Description

JMG N-channel Enhancement Mode Power MOSFET

Features

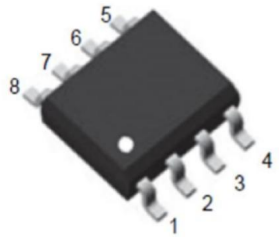
- 100V,7A
  $R_{DS(ON)}$< 140mΩ @ V_{GS}=10V
  $R_{DS(ON)}$< 179mΩ @ V_{GS}=4.5V
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Application

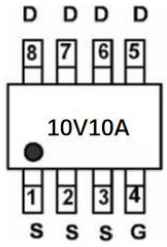
- Load Switch
- PWM Application
- Power management

RoHS

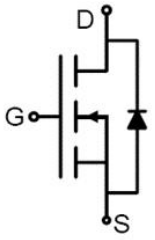
100% UIS TESTED!
100% ΔVds TESTED!



SOP-8 top view



Marking and pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
10V10A	JMGP10V10A	TAPING	SOP-8	13inch	4000	48000

Absolute Maximum Ratings (T_C=25℃ 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_A= 25℃	7	A
		T_A= 100℃	4.5	A
I_{DM}	Pulsed Drain Current note1		28	A
E_{AS}	Single Pulsed Avalanche Energy note2		1.6	mJ
P_D	Power Dissipation	T_A= 25℃	11.7	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		10.7	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

Electrical Characteristics (T_J=25℃ 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	1.7	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS} =10V, I_D =3.5A	-	108	140	mΩ
		V_{GS} =4.5V, I_D =2A	-	128	179	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} =50V, V_{GS} =0V, f = 1MHz	-	150	-	pF
C_{oss}	Output Capacitance		-	34	-	pF
C_{rss}	Reverse Transfer Capacitance		-	6	-	pF
Q_g	Total Gate Charge	V_{DS} =50V, I_D =5A, V_{GS} =10V	-	4.3	-	nC
Q_{gs}	Gate-Source Charge		-	1.5	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	1.1	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=50V, I_D=5A, R_{GEN}=2Ω, V_{GS} =10V	-	14.7	-	ns
t_r	Turn-on Rise Time		-	3.5	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	20.9	-	ns
t_f	Turn-off Fall Time		-	2.7	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	7	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	28	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S=7A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F=5A,dI/dt=100A/μs	-	32	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	39	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: T_J=25℃,VDD=50V,VGS=10V, RG=25Ω, L=0.5mH,I_{AS}=2.5A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Performance Characteristics

