Description

JMT P-channel Enhancement Mode Power MOSFET

Features

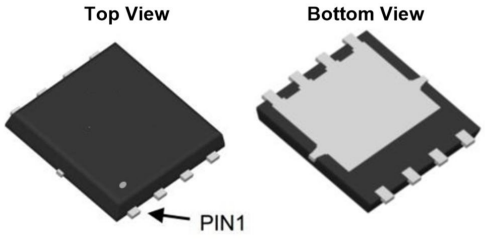
- V_{DS}= -30V, I_D= -75A
  $R_{DS(ON)}$ <5.4mΩ @ V_{GS} = -10V
  $R_{DS(ON)}$ <9.1mΩ @ V_{GS} = -4.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free

Application

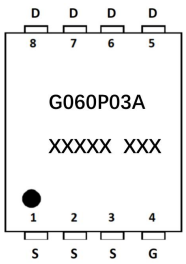
- PWM Applications
- Load Switch
- Power Management

RoHS

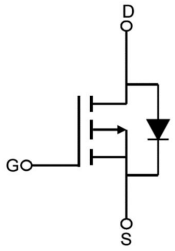
100% UIS TESTED!
100% ΔVds TESTED!



PDFN5x6-8L



Marking and pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	Outline	Package	Reel Size	Reel (pcs)	Per Carton (pcs)
G060P03A	JMTG060P03A	TAPING	PDFN5x6-8L	13”	2500	25000

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

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		-30	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	-75	A
		T_C = 100℃	-49	A
I_{DM}	Pulsed Drain Current note1		-300	A
E_{AS}	Single Pulsed Avalanche Energy note2		210	mJ
P_D	Power Dissipation	T_C = 25℃	55	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		2.3	℃/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	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= -30V, V_{GS}=0V,	-	-	-1	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	-	4.3	5.4	mΩ
		V_{GS}= -4.5V, I_D= -20A	-	7	9.1	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}= -15V, V_{GS}=0V, f=1.0MHz	-	6800	-	pF
C_{oss}	Output Capacitance		-	769	-	pF
C_{rss}	Reverse Transfer Capacitance		-	726	-	pF
Q_g	Total Gate Charge	V_{DD}= -15V, I_D= -30A, V_{GS}= -10V	-	30	-	nC
Q_{gs}	Gate-Source Charge		-	6	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	8	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}= -15V, I_D= -30A, V_{GS}= -10V, R_{GEN}=2.5Ω	-	11	-	ns
t_r	Turn-on Rise Time		-	13	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	52	-	ns
t_f	Turn-off Fall Time		-	21	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-75	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	300	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S= -30A	-	-0.8	-1.2	V

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

2. E_{AS} condition: Starting T_J=25℃, V_{DD}= -15V, V_G= -10V, R_G=25Ω, L=0.5mH, I_{AS}= -29A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Performance Characteristics

