



Description

JMG P-channel Advanced Mode Power MOSFET

Features

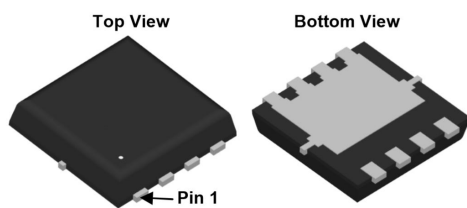
- 100V, -25A
 $R_{DS(ON)} < 50m\Omega @ V_{GS} = -10V$
 $R_{DS(ON)} < 60m\Omega @ V_{GS} = -4.5V$
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Application

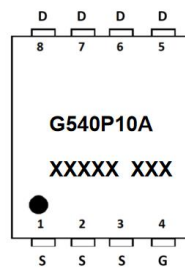
- Load Switch
- PWM Application
- Power management



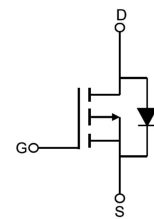
100% UIS TESTED!
100% ΔVds TESTED!



PDFN5x6-8L



Marking and pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
G540P10A	JMGG540P10A	TAPING	PDFN5x6-8L	13inch	2500	25000

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Symbol	Parameter	Max.	Units
V _{DSS}	Drain-Source Voltage	-100	V
V _{GSS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current	T _C = 25°C	-25
		T _C = 100°C	-16
I _{DM}	Pulsed Drain Current ^{note1}	-100	A
E _{AS}	Single Pulsed Avalanche Energy ^{note2}	81	mJ
P _D	Power Dissipation	T _C = 25°C	54
R _{θJC}	Thermal Resistance, Junction to Case	2.3	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +150	°C



Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-100V, V _{GS} =0V,	-	-	-1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-1.0	-	-2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note3</small>	V _{GS} =-10V, I _D =-20A	-	37	50	mΩ
		V _{GS} =-4.5V, I _D =-10A	-	41	60	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-50V, V _{GS} =0V, f=1.0MHz	-	2120	-	pF
C _{oss}	Output Capacitance		-	194	-	pF
C _{rss}	Reverse Transfer Capacitance		-	13	-	pF
Q _g	Total Gate Charge	V _{DS} =-50V, I _D =-5A, V _{GS} =-10V	-	40	-	nC
Q _{gs}	Gate-Source Charge		-	7.8	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	8.6	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =-50V, I _D =-5A, R _G =6Ω, V _{GS} =-10V	-	13	-	ns
t _r	Turn-on Rise Time		-	39	-	ns
t _{d(off)}	Turn-off Delay Time		-	100.1	-	ns
t _f	Turn-off Fall Time		-	105.3	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-25	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-100	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =-25A	-	-	-1.2	V
t _{rr}	Body Diode Reverse Recovery Time	T _J =25°C, I _F =-5A, dI/dt=100A/μs	-	104	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	280	-	nC

- Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
 2. EAS condition: T_J=25°C, V_{DD}=-50V, V_G=-10V, R_G=25Ω, L=0.5mH, I_{AS}=-18A
 3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%