Figure1: Output Characteristics

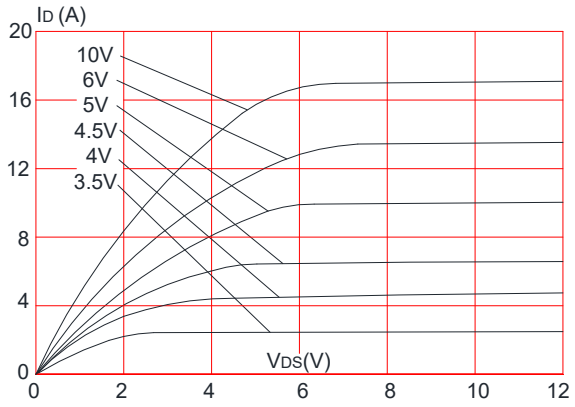


Figure 2: Typical Transfer Characteristics

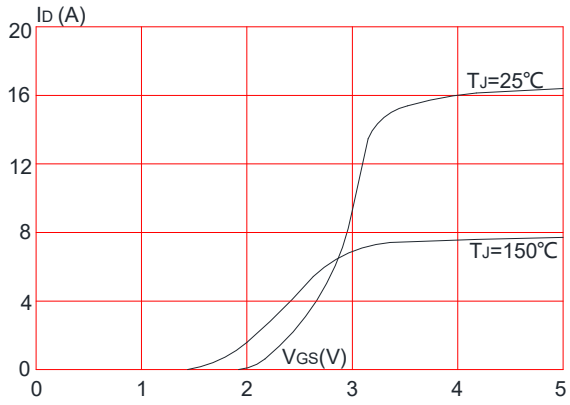


Figure 3: On-resistance vs. Drain Current

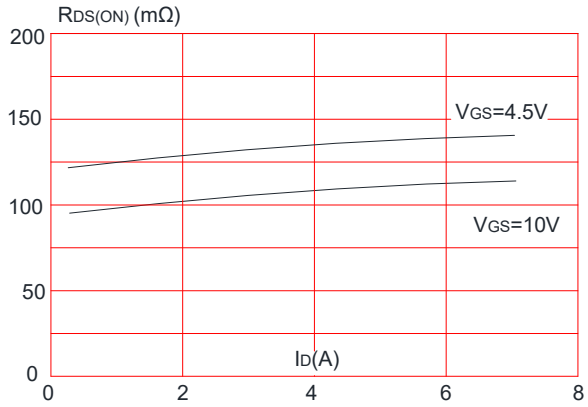


Figure 4: Body Diode Characteristics

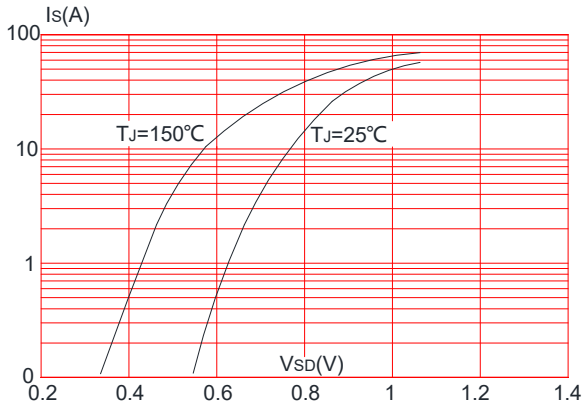


Figure 5: Gate Charge Characteristics

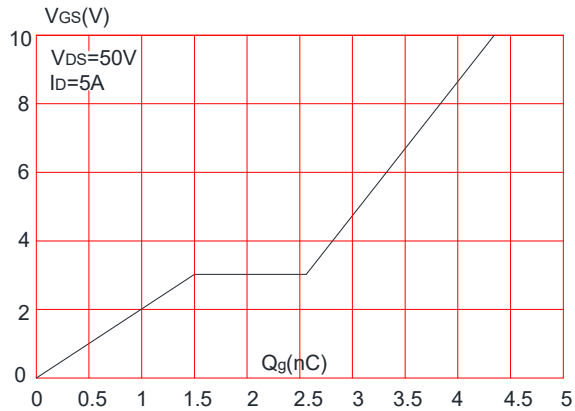


Figure 6: Capacitance Characteristics

