



## Description

### JMT P-channel Enhancement Mode Power MOSFET

#### Features

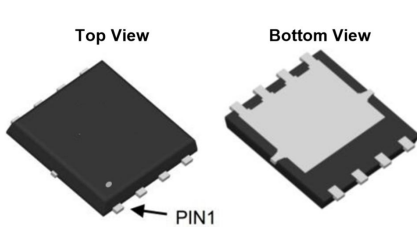
- -20V, -85A  
 $R_{DS(ON)} < 2.7m\Omega @ V_{GS} = -4.5V$   
 $R_{DS(ON)} < 3.8m\Omega @ V_{GS} = -2.5V$   
 $R_{DS(ON)} < 5.7m\Omega @ V_{GS} = -1.8V$
- Advanced Trench Technology
- Provide Excellent  $R_{DS(ON)}$  and Low Gate Charge
- Lead free product is acquired

#### Application

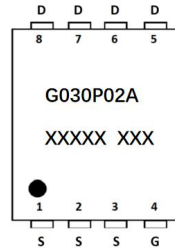
- Load Switch
- PWM Application
- Power management



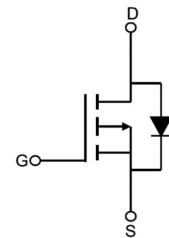
*100% UIS TESTED!*  
*100% ΔVds TESTED!*



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<sub>C</sub>=25°C unless otherwise specified)

Symbol	Parameter	Max.	Units
V <sub>DSS</sub>	Drain-Source Voltage	-20	V
V <sub>GSS</sub>	Gate-Source Voltage	±12	V
I <sub>D</sub>	Continuous Drain Current	T <sub>C</sub> = 25°C	-85
		T <sub>C</sub> = 100°C	-55
I <sub>DM</sub>	Pulsed Drain Current <sup>note1</sup>	-340	A
E <sub>AS</sub>	Single Pulsed Avalanche Energy <sup>note2</sup>	154	mJ
P <sub>D</sub>	Power Dissipation	33	W
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	3.8	°C/W
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Temperature Range	-55 to +150	°C



## Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> = -250μA	-20	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = -20V, V <sub>GS</sub> =0V,	-	-	-1	μA
I <sub>GSS</sub>	Gate to Body Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> = ±12V	-	-	±100	nA
<b>On Characteristics</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.4	-	-1.0	V
R <sub>DS(on)</sub>	Static Drain-Source on-Resistance <small>note2</small>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -30A	-	2.1	2.7	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -20A	-	2.7	3.8	
		V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -15A	-	3.8	5.7	
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = -10V, V <sub>GS</sub> =0V, f=1.0MHz	-	15	-	nF
C <sub>oss</sub>	Output Capacitance		-	1600	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	1068	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> = -10V, I <sub>D</sub> = -20A, V <sub>GS</sub> = -4.5V	-	100	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	21	-	nC
Q <sub>gd</sub>	Gate-Drain("Miller") Charge		-	32	-	nC
<b>Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> = -10V, R <sub>L</sub> =0.5Ω, V <sub>GS</sub> = -4.5V, R <sub>GEN</sub> =3Ω	-	20	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	50	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time		-	100	-	ns
t <sub>f</sub>	Turn-off Fall Time		-	40	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	-85	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-340	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> = -30A	-	-0.8	-1.2	V

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

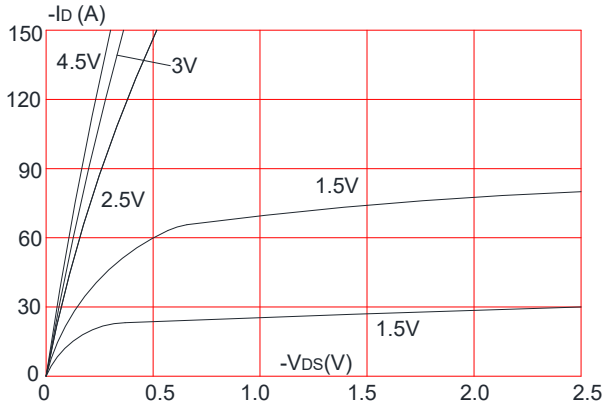
2.EAS condition: T<sub>J</sub>=25°C, V<sub>DD</sub>=-10V, V<sub>G</sub>=-10V, R<sub>G</sub>=25Ω, L=0.5mH, I<sub>AS</sub>=-24.8A

