



Description

JMG N-channel Enhancement Mode Power MOSFET

Features

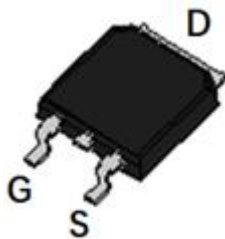
- 100V,10A
 $R_{DS(ON)} < 151m\Omega @ V_{GS} = 10V$
 $R_{DS(ON)} < 190m\Omega @ V_{GS} = 4.5V$
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Application

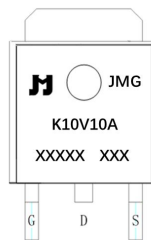
- Load Switch
- PWM Application
- Power management



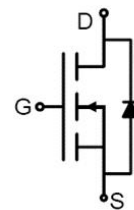
100% UIS TESTED!
100% ΔVds TESTED!



TO-252-3L(DPAK) 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)
JMGK10V10A	JMGK10V10A	TAPING	TO-252-3L	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	10
		T _C = 100°C	6.5
I _{DM}	Pulsed Drain Current ^{note1}	40	A
E _{AS}	Single Pulsed Avalanche Energy ^{note2}	1.6	mJ
P _D	Power Dissipation	T _C = 25°C	32
R _{θJC}	Thermal Resistance, Junction to Case	3.9	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +175	°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	1.7	2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note3</small>	V _{GS} =10V, I _D =5A	-	116	151	mΩ
		V _{GS} =4.5V, I _D =3A	-	136	190	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1.0MHz	-	154	-	pF
C _{oss}	Output Capacitance		-	34	-	pF
C _{riss}	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		-	-	10	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	40	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =10A	-	-	1.2	V
t _{rr}	Body Diode Reverse Recovery Time	I _F =5A, di/dt=100A/μs	-	32	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	39	-	nC

- Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
 2. EAS condition: T_J=25°C, VDD=50V, VGS=10V, RG=25Ω, L=0.5mH, IAS=2.5A
 3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%