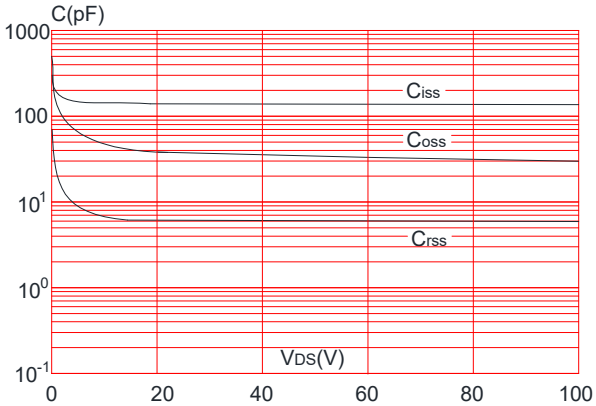


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

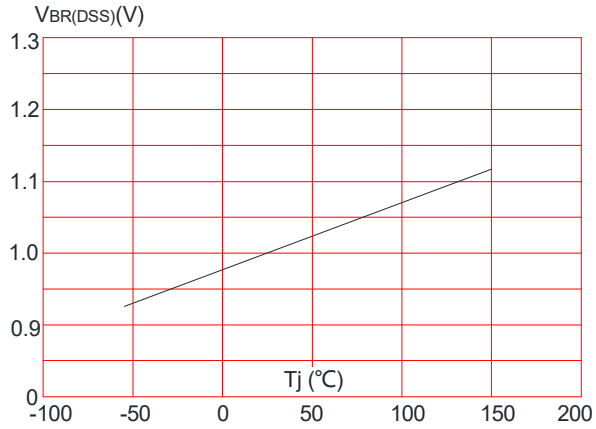


Figure 8: Normalized on Resistance vs. Junction Temperature

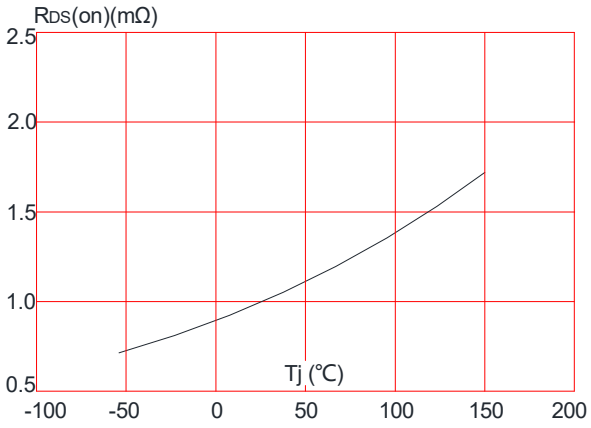


Figure 9: Maximum Safe Operating Area

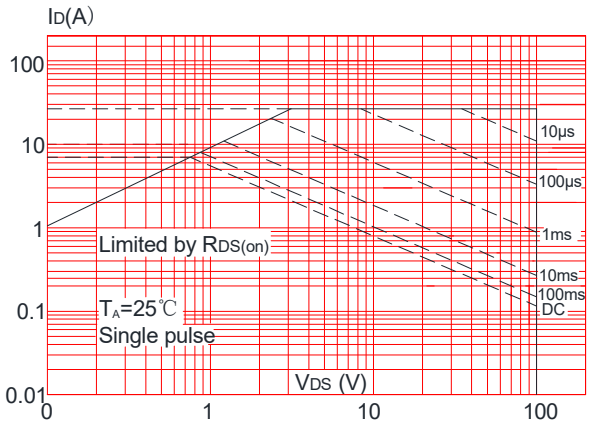


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

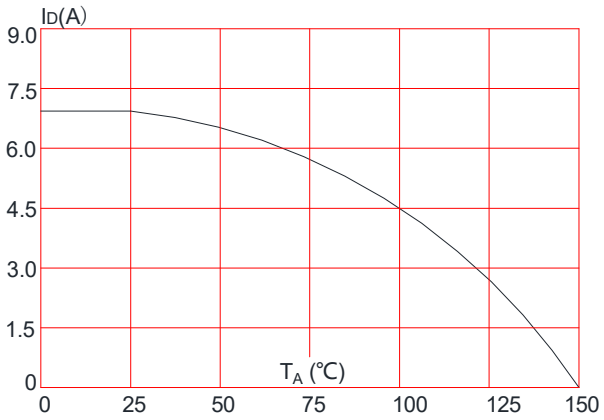
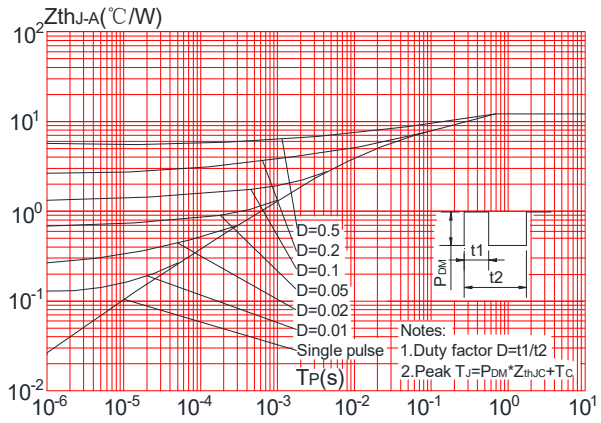


