

Product Summary

V _{(BR)DSS}	R _{DS(on)} TYP	I _D
30V	8.6mΩ@10V	28A
	12.6mΩ@4.5V	
	8mΩ@10V	30A
	11mΩ@4.5V	

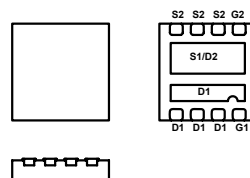
Feature

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

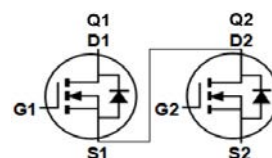
Application

- Power Management
- Load Switching

DFN3×3-8L



Schematic diagram



Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPM083ND03LGE	DFN3X3-8L	M083ND03L	Reel & Tape	NA	NA	5000pcs

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Parameter		Symbol	NMOS1	NMOS2	Unit
Drain-Source Voltage		V _{DS}	30		V
Gate-Source Voltage		V _{GS}	±20		V
Continuous Drain Current ¹	T _C = 25°C	I _D	28	30	A
	T _C = 100°C		18	19	
Pulsed Drain Current ²		I _{DM}	112	120	A
Single Pulsed Avalanche Current ³		I _{AS}	13.5	17	A
Single Pulsed Avalanche Energy ³		E _{AS}	45.6	72	mJ
Power Dissipation ⁵	T _C = 25°C	P _D	20	21	W
Thermal Resistance from Junction to Ambient ⁶		R _{θJA}	45	45	°C/W
Thermal Resistance from Junction to Case		R _{θJC}	6.2	6	°C/W
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55~ +150		°C

MOSFET ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)
NMO1:

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	1.6	3	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 13A		8.6	11	mΩ
		V _{GS} = 4.5V, I _D = 10A		12.6	18	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz		849		pF
Output Capacitance	C _{oss}			93		
Reverse Transfer Capacitance	C _{rss}			84		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		2.6		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 20V, V _{GS} = 10V, I _D = 13A		18.5		nC
Gate-Source Charge	Q _{gs}			2.7		
Gate-Drain Charge	Q _{gd}			4.9		
Gate Plateau Voltage	V _{plateau}			3.1		V
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15V, V _{GS} = 10V, R _G = 3Ω, I _D = 13A		6.4		ns
Turn-On Rise Time	t _r			11		
Turn-Off Delay Time	t _{d(off)}			20		
Turn-Off Fall Time	t _f			5.2		
Source-Drain Diode Characteristics						
Diode Forward Voltage ⁴	V _{SD}	V _{GS} = 0V, I _S = 10A			1.2	V
Diode Reverse Recovery Time	t _{rr}	I _F = 13A, dI/dt = 100A/μs		20		ns
Diode Reverse Recovery Charge	Q _{rr}			11.4		nC

NMO2:

