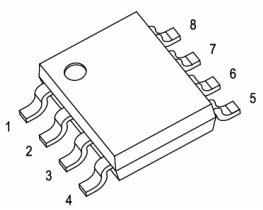
GPM180P03LQA

30V P-Channel MOSFET

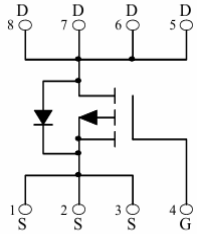
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-30V	20mΩ@-10V	-20A
	30mΩ@-4.5V	

SOP8



Schematic diagram



Feature

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

Application

- Power Management
- Load Switching
- Motor Driving
- High frequency switching, synchronous rectification

Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPM180P03LQA	SOP8	M180P03L	Reel & Tape	330mm	12mm	4000pcs

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C 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°C	I_D	-20	A
	T_C = 100°C		-12	
Pulsed Drain Current[2]		I_{DM}	-80	A
Single Pulsed Avalanche Current[3]		I_{AS}	-14	A
Single Pulsed Avalanche Energy[3]		E_{AS}	49	mJ
Power Dissipation[5]	T_C = 25°C	P_D	25	W
Thermal Resistance from Junction to Ambient[6]		$R_{\theta JA}$	50	°C/W
Junction Temperature		T_J	150	°C
Storage Temperature		T_{STG}	-55~ +150	°C

MOSFET ELECTRICAL CHARACTERISTICS (T_A = 25°C 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	-1.0	-1.5	-2.0	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -10A		20	28	mΩ
		V_{GS} = -4.5V, I_D = -8A		30	45	mΩ
Forward Transconductance	g_{FS}	V_{DS} = -5V, I_D = -20A		15		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = -15V, V_{GS} = 0V, f = 1MHz		871		pF
Output Capacitance	C_{oss}			108		
Reverse Transfer Capacitance	C_{rss}			97		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		17		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} =-15V, V_{GS} = -10V, I_D = -10A		18.5		nC
Gate-Source Charge	Q_{gs}			2.6		
Gate-Drain Charge	Q_{gd}			4.0		
Gate Plateau Voltage	$V_{plateau}$			-3.0		V
Turn-On Delay Time	$t_{d(on)}$	V_{DS} = -15V, V_{GS}= -10V, I_D = -10A, R_G = 3Ω		5.5		ns
Turn-On Rise Time	t_r			9.0		
Turn-Off Delay Time	$t_{d(off)}$			50		
Turn-Off Fall Time	t_f			20		
Source-Drain Diode Characteristics						
Diode Forward Voltage[4]	V_{SD}	V_{GS} = 0V, I_S = -10A			-1.2	V
Diode Continuous Forward Current[1]	I_S	T_C = 25℃			-20	A

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%.

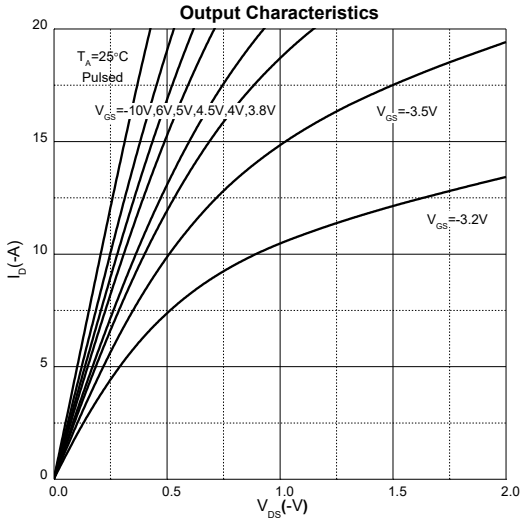
3.E_{AS} condition: V_{DD} = -15V, V_{GS} = -10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°C.

