



Description

JMG N-channel Enhancement Mode Power MOSFET

Features

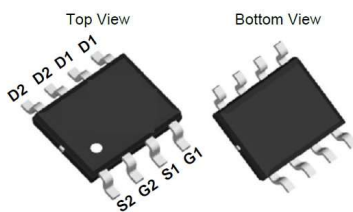
- 100V,4.5A
 $R_{DS(ON)} < 62m\Omega @ V_{GS} = 10V$
 $R_{DS(ON)} < 90m\Omega @ V_{GS} = 4.5V$
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Application

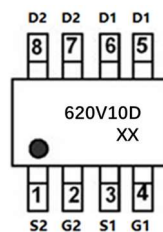
- Load Switch
- PWM Application
- Power management



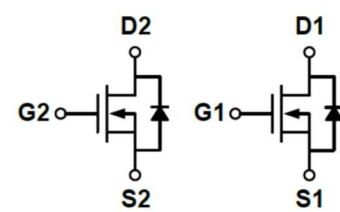
100% UIS TESTED!
100% ΔVds TESTED!



SOP-8(dual chip)



Marking and pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
620V10D	JMGP620V10D	TAPING	SOP-8	13inch	4000	48000

Absolute Maximum Ratings ($T_A=25^\circ C$ 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	$T_A = 25^\circ C$	4.5
		$T_A = 100^\circ C$	3
I_{DM}	Pulsed Drain Current ^{note1}	18	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	4.2	mJ
P_D	Power Dissipation	$T_A = 25^\circ C$	2.5
$R_{\theta JA}$	Thermal Resistance, Junction to Case	50	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ C$



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	2	3	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note3</small>	V _{GS} =10V, I _D =3.5A	-	47	62	mΩ
		V _{GS} =4.5V, I _D =2A	-	60	90	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f = 1MHz	-	429.4	-	pF
C _{oss}	Output Capacitance		-	58.3	-	pF
C _{rss}	Reverse Transfer Capacitance		-	2.9	-	pF
Q _g	Total Gate Charge	V _{DS} =50V, I _D =5A, V _{GS} =10V	-	7.6	-	nC
Q _{gs}	Gate-Source Charge		-	1.4	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	2.4	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DS} =50V, I _D =5A, R _{GEN} =2Ω, V _{GS} =10V	-	15.6	-	ns
t _r	Turn-on Rise Time		-	4.2	-	ns
t _{d(off)}	Turn-off Delay Time		-	26.8	-	ns
t _f	Turn-off Fall Time		-	3.6	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	4.5	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	18	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S =5A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I _F =5A, di/dt=100A/μs	-	36.1	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	50.4	-	nC

- Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
 2. EAS condition: T_J=25°C, VDD=50V, VG=10V, RG=25Ω, L=0.3mH, IAS=5.3A
 3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%



