Description

JMT Dual N-channel Enhancement Mode Power MOSFET

Features

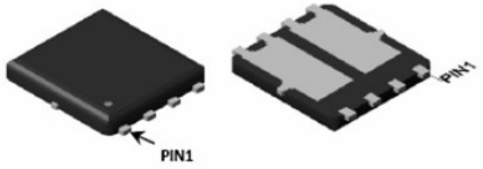
- 40V, 55A
  $R_{DS(ON)}$ < 8.2mΩ @ V_{GS} = 10V
  $R_{DS(ON)}$ < 11.2mΩ @ V_{GS} = 4.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free

Applications

- Load Switch
- PWM Application
- Power Management

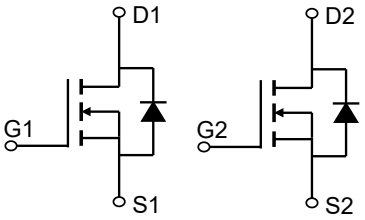
100% UIS TESTED!
100% ΔVds TESTED!

RoHS



PDFN5x6-8L-D

Marking and Pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	Outline	Package	Reel Size	Reel(pcs)	Per Carton (pcs)
G062N04D	JMTG062N04D	TAPING	PDFN5x6-8L-D	13"	5000	50000

Absolute Maximum Ratings (@ T_C = 25°C unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		40	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25°C	55	A
		T_C = 100°C	35	
I_{DM}	Pulsed Drain Current (1)		220	A
E_{AS}	Single Pulsed Avalanche Energy (2)		100	mJ
P_D	Power Dissipation	T_C = 25°C	37	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient (3)		45	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		3.4	
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°C

Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D = 250μA, V_{GS} = 0V	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 40V, V_{GS} = 0V	-	-	1.0	μA
I_{GSS}	Gate-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	1.3	1.8	2.3	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(4)	V_{GS} = 10V, I_D = 30A	-	6.3	8.2	mΩ
		V_{GS} = 4.5V, I_D = 20A	-	8.6	11.2	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 20V, f = 1MHz	-	3031	-	pF
C_{oss}	Output Capacitance		-	213	-	pF
C_{rss}	Reverse Transfer Capacitance		-	179	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 20V, I_D = 30A	-	59	-	nC
Q_{gs}	Gate Source Charge		-	12	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	12	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 20V I_D= 30A, R_{GEN} = 3Ω	-	11	-	ns
t_r	Turn-On Rise Time		-	32	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	52	-	ns
t_f	Turn-Off Fall Time		-	13	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	55	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	220	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 = 20A, di/dt = 100A/us	-	13	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	7	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25C, V_{DD}=20V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=20A
3. $R_{\theta JA}$ is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Typical Performance Characteristics