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

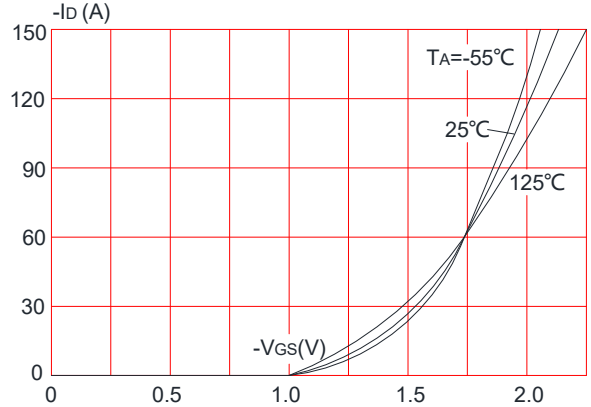


## Typical Performance Characteristics

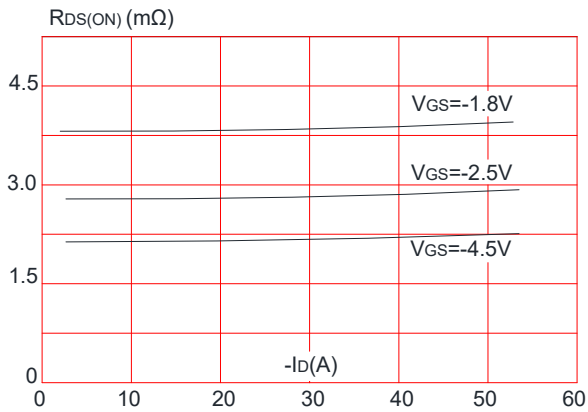
**Figure 1:** Output Characteristics



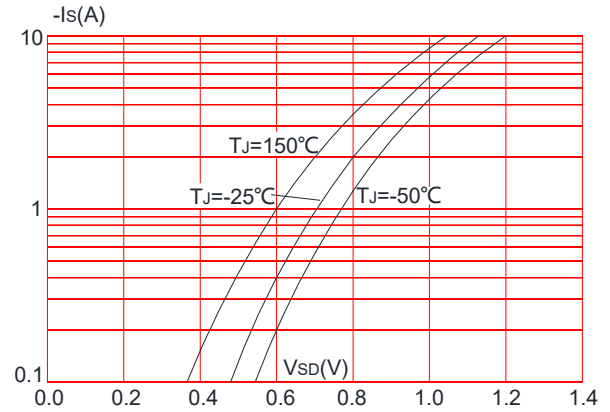
**Figure 2:** Typical Transfer Characteristics



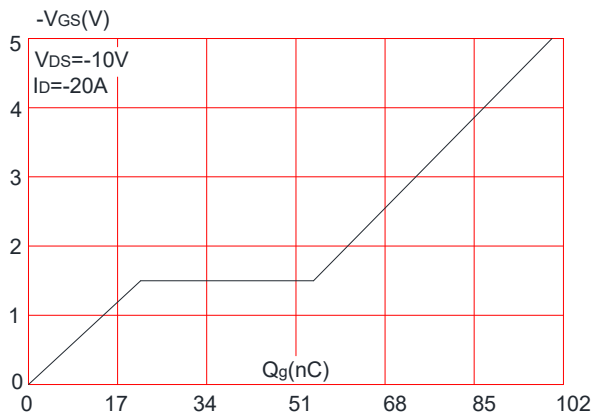
**Figure 3:** On-resistance vs. Drain Current



