Description

JMT P-channel Enhancement Mode Power MOSFET

Features

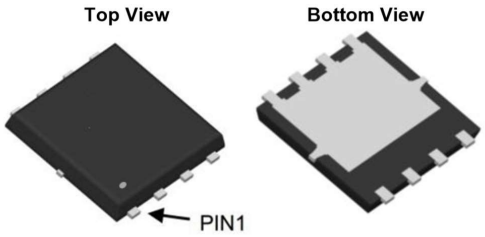
- V_{DS}= -30V, I_D= -50A
  $R_{DS(ON)}$ <7.8mΩ @ V_{GS} = -10V
  $R_{DS(ON)}$ <12.6mΩ @ V_{GS} = -4.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Application

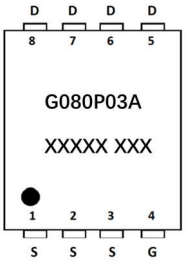
- PWM Applications
- Load Switch
- Power Management

RoHS

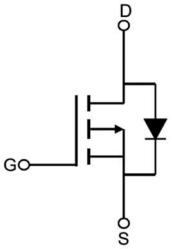
100% UIS TESTED!
100% ΔVds TESTED!



PDFN5X6-8L



Marking and pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
G080P03A	JMTG080P03A	TAPING	PDFN5X6-8L	13inch	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℃	-50	A
		T_C = 100℃	-33	A
I_{DM}	Pulsed Drain Current note1		-200	A
E_{AS}	Single Pulsed Avalanche Energy note2		144	mJ
P_D	Power Dissipation	T_C = 25℃	33	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		3.8	℃/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	-1.5	-2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS}= -10V, I_D= -20A	-	6	7.8	mΩ
		V_{GS}= -4.5V, I_D= -10A	-	9	12.6	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}= -15V, V_{GS}=0V, f=1.0MHz	-	4650	-	pF
C_{oss}	Output Capacitance		-	550	-	pF
C_{rss}	Reverse Transfer Capacitance		-	486	-	pF
Q_g	Total Gate Charge	V_{DS}= -15V, I_D= -20A, V_{GS}= -10V	-	45	-	nC
Q_{gs}	Gate-Source Charge		-	8	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	12	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}= -15V, I_D= -20A, V_{GS}= -10V, R_{GEN}=2.5Ω	-	19	-	ns
t_r	Turn-on Rise Time		-	15	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	65	-	ns
t_f	Turn-off Fall Time		-	36	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-50	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	200	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: T_J=25℃, V_{DD}= -20V, V_G= -10V, R_G=25Ω, L=0.5mH, I_{AS}= -24A