Figure 1: Output Characteristics

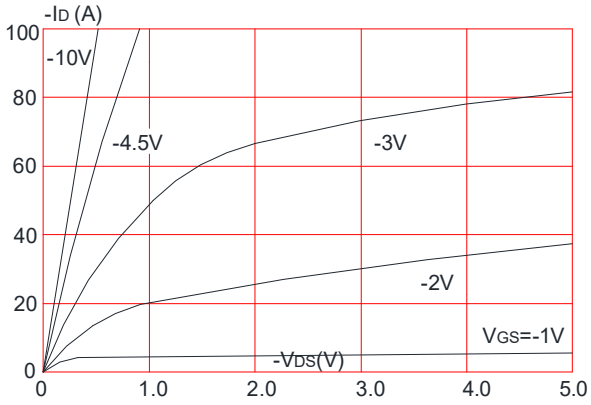


Figure 2: Typical Transfer Characteristics

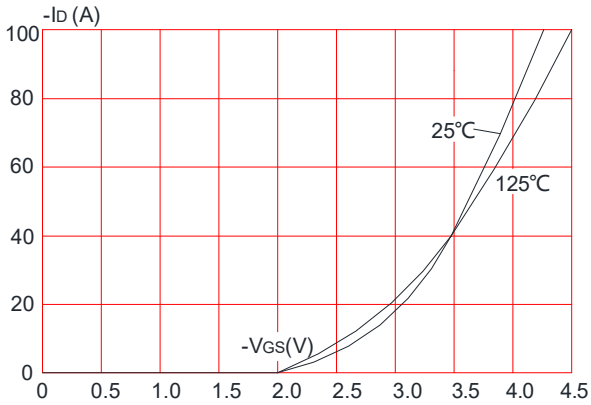


Figure 3: On-resistance vs. Drain Current

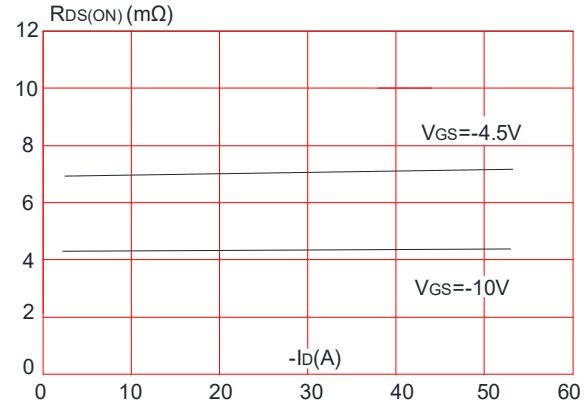


Figure 4: Body Diode Characteristics

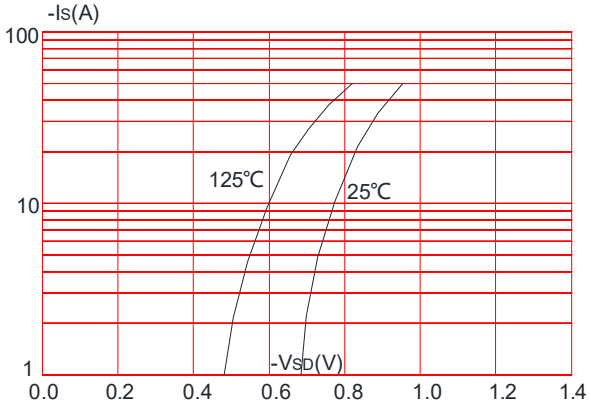


Figure 5: Gate Charge Characteristics

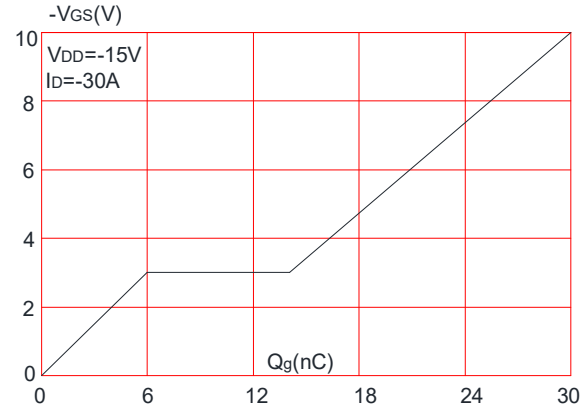


Figure 6: Capacitance Characteristics

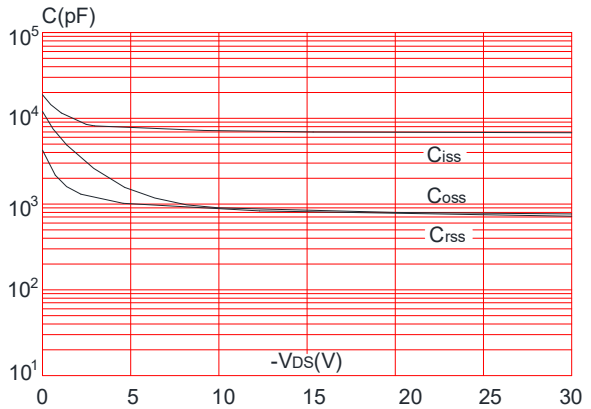