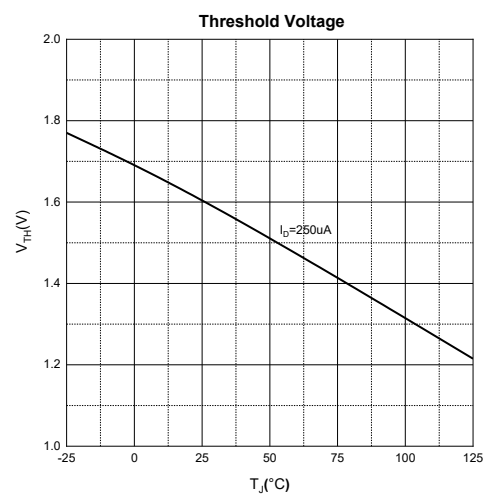
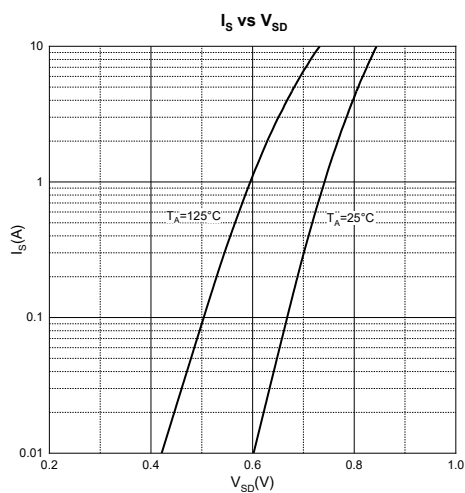
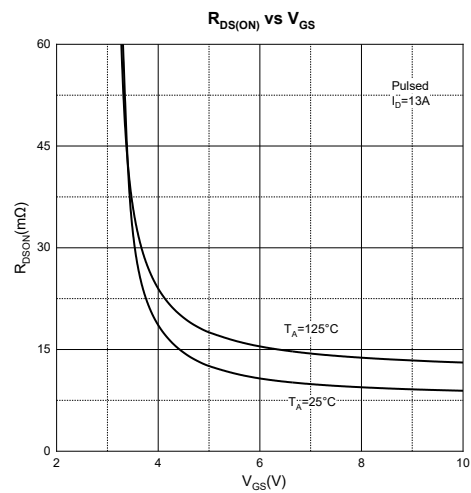
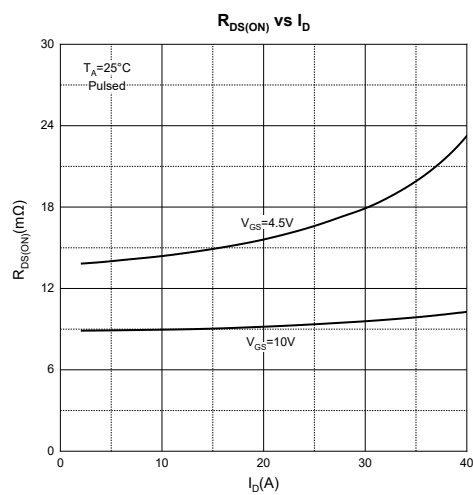
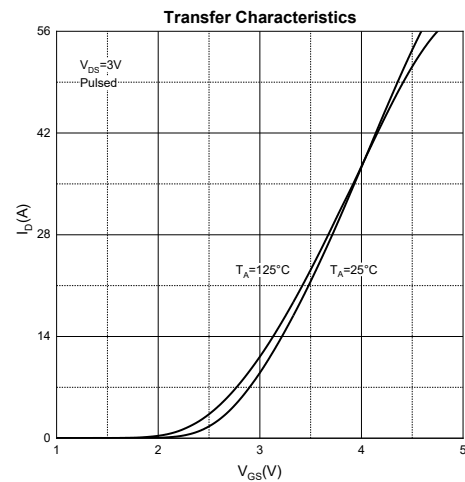
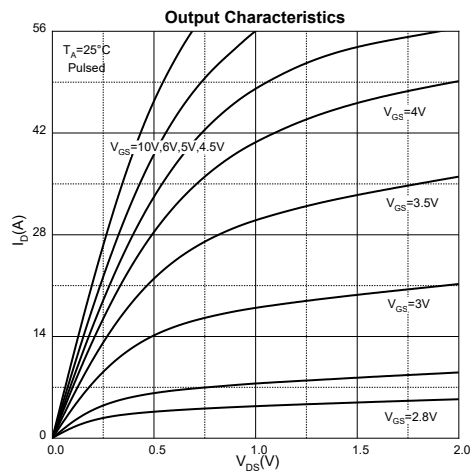
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$			1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
On Characteristics ⁴						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.6	3	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 15A$		8	10	m Ω
		$V_{GS} = 4.5V, I_D = 10A$		11	15	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$		1219		pF
Output Capacitance	C_{oss}			140		
Reverse Transfer Capacitance	C_{rss}			116		
Gate Resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		2.2		Ω
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = 25V, V_{GS} = 10V, I_D = 15A$		26		nC
Gate-Source Charge	Q_{gs}			3.6		
Gate-Drain Charge	Q_{gd}			7.2		
Gate Plateau Voltage	$V_{plateau}$			3.2		V
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15V, V_{GS} = 10V, R_G = 3\Omega, I_D = 15A$		8.6		ns
Turn-On Rise Time	t_r			4.1		
Turn-Off Delay Time	$t_{d(off)}$			20		
Turn-Off Fall Time	t_f			5.6		
Source-Drain Diode Characteristics						
Diode Forward Voltage ⁴	V_{SD}	$V_{GS} = 0V, I_S = 10A$			1.2	V
Diode Reverse Recovery Time	t_{rr}	$I_F = 15A, dI/dt = 100A/\mu s$		11		ns
Diode Reverse Recovery Charge	Q_{rr}			16		nC

