



Description

JMT P-channel Enhancement Mode Power MOSFET

Features

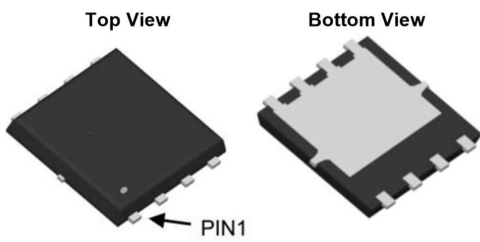
- $V_{DS} = -30V$, $I_D = -80A$
 $R_{DS(ON)} < 4.3m\Omega @ V_{GS} = -10V$
 $R_{DS(ON)} < 7.2m\Omega @ V_{GS} = -4.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Application

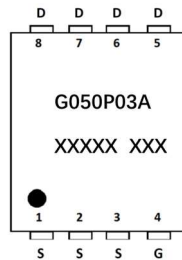
- PWM Applications
- Load Switch
- Power Management



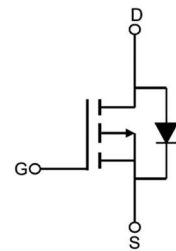
100% UIS TESTED!
100% ΔVds TESTED!



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)
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	± 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 ^{note1}	-320	A	
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	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_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	-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 <small>note3</small>	V _{GS} = -10V, I _D = -20A	-	3.3	4.3	mΩ
		V _{GS} = -4.5V, I _D = -10A	-	5.1	7.2	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = -15V, V _{GS} =0V, f=1.0MHz	-	9400	-	pF
C _{oss}	Output Capacitance		-	1000	-	pF
C _{rss}	Reverse Transfer Capacitance		-	767	-	pF
Q _g	Total Gate Charge	V _{DS} = -15V, I _D = -30A, V _{GS} = -10V	-	42	-	nC
Q _{gs}	Gate-Source Charge		-	8.4	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	11.2	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} = -15V, I _D = -30A, V _{GS} = -10V, R _{GEN} =2.5Ω	-	15	-	ns
t _r	Turn-on Rise Time		-	16	-	ns
t _{d(off)}	Turn-off Delay Time		-	69	-	ns
t _f	Turn-off Fall Time		-	27	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-80	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-320	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°C, V_{DD}= -15V, V_G= -10V, R_G=25Ω, L=0.5mH, I_{AS}= -30A