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



Test Circuit

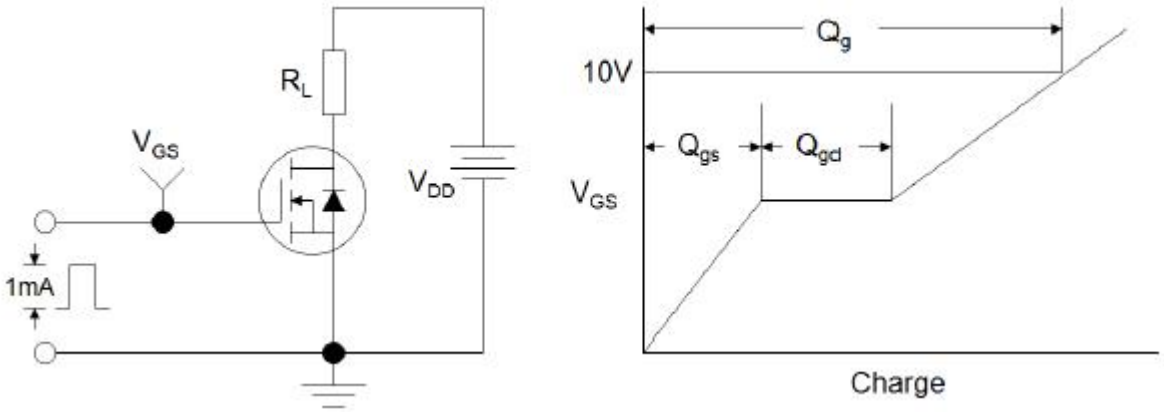


Figure1:Gate Charge Test Circuit & Waveform

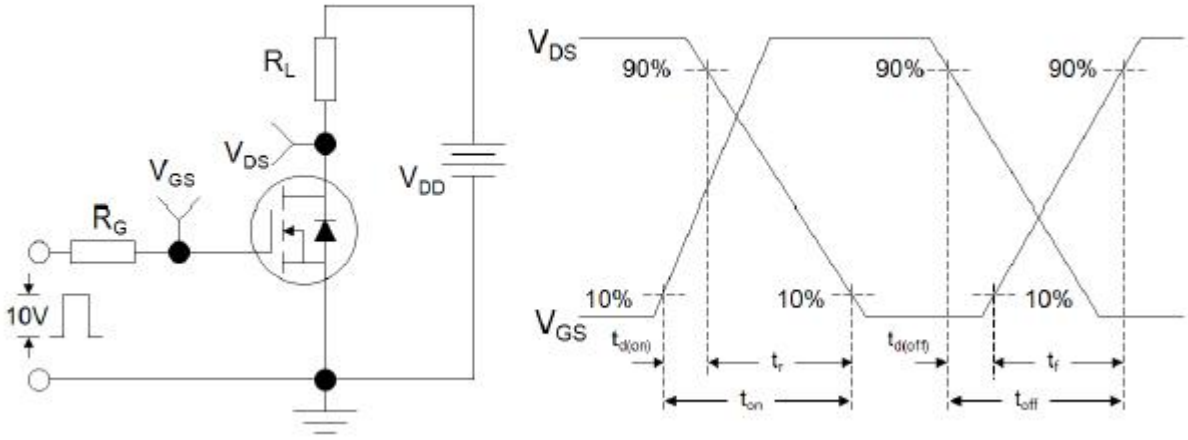


Figure 2: Resistive Switching Test Circuit & Waveforms

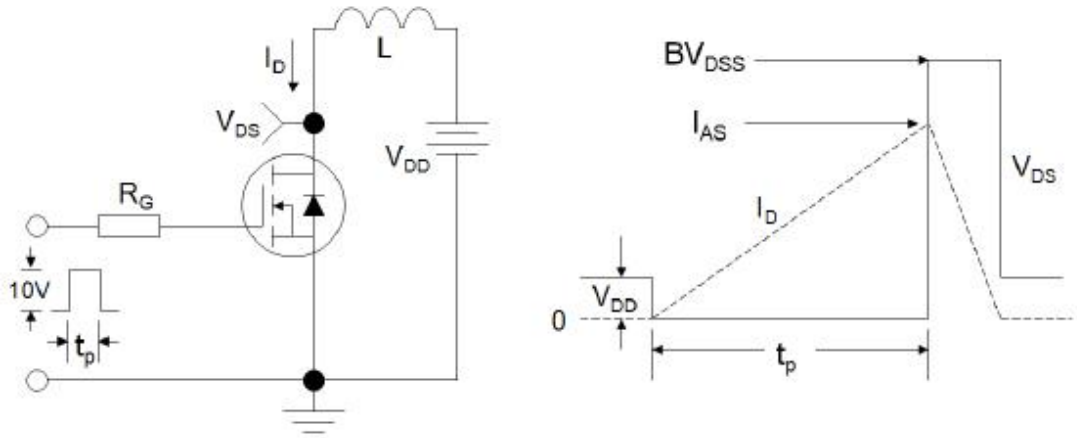
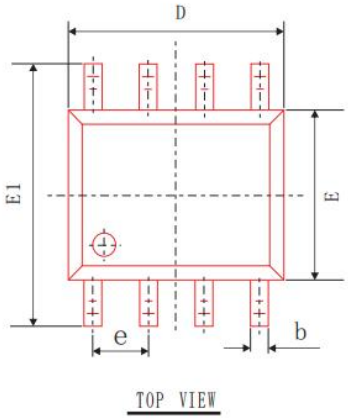
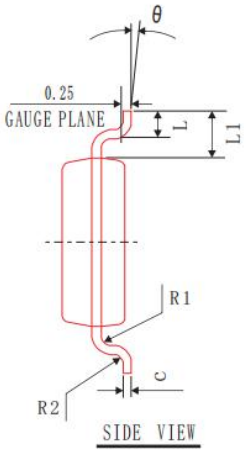
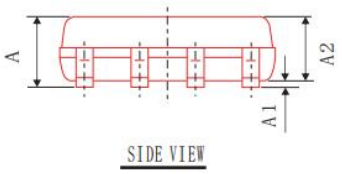


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Package Mechanical Data-SOP-8







COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	1.40	1.60	1.80
A1	0.05	0.15	0.25
A2	1.35	1.45	1.55
b	0.30	0.40	0.50
c	0.153	0.203	0.253
D	4.80	4.90	5.00
E	3.80	3.90	4.00
E1	5.80	6.00	6.20
L	0.45	0.70	1.00
θ	2°	4°	6°
L 1	1.04 REF		
e	1.27 BSC		
R1	0.07 TYP		
R2	0.07 TYP		