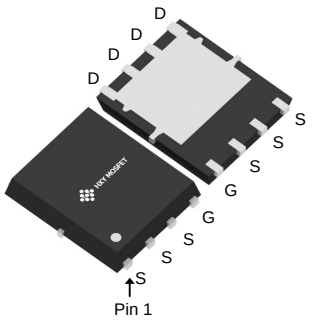
Description

The RJK0396DPA-00#J53 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

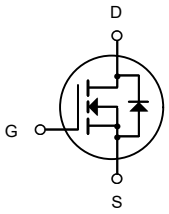


DFN5X6-8L

General Features

V_{DS} = 30V I_D = 50A

$R_{DS(ON)}$ < 8.5mΩ V_{GS}=10V



N-Channel MOSFET

Application

Battery protection

Load switch

Uninterruptible power supply

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
RJK0396DPA-00#J53	DFN5X6-8L	HXY MOSFET	5000

Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V	60	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	38	A
I_{DM}	Pulsed Drain Current[1]	200	A
EAS	Single Pulse Avalanche Energy[2]	36	mJ
I_{AS}	Avalanche Current	50	A
P_D@T_C=25℃	Total Power Dissipation[4]	31	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[3]	27	℃/W

Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=24V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	1.2	1.5	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance[4]	V_{GS}=10V,I_D=30A	---	6.5	8.5	mΩ
		V_{GS}=4.5V,I_D=15A	---	11	14	
G_{FS}	Forward Transconductance	V_{DS}=5V, I_D=30A	---	38	---	S
C_{iss}	Input Capacitance	V_{DS} =15V, V_{GS} =0V, f=1MHz	---	1317	1844	pF
C_{oss}	Output Capacitance		---	163	228	
C_{rss}	Reverse Transfer Capacitance		---	131	183	
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=15V,I_D=15A, V_{GS}=15V,R_G=3.3Ω	---	4.6	9.2	ns
t_r	Rise Time		---	12.2	22	ns
$t_{d(off)}$	Turn-Off Delay Time		---	26.6	53	ns
t_f	Fall Time		---	8	16	ns
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=15V, I_D=15A	---	17.6	21	nC
Q_{gs}	Gate-Source Charge		---	2.35	5.9	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	5.9	7.1	nC
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=1A	---	---	1	V
IS	Continuous Source Current	VG=VD=0V , Force Current	---	---	58	A
ISM	Pulsed Source Current		---	---	115	A
trr	Reverse Recovery Time	IF=30A , dI/dt=100A/μs,TJ=25℃	---	9.2	---	ns
Qrr	Reverse Recovery Charge		---	2	---	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25C, V_{DD}=15V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=14A
3. $R_{\theta JA}$ is measured with the device mounted on a $1inch^2$ pad of 2oz copper FR4 PCB
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Typical Characteristics