Figure 1: Output Characteristics

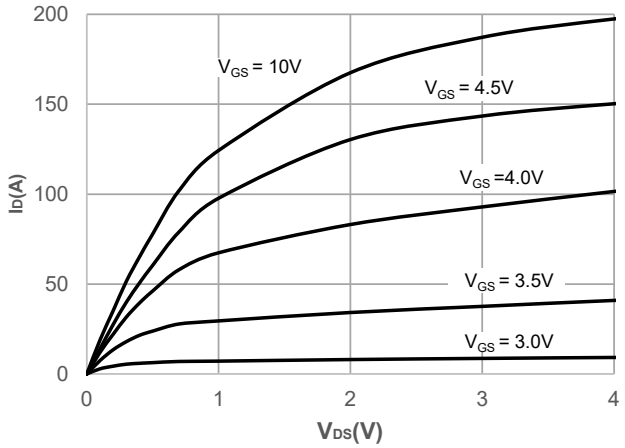


Figure 2: Typical Transfer Characteristics

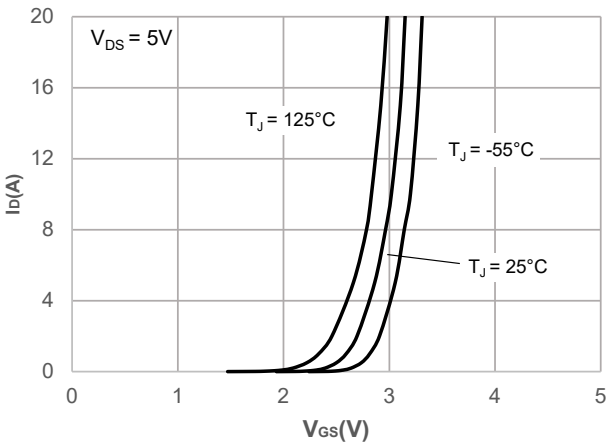


Figure 3: On-resistance vs. Drain Current

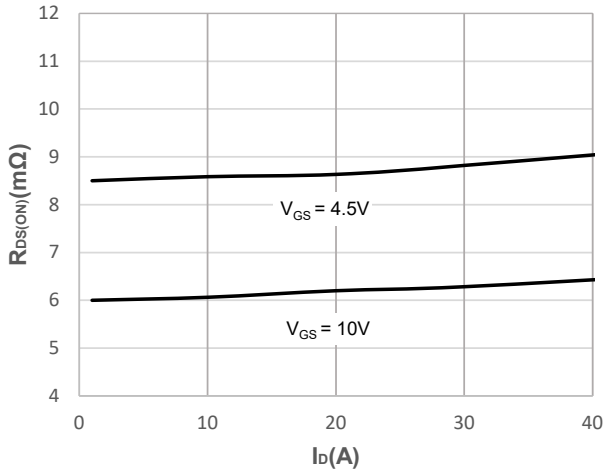


Figure 4: Body Diode Characteristics

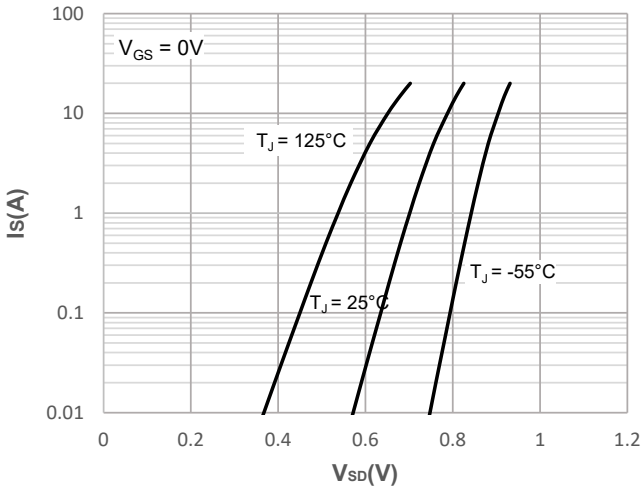


Figure 5: Gate Charge Characteristics

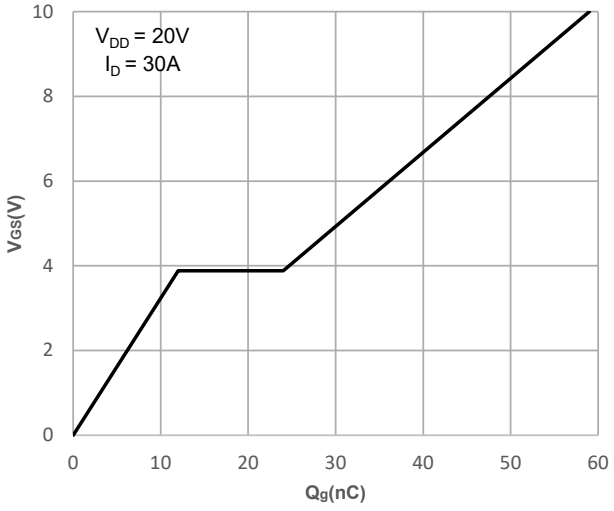
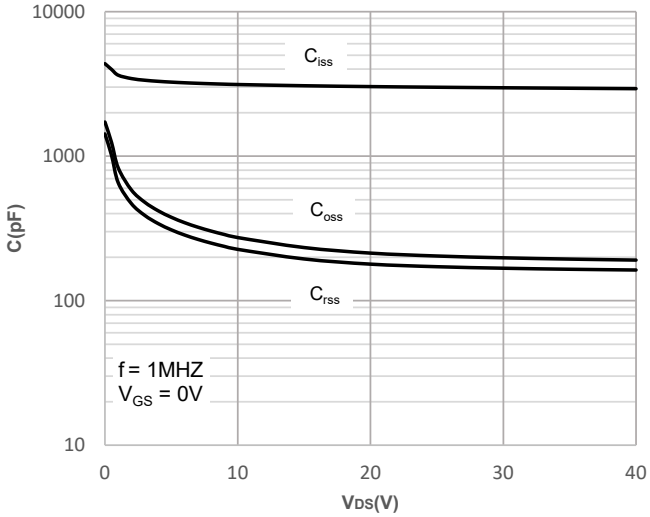


