



## Description

### JMT P-channel Enhancement Mode Power MOSFET

#### Features

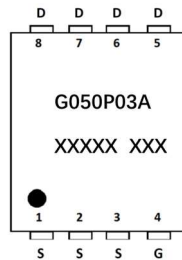
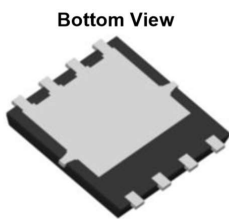
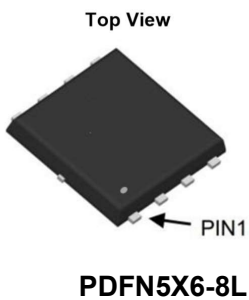
- $V_{DS} = -30V$ ,  $I_D = -80A$   
 $R_{DS(ON)} < 4.3m\Omega @ V_{GS} = -10V$   
 $R_{DS(ON)} < 7.2m\Omega @ V_{GS} = -4.5V$
- Advanced Trench Technology
- Excellent  $R_{DS(ON)}$  and Low Gate Charge
- Lead free product is acquired

#### Application

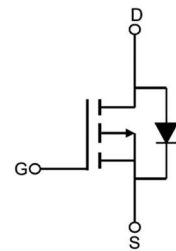
- PWM Applications
- Load Switch
- Power Management



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



Marking and pin Assignment



Schematic Diagram

## Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
G050P03A	JMTG050P03A	TAPING	PDFN5X6-8L	13inch	2500	25000

## Absolute Maximum Ratings ( $T_C = 25^\circ C$ unless otherwise specified)

Symbol	Parameter	Max.	Units	
$V_{DSS}$	Drain-Source Voltage	-30	V	
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	V	
$I_D$	Continuous Drain Current	$T_C = 25^\circ C$	-80	A
		$T_C = 100^\circ C$	-52	A
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	-320	A	
$E_{AS}$	Single Pulsed Avalanche Energy <sup>note2</sup>	225	mJ	
$P_D$	Power Dissipation	$T_C = 25^\circ C$	47	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	3.2	$^\circ C/W$	
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to +150	$^\circ C$	



## 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	-30	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = -30V, 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> = ±20V	-	-	±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	-1.0	-1.5	-2.5	V
R <sub>DS(on)</sub>	Static Drain-Source on-Resistance <small>note3</small>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -20A	-	3.3	4.3	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -10A	-	5.1	7.2	
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = -15V, V <sub>GS</sub> =0V, f=1.0MHz	-	9400	-	pF
C <sub>oss</sub>	Output Capacitance		-	1000	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	767	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> = -15V, I <sub>D</sub> = -30A, V <sub>GS</sub> = -10V	-	42	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	8.4	-	nC
Q <sub>gd</sub>	Gate-Drain("Miller") Charge		-	11.2	-	nC
<b>Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> = -15V, I <sub>D</sub> = -30A, V <sub>GS</sub> = -10V, R <sub>GEN</sub> =2.5Ω	-	15	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	16	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time		-	69	-	ns
t <sub>f</sub>	Turn-off Fall Time		-	27	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	-80	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-320	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

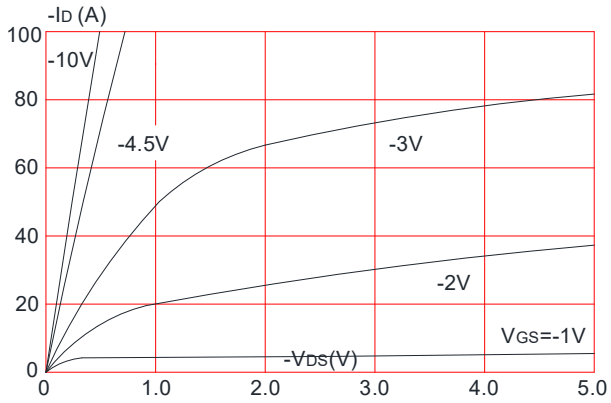
2. E<sub>AS</sub> condition: T<sub>J</sub>=25°C, V<sub>DD</sub>= -15V, V<sub>G</sub>= -10V, R<sub>G</sub>=25Ω, L=0.5mH, I<sub>AS</sub>= -30A