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

Typical Performance Characteristics

Figure1: Output Characteristics

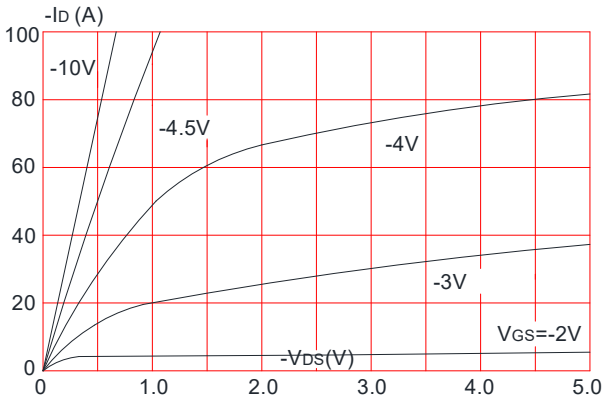


Figure 2: Typical Transfer Characteristics

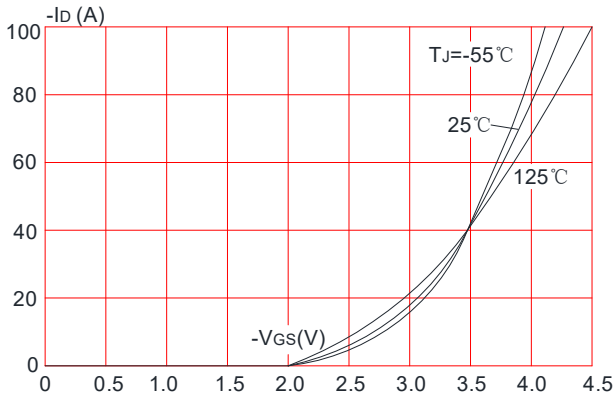


Figure 3: On-resistance vs. Drain Current

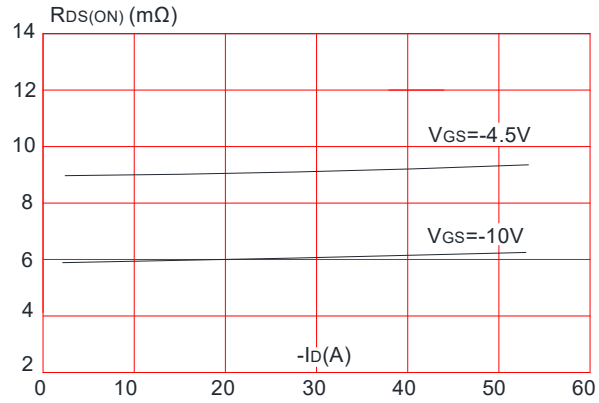


