JMTQ025N02A

Description

JMT N-channel Enhancement Mode Power MOSFET

Features

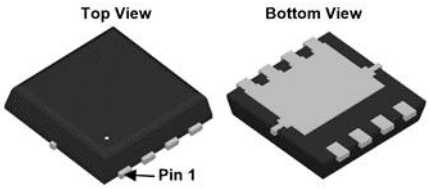
- 20V,80 A
  $R_{DS(ON)}$ < 2.9mΩ @ V_{GS} = 10V
  $R_{DS(ON)}$ < 3.5mΩ @ V_{GS} = 4.5V
  $R_{DS(ON)}$ < 5.6mΩ @ V_{GS} = 2.5V
- Lead free and Green Device Available
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Application

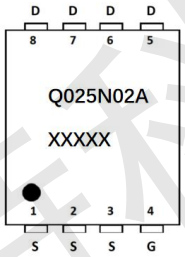
- Load Switch
- PWM Application
- Power management

RoHS

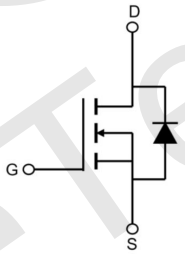
100% UIS TESTED!
100% ΔVds TESTED!



PDFN3.3X3.3-8L



Marking and pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
Q025N02A	JMTQ025N02A	TAPING	PDFN3.3X3.3-8L	13inch	5000	50000

Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current	T_C = 25℃	80	A
		T_C= 100℃	53	A
I_{DM}	Pulsed Drain Current note1		320	A
E_{AS}	Single Pulsed Avalanche Energy note2		150	mJ
P_D	Power Dissipation	T_C= 25℃	30	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		4.2	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

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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	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	V_{GS}= ±12V, V_{DS}=0V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	0.5	0.7	1.1	V
$R_{DS(on)}$	Static Drain-Source On-Resistance note3	V_{GS}=10V, I_D=30A	-	2.2	2.9	mΩ
		V_{GS}=4.5V, I_D=20A	-	2.5	3.5	
		V_{GS}=2.5V, I_D=10A	-	3.7	5.6	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=10V, V_{GS}=0V, f=1MHz	-	5392	-	pF
C_{oss}	Output Capacitance		-	902	-	pF
C_{rss}	Reverse Transfer Capacitance		-	866	-	pF
Q_g	Total Gate Charge	V_{DS}=10V, I_D=40A, V_{GS}=4.5V	-	52	-	nC
Q_{gs}	Gate-Source Charge		-	6.3	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	25	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS} =10V, I_D=40A, R_G=1Ω, V_{GS}=4.5V	-	7.5	-	ns
t_r	Turn-On Rise Time		-	25	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	57	-	ns
t_f	Turn-Off Fall Time		-	37	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	80	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	320	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_{SD}=80A, T_J=25℃	-	-	1.2	V
t_{rr}	Reverse Recovery Time	T_J=25°C, I_F=40A, di/dt =220A/μs	-	41	-	ns
Q_{rr}	Reverse Recovery Charge		-	68	-	nC

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

2. EAS condition: T_J=25℃, V_{DD}=10V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=24.5A

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

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Typical Performance Characteristics