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



Typical Performance Characteristics

Figure 1: Output Characteristics

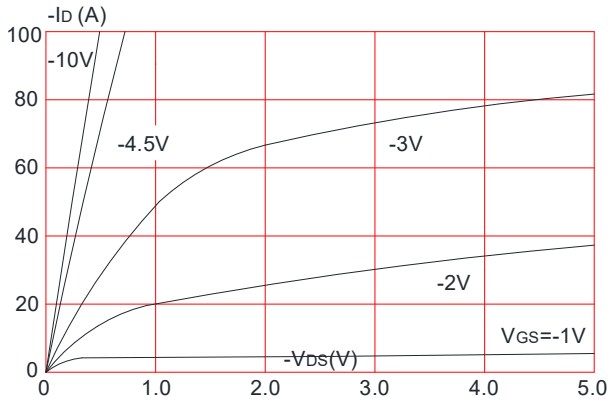


Figure 2: Typical Transfer Characteristics

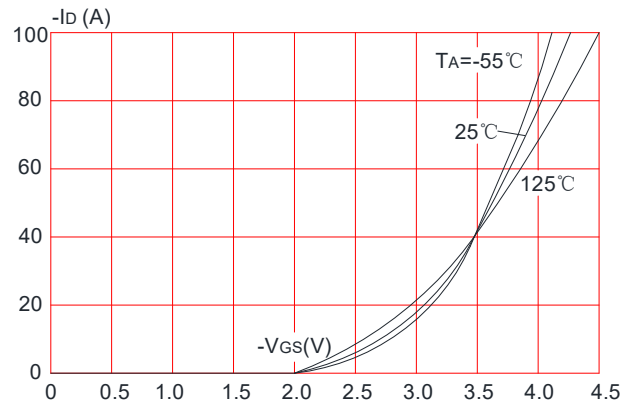


Figure 3: On-resistance vs. Drain Current

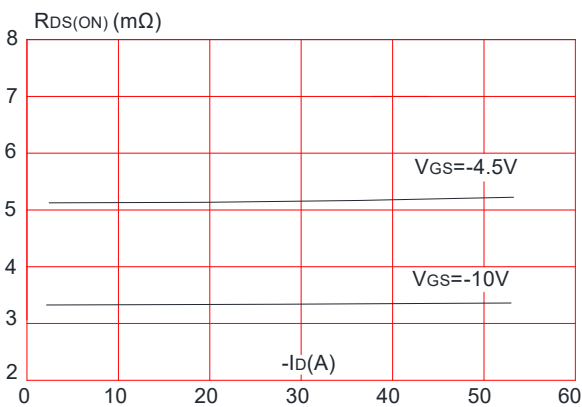


Figure 4: Body Diode Characteristics

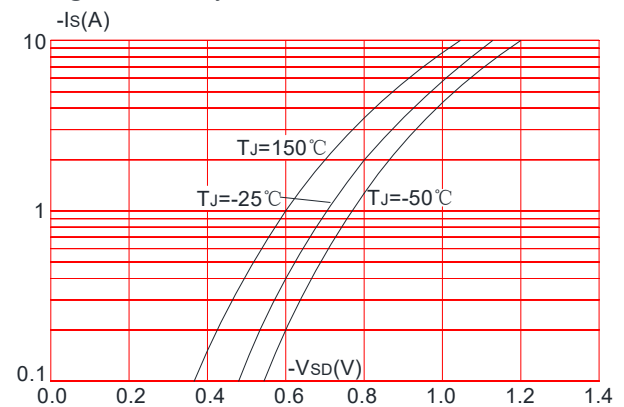


Figure 5: Gate Charge Characteristics

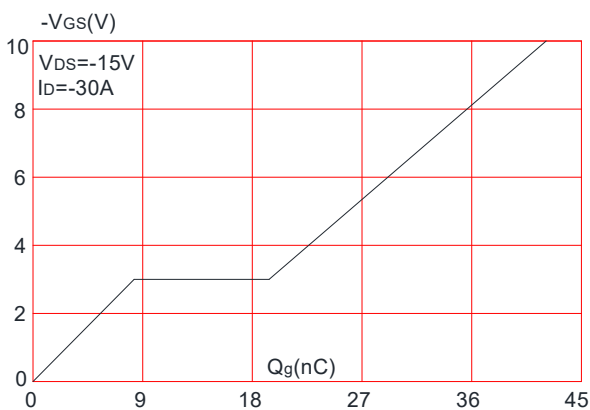


Figure 6: Capacitance Characteristics