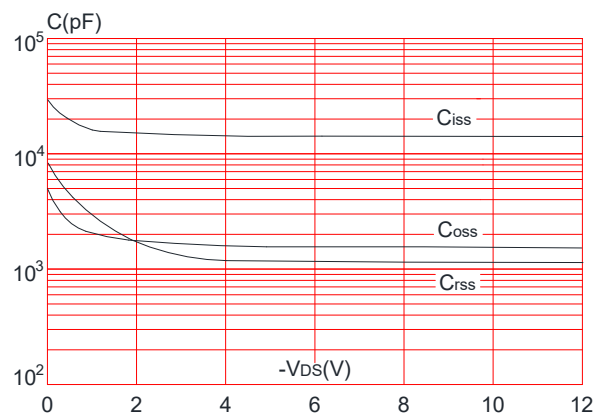
**Figure 4:** Body Diode Characteristics



**Figure 5:** Gate Charge Characteristics

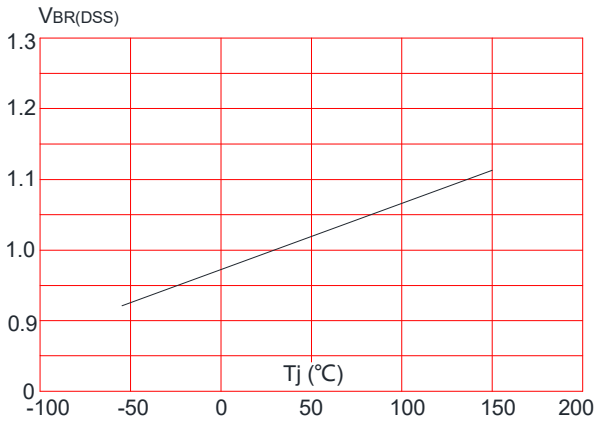


**Figure 6:** Capacitance Characteristics

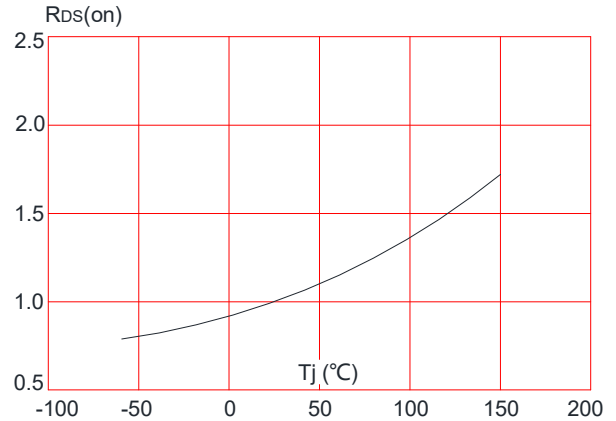




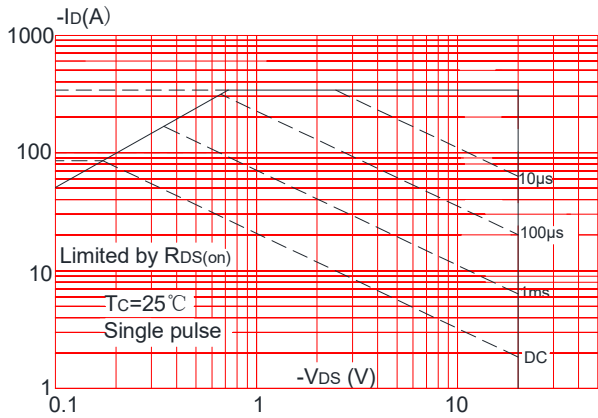
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**