Figure1: Output Characteristics

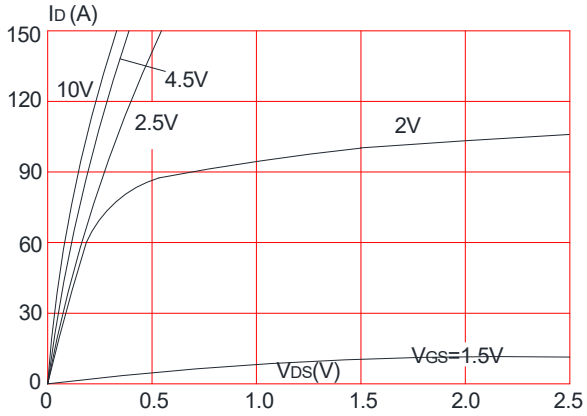

Figure 2: Typical Transfer Characteristics

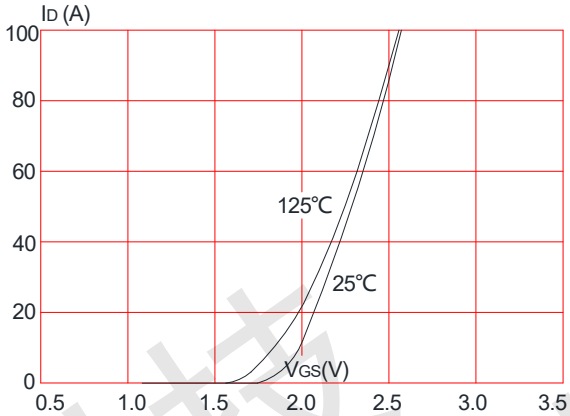

Figure 3: On-resistance vs. Drain Current

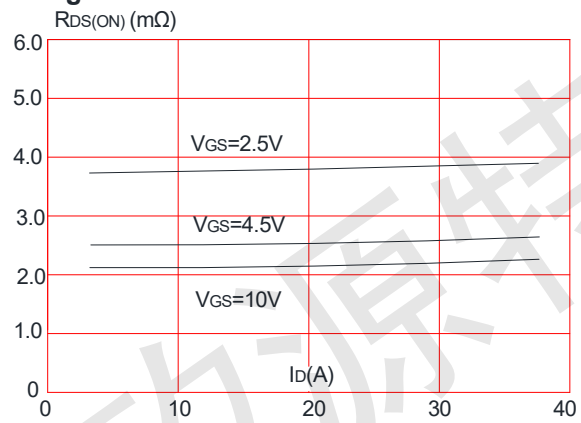

Figure 4: Body Diode Characteristics

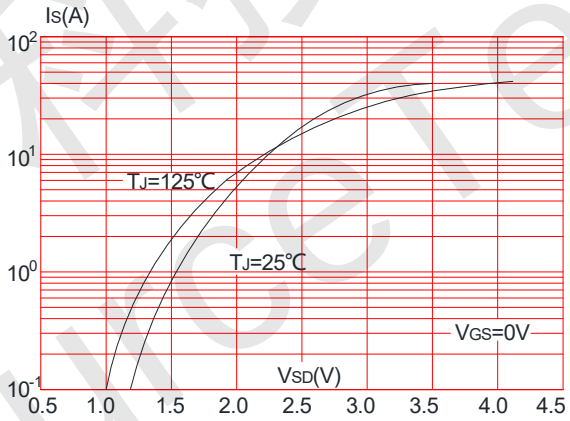

Figure 5: Gate Charge Characteristics

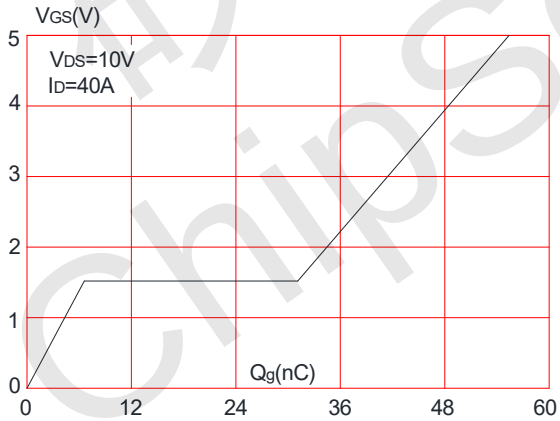

Figure 6: Capacitance Characteristics

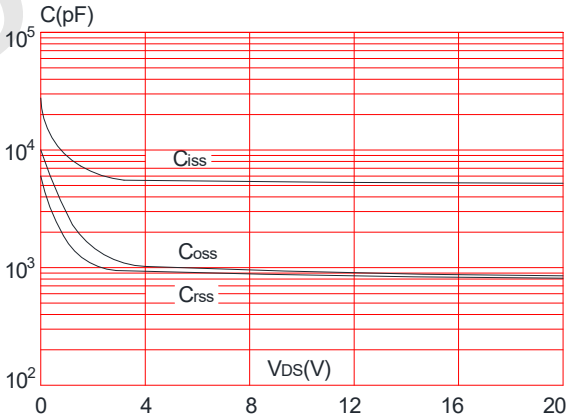

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Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