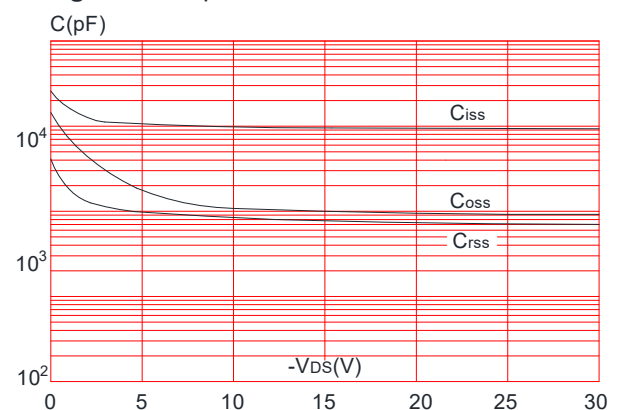




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

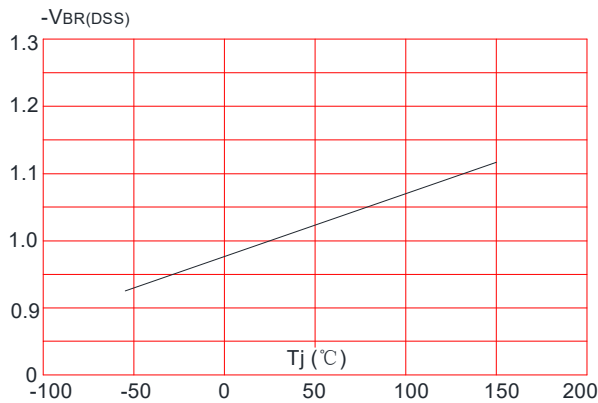


Figure 8: Normalized on Resistance vs. Junction Temperature

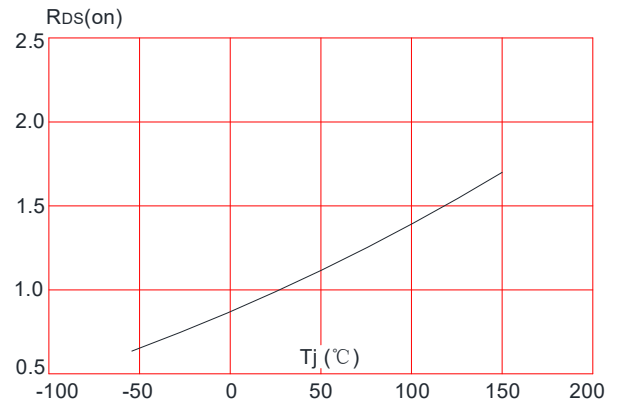


Figure 9: Maximum Safe Operating Area

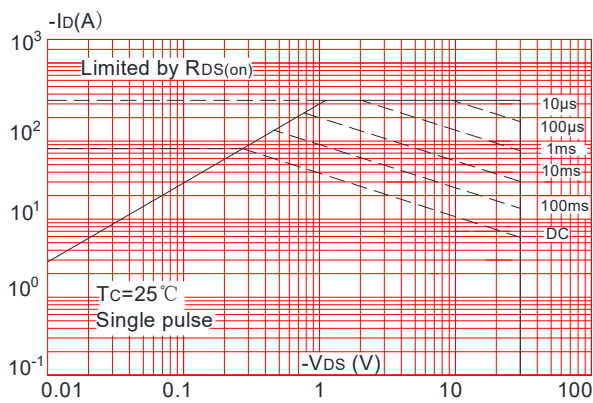


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

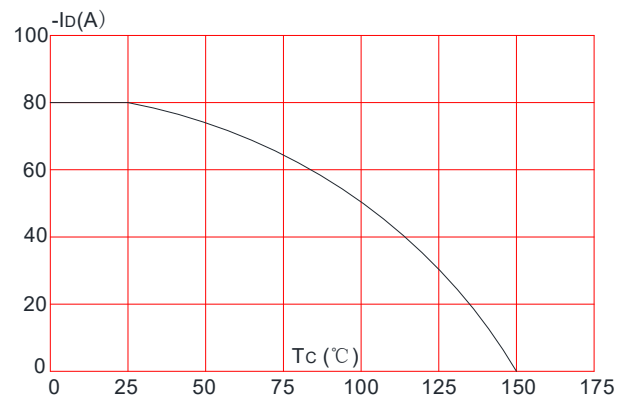
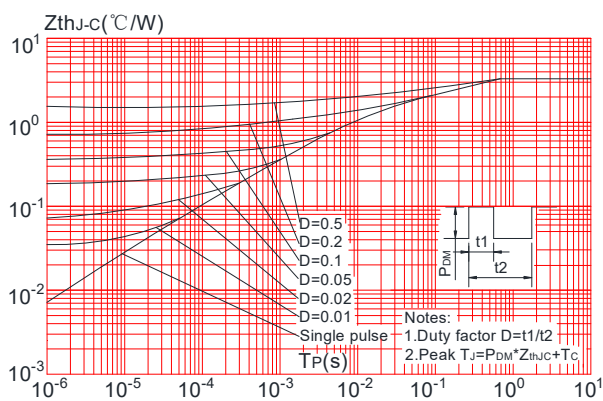
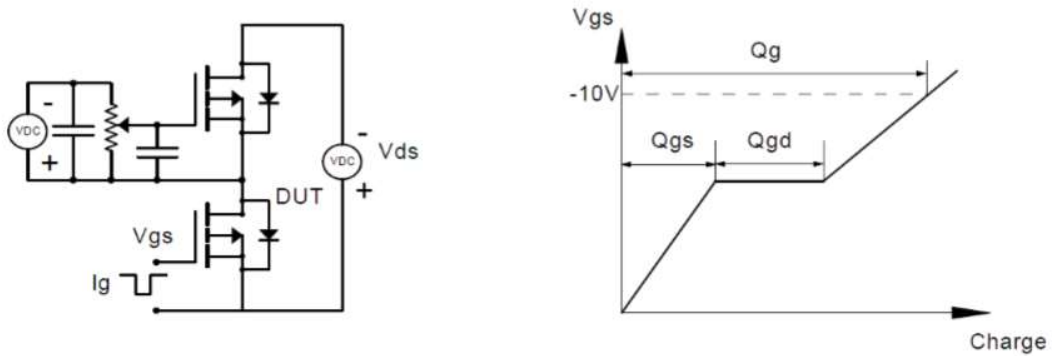