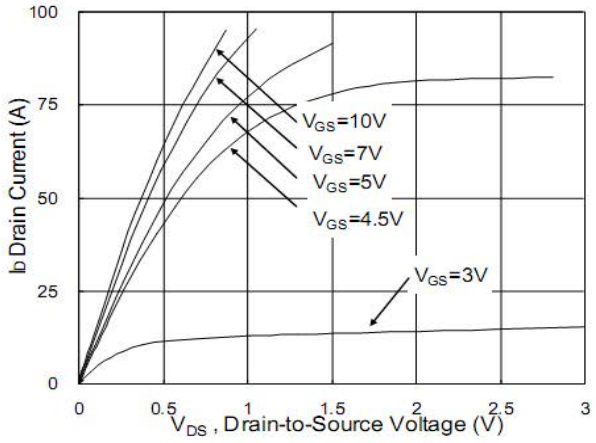


Fig.1 Typical Output Characteristics

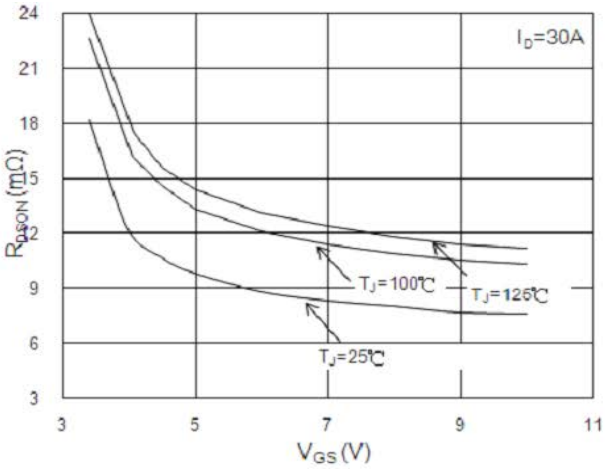


Fig.2 On-Resistance vs. Gate-Source

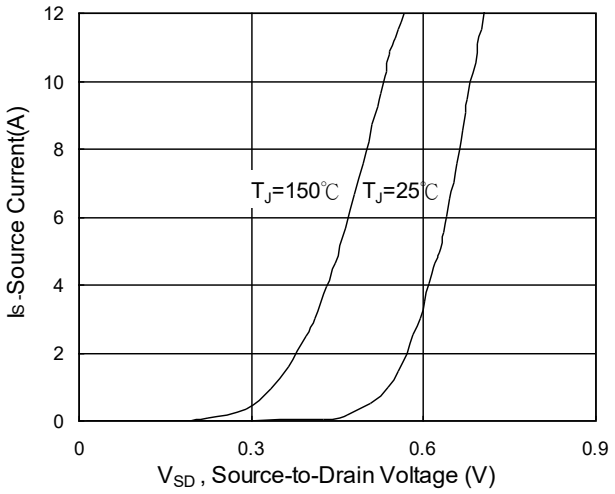


Fig.3 Forward Characteristics of reverse

