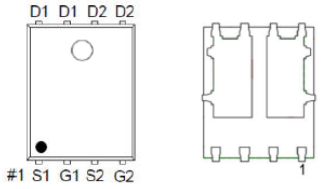
GPM041ND03LND

30V Dual N-Channel MOSFET

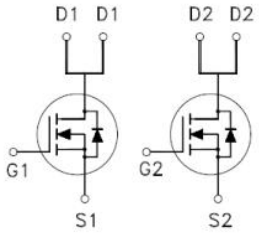
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	4.2mΩ@10V	60A
	5.5mΩ@4.5V	

PDFN5X6-8L



Schematic diagram



Feature

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

Application

- Power Switching Application

MARKING:

M041ND03L = 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}	30	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C = 25℃	I_D	60	A
	T_C = 100℃	I_D	37	A
Pulsed Drain Current[2]	T_C = 25℃	I_{DM}	240	A
	T_C = 100℃	I_{DM}	115	A
Single Pulsed Avalanche Current[3]		I_{AS}	30	A
Single Pulsed Avalanche Energy[3]		E_{AS}	193	mJ
Power Dissipation[5]	T_C = 25℃	P_D	44	W
Thermal Resistance from Junction to Ambient[6]	T_A = 25℃	$R_{\theta JA}$	50	℃/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	2.8	℃/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	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30V, 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	1.3	1.5	3.0	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A		4.2	5.6	mΩ
		V_{GS} = 4.5V, I_D = 15A		5.5	7.5	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz		2587		pF
Output Capacitance	C_{oss}			357		
Reverse Transfer Capacitance	C_{rss}			284		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		2.5		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DD} = 15V, V_{GS} = 10V, I_D = 20A		57.6		nC
Gate-source Charge	Q_{gs}			7.9		
Gate-drain Charge	Q_{gd}			14		
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 15V, V_{GS} = 10V, I_D = 22.5A R_G = 3Ω		10		ns
Turn-on Rise Time	t_r			65		
Turn-off Delay Time	$t_{d(off)}$			40		
Turn-off Fall Time	t_f			90		
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} = 15V,V_{GS} = 10V, L =0.5mH, R_G = 25Ω Starting T_J = 25°℃.

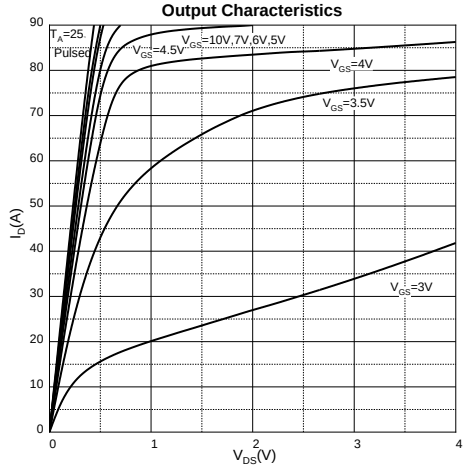
4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

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

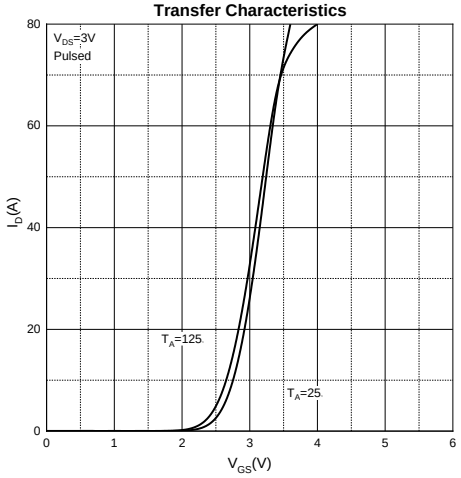
6.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