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

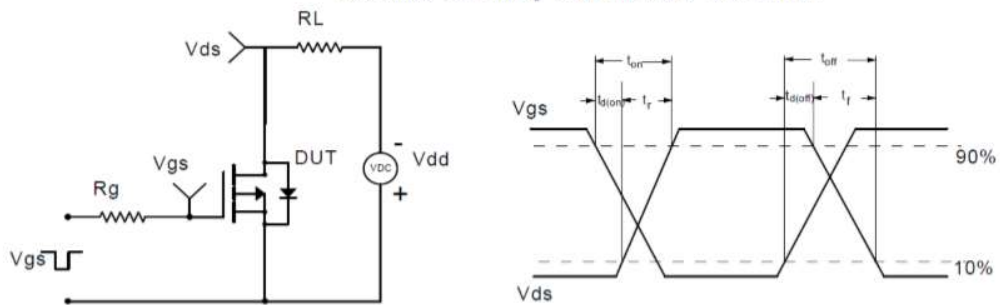


Test Circuit

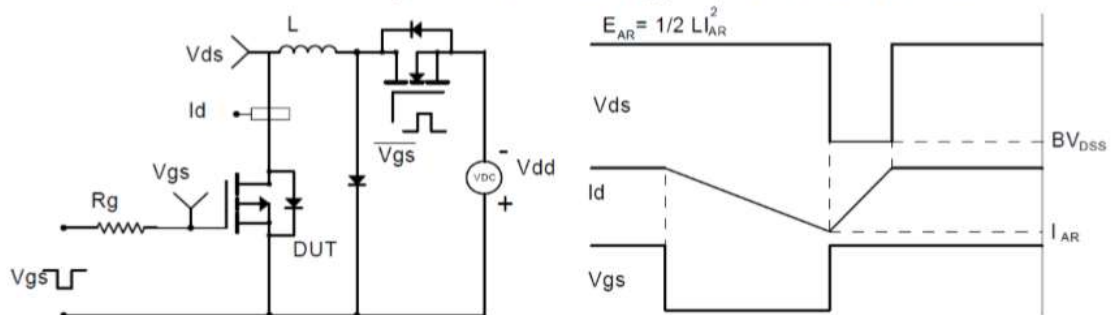
Gate Charge Test Circuit & Waveform



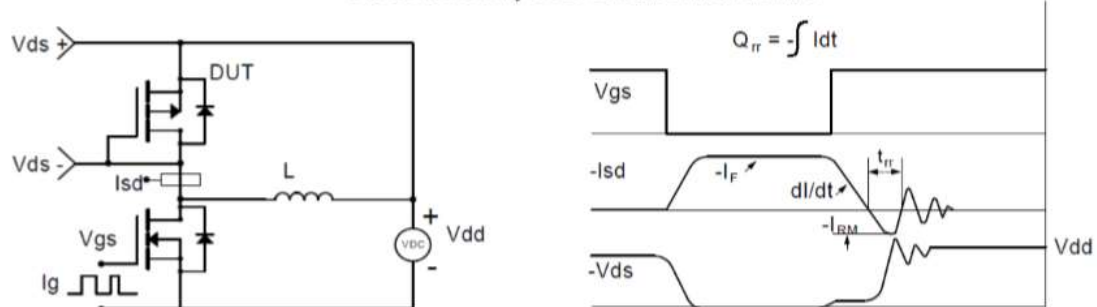
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

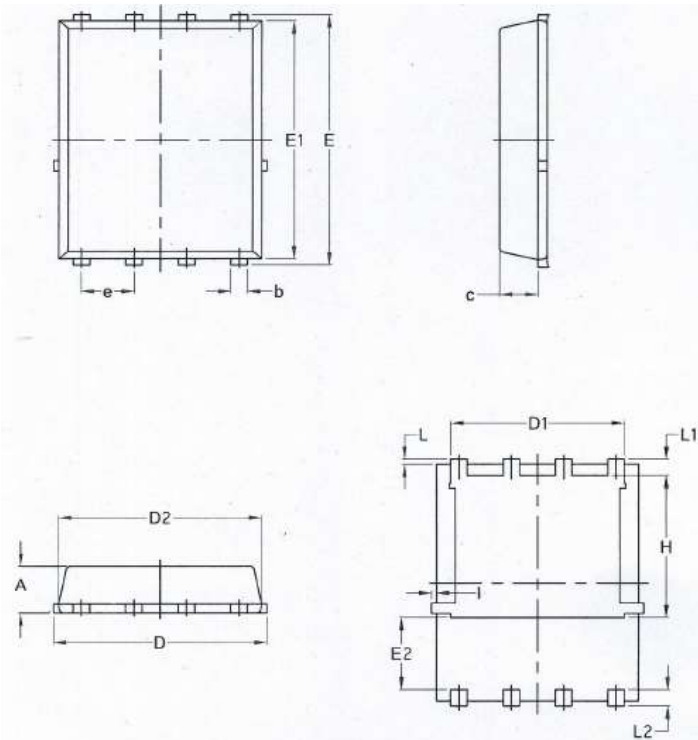


Diode Recovery Test Circuit & Waveforms





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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