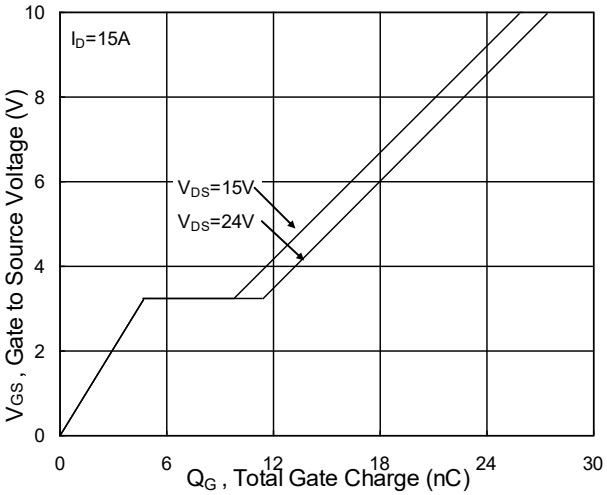


Fig.4 Gate-Charge Characteristics

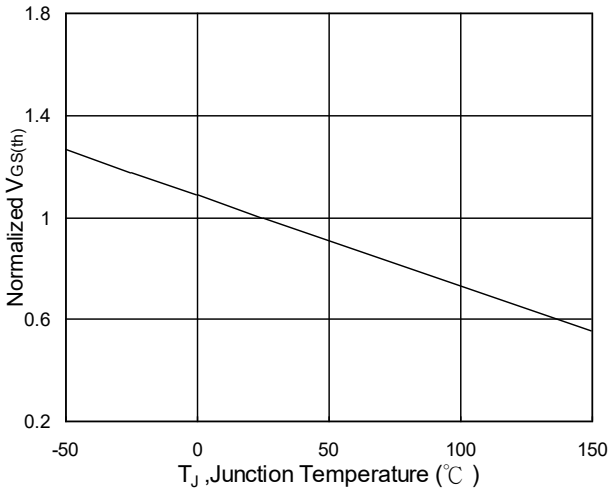


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

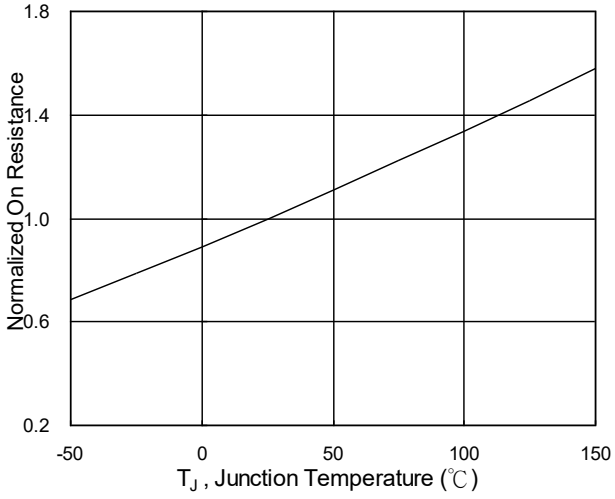


Fig.6 Normalized R_{DSON} vs. T_J

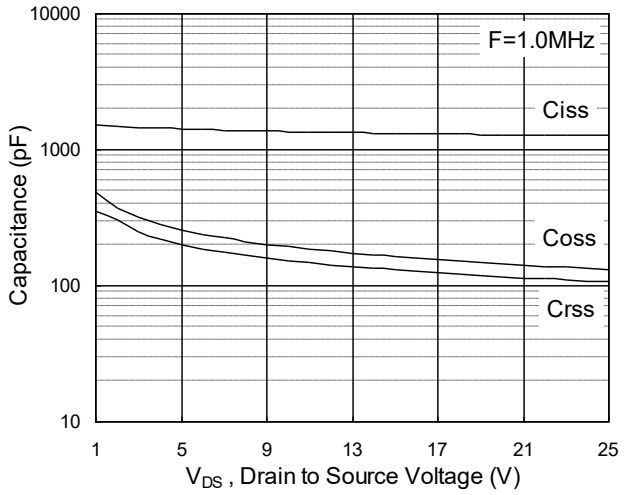