Figure 4: Body Diode Characteristics

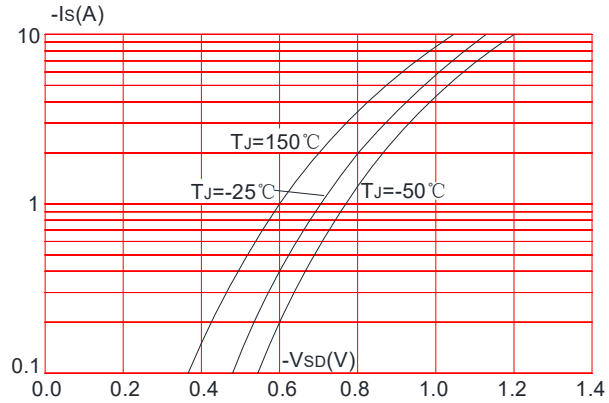


Figure 5: Gate Charge Characteristics

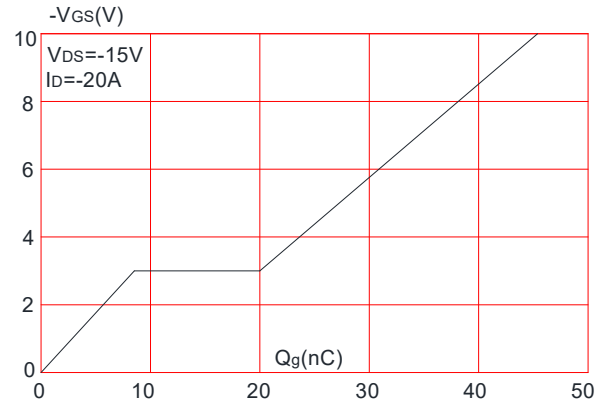


Figure 6: Capacitance Characteristics

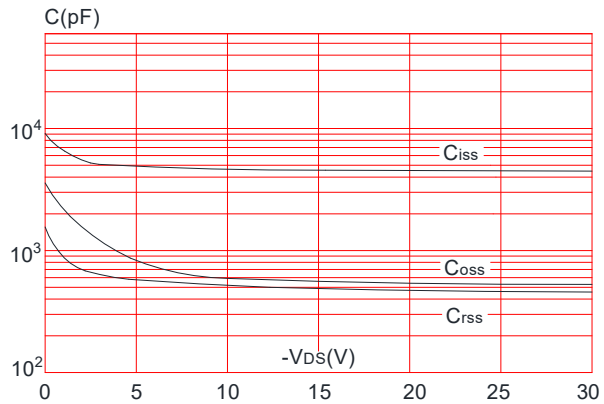


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

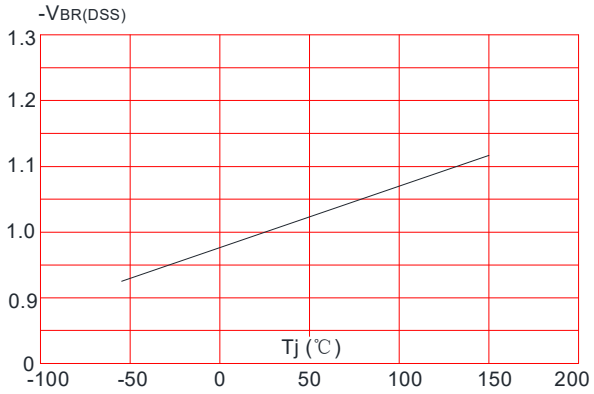


