



Description

JMT P-channel Enhancement Mode Power MOSFET

Features

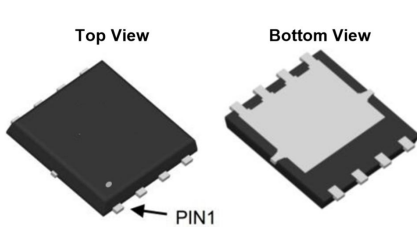
- -20V, -85A
 $R_{DS(ON)} < 2.7m\Omega @ V_{GS} = -4.5V$
 $R_{DS(ON)} < 3.8m\Omega @ V_{GS} = -2.5V$
 $R_{DS(ON)} < 5.7m\Omega @ V_{GS} = -1.8V$
- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Application

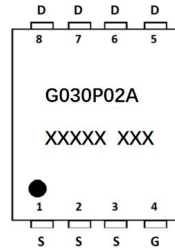
- Load Switch
- PWM Application
- Power management



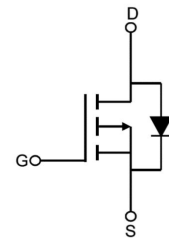
100% UIS TESTED!
100% ΔVds TESTED!



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)
G030P02A	JMTG030P02A	TAPING	PDFN5X6-8L	13inch	2500	25000

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	-85
		T _C = 100°C	-55
I _{DM}	Pulsed Drain Current ^{note1}	-340	A
E _{AS}	Single Pulsed Avalanche Energy ^{note2}	154	mJ
P _D	Power Dissipation	33	W
R _{θJC}	Thermal Resistance, Junction to Case	3.8	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +150	°C



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 _{DS} =0V, V _{GS} = ±12V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D = -250μA	-0.4	-	-1.0	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note2</small>	V _{GS} = -4.5V, I _D = -30A	-	2.1	2.7	mΩ
		V _{GS} = -2.5V, I _D = -20A	-	2.7	3.8	
		V _{GS} = -1.8V, I _D = -15A	-	3.8	5.7	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = -10V, V _{GS} =0V, f=1.0MHz	-	15	-	nF
C _{oss}	Output Capacitance		-	1600	-	pF
C _{rss}	Reverse Transfer Capacitance		-	1068	-	pF
Q _g	Total Gate Charge	V _{DS} = -10V, I _D = -20A, V _{GS} = -4.5V	-	100	-	nC
Q _{gs}	Gate-Source Charge		-	21	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	32	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} = -10V, R _L =0.5Ω, V _{GS} = -4.5V, R _{GEN} =3Ω	-	20	-	ns
t _r	Turn-on Rise Time		-	50	-	ns
t _{d(off)}	Turn-off Delay Time		-	100	-	ns
t _f	Turn-off Fall Time		-	40	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-85	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-340	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.EAS condition: T_J=25°C, V_{DD}=-10V, V_G=-10V, R_G=25Ω, L=0.5mH, I_{AS}=-24.8A

