Power MOSFETS

DATASHEET

LM1AB50PAQ8A

P-Channel

Enhancement Mode MOSFET

Leadpower-semiconductor Corp., Ltd

sales@leadpower-semi.com

(03) 6577339 FAX：(03) 6577229

www.leadpower-semi.com

Quality Management Systems

ISO 9001:2015 Certificate

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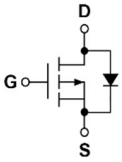
P-Channel Enhancement Mode MOSFET

Pin Description

SOP-8L	Symbol
	

Product Summary

Symbol	P-Channel	Unit
V_{DSS}	-100	V
$R_{DS(ON)-Max}$	260	mΩ
ID	-6	A

Feature

- Fast switching speed
- Reliable and Rugged
- ROHS Compliant & Halogen-Free
- 100% UIS and Rg Tested

Applications

- DC/DC Converters
- Motor Control
- Uninterrupted Power Supply

Ordering Information

Orderable Part Number	Package Type	Form	Shipping	Marking
LM1AB50PAQ8A	SOP-8L	Tape & Reel	3000 / Tape & Reel	1AB50 □□□□□□

Note：□□□□□□ = Lot Code

Absolute Maximum Ratings (T_J=25°C Unless Otherwise Noted)

Symbol	Parameter		P-Channel	Unit
V_{DSS}	Drain-Source Voltage		-100	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	T_A=25°C	-1.3	A
I_{DM}①	Pulse Drain Current Tested	T_A=25°C	-6	A
I_D	Continuous Drain Current	T_A=25°C	-2.4	A
		T_A=70°C	-1.9	
P_D	Maximum Power Dissipation	T_A=25°C	1.5	W
		T_A=70°C	0.9	
I_{AS}②	Avalanche Current, Single pulse	L=0.1mH	-22	A
		L=0.5mH	-14	
E_{AS}②	Avalanche Energy, Single pulse	L=0.1mH	24	mJ
		L=0.5mH	9.8	

Thermal Characteristics

Symbol	Parameter		Rating	Unit
$R_{\theta JA}$③	Thermal Resistance-Junction to Ambient	t≦10s	43	°C/W
		Steady State	85	°C/W

Note ①：Max. current is limited by junction temperature

Note ②：UIS tested and pulse width are limited by maximum junction temperature 150°C

Note ③：Surface Mounted on 1in² FR-4 board with 1oz

P-Channel Electrical Characteristics (T_J=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250uA	-100	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-80V, V_{GS}=0V	-	-	-1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250uA	-1	-2	-3	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$④	Drain-Source On-state Resistance	V_{GS}=-10V, I_{DS}=-1A	-	220	260	mΩ
		V_{GS}=-4.5V, I_{DS}=-0.5A		230	290	
gfs	Forward Transconductance	V_{DS}=-5V, I_{DS}=-0.5A	-	3.4	-	S
Dynamic Characteristics ⑤						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V, Freq.=1MHz	-	18	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-50V, Freq.=1MHz	-	1499	-	pF
C_{oss}	Output Capacitance		-	35	-	
C_{rss}	Reverse Transfer Capacitance		-	26	-	
$td_{(ON)}$	Turn-on Delay Time	V_{GS}=-10V,V_{DS}=-30V, I_D=-1A,R_{GEN}=1Ω	-	6.7	-	nS
t_r	Turn-on Rise Time		-	4.2	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	103	-	
t_f	Turn-off Fall Time		-	35	-	
Q_g	Total Gate Charge	V_{GS}=-4.5V,V_{DS}=-50V I_D=-1A	-	12.6	-	nC
Q_g	Total Gate Charge	V_{GS}=-10V,V_{DS}=-50V, I_D=-1A	-	27.6	-	
Q_{gs}	Gate-Source Charge		-	5.5	-	
Q_{gd}	Gate-Drain Charge		-	3.6	-	
Source-Drain Characteristics						
V_{SD}④	Diode Forward Voltage	I_{SD}=-0.5A, V_{GS}=0V	-	0.75	1.1	V
t_{rr}	Reverse Recovery Time	I_F=-1A, V_R=-50V dI$_F$/dt=100A/μs	-	20.5	-	nS
Q_{rr}	Reverse Recovery Charge		-	17.7	-	nC

Note ④：Pulse test (pulse width≤300us, duty cycle≤2%).
Note ⑤：Guaranteed by design, not subject to production testing.