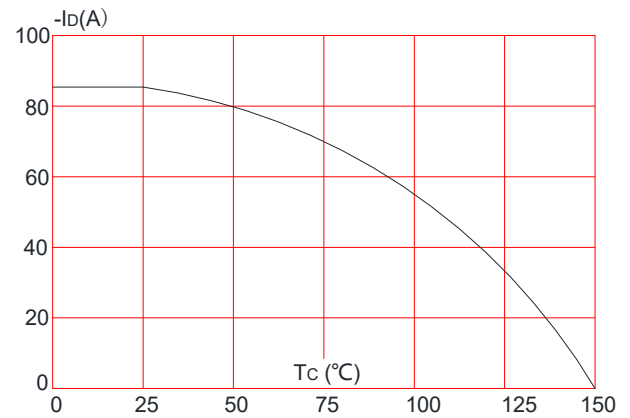
**Figure 8: Normalized on Resistance vs. Junction Temperature**



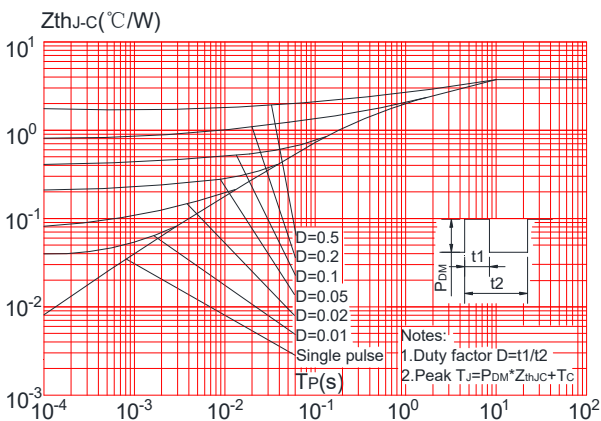
**Figure 9: Maximum Safe Operating Area**



