JMTQ35N06A

Description

JMT N-channel Enhancement Mode Power MOSFET

Features
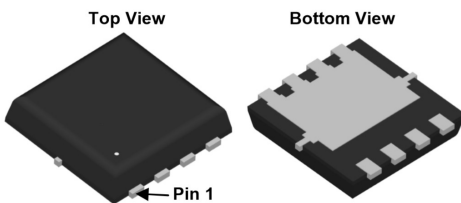
- 60V,35A
  $R_{DS(ON)}$ <18mΩ @ V_{GS} = 10V
  $R_{DS(ON)}$ <27mΩ @ V_{GS} = 4.5V
- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge
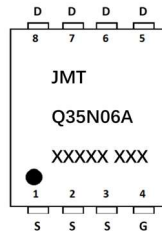- Lead free product is acquired

Application

- Load Switch
- PWM Application
- Power management
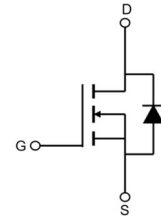
100% UIS TESTED!
100% ΔVds TESTED!

Top View   **Bottom View**

PDFN3.3X3.3-8L

| D | D | D | D |
| 8 | 7 | 6 | 5 |

JMT
Q35N06A
XXXXX XXX

| 1 | 2 | 3 | 4 |
| S | S | S | G |

Marking and pin Assignment

Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
JMTQ35N06A	JMTQ35N06A	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		60	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	$T_C = 25℃$	35	A
		$T_C = 100℃$	22.8	A
I_{DM}	Pulsed Drain Current [note1]		140	A
EAS	Single Pulsed Avalanche Energy [note2]		64	mJ
P_D	Power Dissipation	$T_C = 25℃$	41	W
$R_{θJC}$	Thermal Resistance, Junction to Case		3	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

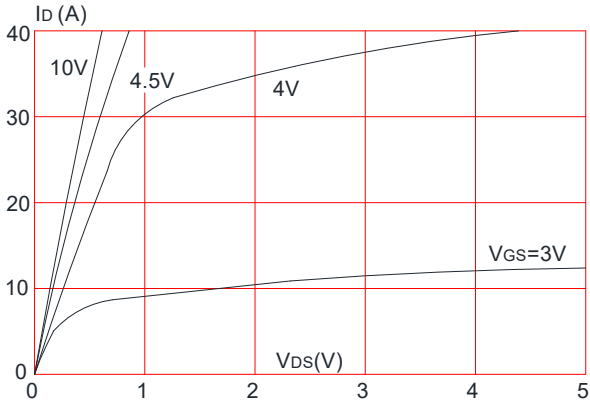## Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250µA	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, 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	1.6	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS}=10V, I_D=30A	-	12	18	mΩ
		V_{GS}=4.5V, I_D=20A	-	15	27	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1.0MHz	-	2900	-	pF
C_{oss}	Output Capacitance		-	140	-	pF
C_{rss}	Reverse Transfer Capacitance		-	124	-	pF
Q_g	Total Gate Charge	V_{DS}=30V, I_D=30A, V_{GS}=10V	-	50	-	nC
Q_{gs}	Gate-Source Charge		-	6	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	15	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=25V, I_D=30A, R_G=1.8Ω, V_{GS}=10V	-	7.4	-	ns
t_r	Turn-on Rise Time		-	5.1	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	28.2	-	ns
t_f	Turn-off Fall Time		-	5.5	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	35	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	140	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=30A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F=30A, dI/dt=100A/µs	-	28	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	40	-	nC