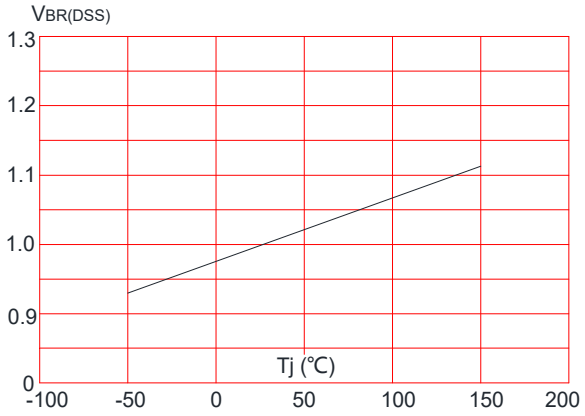


Figure 8: Normalized on Resistance vs. Junction Temperature

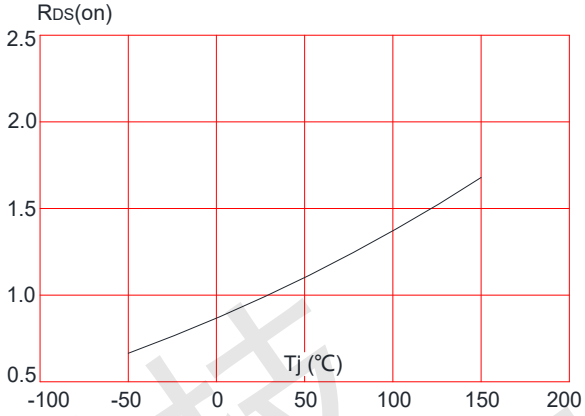


Figure 9: Maximum Safe Operating Area

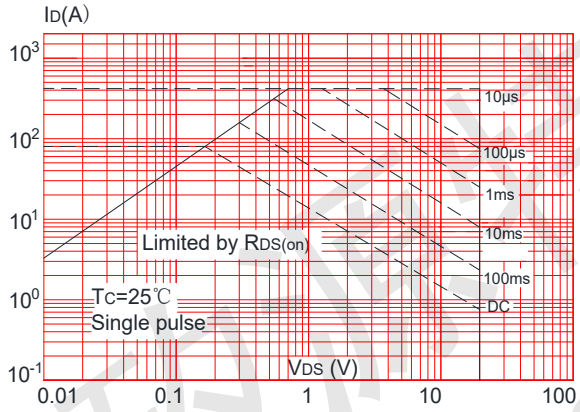


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

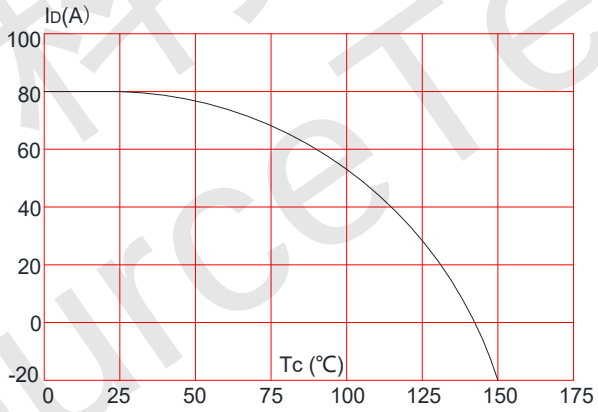
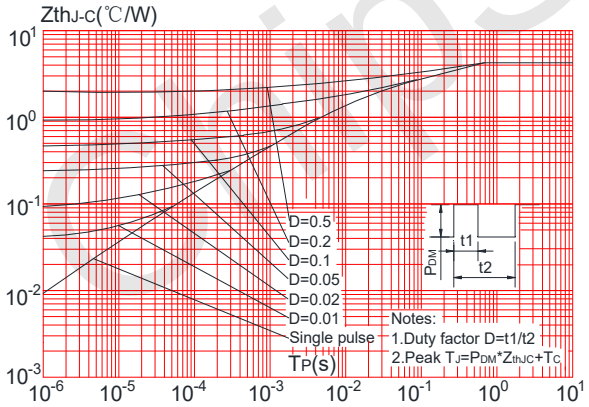