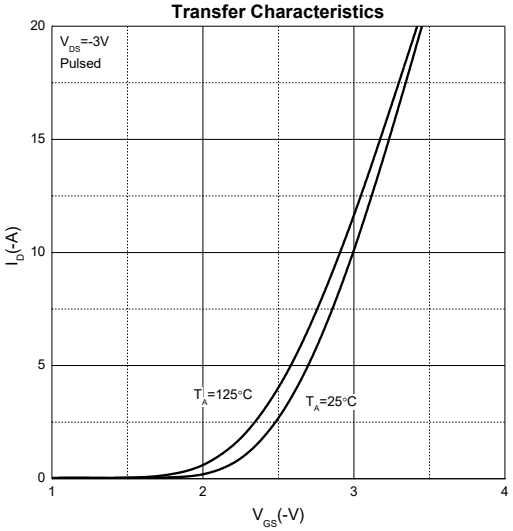
4.Pulse Test: Pulse Width ≤ 300μs, duty cycle ≤ 2%.

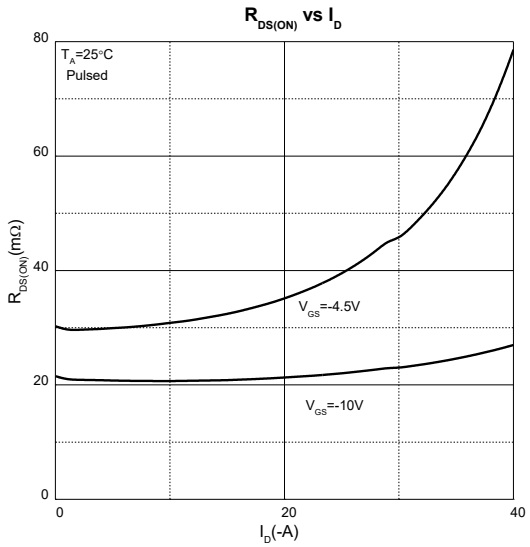
5.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C. And device mounted on a large heatsink.

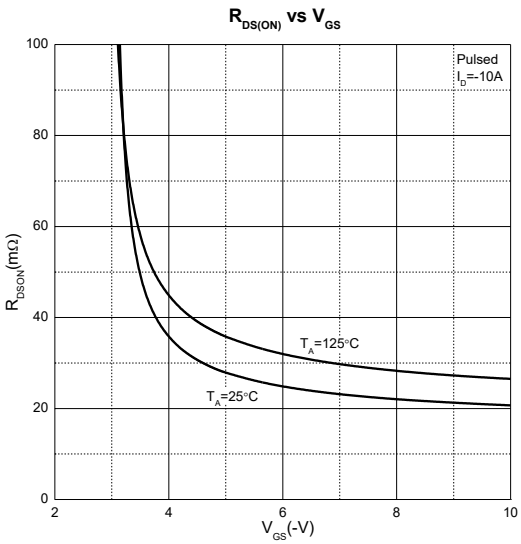
6.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