Typical Characteristics

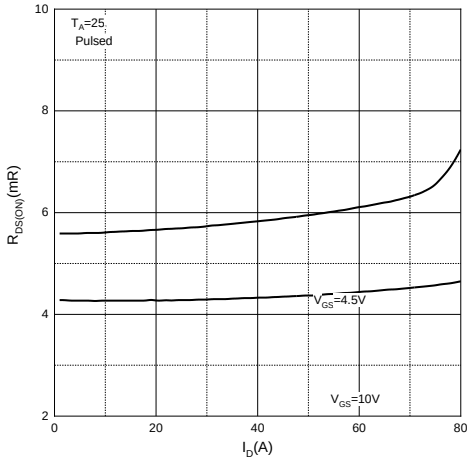
Output Characteristics



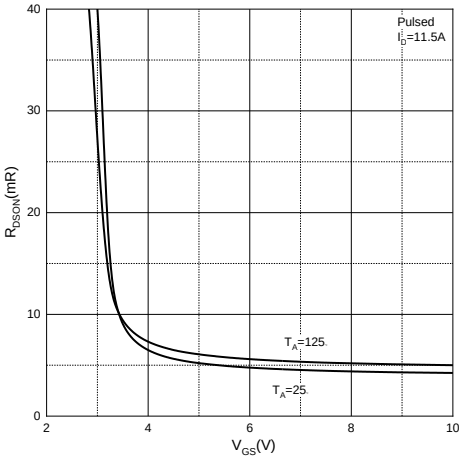
Transfer Characteristics



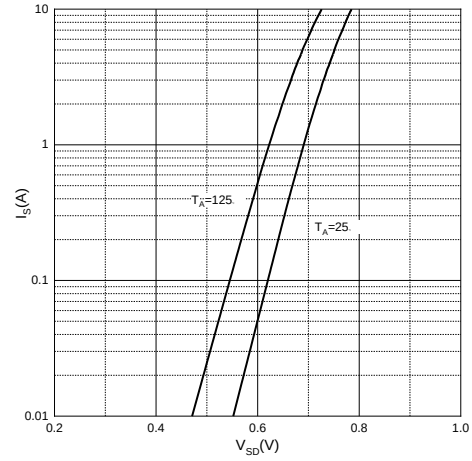
$R_{DS(ON)}$ vs I_D



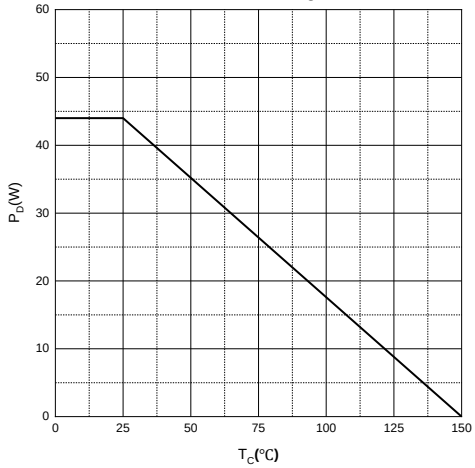
$R_{DS(ON)}$ vs V_{GS}



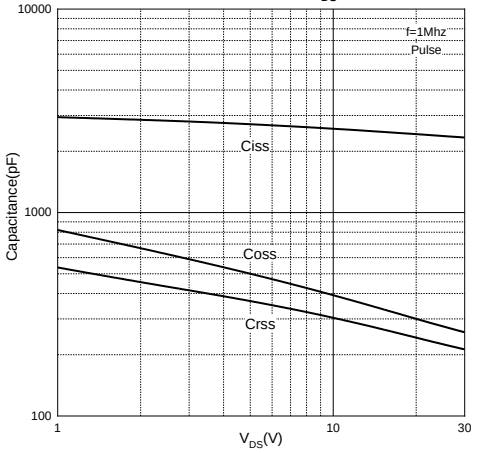
I_S vs V_{SD}



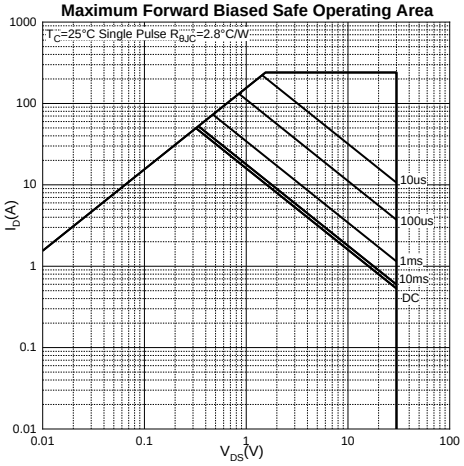
Power De-rating



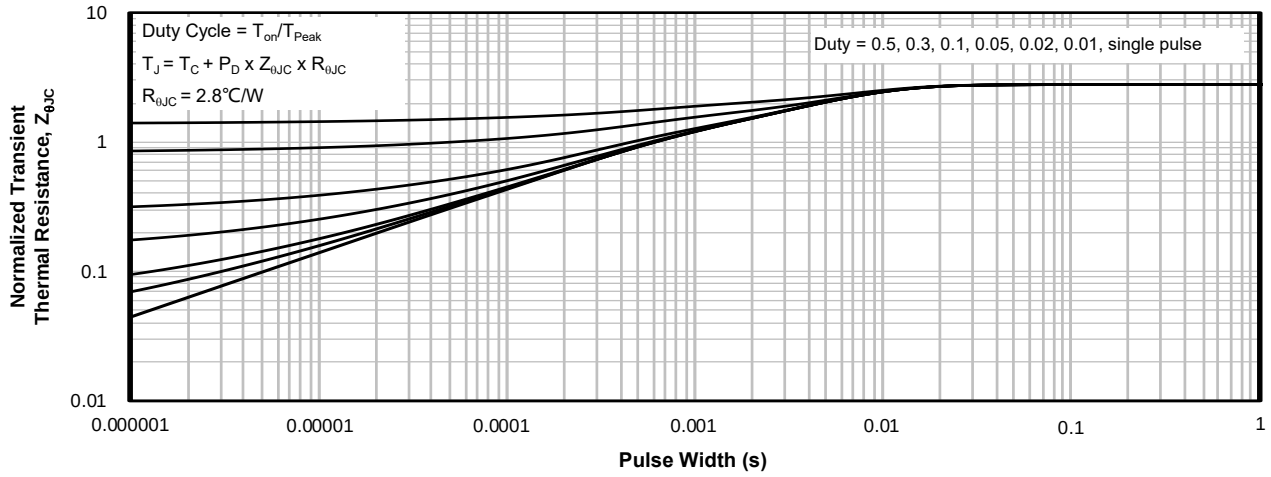
Capacitance vs V_{DS}



Maximum Forward Biased Safe Operating Area

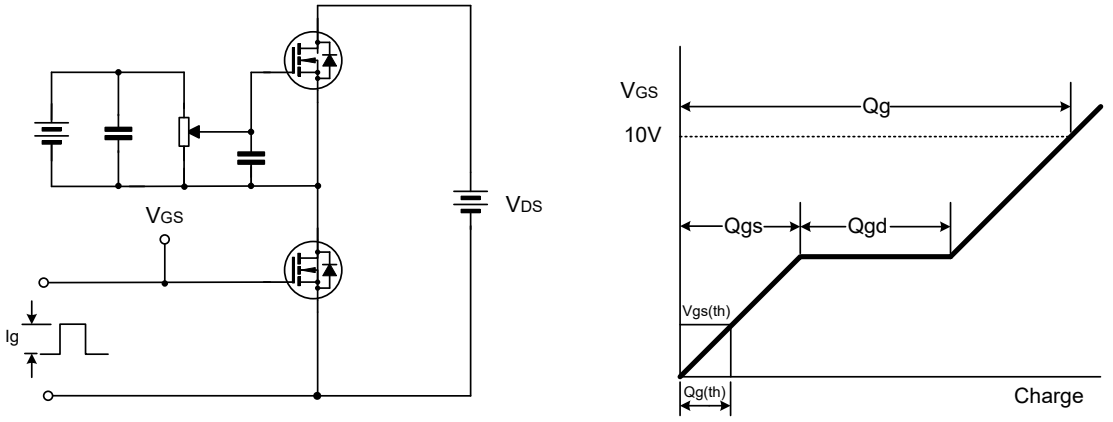


