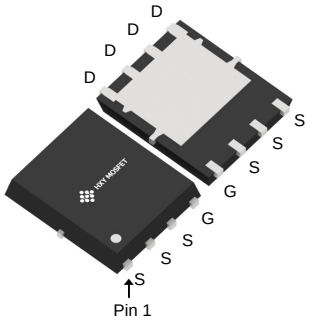
Description

The AONS21321 uses advanced trench technology excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as aload switch or in PWM applications.



DFN5X6-8L
(DFN(5x6))

General Features

V_{DS} = -30V,I_D = -50A

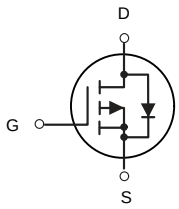
$R_{DS(ON)}$ < 15mΩ @ V_{GS}=-10V

$R_{DS(ON)}$ < 25mΩ @ V_{GS}=-4.5V

High Power and current handing capability

Lead free product is acquired

Surface mount package



P-Channel MOSFET

Application

PWM applications

Load switch

Power management

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
AONS21321	DFN5X6-8L(DFN(5x6))	HXY MOSFET	5000

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Symbol	Parameter	Limit	Unit
VDS	Drain-Source Voltage	-30	V
VGS	Gate-Source Voltage	±20	V
I_D	Drain Current-Continuous (T_C=25℃)	-50	A
	Drain Current-Continuous (T_C=100℃)	-24	
IDM	Drain Current-Pulsed (Note 1)	-80	A
P_D	Maximum Power Dissipation (T_C=25℃)	3	W
	Maximum Power Dissipation (T_C=100℃)	1.3	
EAS	Single pulse avalanche energy (Note 5)	231	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	℃
RθJA	Thermal Resistance,Junction-to-Ambient (Note 2)	41.67	℃/W

Electrical Characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250μA	-30	-33	-	V
Zero Gate Voltage Drain Current	IDSS	V_{DS}=-30V,V_{GS}=0V	-	-	-1	μA
Gate-Body Leakage Current	IGSS	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	V_{DS}=V_{GS},I_D=-250μA	-1	-1.5	-3	V
Drain-Source On-State Resistance	RDS(ON)	V_{GS}=-10V, I_D=-10A	-	9	15	mΩ
		V_{GS}=-4.5V, I_D=-7A	-	18	25	mΩ
Forward Transconductance	gFS	V_{DS}=-10V,I_D=-10A	-	20	-	S
Input Capacitance	C_{lss}	V_{DS}=-15V,V_{GS}=0V, F=1.0MHz	-	1750	-	PF
Output Capacitance	Coss		-	215	-	PF
Reverse Transfer Capacitance	C_{rss}		-	180	-	PF
Turn-on Delay Time	td(on)	V_{DD}=-15V, ID=-10A, V_{GS}=-10V,R_{GEN}=1Ω	-	9	-	nS
Turn-on Rise Time	t_r		-	8	-	nS
Turn-Off Delay Time	td(off)		-	28	-	nS
Turn-Off Fall Time	t_f		-	10	-	nS
Total Gate Charge	Q_g	V_{DS}=-15V,I_D=-10A,V_{GS}=-10V	-	24	-	nC
Gate-Source Charge	Q_{gs}		-	3.5	-	nC
Gate-Drain Charge	Q_{gd}		-	6	-	nC
Diode Forward Current (Note 2)	I_S		-	-	-12	A
Diode Forward Voltage (Note 3)	VSD	V_{GS}=0V,I_S=-12A	-	-	-1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. E_{AS} condition: Tj=25℃,V_{DD}=-15V,V_G=10V,L=0.5mH,Rg=25Ω, I_{AS}=-34A