Notes:

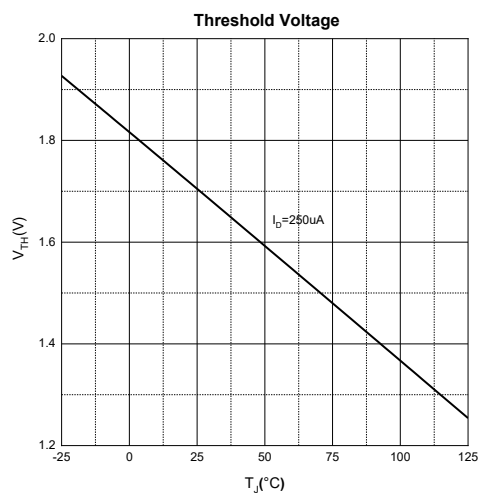
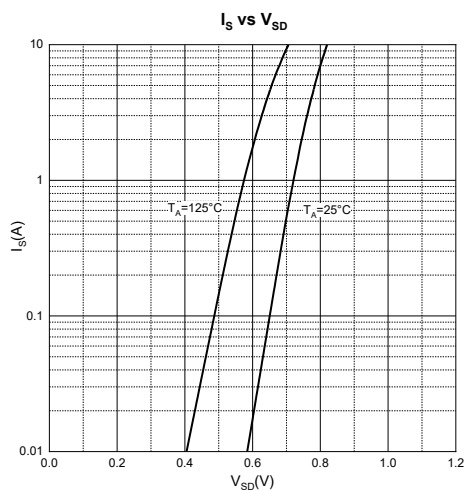
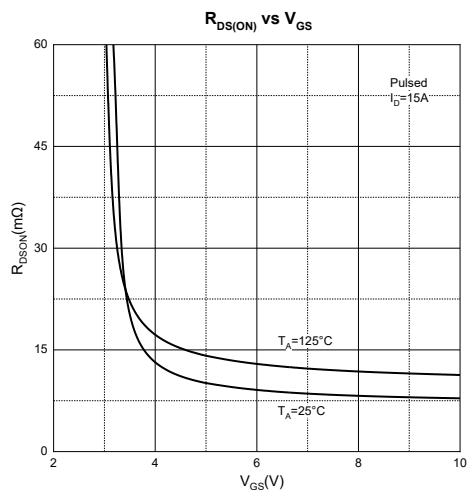
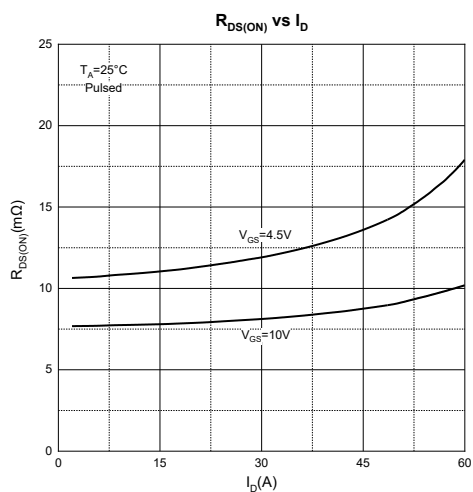
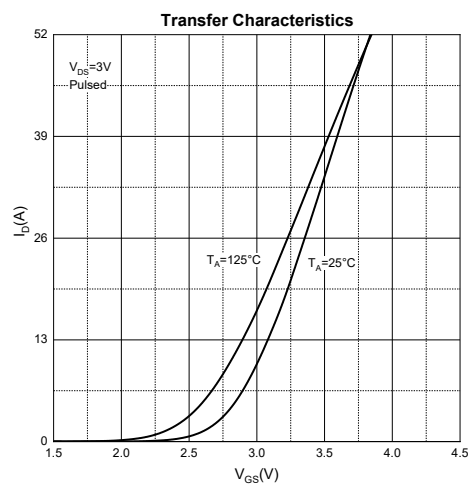
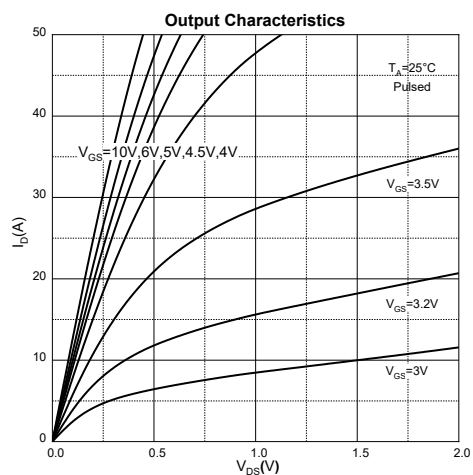
- 1.The maximum current rating is limited by package. And device mounted on a large heatsink.
- 2.Pulse Test: Pulse Width $\leq 10\mu s$, duty cycle $\leq 1\%$.
- 3.EAS condition: $V_{DD} = 30V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$ Starting $T_J = 25^\circ C$.
- 4.Pulse Test: Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 5.The power dissipation P_D is limited by $T_{J(MAX)} = 150^\circ C$. And device mounted on a large heatsink.
- 6.Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ C$.