Typical Performance Characteristics

Figure 1: Output Characteristics

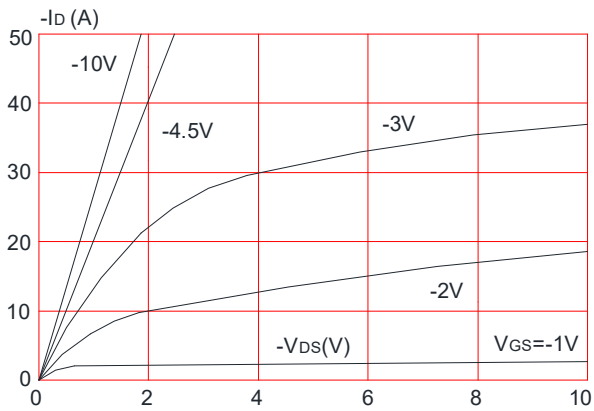


Figure 2: Typical Transfer Characteristics

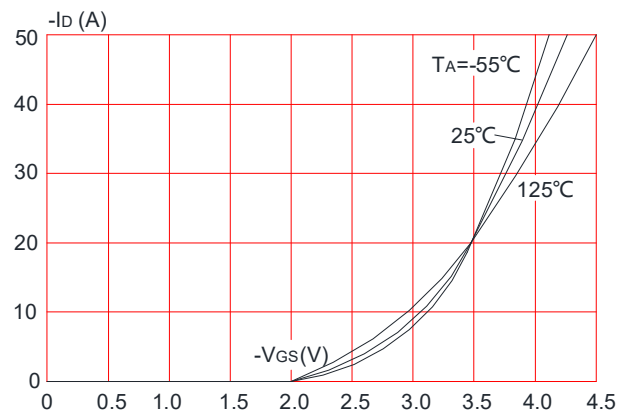


Figure 3: On-resistance vs. Drain Current

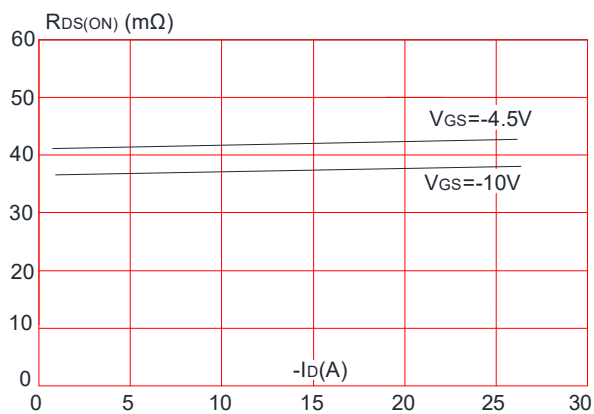


Figure 4: Body Diode Characteristics

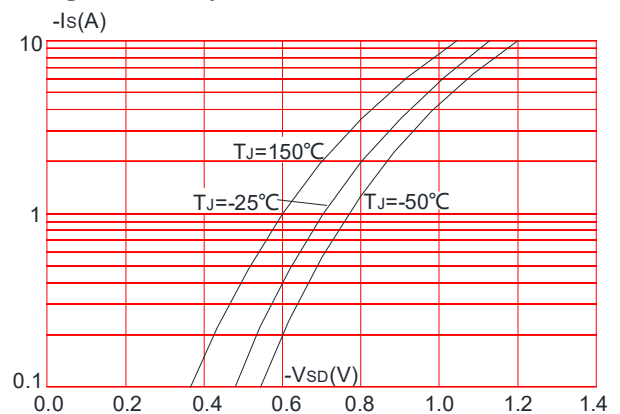


Figure 5: Gate Charge Characteristics

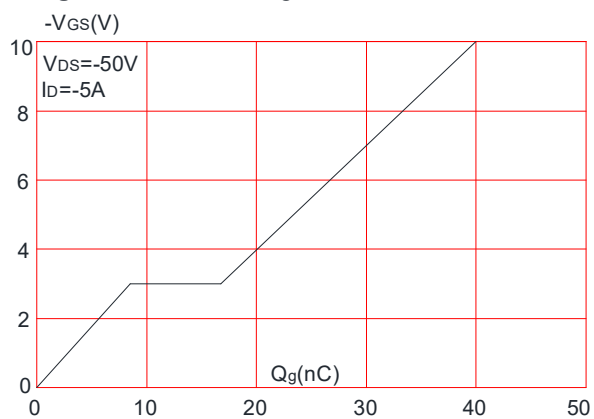
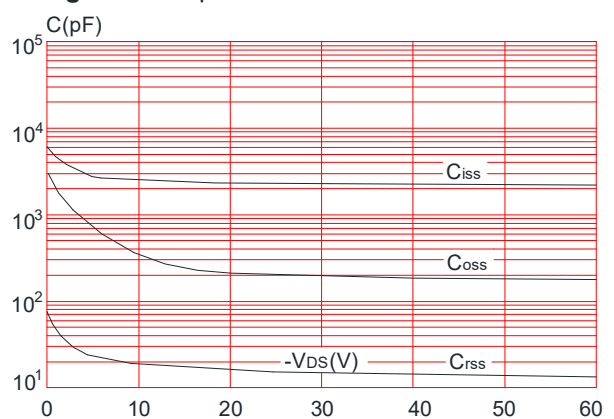