**Figure 10: Maximum Continuous Drain Current vs. Case Temperature**

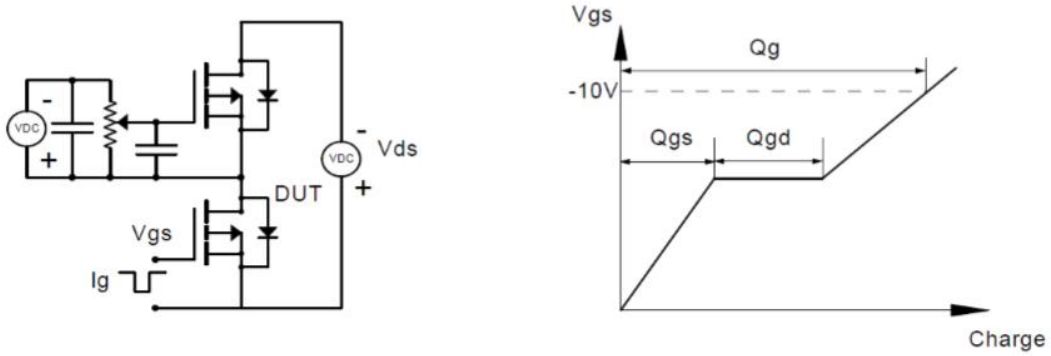


**Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case**

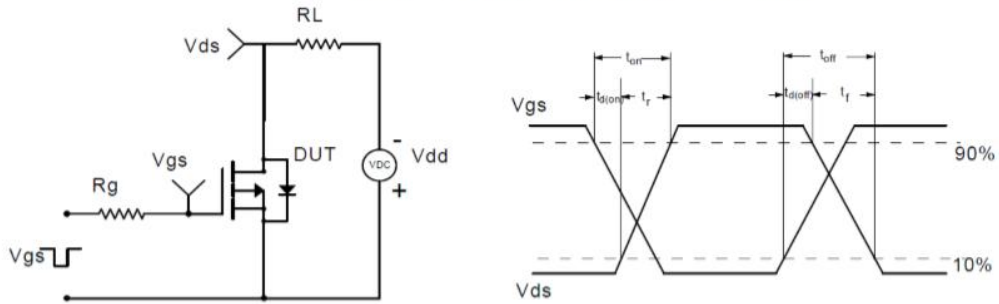


## Test Circuit

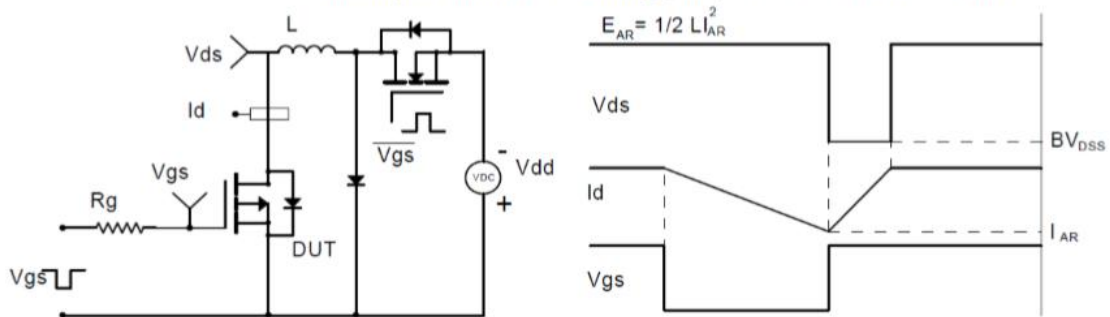
### Gate Charge Test Circuit & Waveform



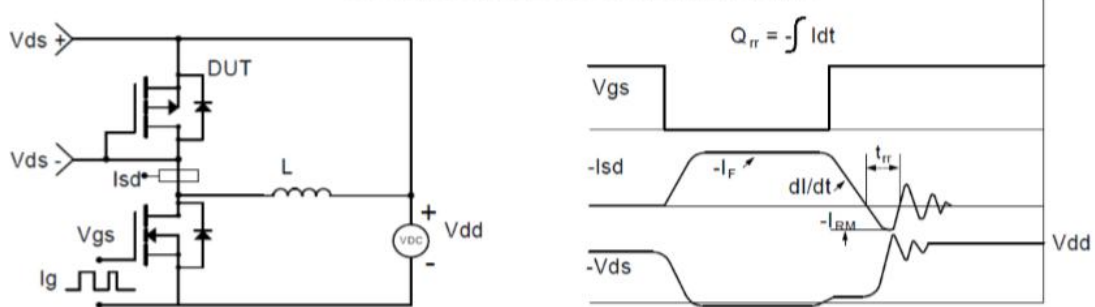
### Resistive Switching Test Circuit & Waveforms



### Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

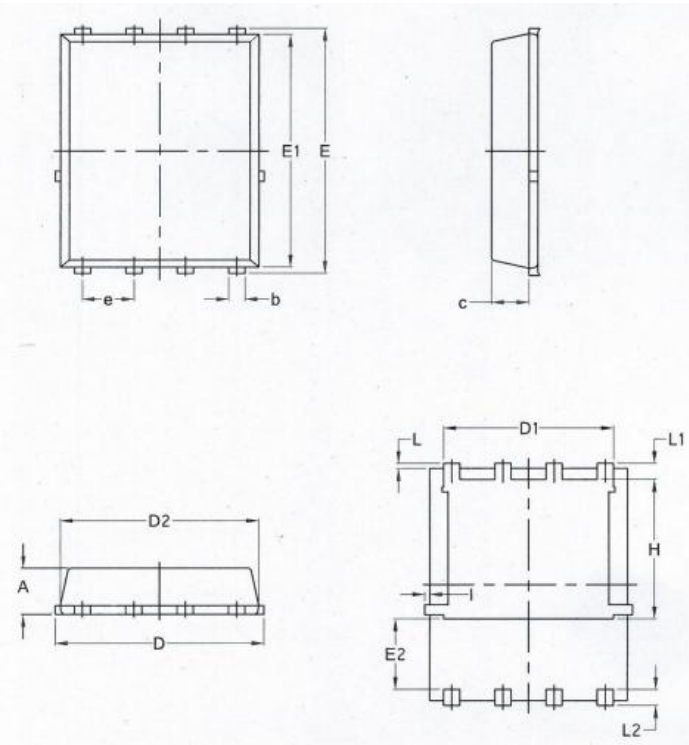


### Diode Recovery Test Circuit & Waveforms





## 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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