3.Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%



Typical Performance Characteristics

Figure 1: Output Characteristics

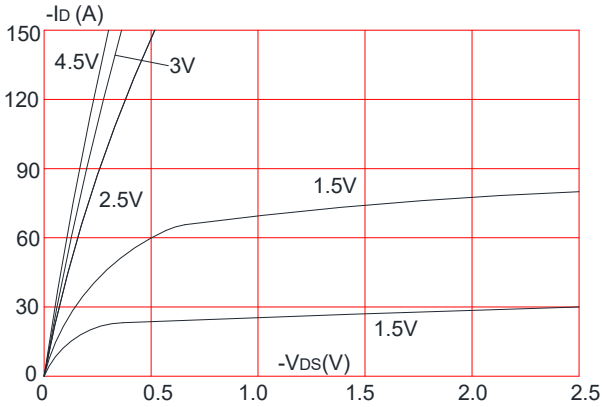


Figure 2: Typical Transfer Characteristics

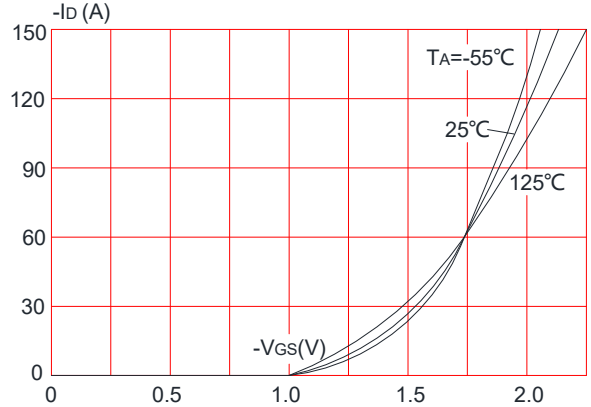


Figure 3: On-resistance vs. Drain Current

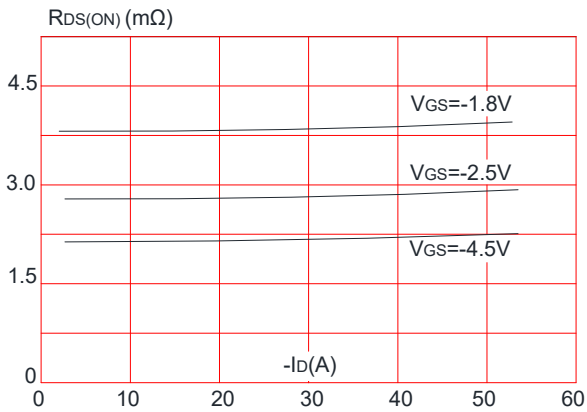


Figure 4: Body Diode Characteristics

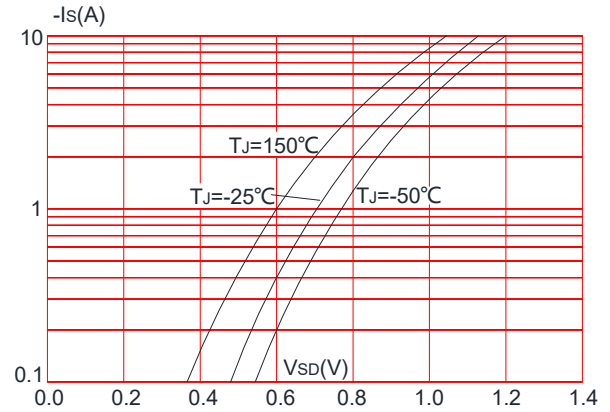


Figure 5: Gate Charge Characteristics

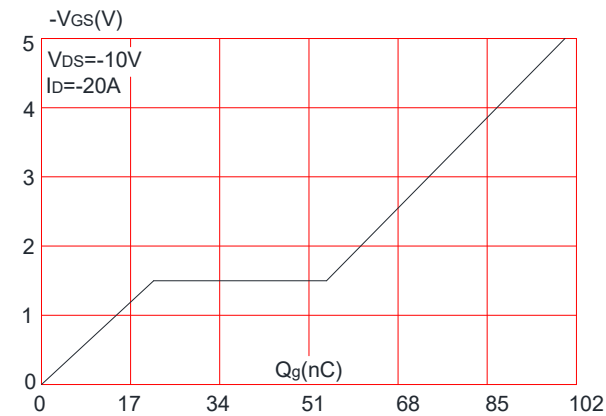
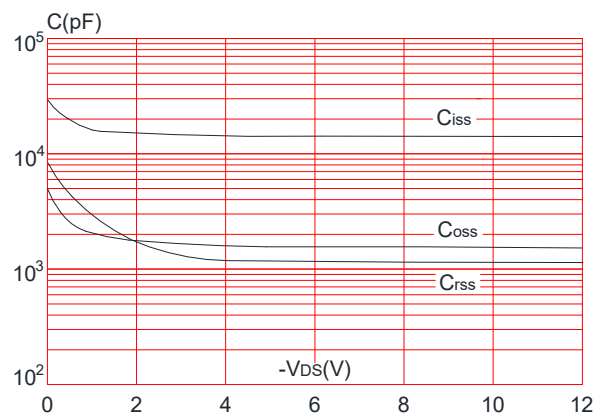