Typical Performance Characteristics

Figure 1: Output Characteristics

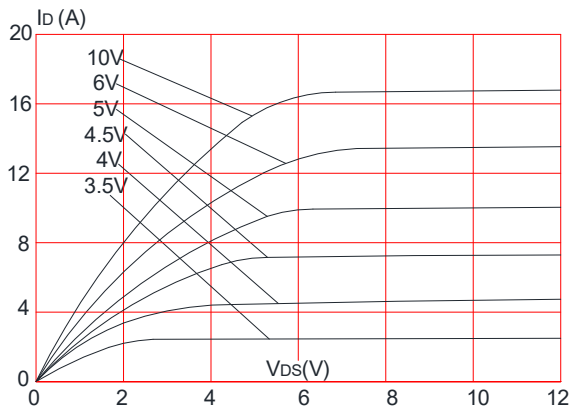


Figure 2: Typical Transfer Characteristics

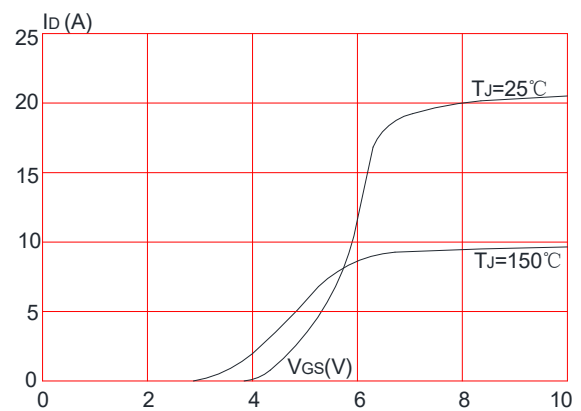


Figure 3: On-resistance vs. Drain Current

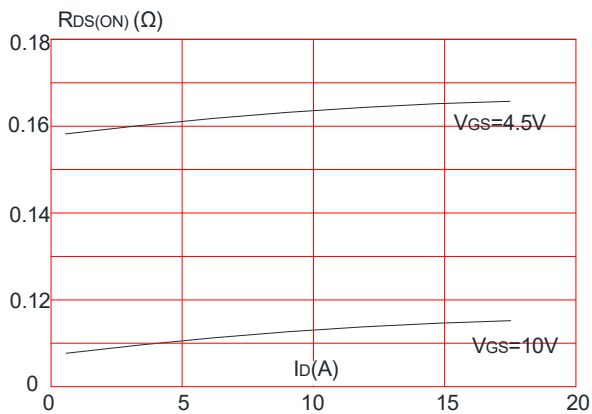


Figure 4: Body Diode Characteristics

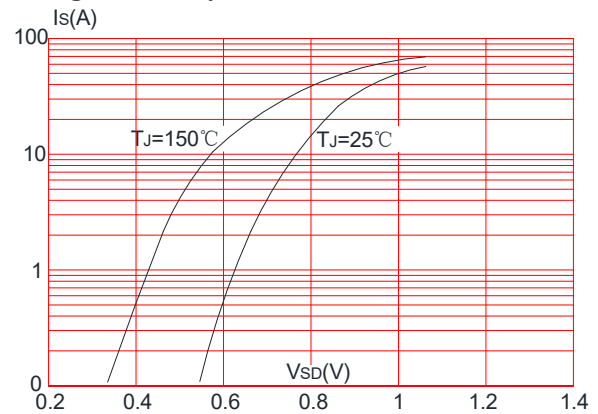


Figure 5: Gate Charge Characteristics

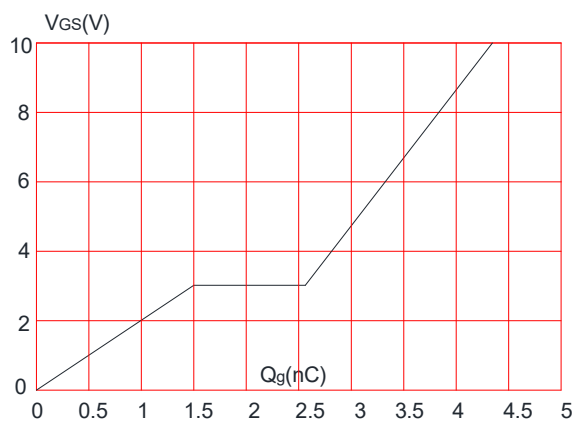


Figure 6: Capacitance Characteristics