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

2. EAS condition : T_J=25℃, V_{DD}=30V, V_G=10V, L=0.5mH, Rg=25Ω, I_{AS}=16A
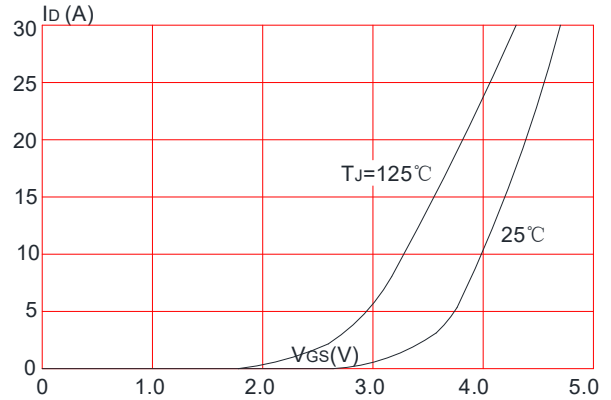
3. Pulse Test: Pulse Width≤300µs, Duty Cycle≤0.5%
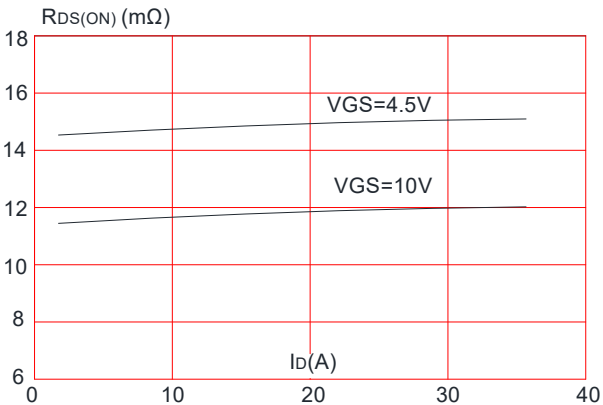
Typical Performance Characteristics

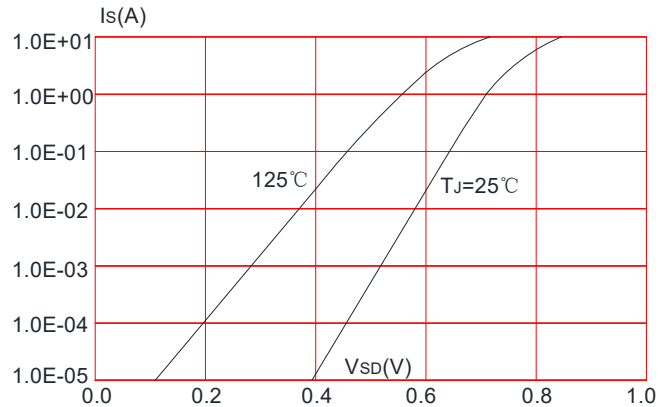**Figure1:** Output Characteristics

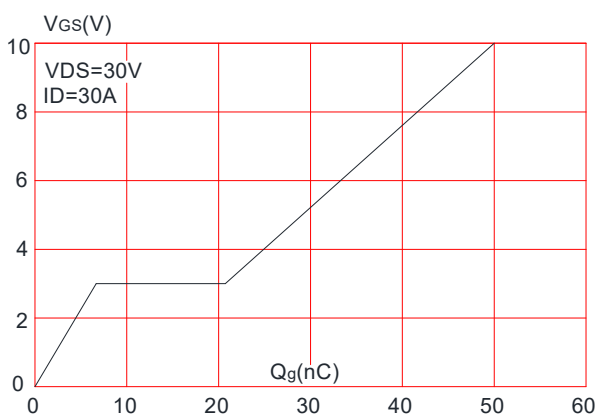**Figure 2:** Typical Transfer Characteristics

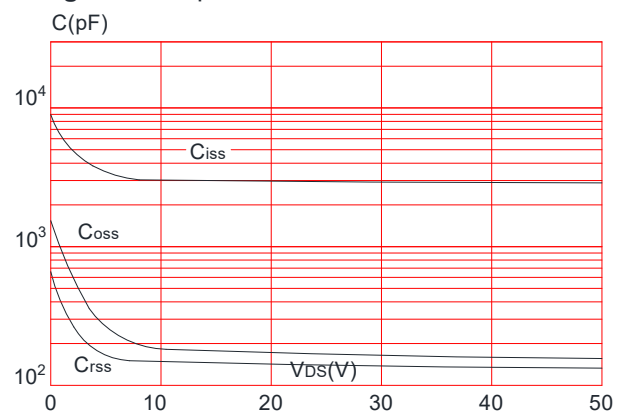**Figure 3:** On-resistance vs. Drain Current