Figure 8: Normalized on Resistance vs. Junction Temperature

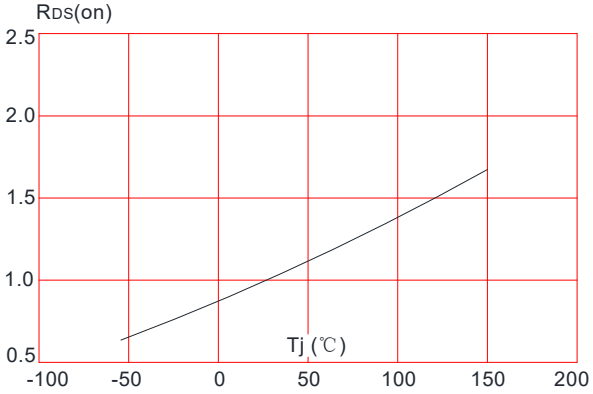


Figure 9: Maximum Safe Operating Area

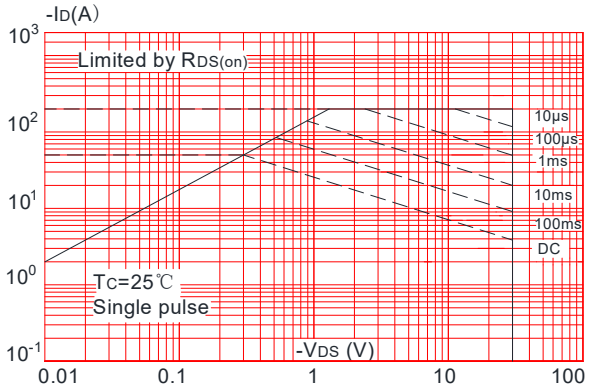


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

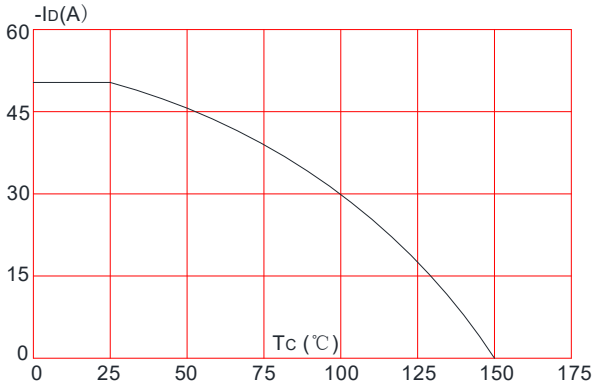
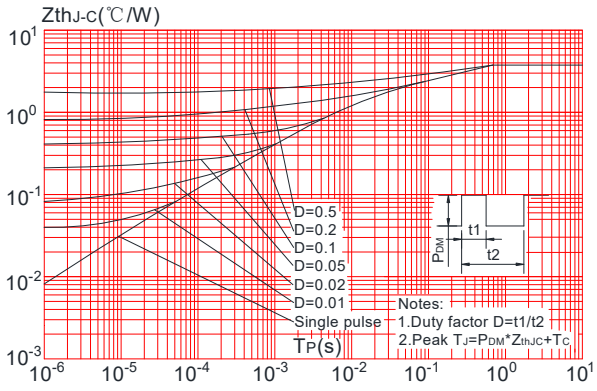
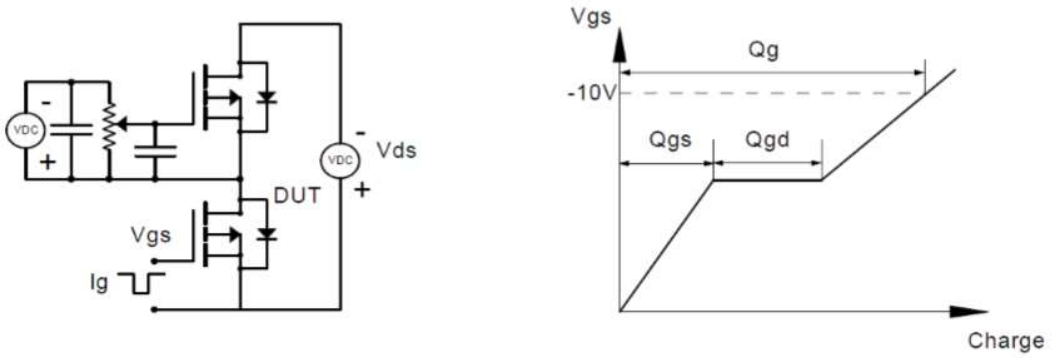