Figure 6: Capacitance Characteristics





JMTG030P02A

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

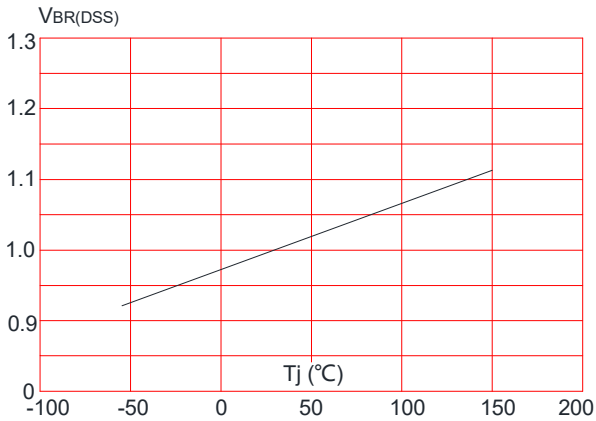


Figure 8: Normalized on Resistance vs. Junction Temperature

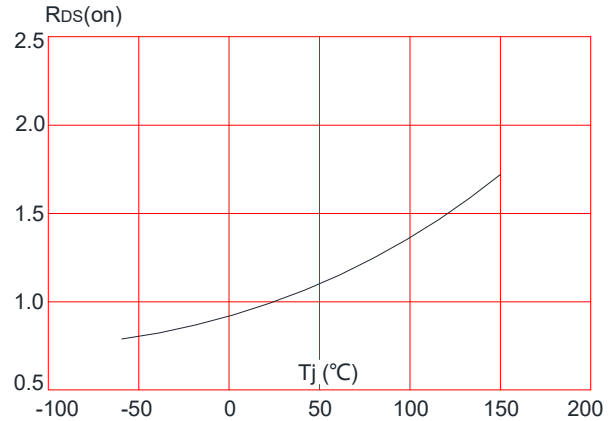


