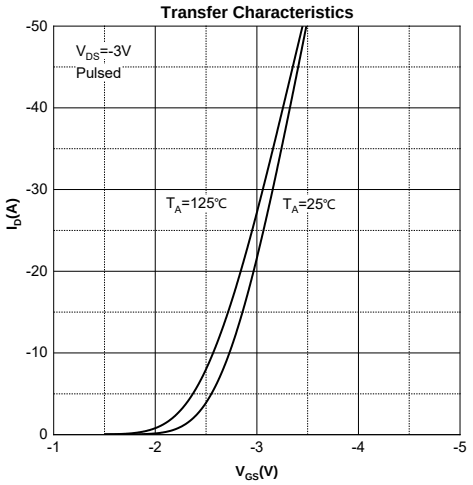
4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

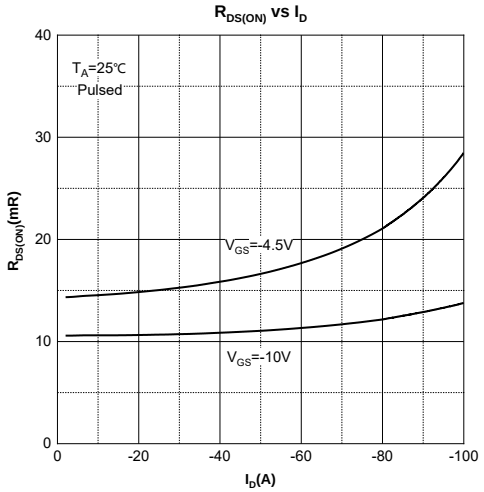
5.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.And device mounted on a large heatsink

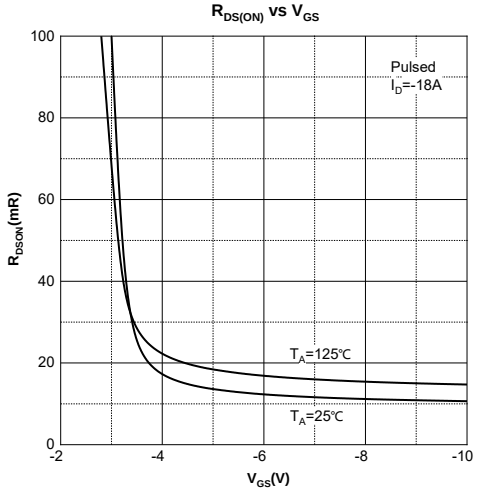
6.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