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

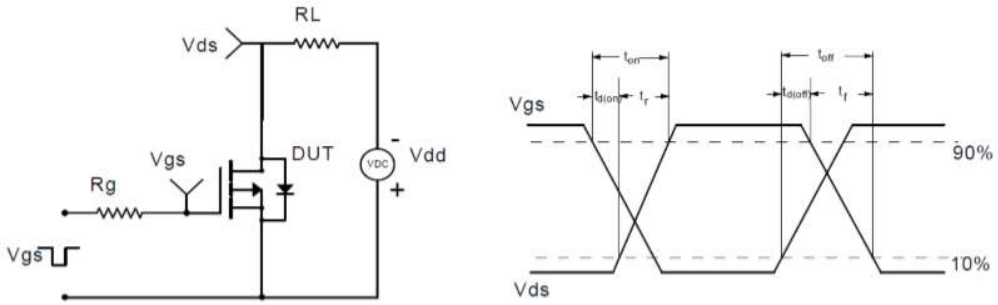


Test Circuit

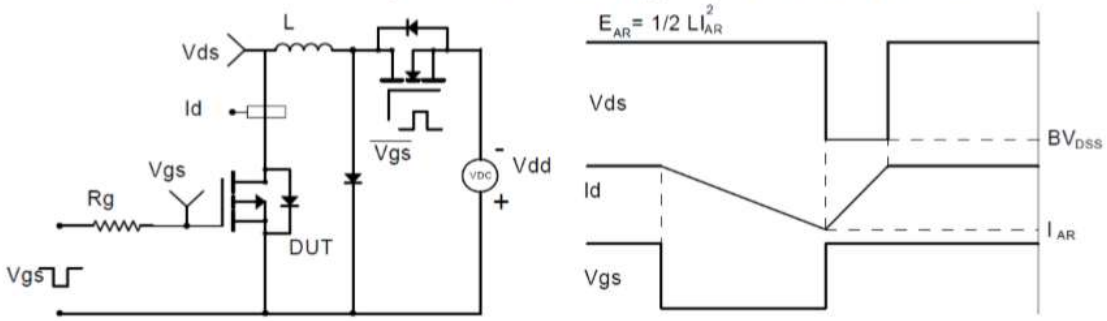
Gate Charge Test Circuit & Waveform



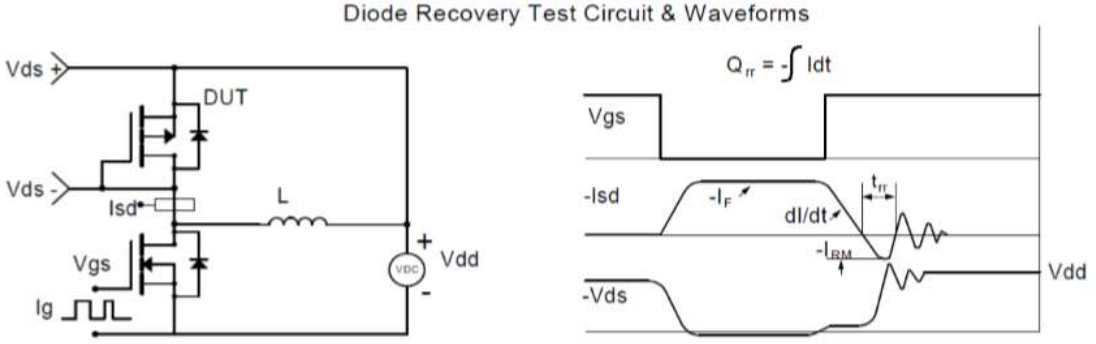
Resistive Switching Test Circuit & Waveforms



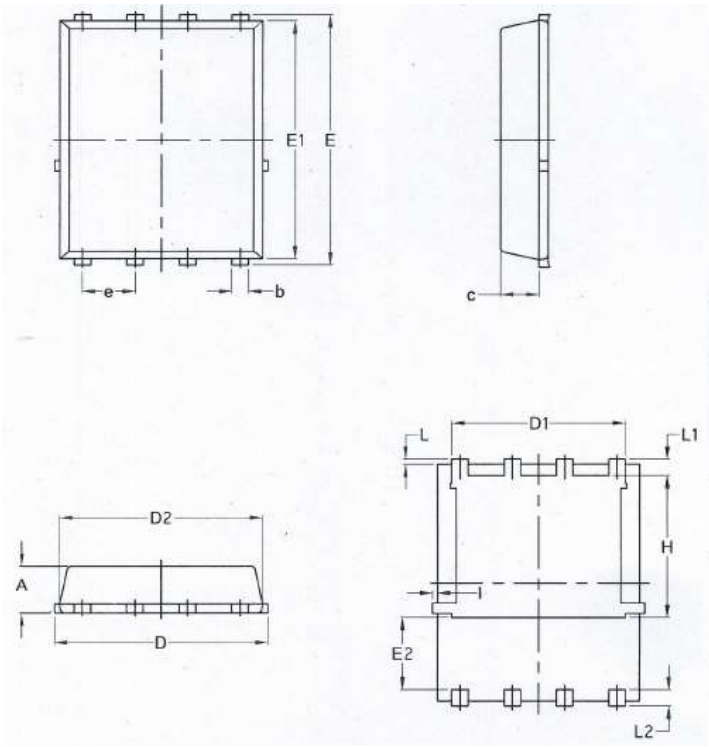
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Mechanical Data- PDFN5X6-8L



	SYMBOL	COMMON			
		MM		INCH	
		MIN.	MAX.	MIN.	MAX.
	A	1.03	1.17	0.0406	0.0461
	b	0.34	0.48	0.0134	0.0189
	c	0.824	0.970	0.0324	0.0382
3	D	4.80	5.40	0.1890	0.2126
	D1	4.11	4.31	0.1618	0.1697
3	D2	4.80	5.00	0.1890	0.1969
	E	5.95	6.15	0.2343	0.2421
	E1	5.65	5.85	0.2224	0.2303
	E2	1.60	—	0.0630	—
	e	1.27 BSC		0.05 BSC	
3	L	0.05	0.25	0.0020	0.0098
	L1	0.38	0.50	0.0150	0.0197
	L2	0.38	0.50	0.0150	0.0197
4	H	3.30	3.50	0.1299	0.1378
	I	—	0.18	—	0.0070