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

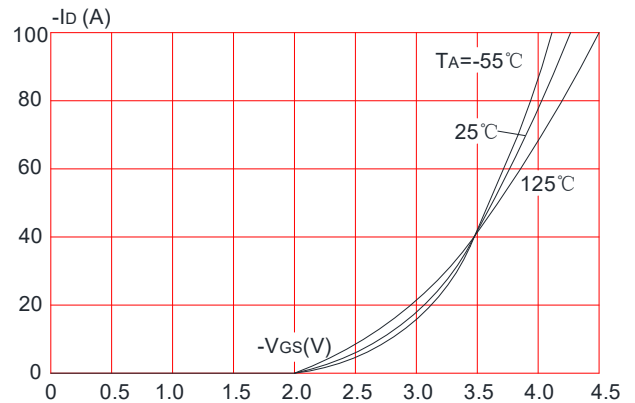


## Typical Performance Characteristics

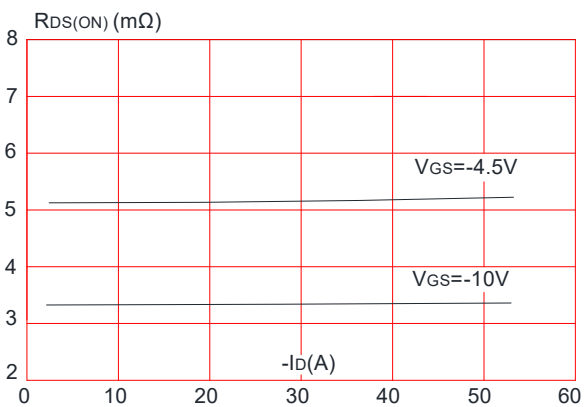
**Figure 1:** Output Characteristics



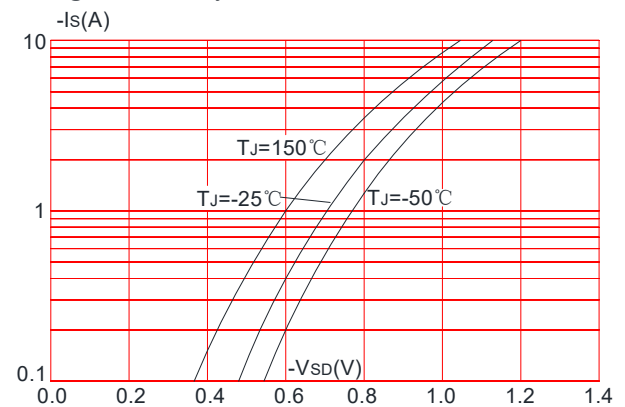
**Figure 2:** Typical Transfer Characteristics



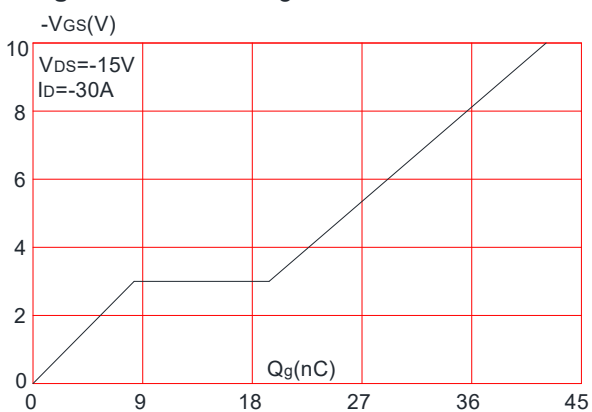
**Figure 3:** On-resistance vs. Drain Current