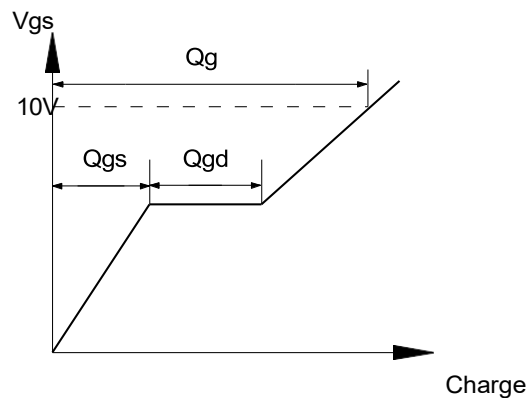
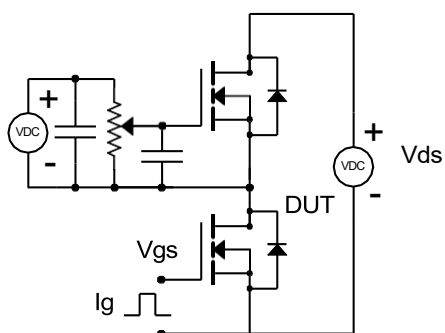
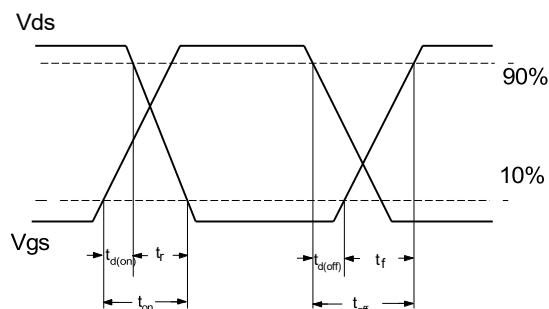
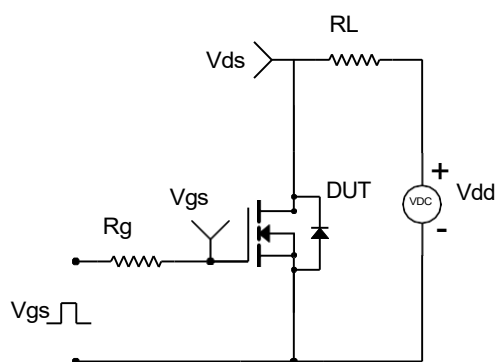
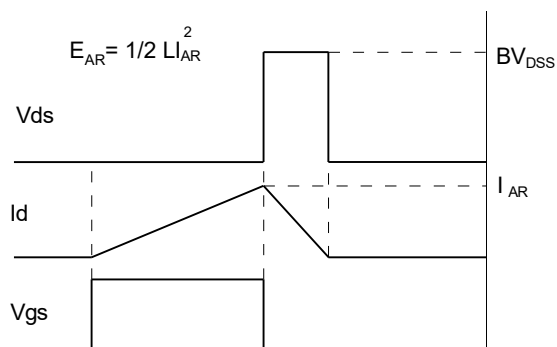
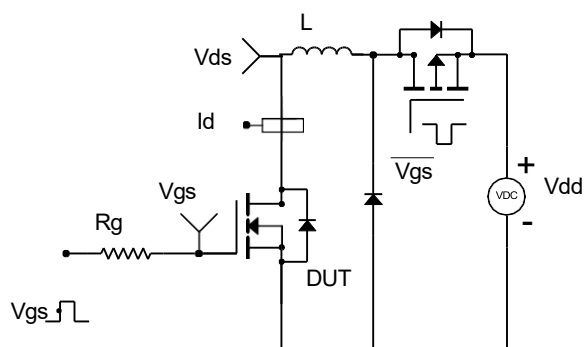
Typical Characteristics