Typical Performance Characteristics

Figure 1: Output Characteristics

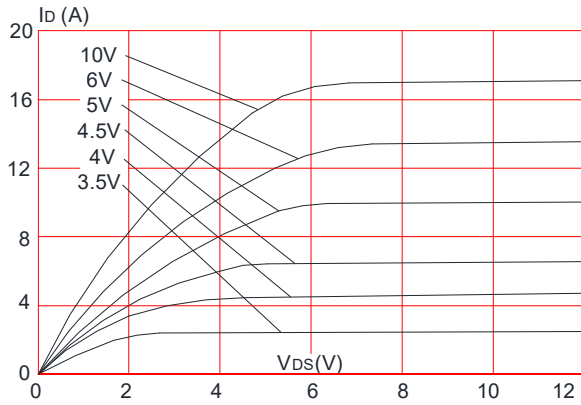


Figure 2: Typical Transfer Characteristics

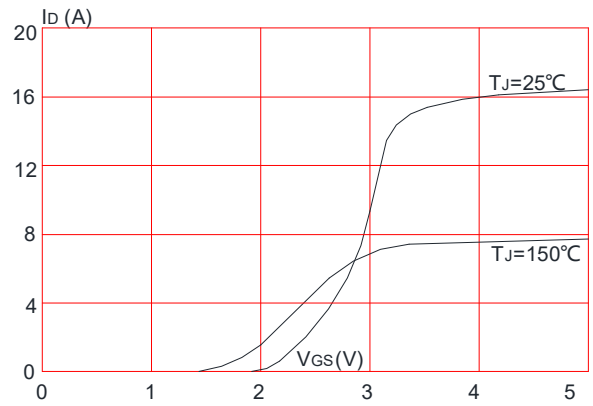


Figure 3: On-resistance vs. Drain Current

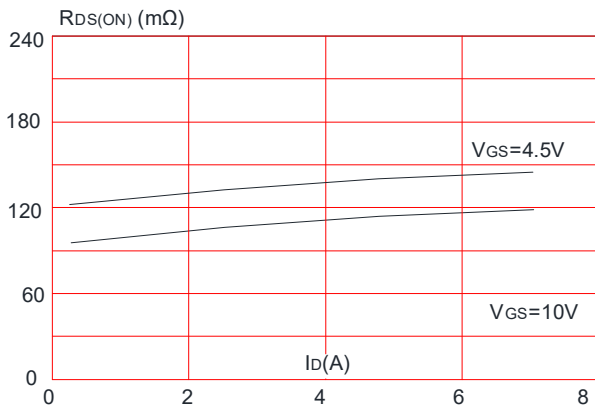


Figure 4: Body Diode Characteristics

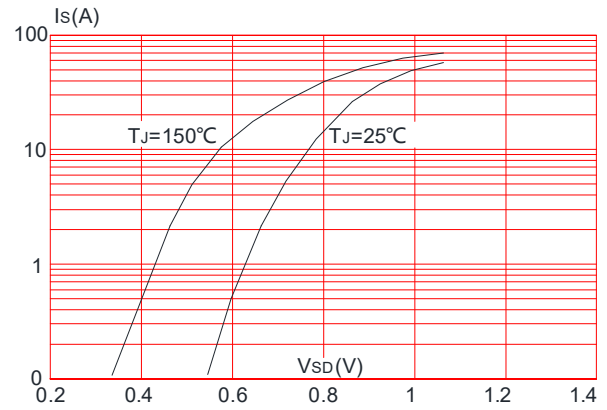


Figure 5: Gate Charge Characteristics

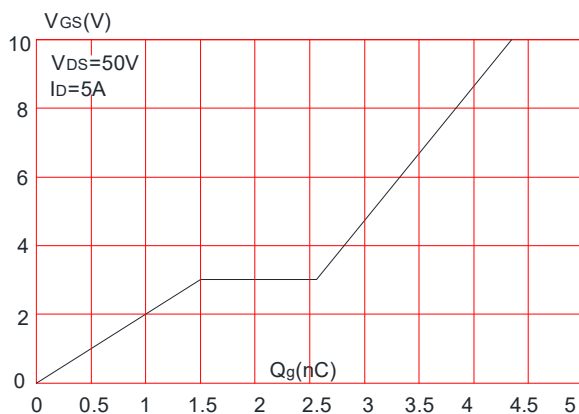


Figure 6: Capacitance Characteristics