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



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Test Circuit

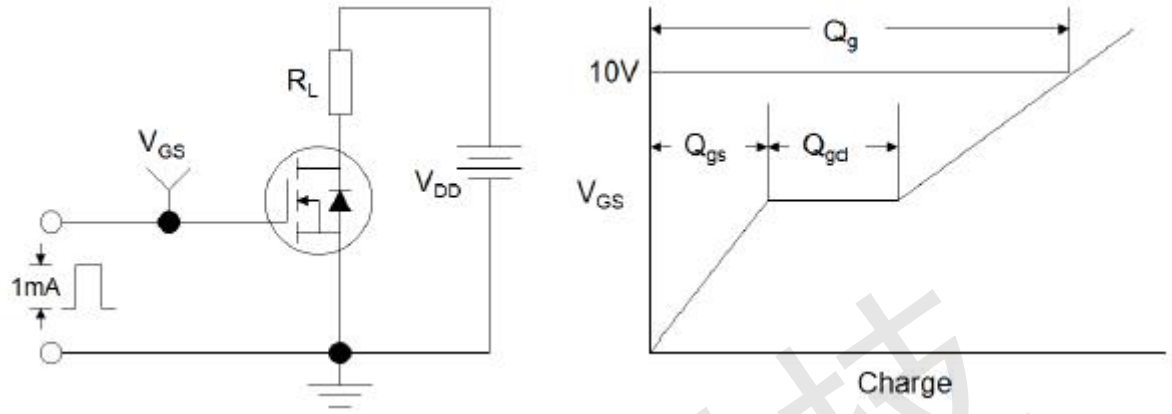

Figure1:Gate Charge Test Circuit & Waveform

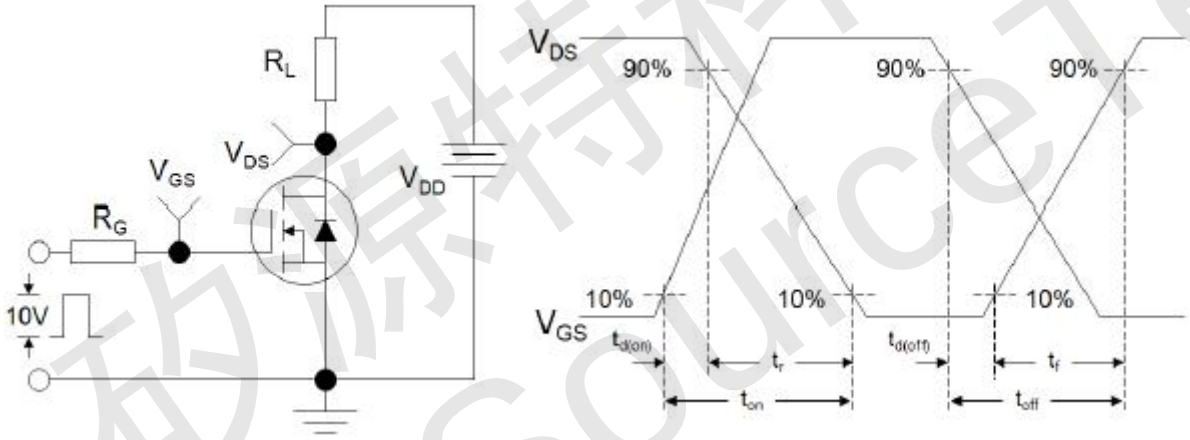

Figure 2: Resistive Switching Test Circuit & Waveforms

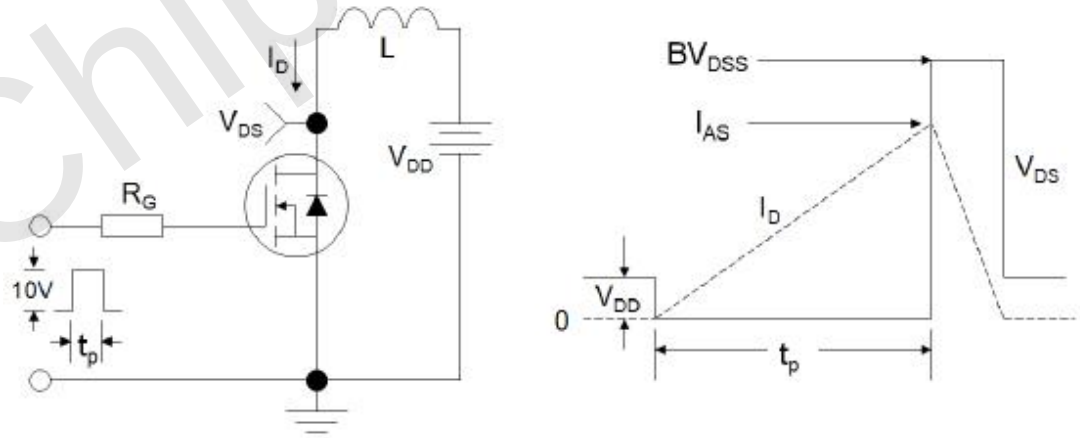

Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

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Package Mechanical Data- PDFN3.3X3.3-8L