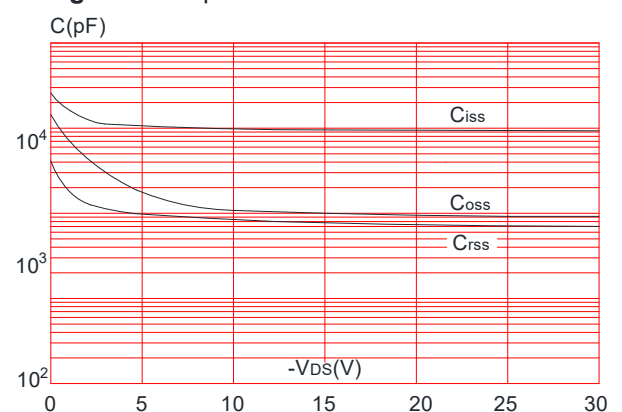
**Figure 4:** Body Diode Characteristics



**Figure 5:** Gate Charge Characteristics

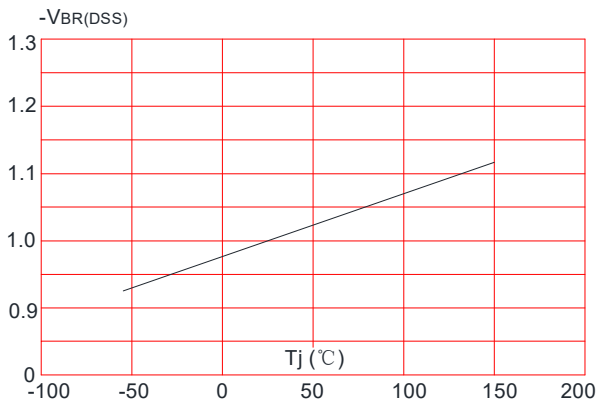


**Figure 6:** Capacitance Characteristics

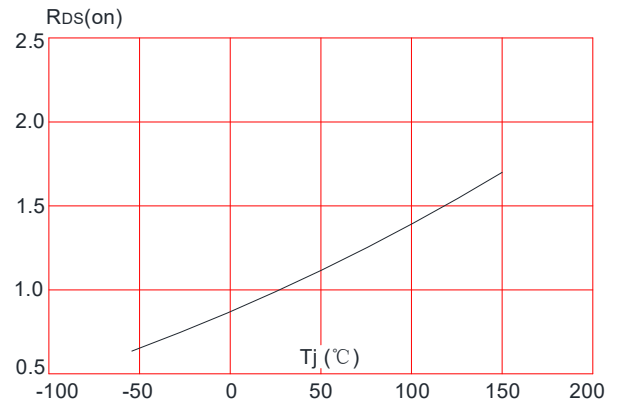




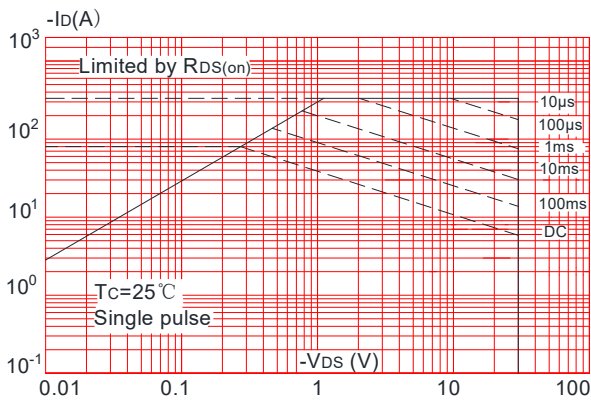
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



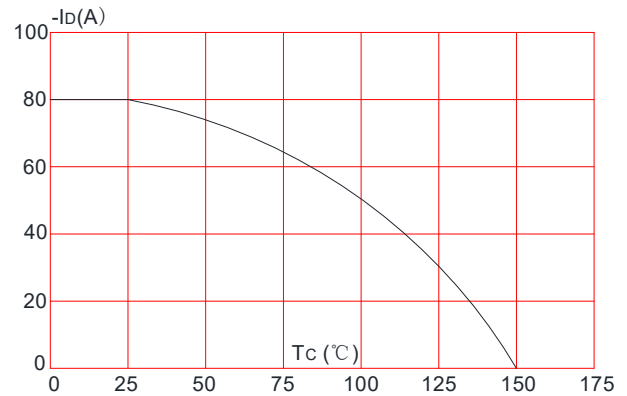
**Figure 8:** Normalized on Resistance vs. Junction Temperature