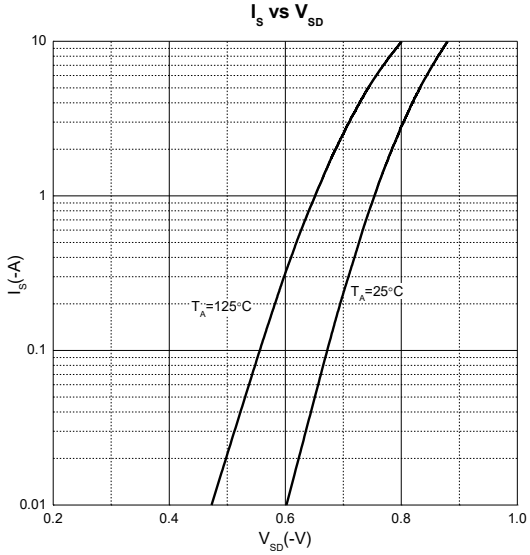
Typical Characteristics

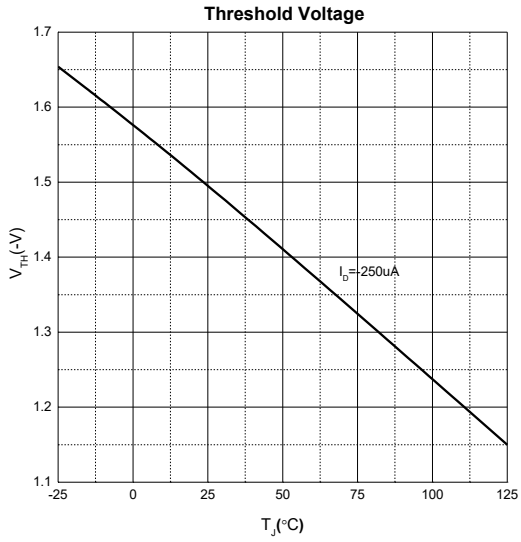






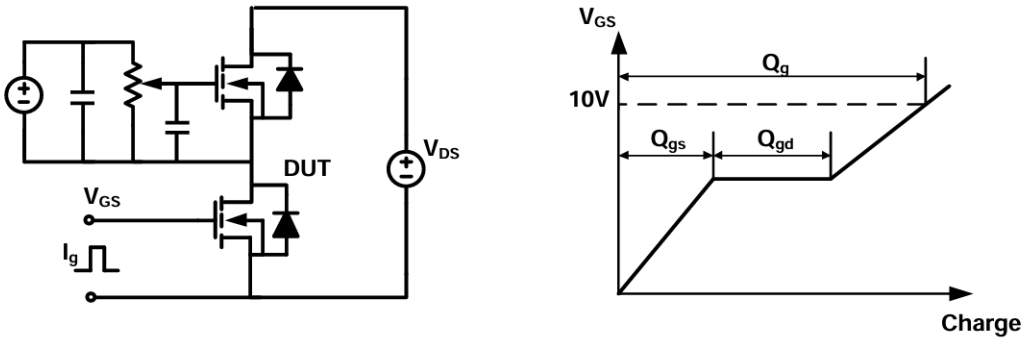




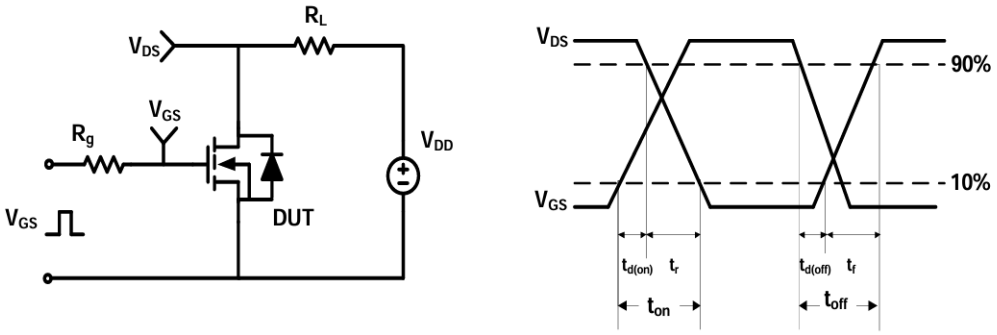


Test Circuit

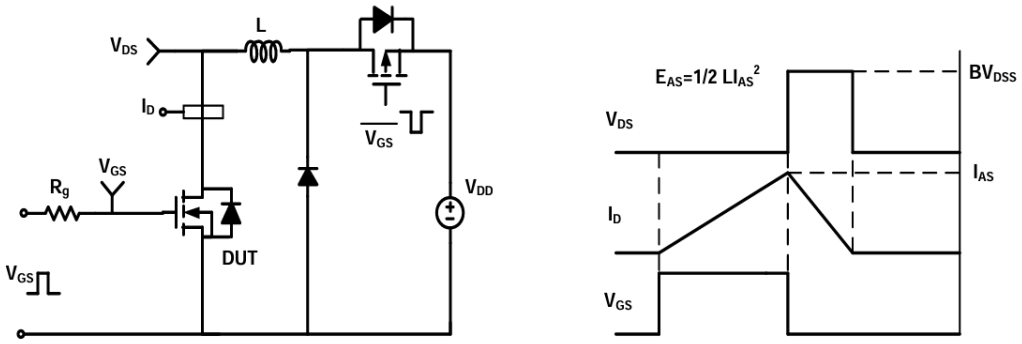
Gate Charge Test Circuit & Waveform



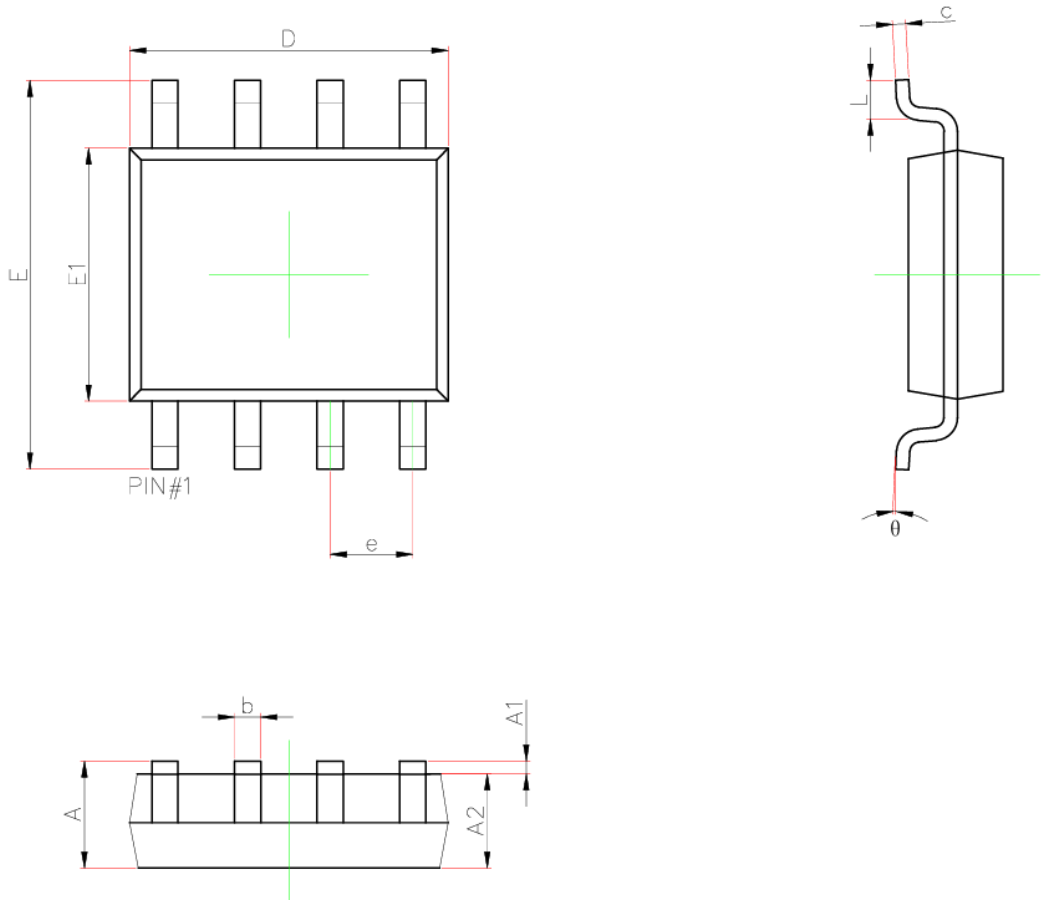
Resistive Switching Test Circuit & Waveform



Unclamped Inductive Switching (UIS) Test Circuit & Waveform



SOP8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.156	0.250	0.006	0.010
D	4.700	5.100	0.185	0.201
e	1.270(BSC)		0.050(BSC)	
E	5.800	6.200	0.228	0.244
E1	3.700	4.100	0.146	0.161
L	0.400	1.270	0.016	0.05
θ	0°	8°	0°	8°

Attention：

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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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