Figure 9: Maximum Safe Operating Area

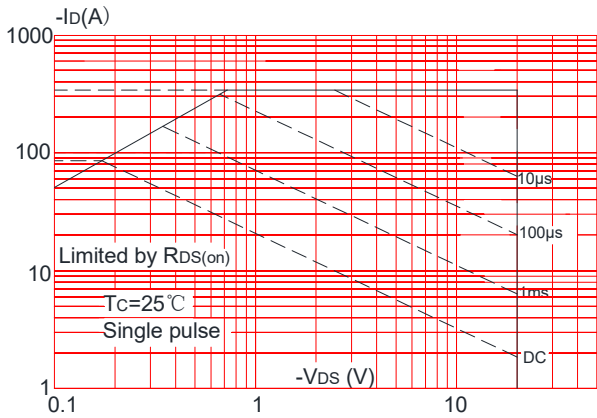


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

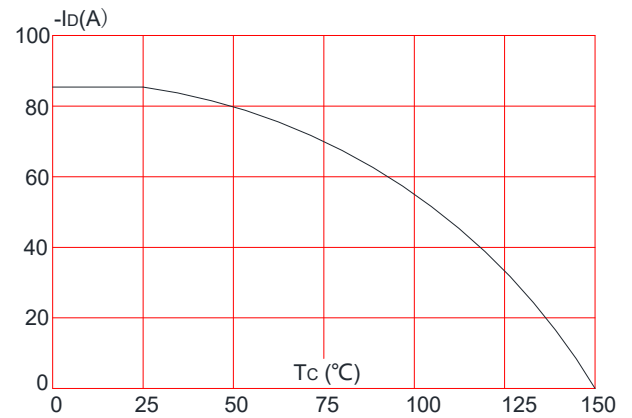
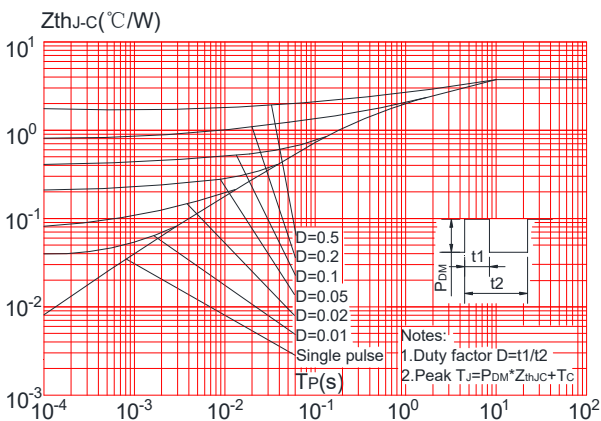
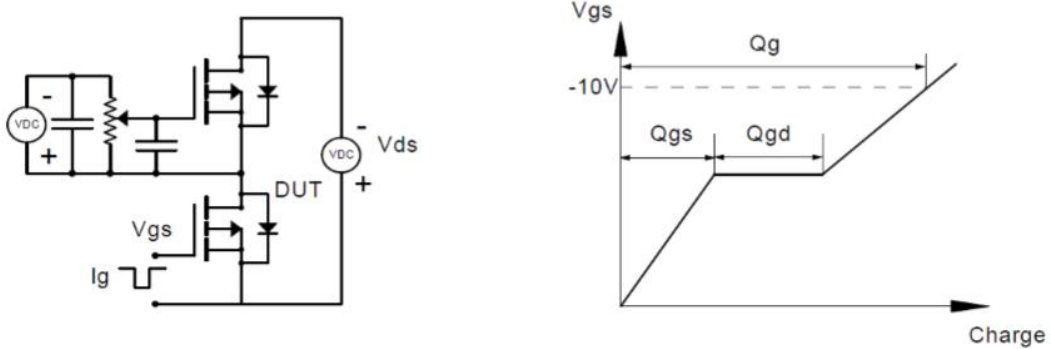