Normalized Transient Thermal Impedance vs Pulse Width

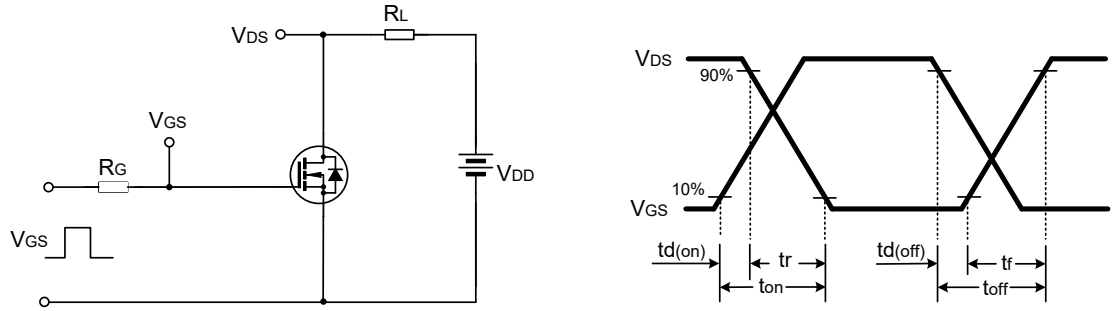


Test Circuit

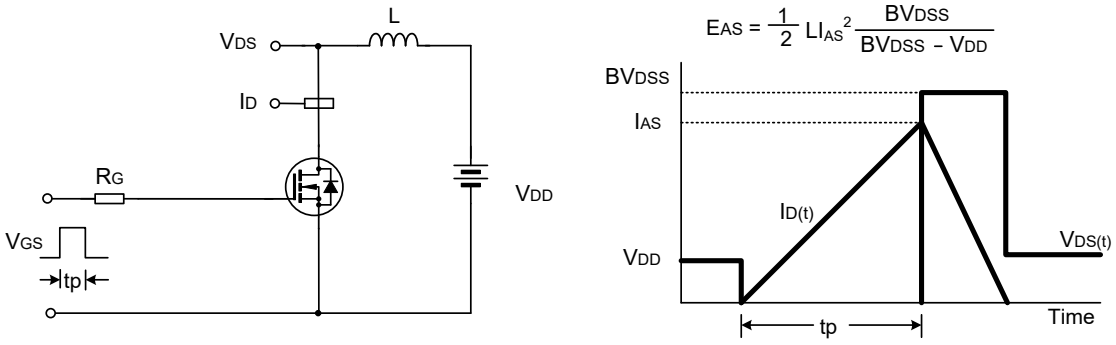
Gate Charge Test Circuit & Waveform



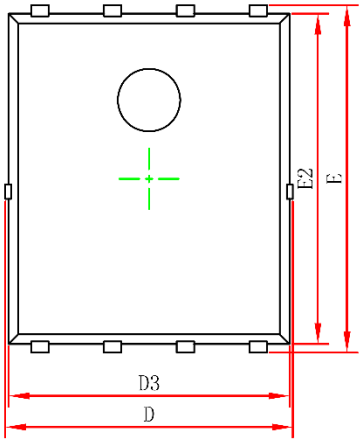
Resistive Switching Test Circuit & Waveform



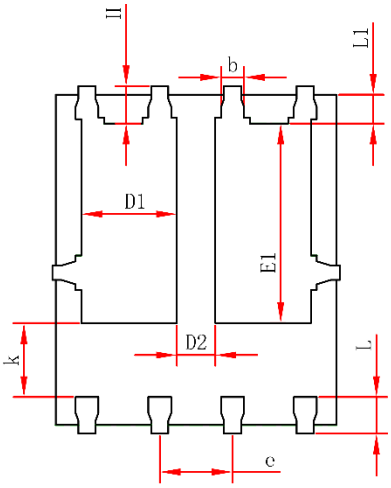
E_{AS} Test Circuit & Waveform



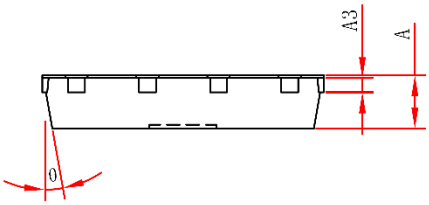
PDFN5X6-8L Package Information



Top View
[顶视图]



Bottom View
[背视图]



Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A3	0.210	0.340	0.008	0.013
D	4.900	5.100	0.193	0.201
E	5.900	6.100	0.232	0.240
D1	1.470	1.870	0.058	0.074
D2	0.470	0.870	0.019	0.034
E1	3.340	3.640	0.131	0.143
D3	4.800	5.000	0.189	0.197
E2	5.674	5.826	0.223	0.229
k	1.100	-	0.043	-
b	0.300	0.500	0.012	0.020
e	1.270TYB		0.050TYB	
L	0.510	0.710	0.020	0.028
L1	0.424	0.576	0.017	0.023
H	0.549	0.726	0.022	0.029
θ	8°	12°	8°	12°

Attention：

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
- Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.
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