



JMTQ025N02A

Description

JMT N-channel Enhancement Mode Power MOSFET	
Features <ul style="list-style-type: none"> • 20V, 80 A • $R_{DS(ON)} < 2.9m\Omega @ V_{GS} = 10V$ • $R_{DS(ON)} < 3.5m\Omega @ V_{GS} = 4.5V$ • $R_{DS(ON)} < 5.6m\Omega @ V_{GS} = 2.5V$ • Lead free and Green Device Available • Excellent $R_{DS(ON)}$ and Low Gate Charge • Lead free product is acquired 	Application <ul style="list-style-type: none"> • Load Switch • PWM Application • Power management <p style="text-align: center;"><i>100% UIS TESTED!</i> <i>100% ΔV_{ds} TESTED!</i></p>
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°C 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°C	80
		T _C = 100°C	53
I _{DM}	Pulsed Drain Current ^{note1}	320	A
E _{AS}	Single Pulsed Avalanche Energy ^{note2}	150	mJ
P _D	Power Dissipation	30	W
R _{θJC}	Thermal Resistance, Junction to Case	4.2	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +150	°C



JMTQ025N02A

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	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 <small>note3</small>	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°C	-	-	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°C, 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%



JMTQ025N02A

Typical Performance Characteristics

Figure 1: Output Characteristics

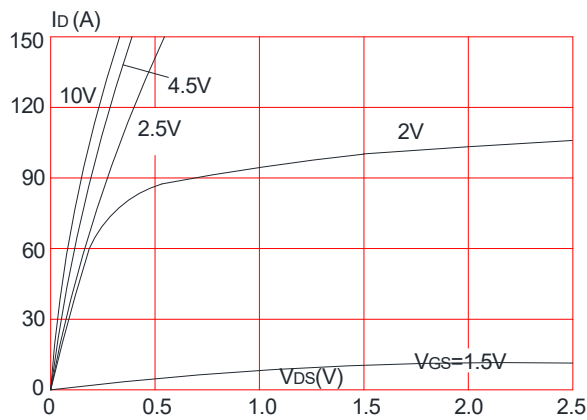


Figure 2: Typical Transfer Characteristics

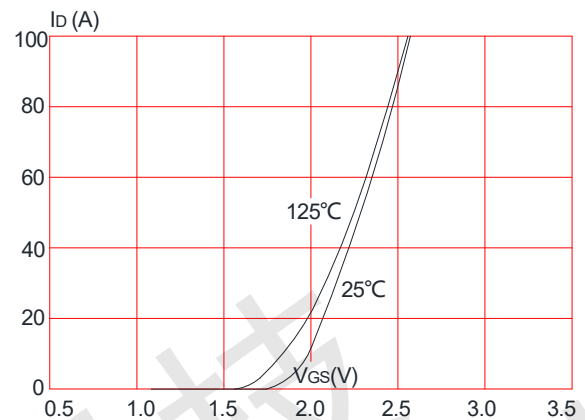


Figure 3: On-resistance vs. Drain Current

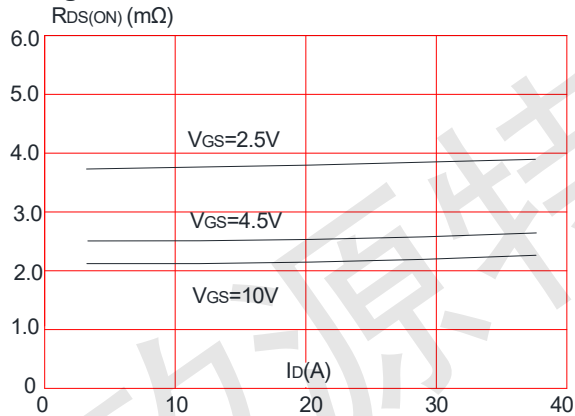


Figure 4: Body Diode Characteristics

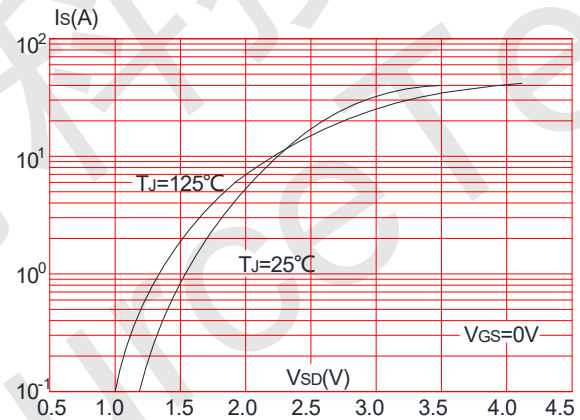


Figure 5: Gate Charge Characteristics

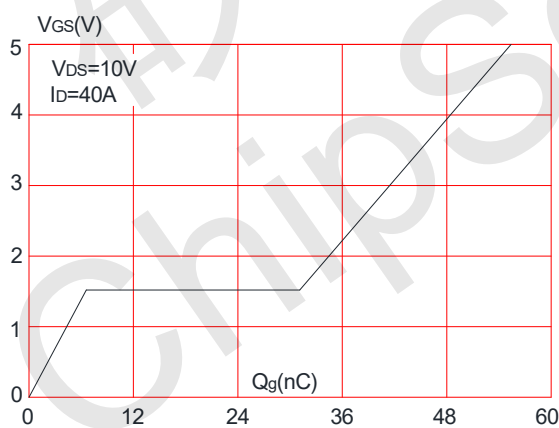
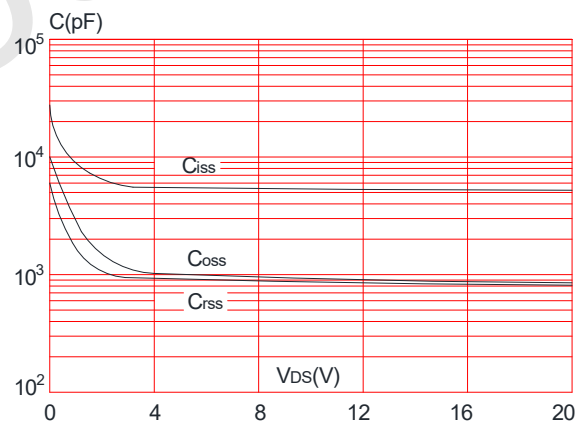