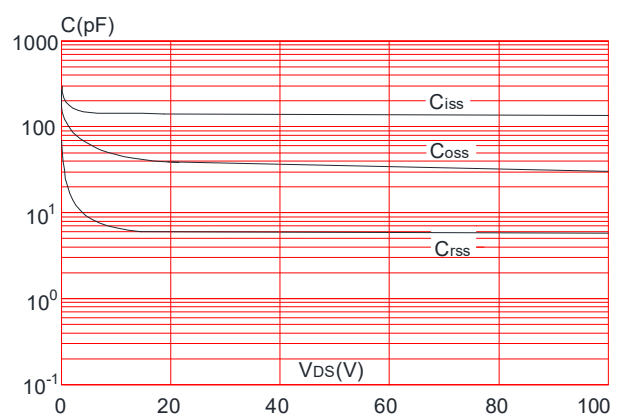




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

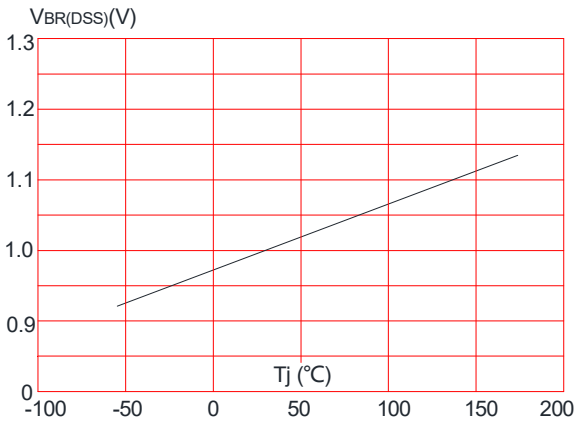


Figure 8: Normalized on Resistance vs. Junction Temperature

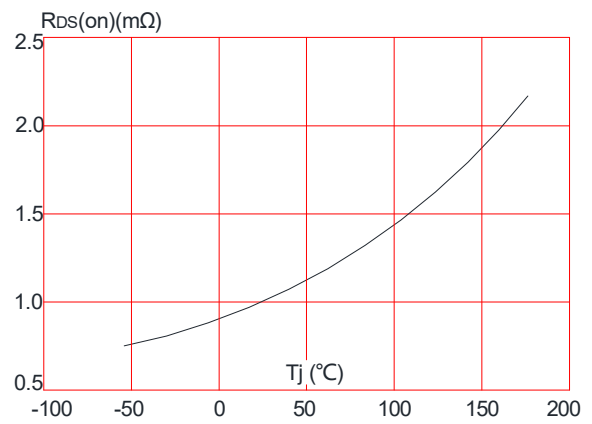


Figure 9: Maximum Safe Operating Area

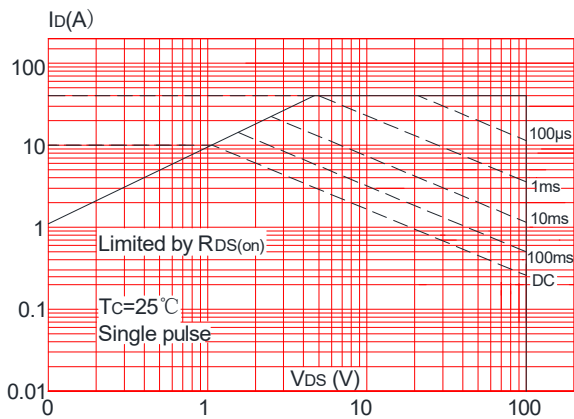


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

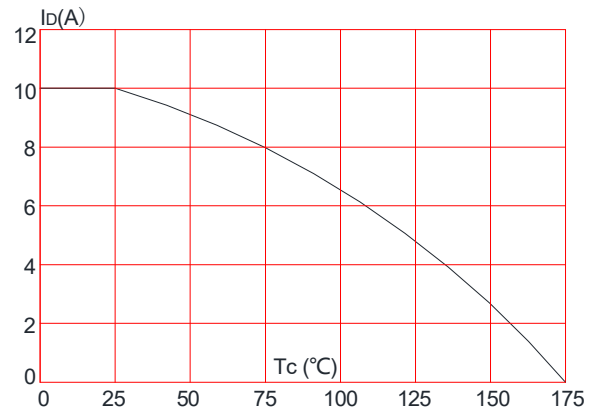
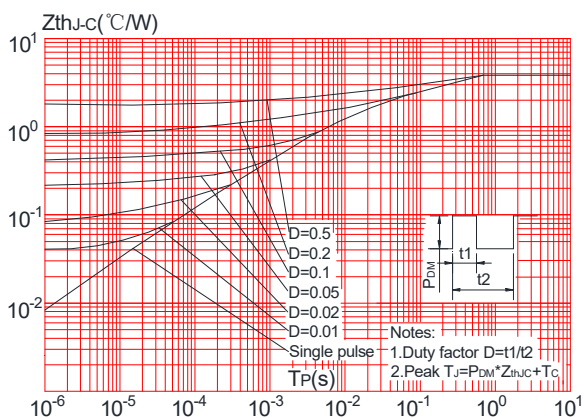