Figure 4: Body Diode Characteristics

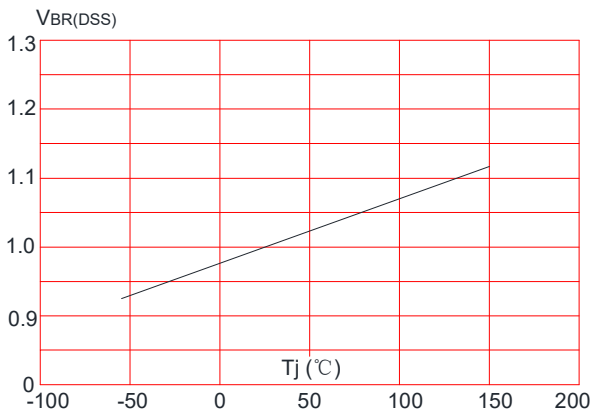**Figure 5:** Gate Charge Characteristics

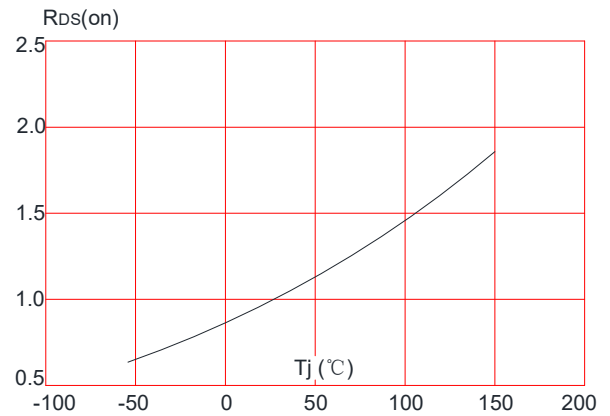**Figure 6:** Capacitance Characteristics

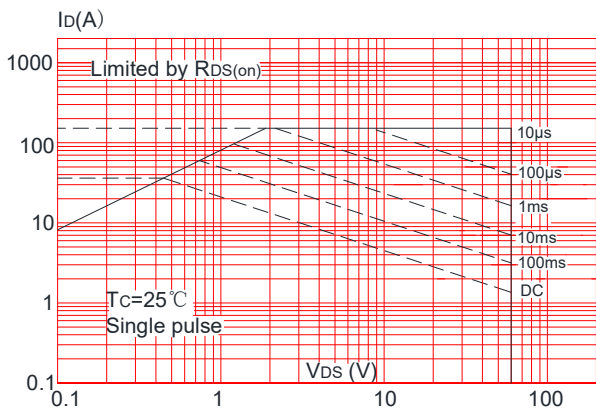**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature

$V_{BR(DSS)}$

Figure 8: Normalized on Resistance vs. Junction Temperature

$R_{DS(on)}$

Figure 9: Maximum Safe Operating Area

$I_D(A)$

Limited by $R_{DS(on)}$

10μs
100μs
1ms
10ms
100ms
DC

T_C=25℃
Single pulse

V_{DS} (V)

Figure 10: Maximum Continuous Drain Current vs. Case Temperature

$I_D(A)$

T_C (℃)

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

Zth_{J-C}(℃/W)

D=0.5
D=0.2
D=0.1
D=0.05
D=0.02
D=0.01
Single pulse

P_{DM}
t1
t2

Notes:
1.Duty factor D=t1/t2
2.Peak T_J=P_{DM}*Zth_{JC}+T_C
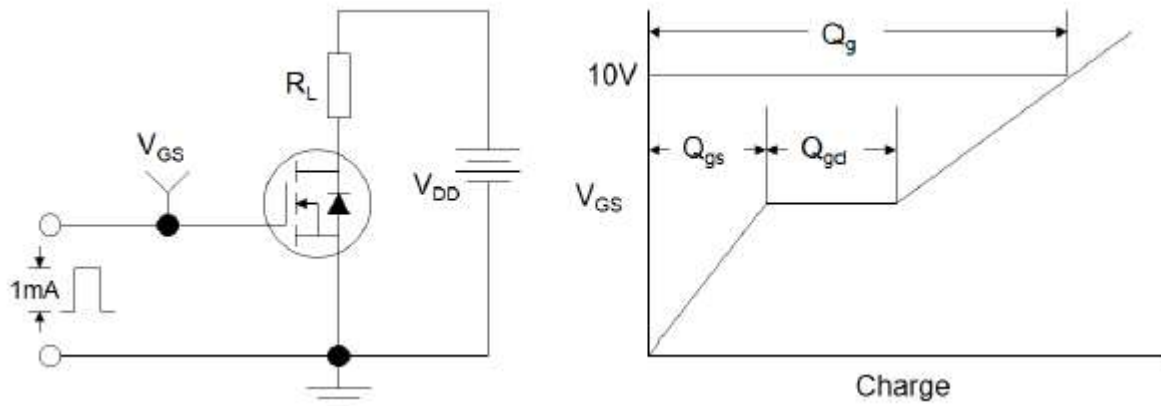
T_P(s)