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

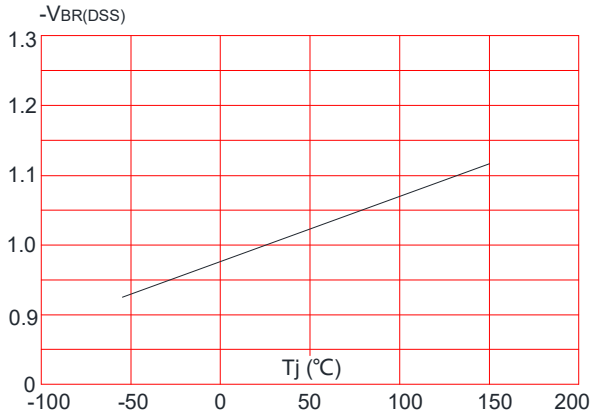


Figure 8: Normalized on Resistance vs. Junction Temperature

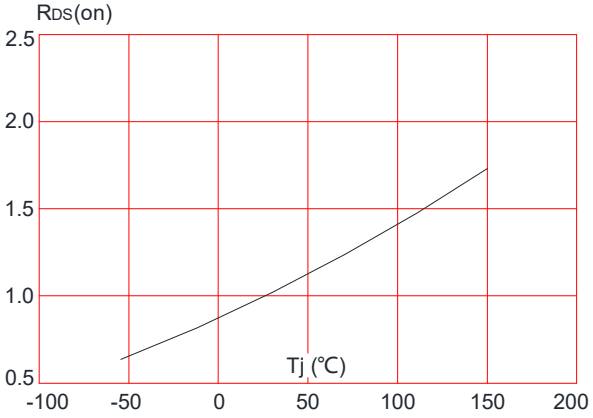


Figure 9: Maximum Safe Operating Area

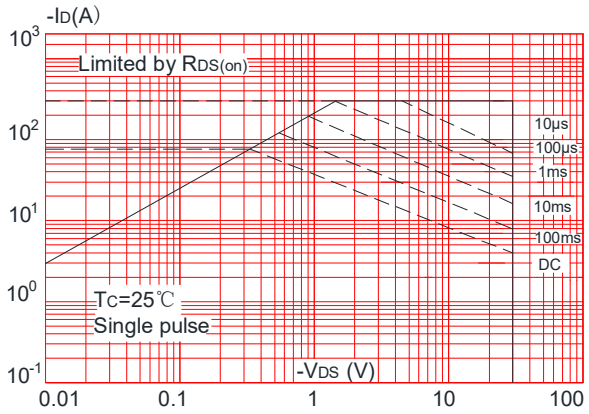


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

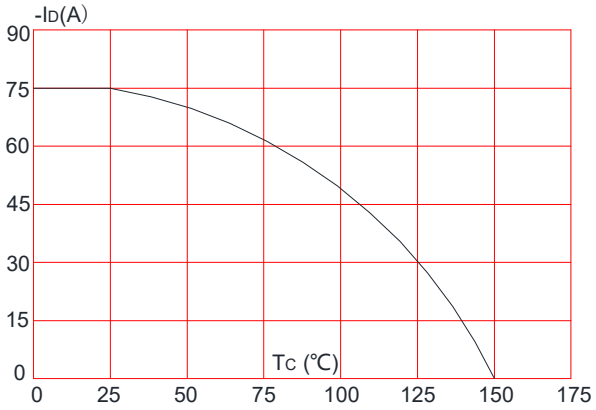
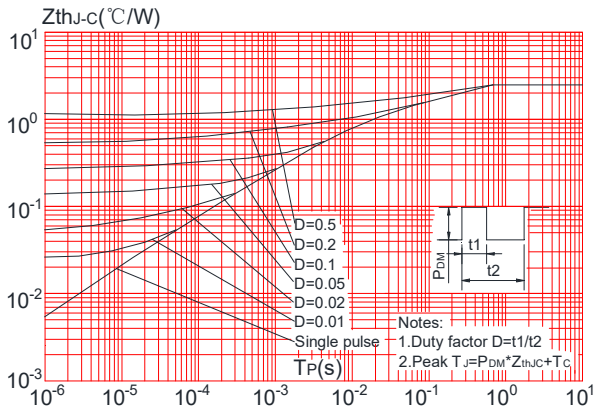
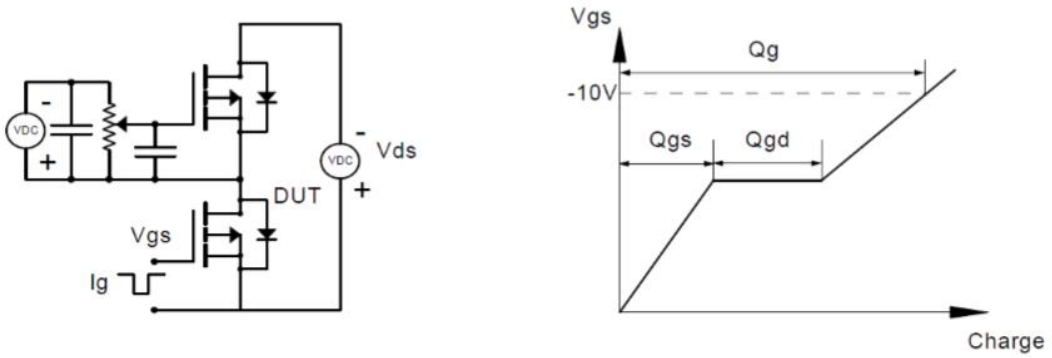


Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

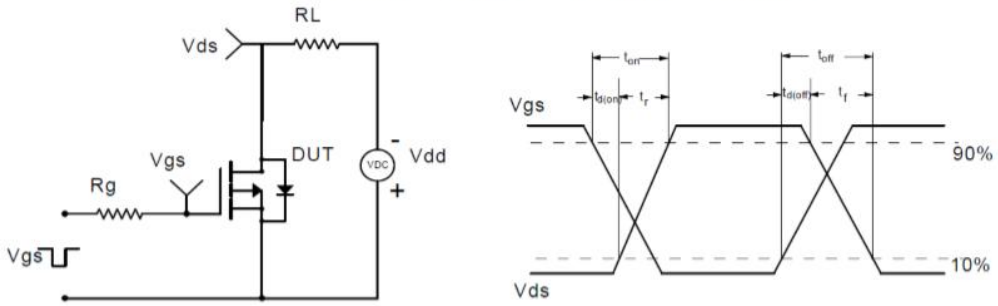


Test Circuit

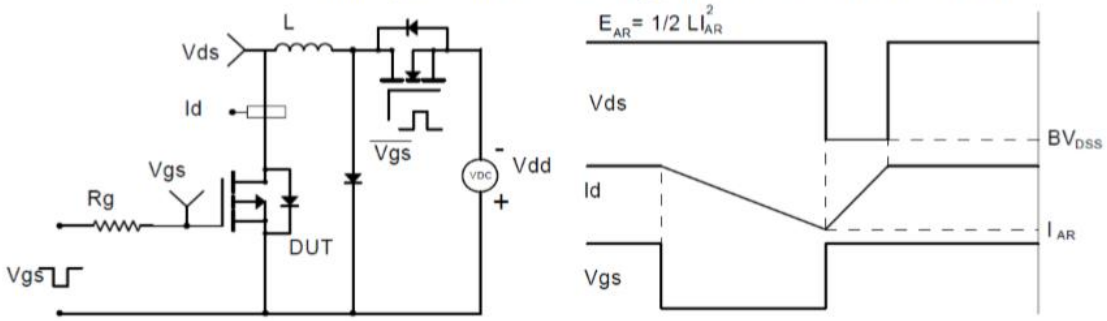
Gate Charge Test Circuit & Waveform



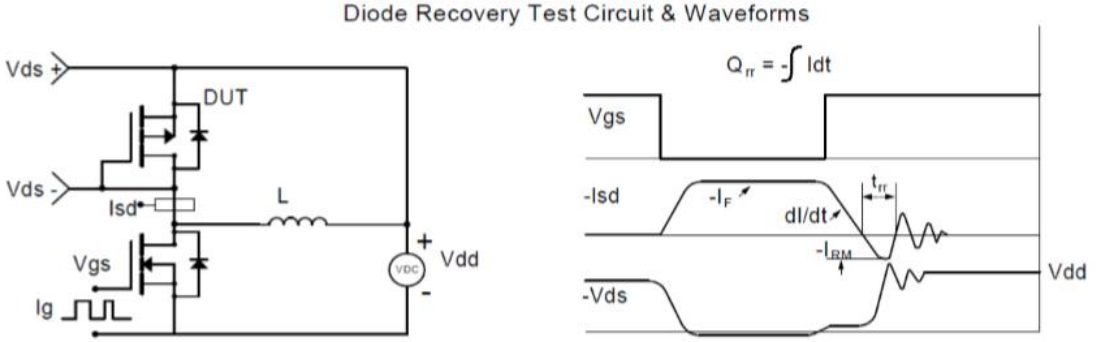
Resistive Switching Test Circuit & Waveforms



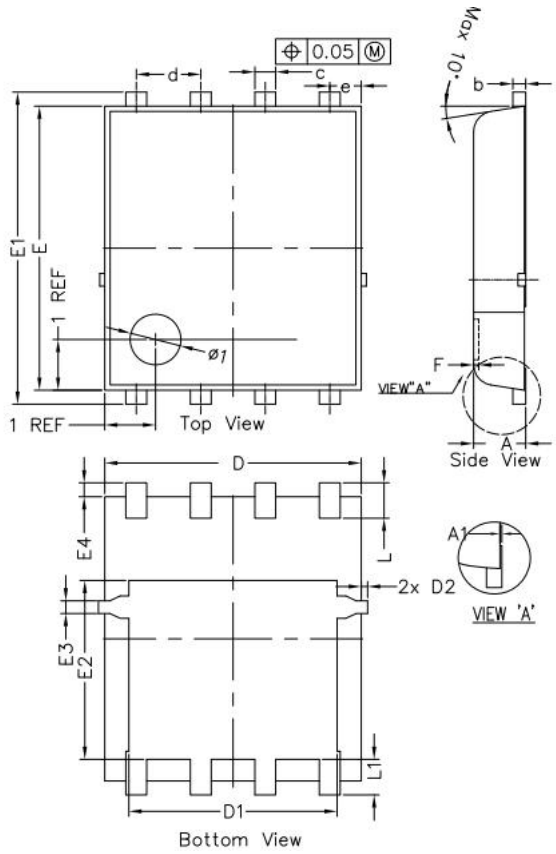
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Mechanical Data- PDFN5x6-8L



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	4.000	4.100	4.200	0.157	0.161	0.165
⚠ * D2	---	---	0.125	---	---	0.005
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	3.425	3.525	3.625	0.135	0.139	0.143
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