Figure 6: Capacitance Characteristics





JMGG540P10A

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

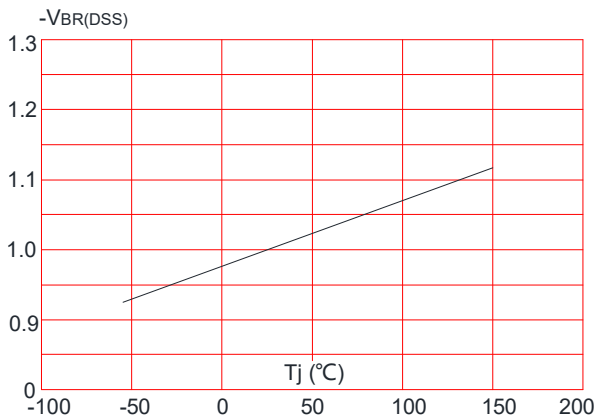


Figure 8: Normalized on Resistance vs. Junction Temperature

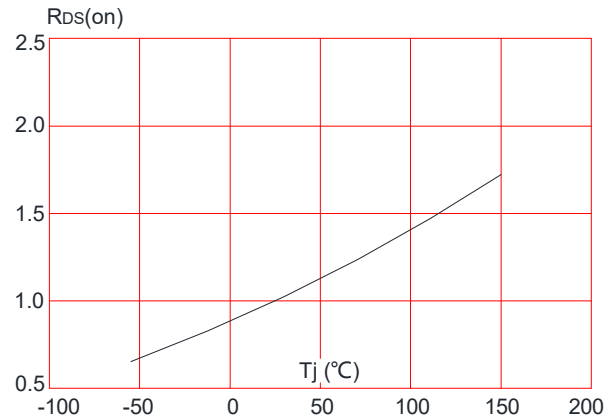


Figure 9: Maximum Safe Operating Area

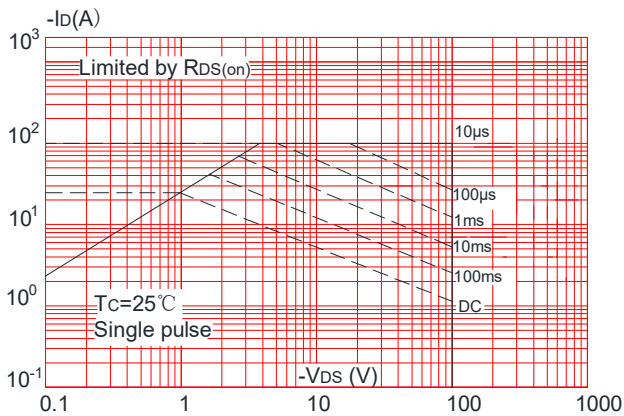


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

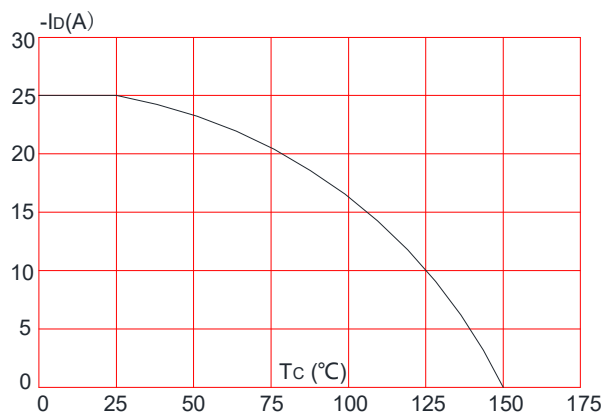
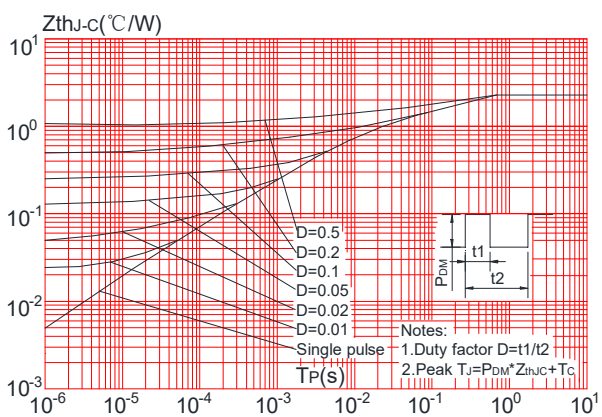