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

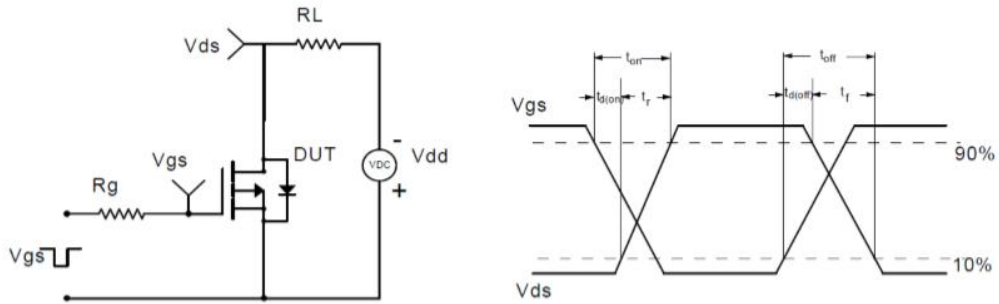


Test Circuit

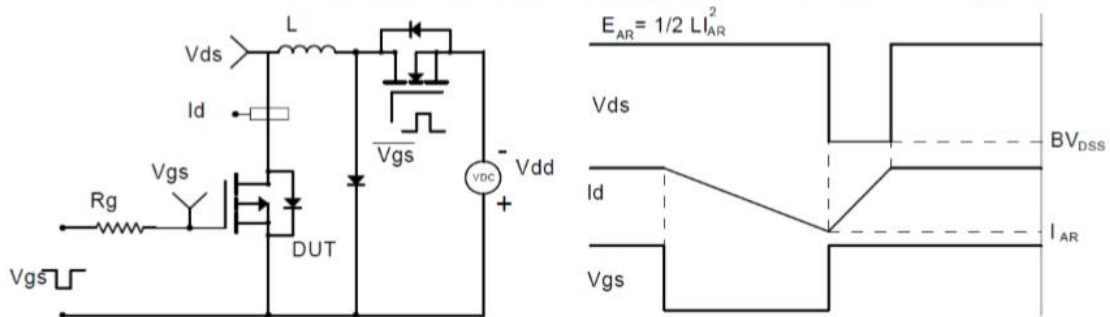
Gate Charge Test Circuit & Waveform



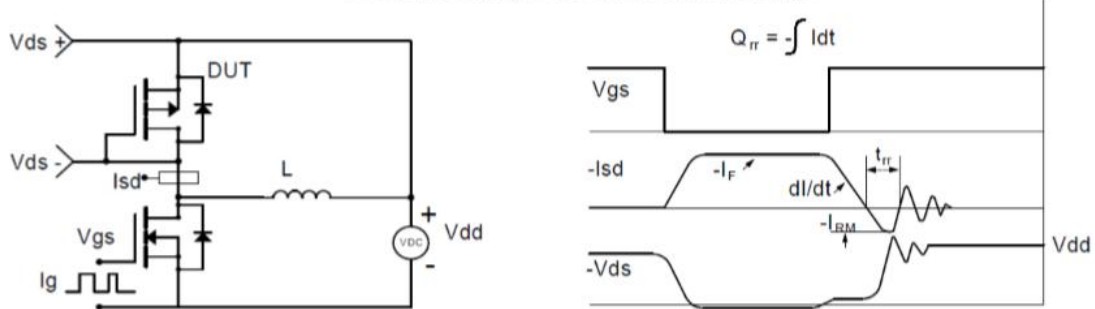
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

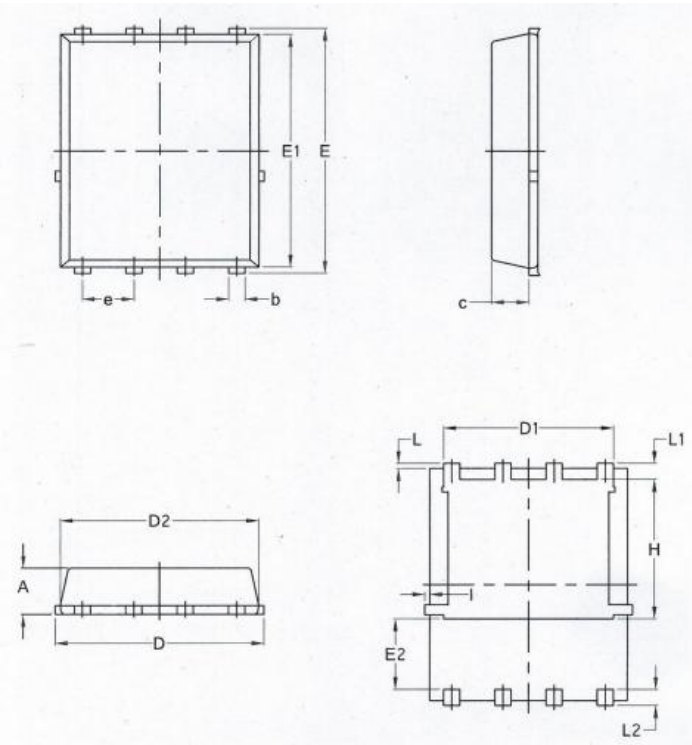


Diode Recovery Test Circuit & Waveforms





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
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
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	
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
H	3.30	3.50	0.1299	0.1378
I	—	0.18	—	0.0070

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