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Test Circuit

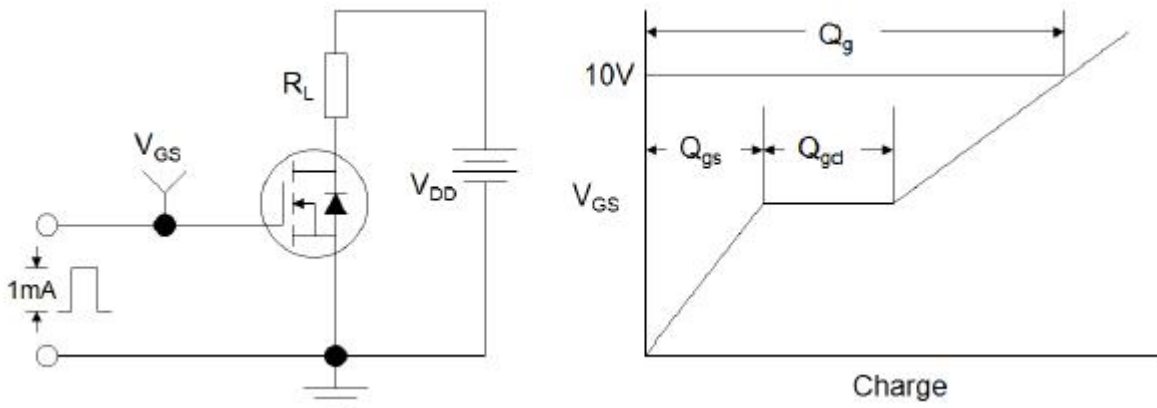


Figure1:Gate Charge Test Circuit & Waveform

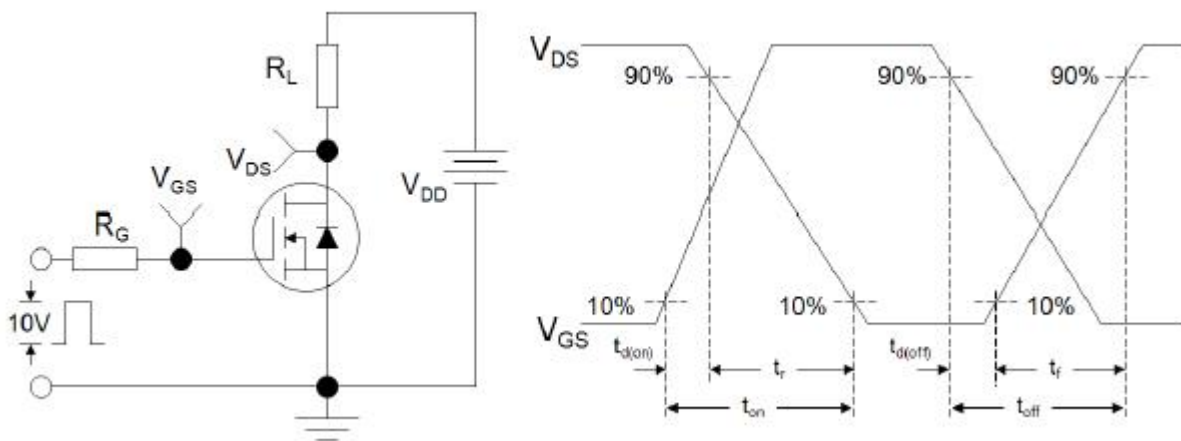


Figure 2: Resistive Switching Test Circuit & Waveforms

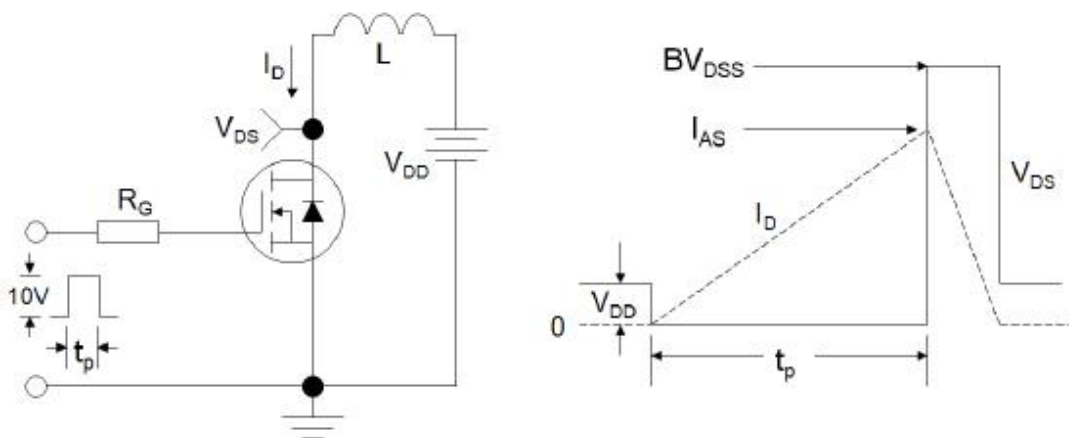
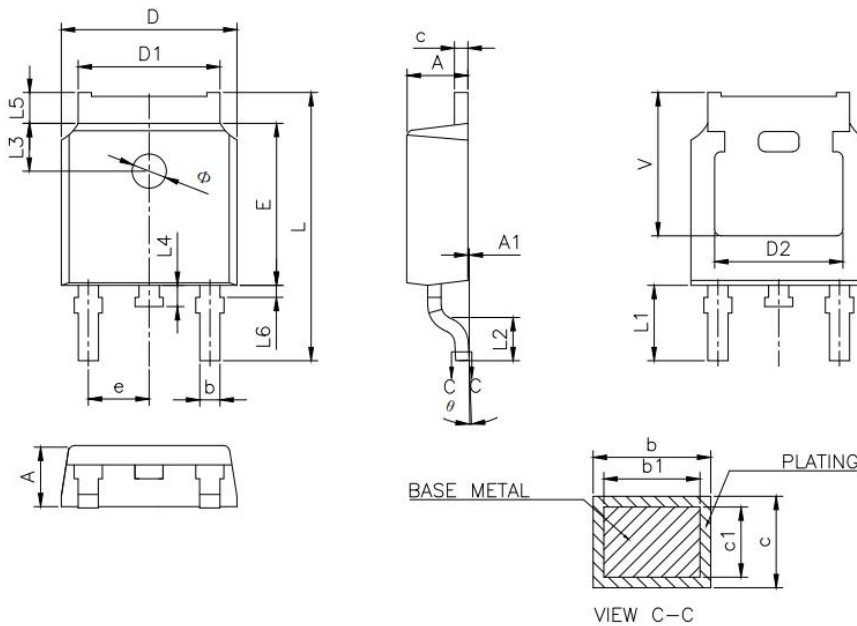


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



Package Mechanical Data-TO-252-3L



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	2.20	2.30	2.40
A1	0.00	--	0.127
b	0.66	0.76	0.86
c	0.46	0.51	0.58
D	6.50	6.60	6.70
D1	5.10	5.33	5.46
c	0.47	--	0.60
c1	0.46	0.51	0.56
c2	0.47	--	0.60
D2	4.83 REF.		
E	6.00	6.10	6.20
e	2.186	2.286	2.386
L	9.80	10.10	10.40
L1	2.90 REF.		
L2	1.40	1.50	1.60
L3	1.80 REF.		
L4	0.60	0.80	1.00
L5	0.90	--	1.25
L6	0.15	--	0.75
Φ	1.10	--	1.30
θ	0°	--	8°
V	5.35 REF.		

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