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

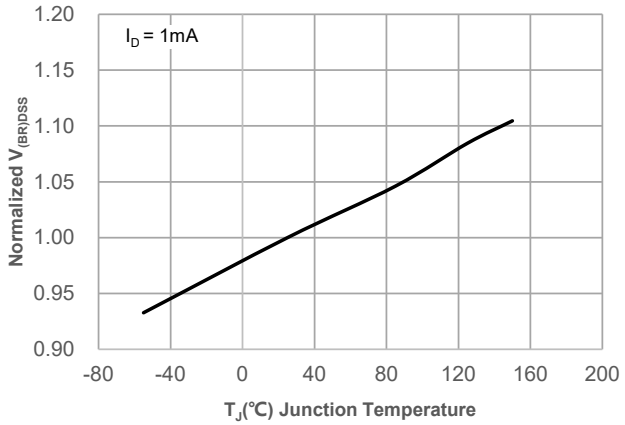


Figure 8: Normalized on Resistance vs. Junction Temperature

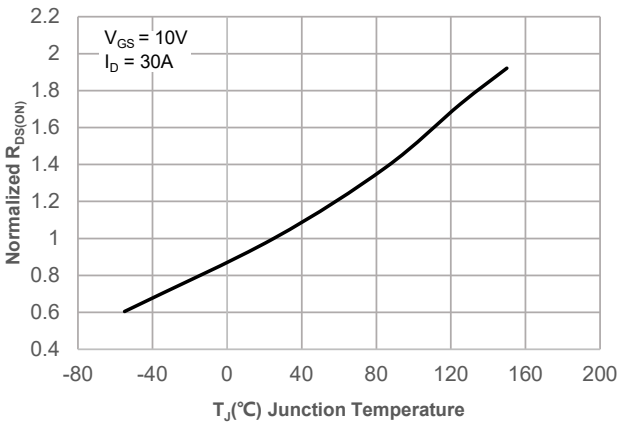


Figure 9: Maximum Safe Operating Area

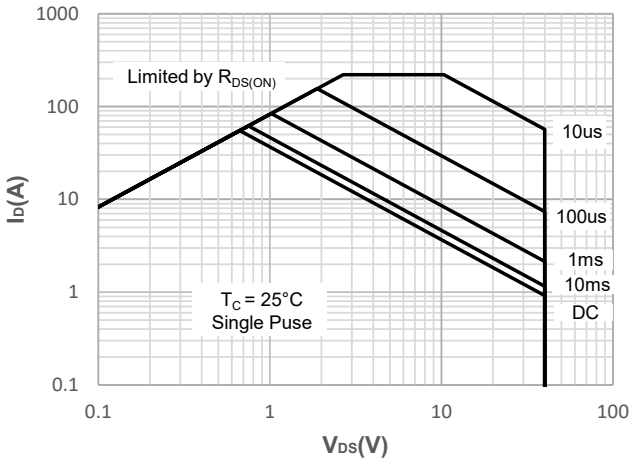


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

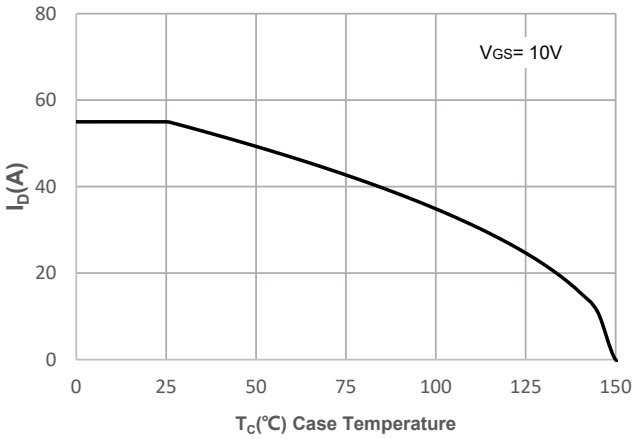


Figure 11: Normalized Maximum Transient Thermal Impedance

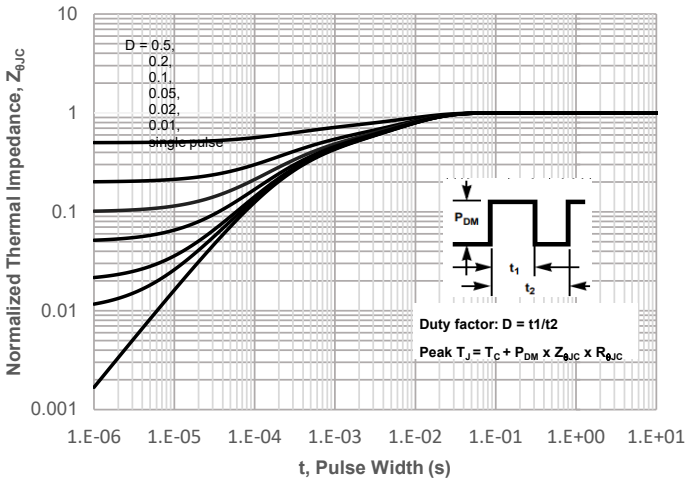
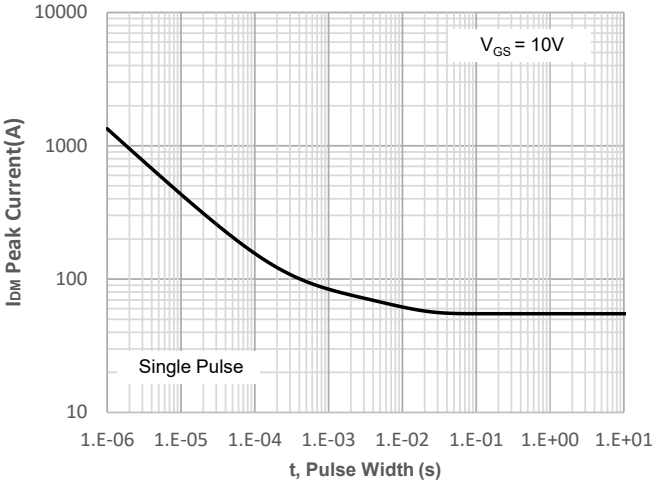