Figure 6: Capacitance Characteristics





JMTQ025N02A

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

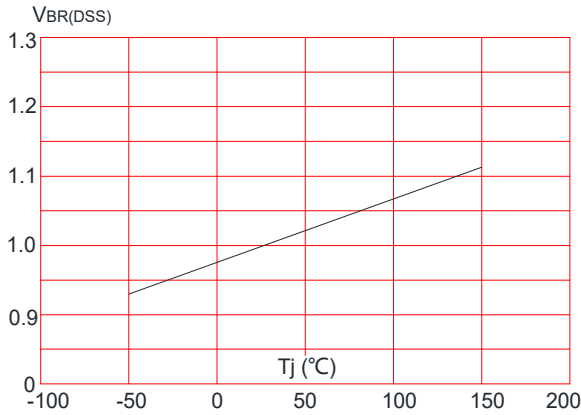


Figure 8: Normalized on Resistance vs. Junction Temperature

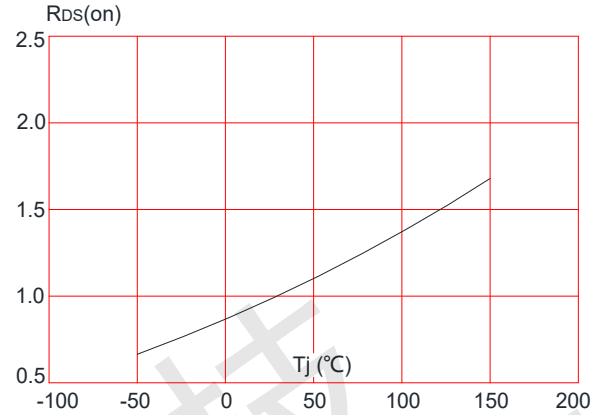


Figure 9: Maximum Safe Operating Area

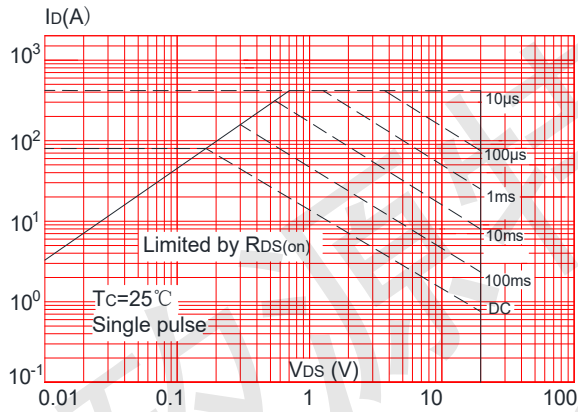


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

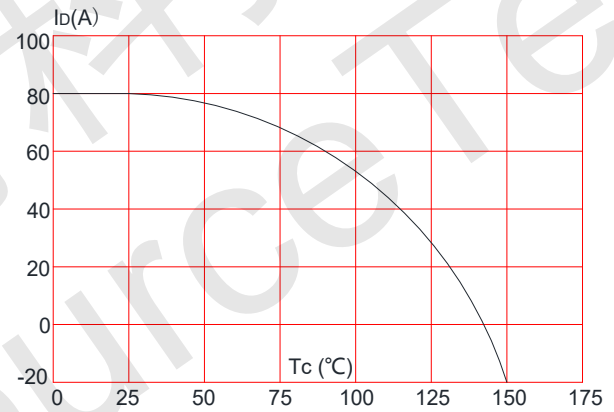
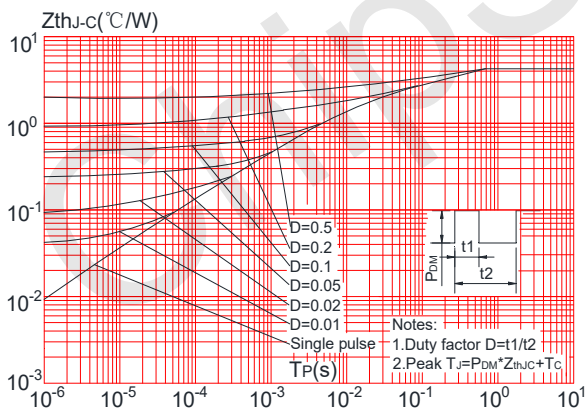