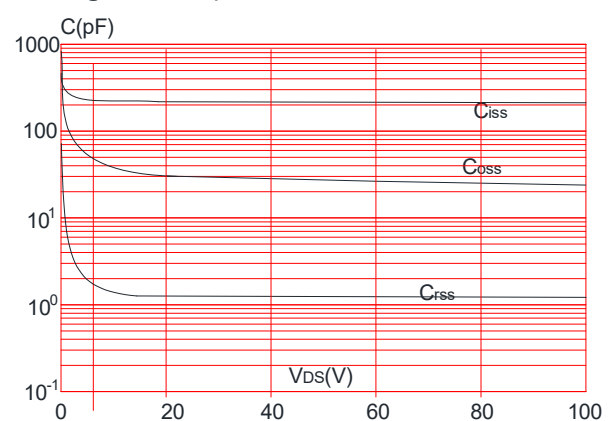




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

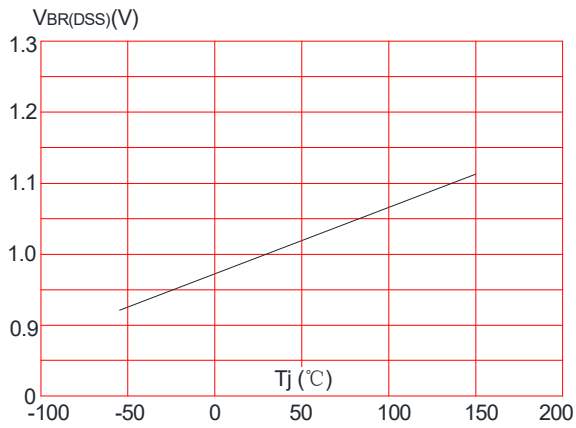


Figure 8: Normalized on Resistance vs. Junction Temperature

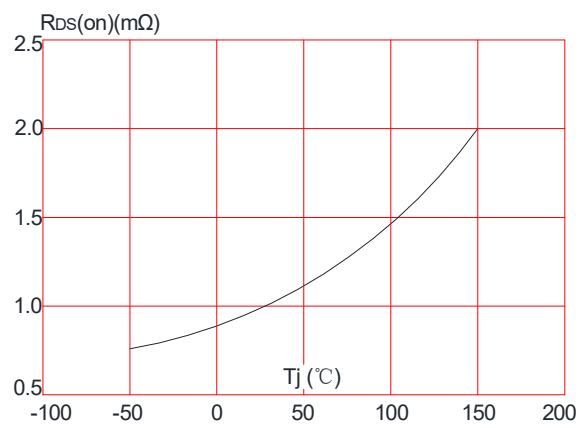


Figure 9: Maximum Safe Operating Area

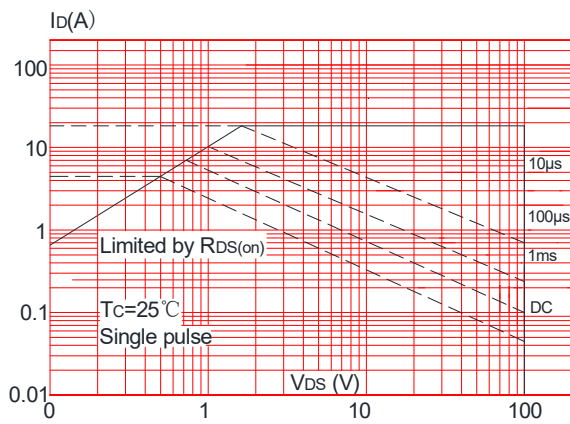


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

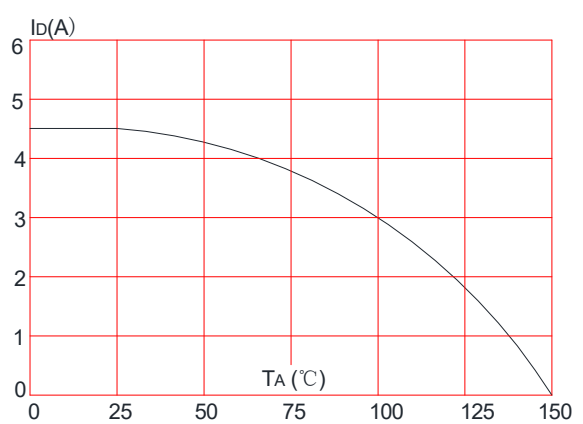
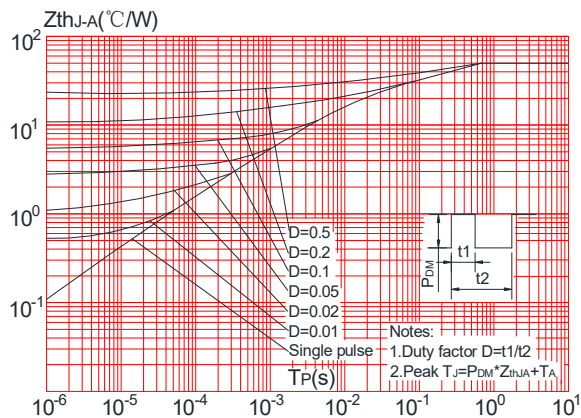