P-Channel Typical Characteristics

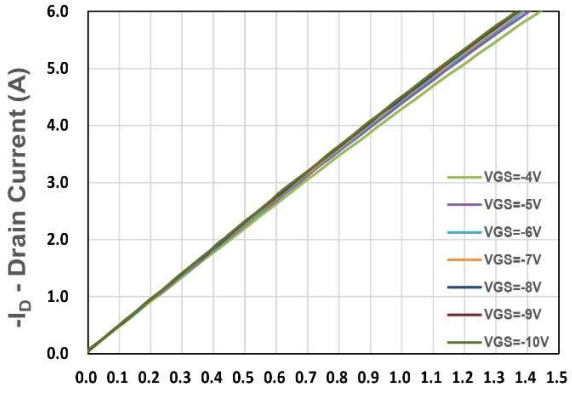


Figure 1. Output Characteristics

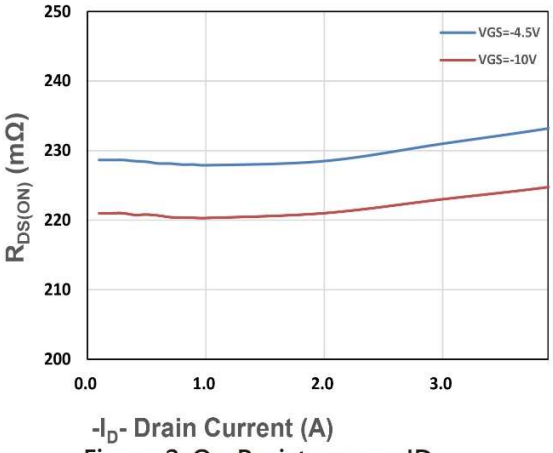


Figure 2. On-Resistance vs. ID

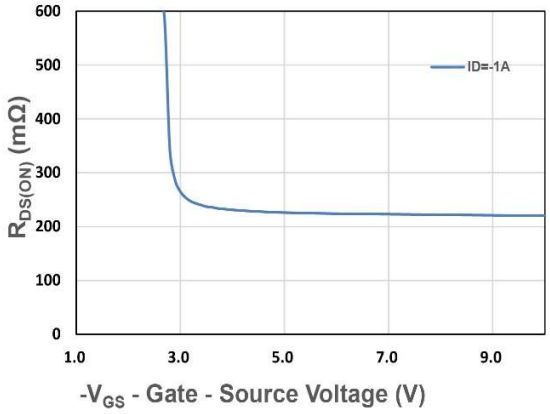


Figure 3. On-Resistance vs. VGS

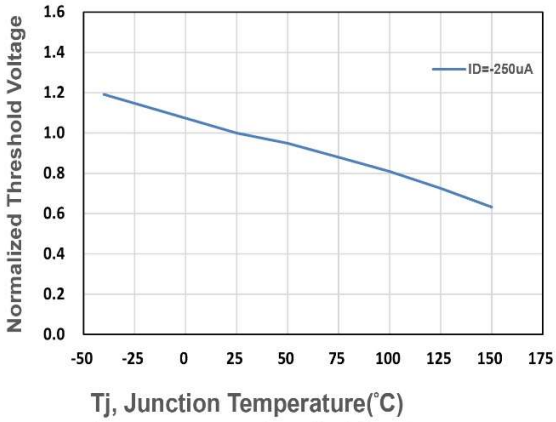


Figure 4. Gate Threshold Voltage

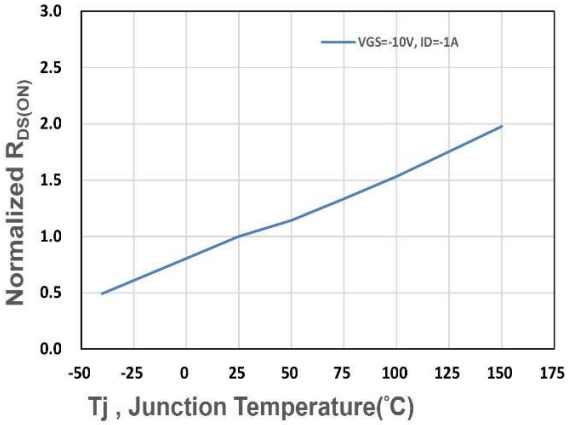


Figure 5. Drain-Source On Resistance

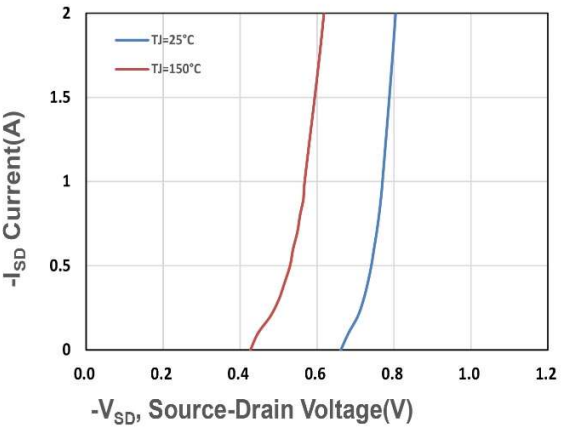
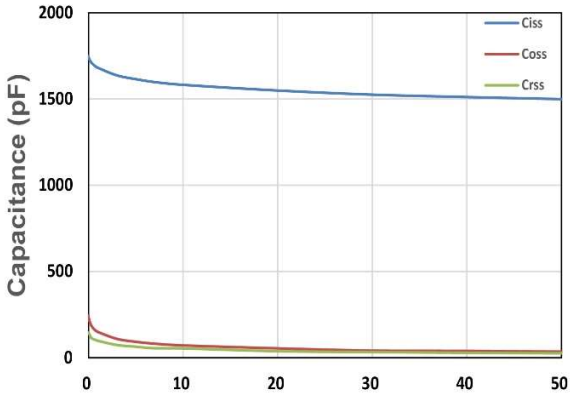
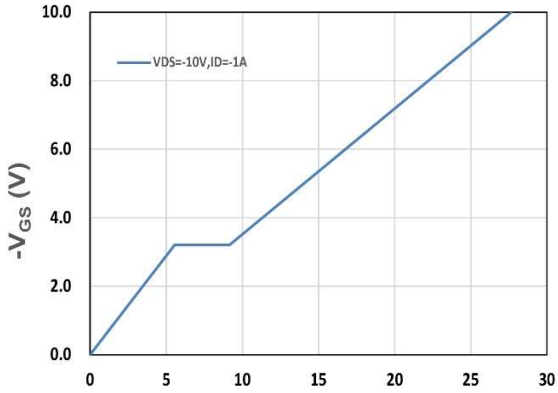


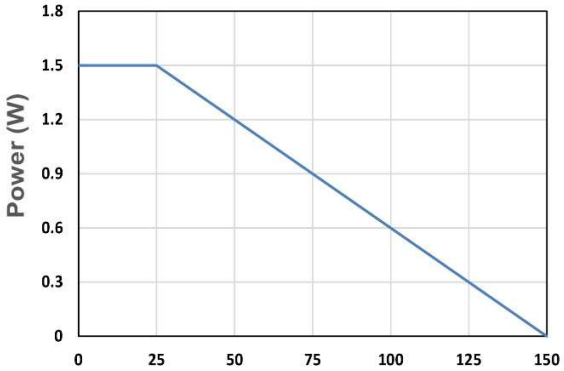