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case





JMTQ025N02A

Test Circuit

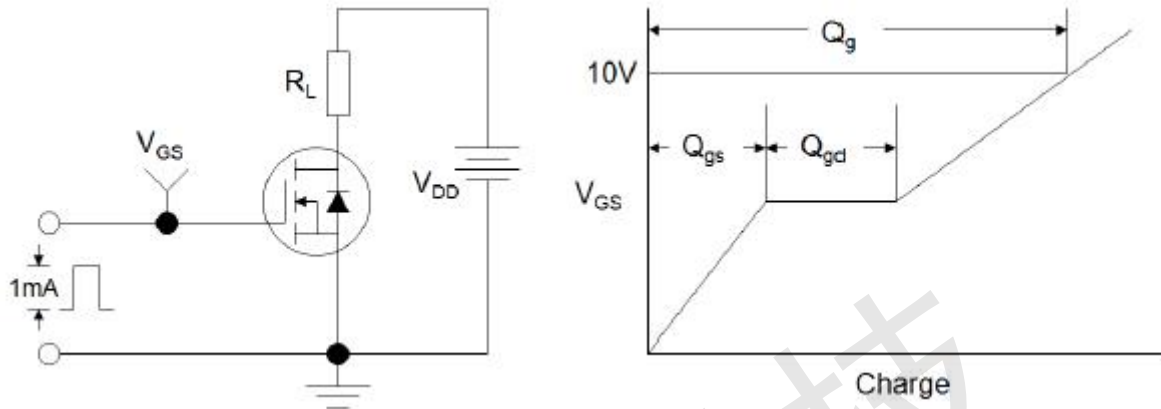


Figure1:Gate Charge Test Circuit & Waveform

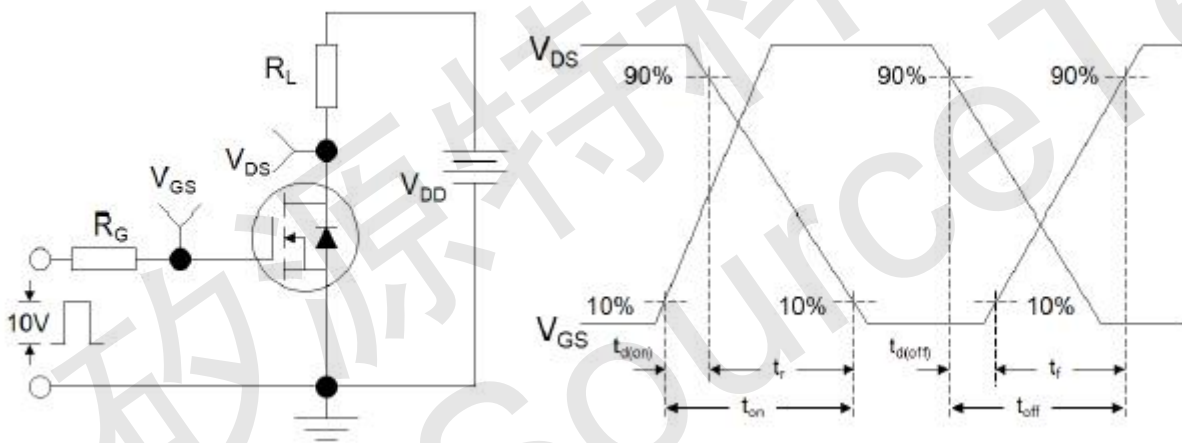


Figure 2: Resistive Switching Test Circuit & Waveforms

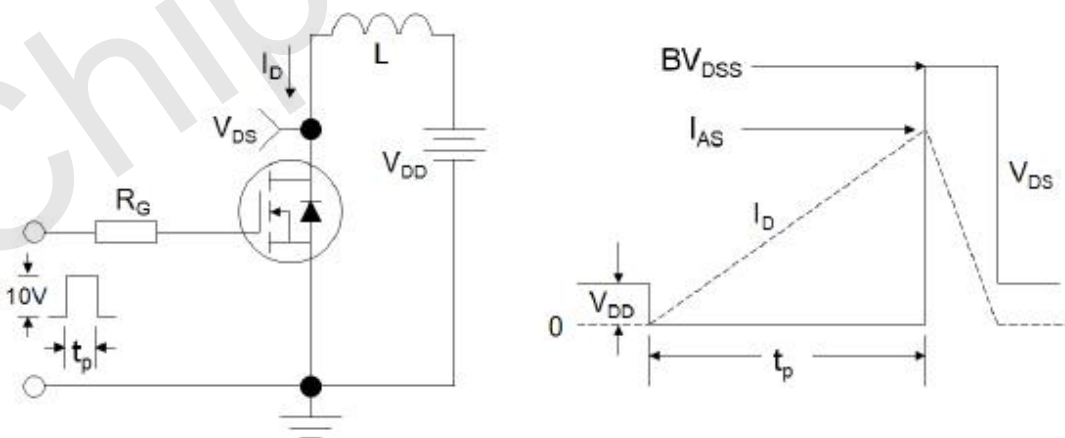


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



JMTQ025N02A

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