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



Test Circuit

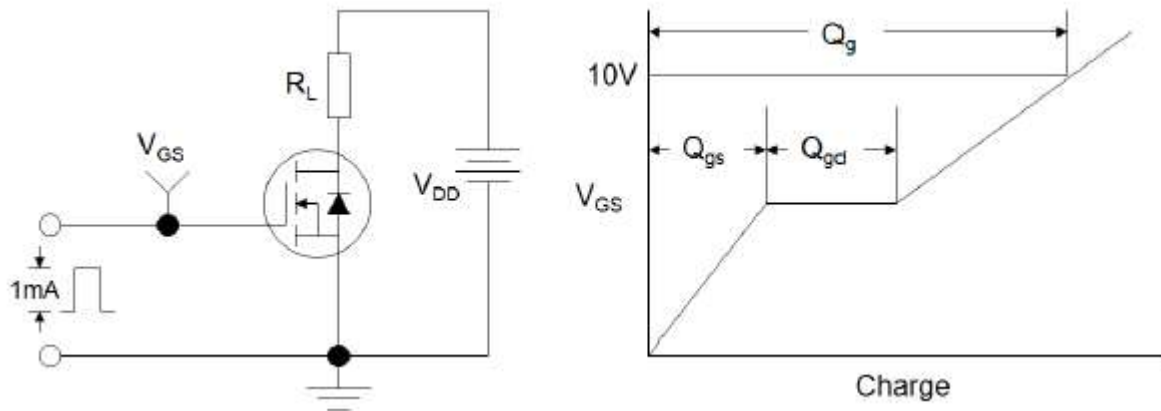


Figure1:Gate Charge Test Circuit & Waveform

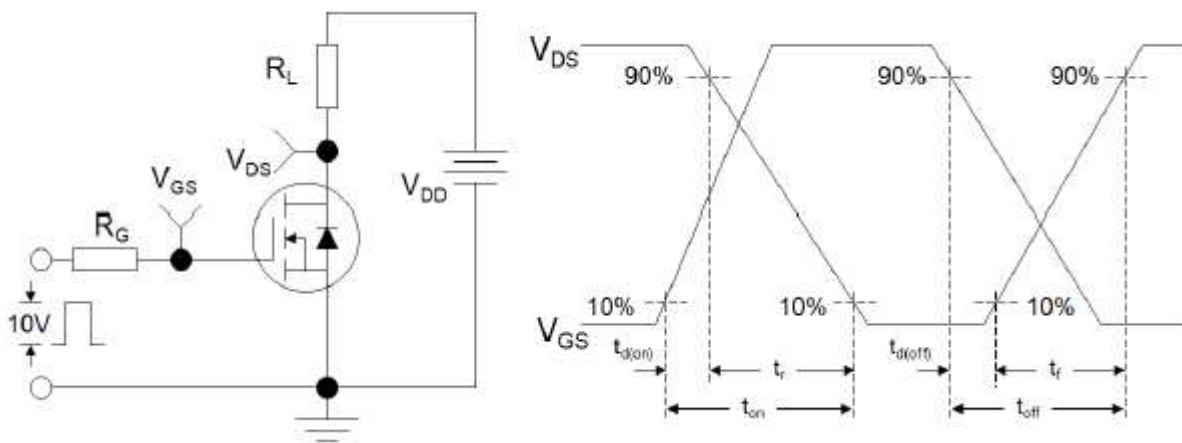


Figure 2: Resistive Switching Test Circuit & Waveforms