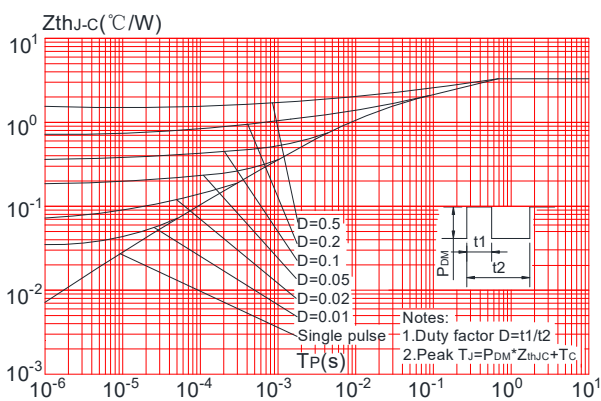
**Figure 9:** Maximum Safe Operating Area



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

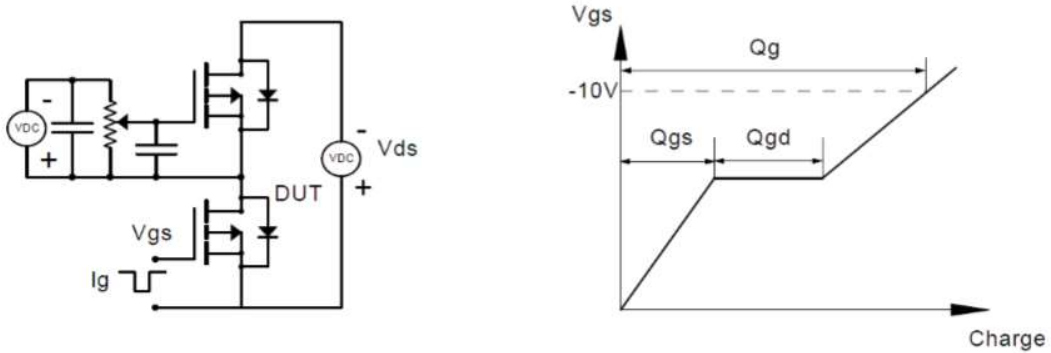


**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case

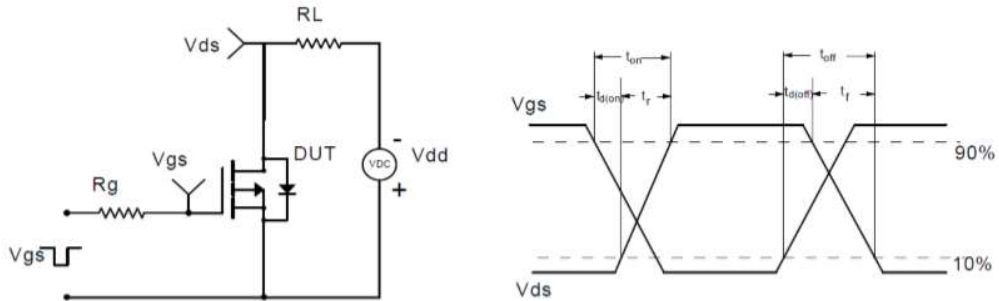


## Test Circuit

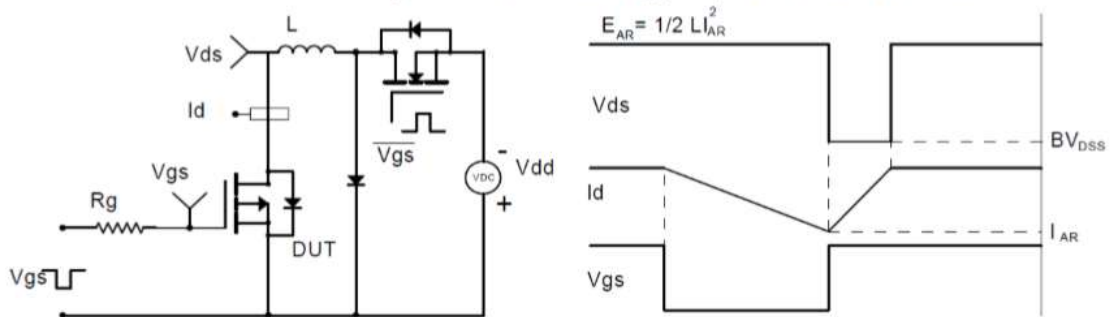
### Gate Charge Test Circuit & Waveform



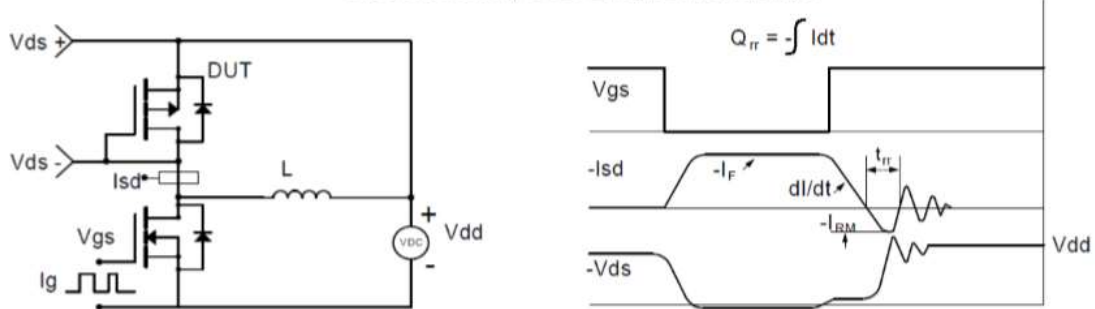