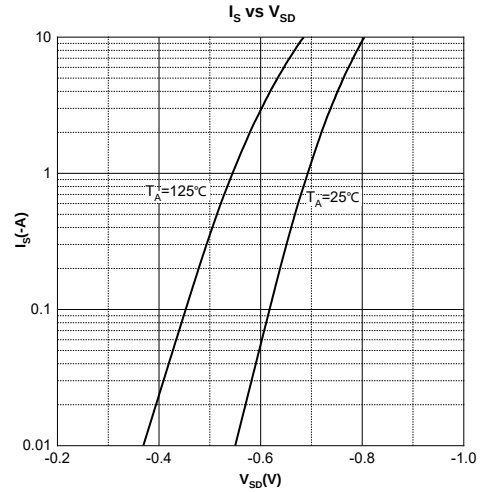
Typical Characteristics

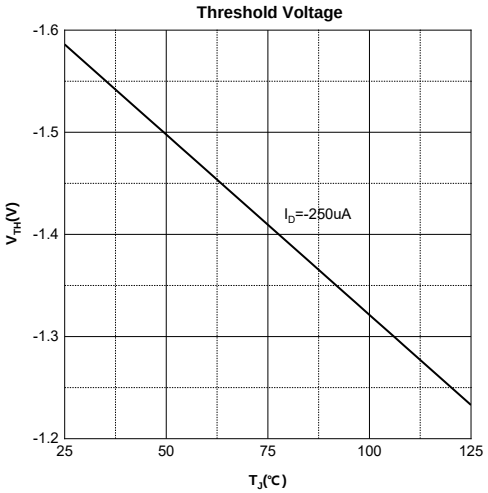


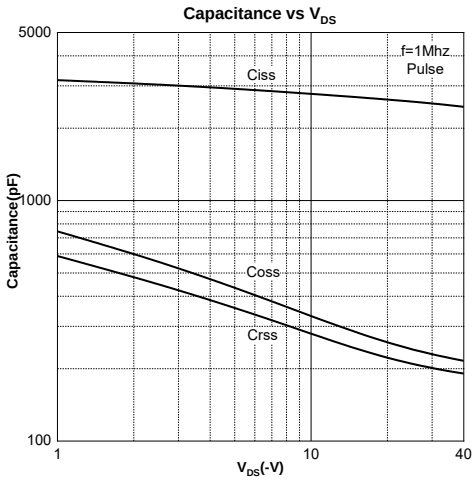


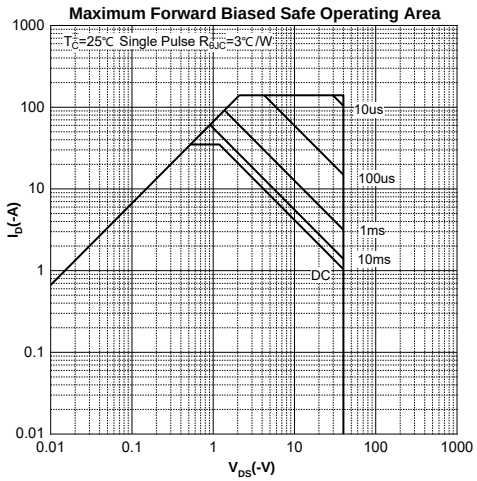


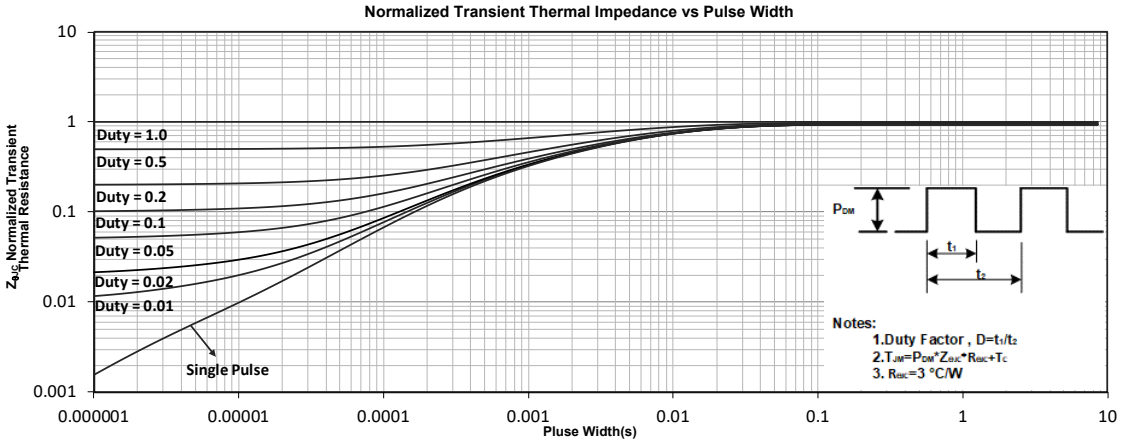




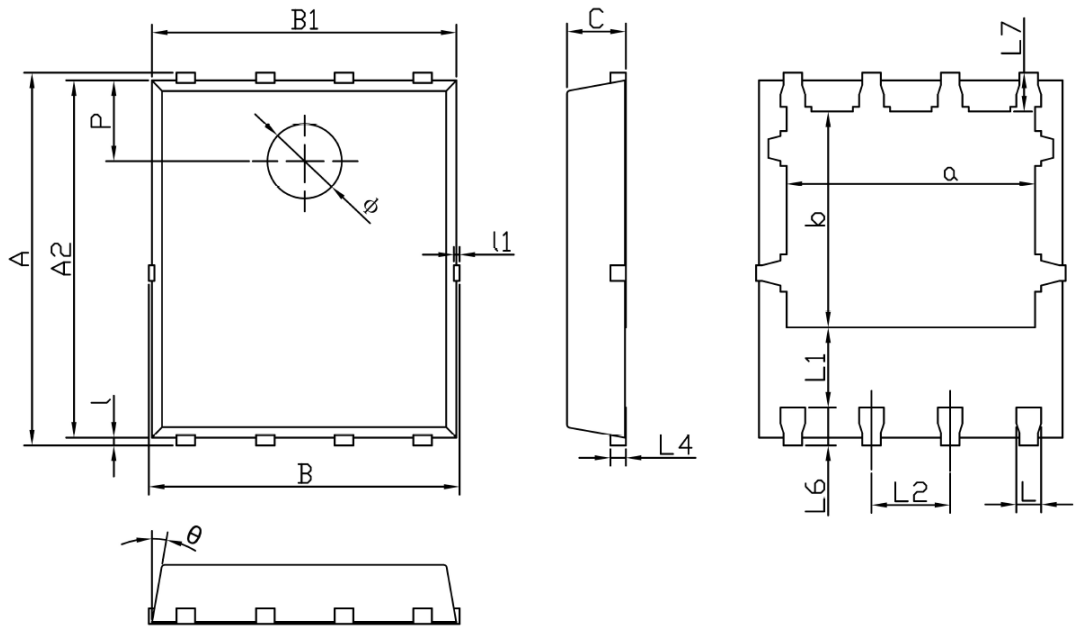



Capacitance vs V_{DS}
f=1Mhz
Pulse
Ciss
Coss
Crss
Capacitance(pF)
5000
1000
100
1
10
40
V_{DS}(-V)


Maximum Forward Biased Safe Operating Area
T_C=25℃ Single Pulse $R_{\theta JC}$=3℃/W
10us
100us
1ms
10ms
DC
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
Duty = 1.0
Duty = 0.5
Duty = 0.2
Duty = 0.1
Duty = 0.05
Duty = 0.02
Duty = 0.01
Single Pulse
P_{DM}
t_1
t_2
Notes:
1.Duty Factor , D=t_1/t_2
2.$T_{JM}=P_{DM}*Z_{\theta JC}*R_{\theta JC}+T_C$
3. $R_{\theta JC}$=3 °C/W
10
1
0.1
0.01
0.001
0.000001
0.00001
0.0001
0.001
0.01
0.1
1
10
Pluse Width(s)

PDFN5X6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	5.900	6.100	0.232	0.240
a	3.910	4.110	0.154	0.162
A2	5.700	5.800	0.224	0.228
B	4.900	5.100	0.193	0.201
b	3.375	3.575	0.133	0.141
B1	4.800	5.000	0.189	0.197
C	0.900	1.000	0.035	0.039
L	0.300	0.500	0.014	0.018
l	0.060	0.200	0.002	0.008
L1	1.100	-	0.043	-
l1	-	0.100	-	0.004
L2	1.170	1.370	0.046	0.054
L4	0.210	0.340	0.008	0.013
L6	0.510	0.710	0.020	0.028
L7	0.510	0.710	0.020	0.028
P	1.150	1.450	0.045	0.057
Φ	1.100	1.300	0.043	0.051
θ	8°	12°	8°	12°