Figure 6. Source-Drain Diode Forward



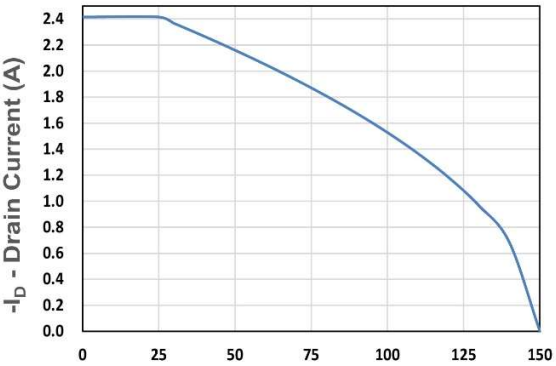
$-V_{DS}$ - Drain - Source Voltage (V)
Figure 7. Capacitance



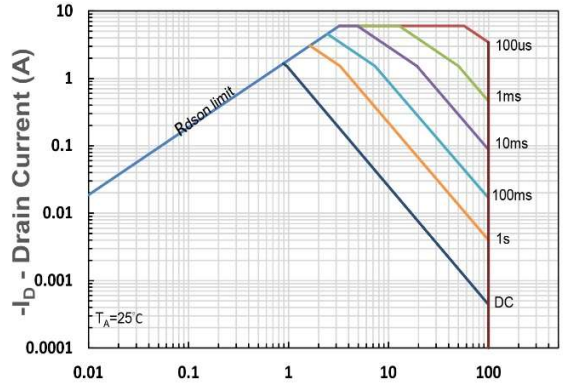
Qg, Total Gate Charge (nC)
Figure 8. Gate Charge Characteristics



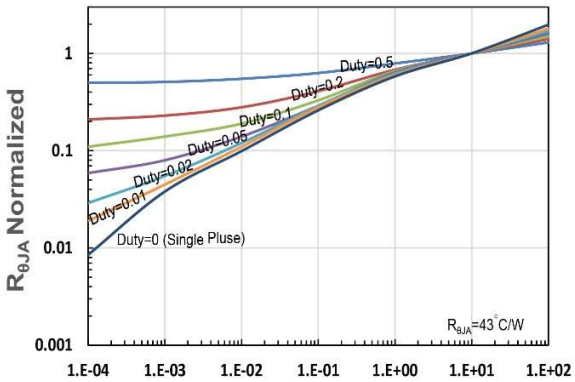
T_A - Ambient Temperature (˚C)
Figure 9. Power Dissipation



T_A - Ambient Temperature (˚C)
Figure 10. Drain Current



$-V_{DS}$ - Drain-Source Voltage (V)
Figure 11. Safe Operating Area



t_1,Square Wave Pulse Duration(s)
Figure 12. RθJA Transient Thermal Impedance