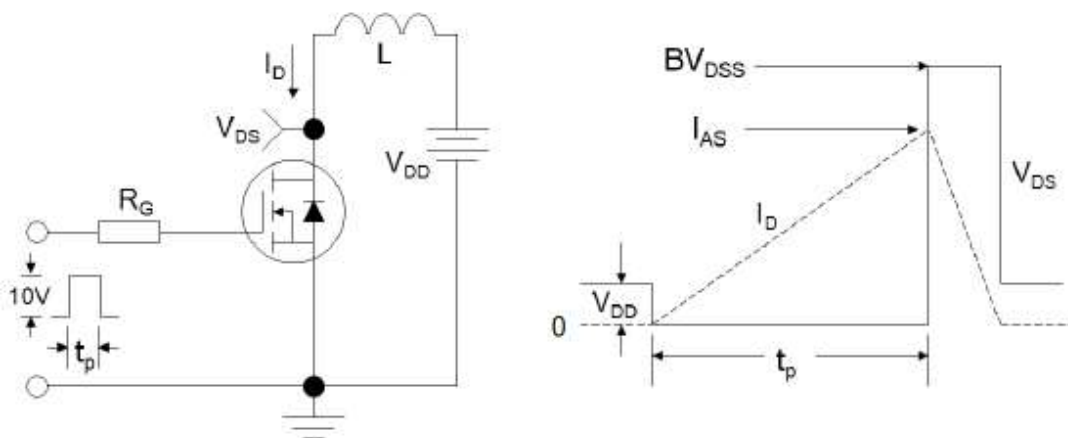
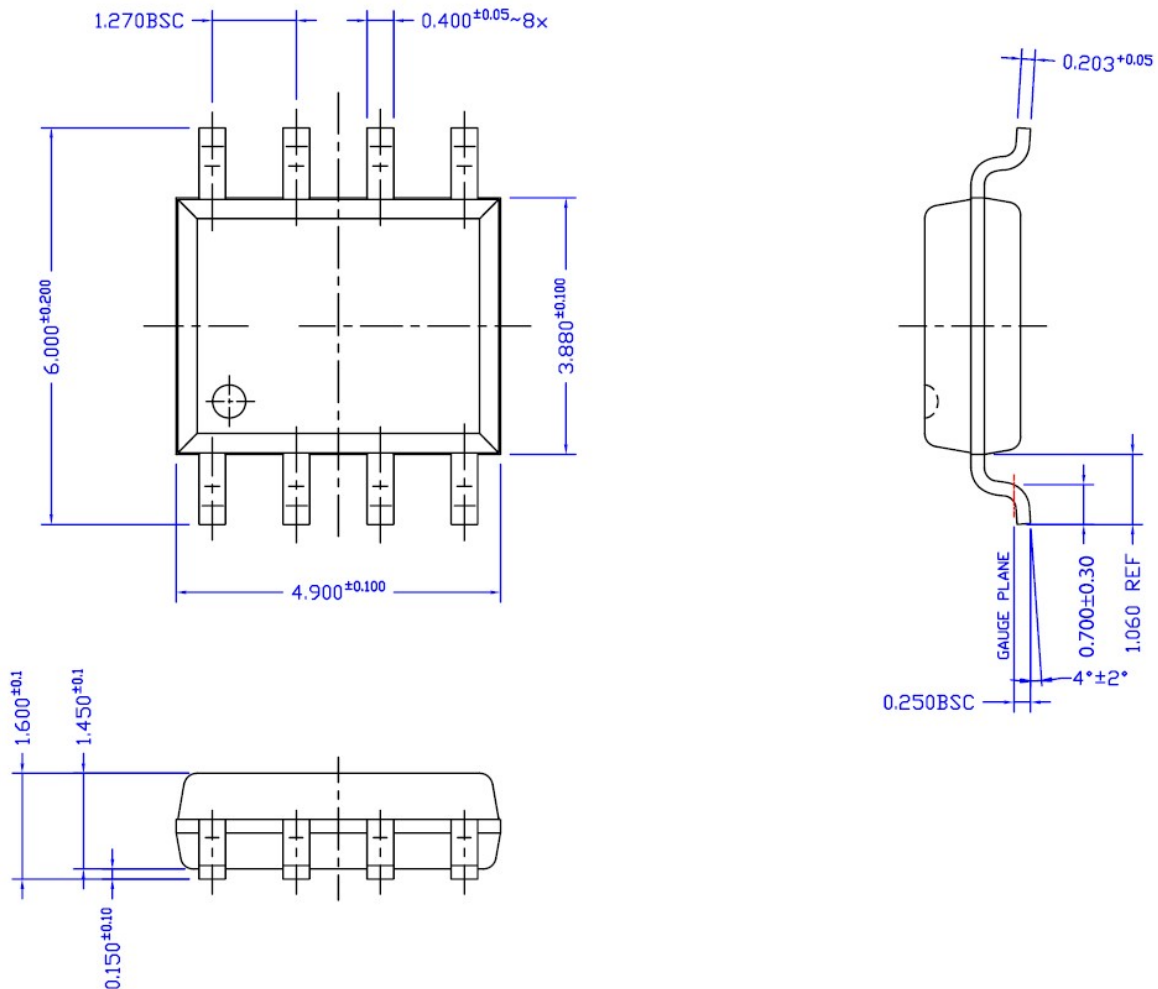


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



Package Mechanical Data-SOP-8




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