Fig.7 Capacitance

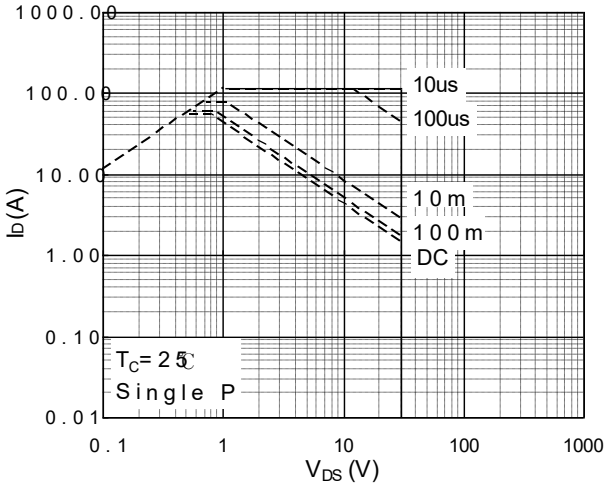
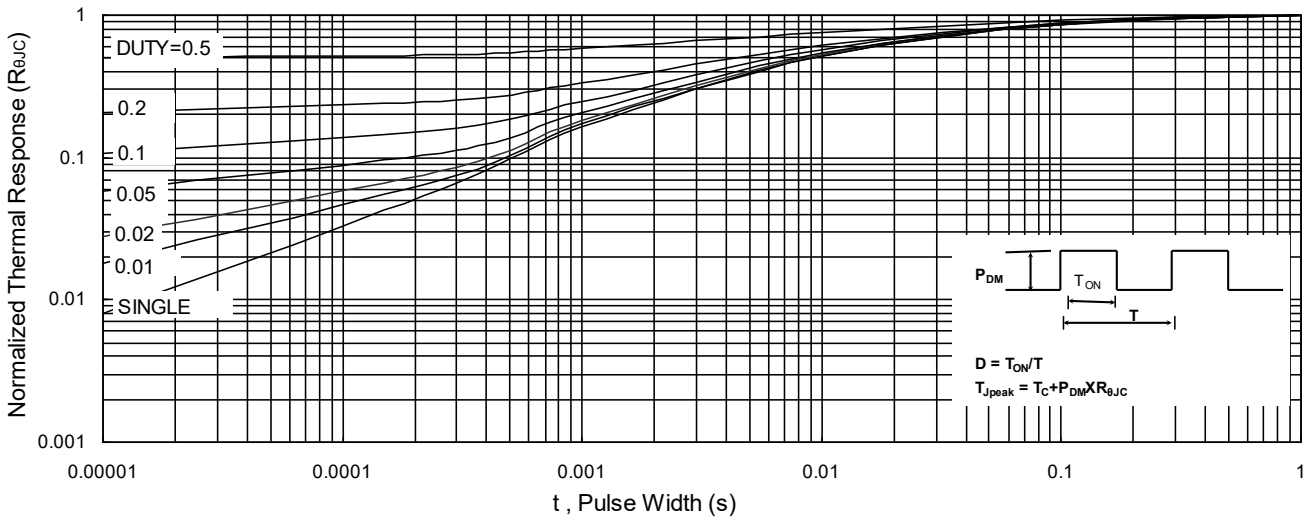
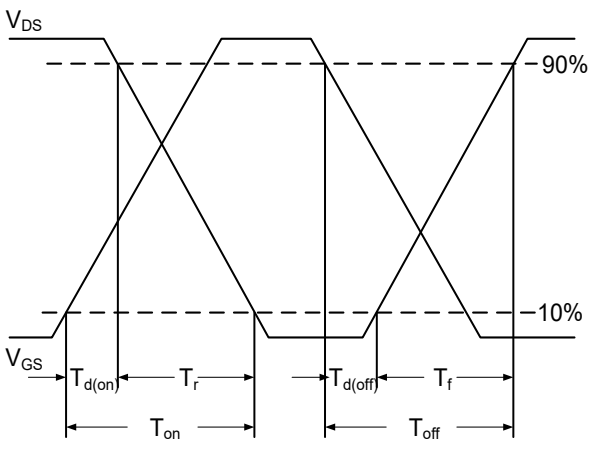


Fig.8 Safe Operating Area





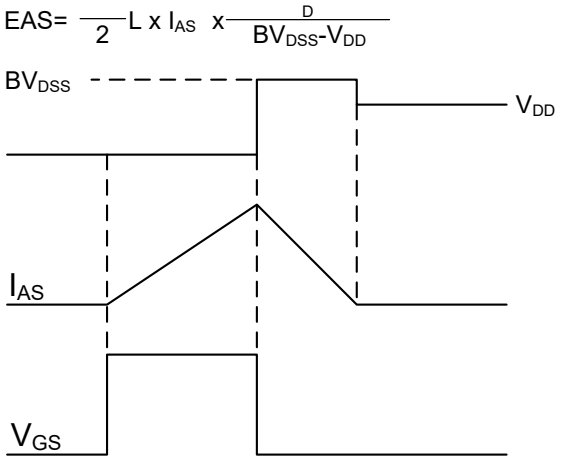
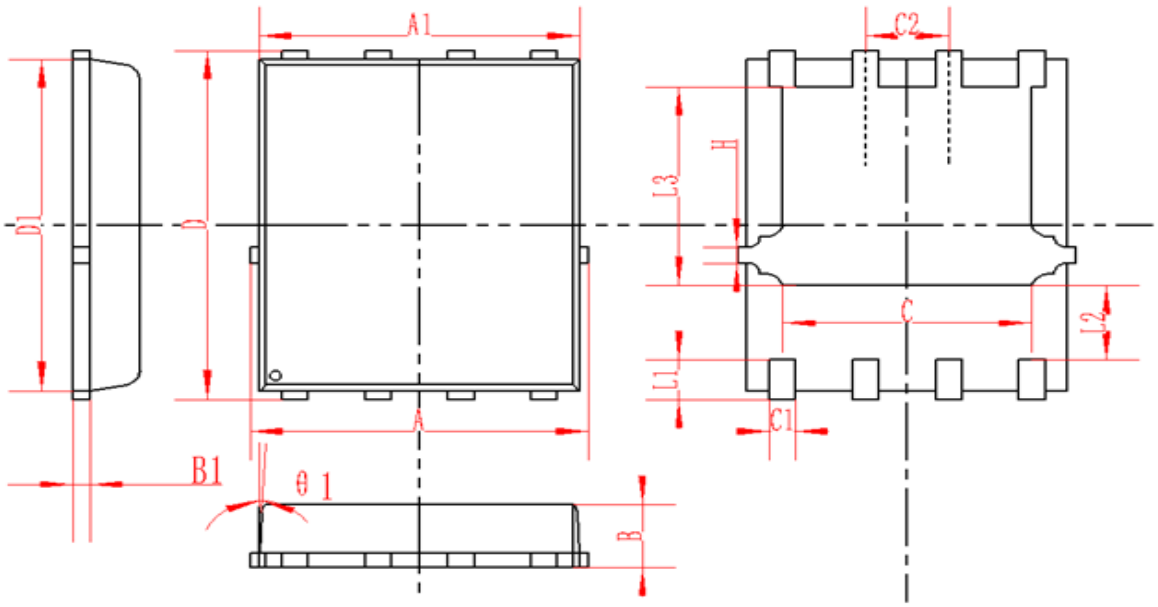