Test Circuit

Figure1: Gate Charge Test Circuit & Waveform
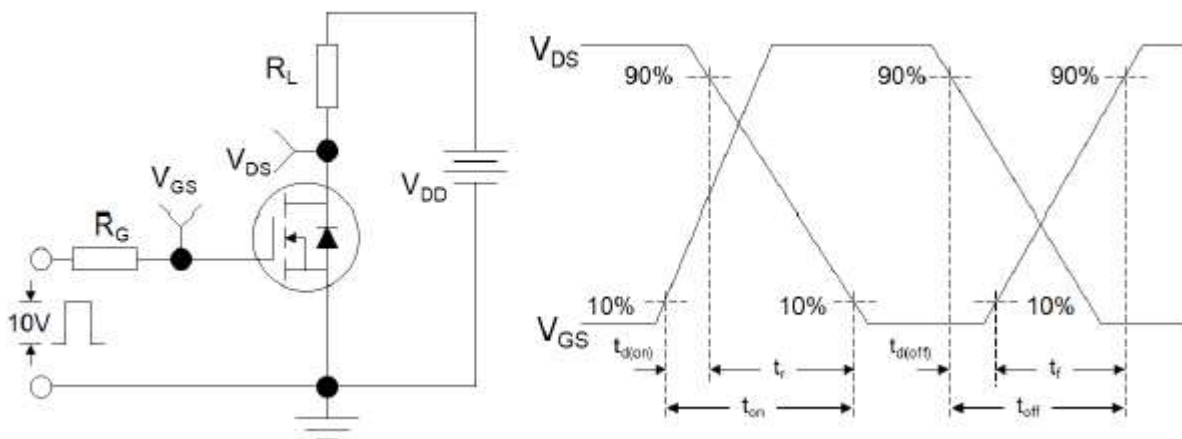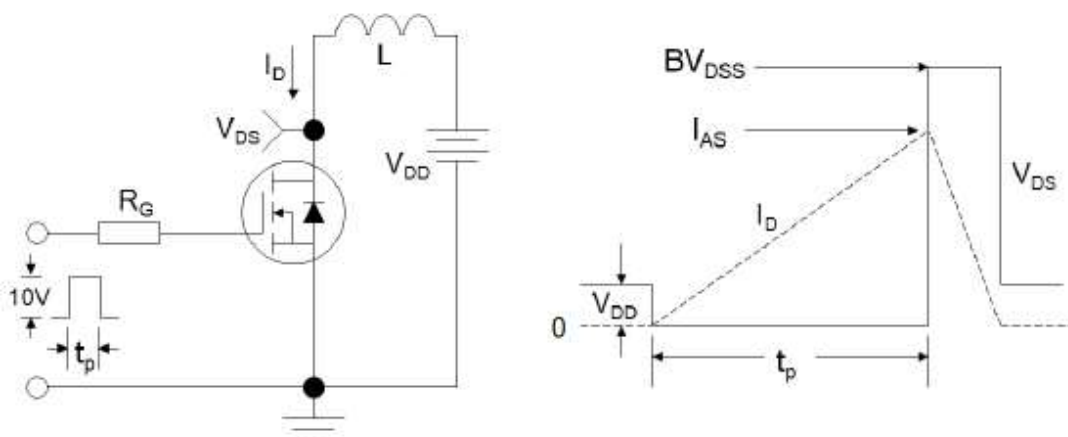

Figure 2: Resistive Switching Test Circuit & Waveforms

Figure 3: Unclamped Inductive Switching Test Circuit & Waveforms

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

SYMBOL	COMMON MM		
	MIN	NOM	MAX
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
t	0	0.075	0.13
θ	10°	12°	14°

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