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Test Circuit

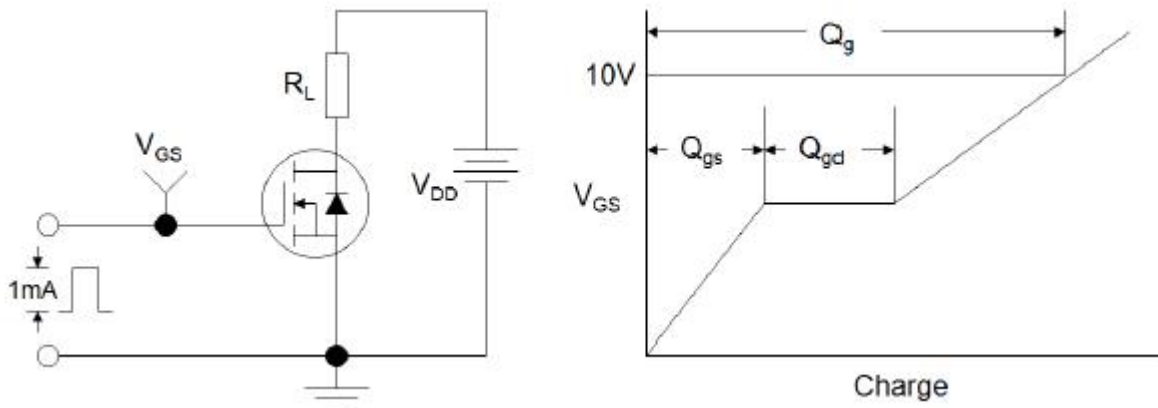


Figure1:Gate Charge Test Circuit & Waveform

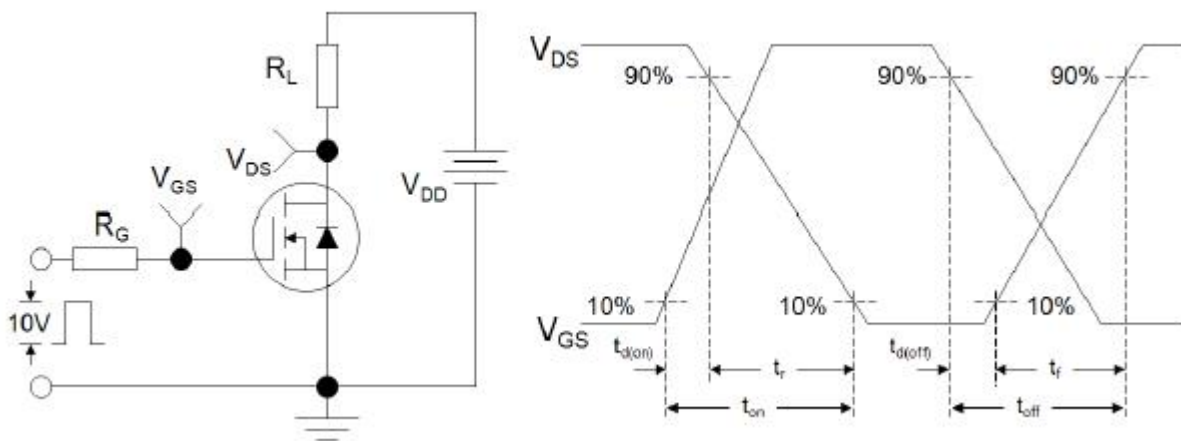


Figure 2: Resistive Switching Test Circuit & Waveforms

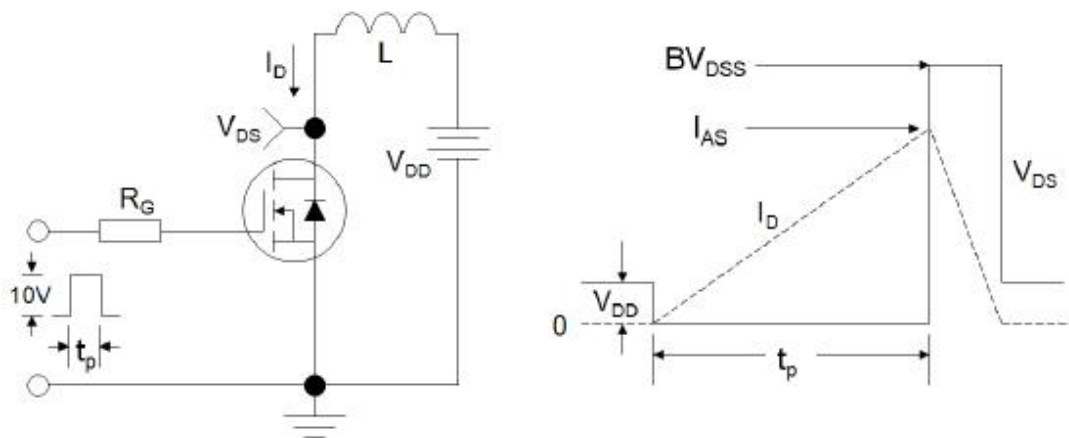
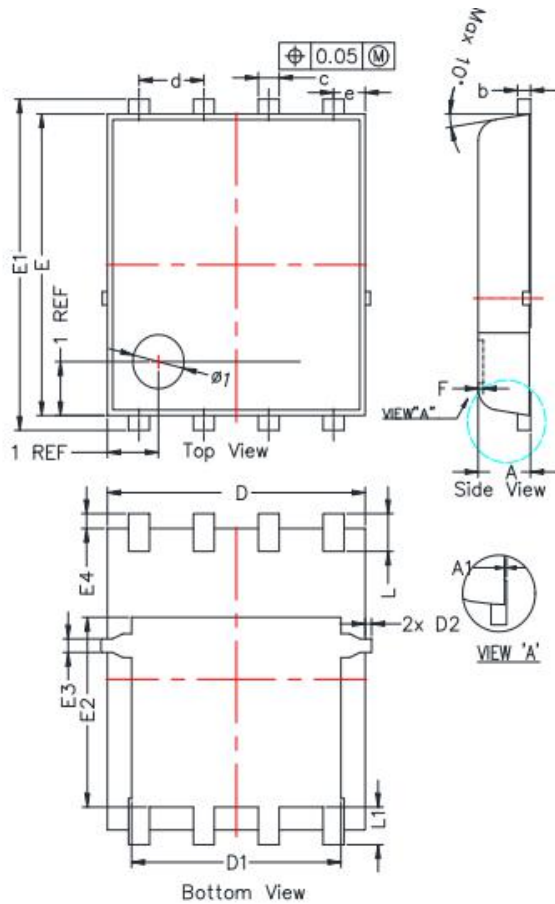


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



Package Mechanical Data-PDFN5x6-8L



SYMBOLS	DIMENSION IN MM			DIMENSION IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
* A	0.900	1.000	1.100	0.035	0.039	0.043
A1	0.000	---	0.050	0.000	---	0.002
b	0.246	0.254	0.312	0.010	0.010	0.012
* c	0.310	0.410	0.510	0.012	0.016	0.020
d	1.27 BSC			0.050 BSC		
* D	4.950	5.050	5.150	0.195	0.199	0.203
D1	4.000	4.100	4.200	0.157	0.161	0.165
* D2	---	---	0.125	---	---	0.005
e	0.62 BSC			0.024 BSC		
* E	5.500	5.600	5.700	0.217	0.220	0.224
* E1	6.050	6.150	6.250	0.238	0.242	0.246
E2	3.425	3.525	3.625	0.135	0.139	0.143
E3	0.150	0.250	0.350	0.006	0.010	0.014
* E4	0.175	0.275	0.375	0.007	0.011	0.015
F	-	-	0.100	-	-	0.004
* L	0.500	0.600	0.700	0.02	0.02	0.03
L1	0.600	0.700	0.800	0.02	0.03	0.03

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