Figure 12: Peak Current Capacity



Test Circuit

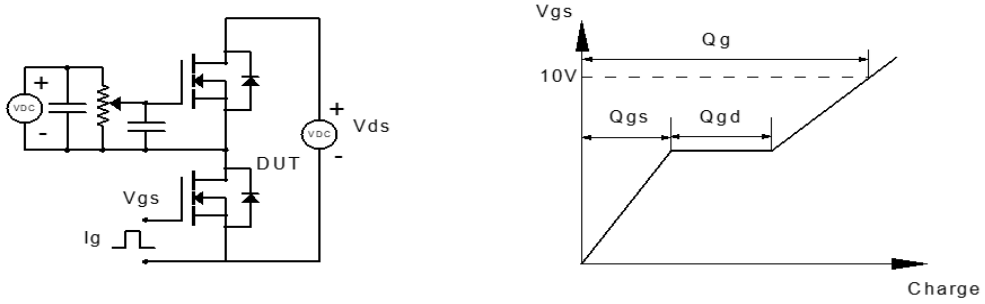


Figure 1: Gate Charge Test Circuit & Waveform

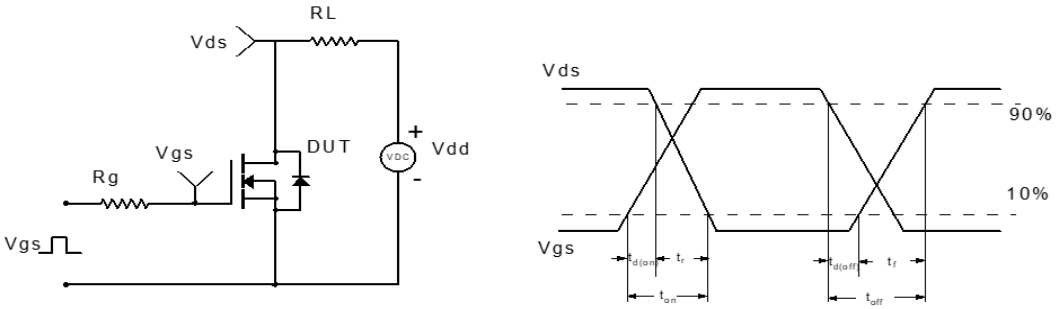


Figure 2: Resistive Switching Test Circuit & Waveform

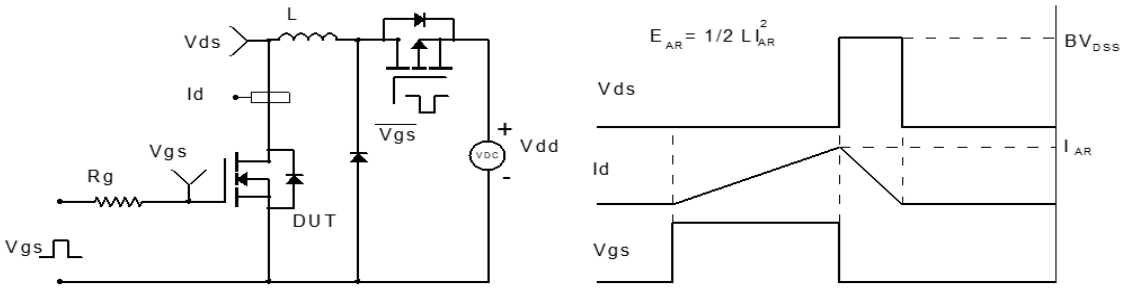


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

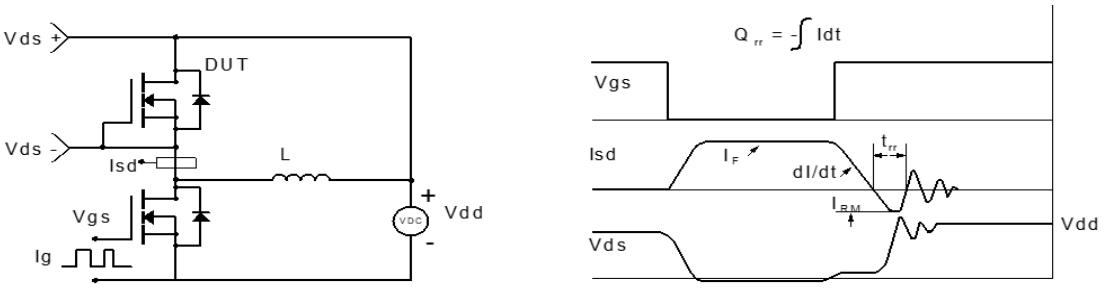
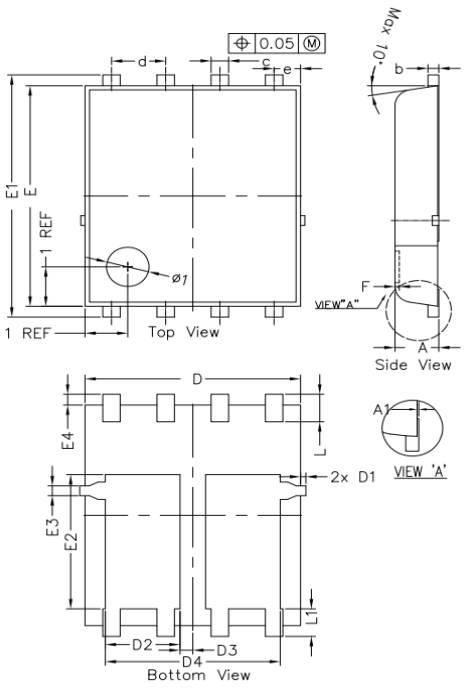


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(PDFN5x6-8L-D)



SYMBOLS	DIMENSION IN MM			DIMENSION IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
* A	0.900	1.000	1.100	0.035	0.039	0.043
A1	0.000	---	0.050	0.000	----	0.002
b	0.246	0.254	0.312	0.010	0.010	0.012
* c	0.310	0.410	0.510	0.012	0.016	0.020
d		1.27 BSC			0.050 BSC	
* D	4.950	5.050	5.150	0.195	0.199	0.203
*D1	---	---	0.125	---	---	0.005
*D2	1.650	1.750	1.850	0.065	0.069	0.073
D3	0.200	0.300	0.400	0.008	0.012	0.016
D4	4.000	4.100	4.200	0.157	0.161	0.165
e		0.62 BSC			0.024 BSC	
* E	5.500	5.600	5.700	0.217	0.220	0.224
* E1	6.050	6.150	6.250	0.238	0.242	0.246
E2	3.310	3.410	3.510	0.130	0.134	0.138
E3	0.150	0.250	0.350	0.006	0.010	0.014
* E4	0.175	0.275	0.375	0.007	0.011	0.015
F	-	-	0.100	-	-	0.004
* L	0.500	0.600	0.700	0.02	0.02	0.03
L1	0.600	0.700	0.800	0.02	0.03	0.03