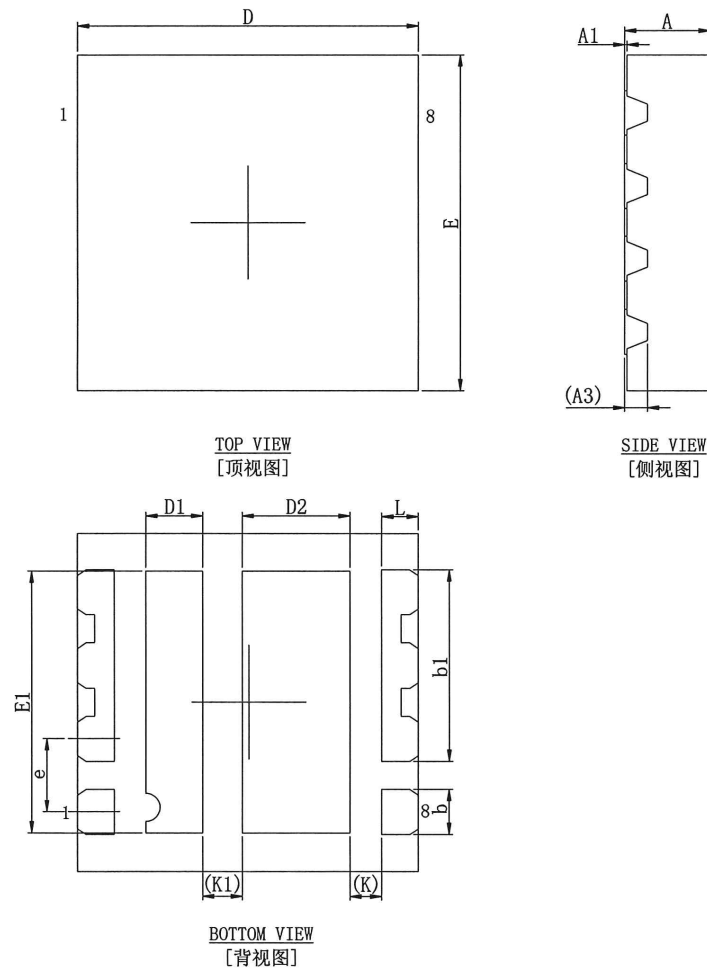
NMO1:



NMOS2:



Test Circuit
Gate Charge Test Circuit & Waveform

Resistive Switching Test Circuit & Waveform

Unclamped Inductive Switching (UIS) Test Circuit & Waveforms


DFN3X3-8L Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF		0.008REF	
b	0.350	0.450	0.014	0.018
b1	1.600	1.800	0.063	0.071
D	2.900	3.100	0.114	0.122
E	2.900	3.100	0.114	0.122
e	0.650BSC		0.026BSC	
D1	0.400	0.600	0.016	0.024
D2	0.850	1.050	0.033	0.041
E1	2.225	2.425	0.088	0.095
L	0.220	0.420	0.009	0.017
K	0.280REF		0.011REF	
K1	0.350REF		0.014REF	

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- 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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