### Resistive Switching Test Circuit & Waveforms



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

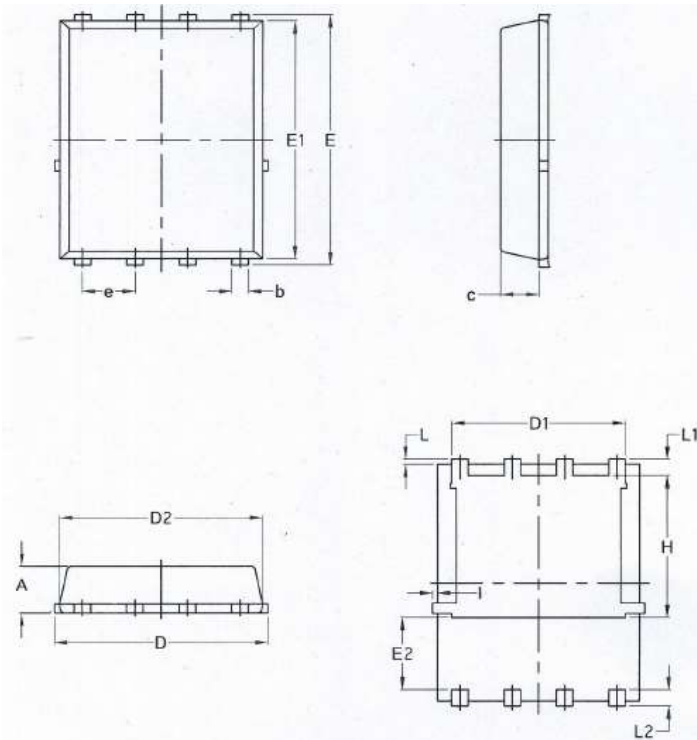


### Diode Recovery Test Circuit & Waveforms





## Package Mechanical Data-PDFN5X6-8L




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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