Fig.10 Switching Time Waveform

DFN5X6-8L Package Information



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	5.3	5.5	5.7	0.208	0.216	0.224
A1	5.1	5.2	5.3	0.2	0.204	0.209
D	5.98	6	6.02	0.235	0.236	0.237
D1	5.85	6.05	6.25	0.23	0.238	0.246
B	0.85	0.95	1.05	0.033	0.037	0.041
B1		0.254REF			0.010REF	
C	3.95	4	4.05	0.156	0.157	0.159
C1	0.35	0.4	0.45	0.014	0.016	0.018
C2		1.27TYP			0.5TYP	
θ1	8°	10°	12°	8°	10°	12°
L1	0.63	0.64	0.65	0.025	0.025	0.026
L2	1.2	1.3	1.4	0.047	0.051	0.055
L3	3.415	3.42	3.425	0.134	0.135	0.135
H	0.24	0.25	0.26	0.009	0.010	0.010

Attention

■ Any and all HUA XUAN YANG ELECTRONICS products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your HUA XUAN YANG ELECTRONICS representative nearest you before using any HUA XUAN YANG ELECTRONICS products described or contained herein in such applications.

■ HUA XUAN YANG ELECTRONICS assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein.

■ Specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer’s products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer’s products or equipment.

■ HUA XUAN YANG ELECTRONICS CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could
give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.

■ In the event that any or all HUA XUAN YANG ELECTRONICS products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.

■ No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of HUA XUAN YANG ELECTRONICS CO.,LTD.

■ Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. HUA XUAN YANG ELECTRONICS believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

■ Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the HUA XUAN YANG ELECTRONICS product that you intend to use.

Unikeyic Electronics

Global Electronic Components Distributor

Click to view pricing, inventory, delivery, and lifecycle information:

HXY MOSFET:

P6SMB33CA P6SMB36CA SD15C SQJA04EP-T1_BE3 SS5150B TPSMB100CA-VR BZT52C3V3S HESDNC5VB1AF-B HMCP602-I/SN MAX487ESA HT7540-1 HXY8205ES IRLML6246PBF MMBT3904T US2M HC4D20120A DTC143ZE SS1045 SS510C SS10100 HT7150 HXY2300MI PESD5V0S1BB HOPA2340UA BZT52C13 HAD8542ARZ HC3D10170A HXY2101EI P6SMB200A TPSMB28A-VR