Typical Electrical and Thermal Characteristics

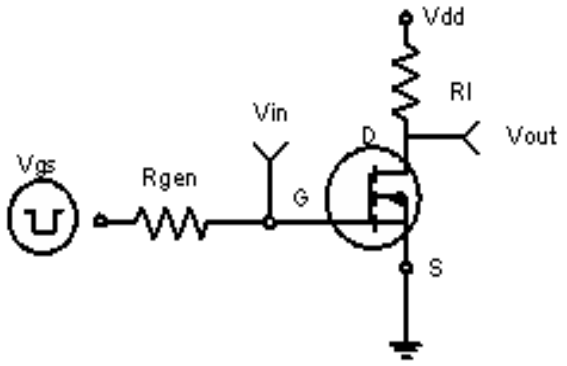


Figure 1:Switching Test Circuit

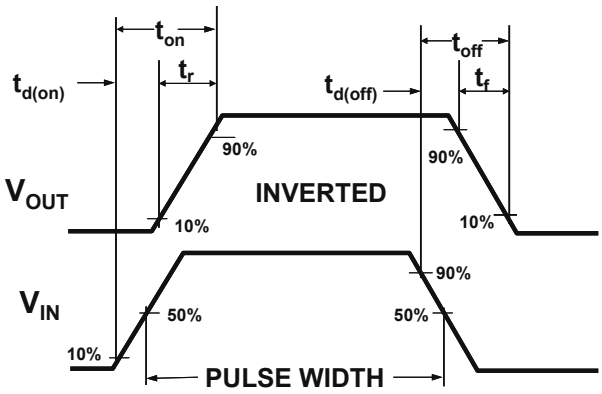


Figure 2:Switching Waveforms

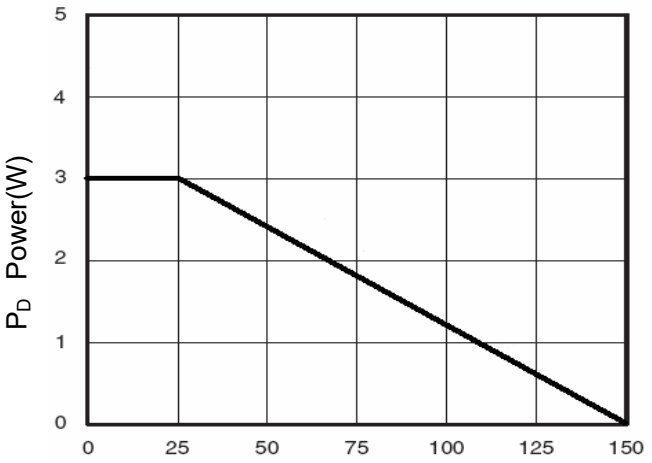


Figure 3 Power Dissipation

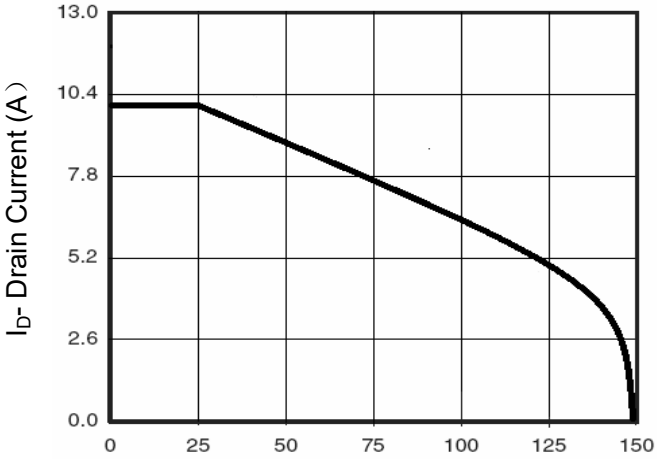


Figure 4 Drain Current

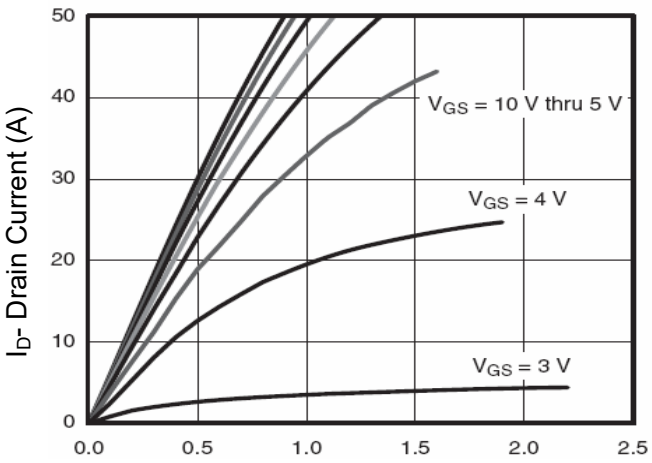


Figure 5 Output Characteristics

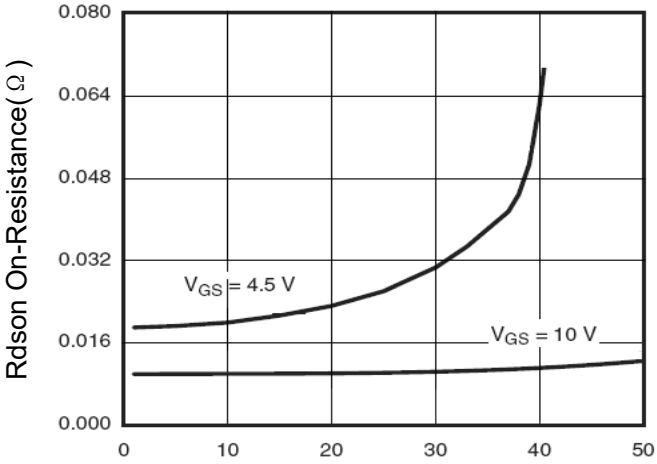


Figure 6 Drain-Source On-Resistance

Figure 5 Output Characteristics

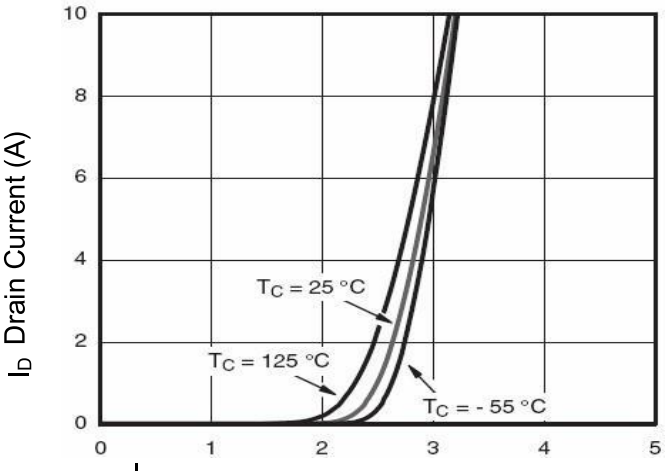


Figure 7 Transfer Characteristics

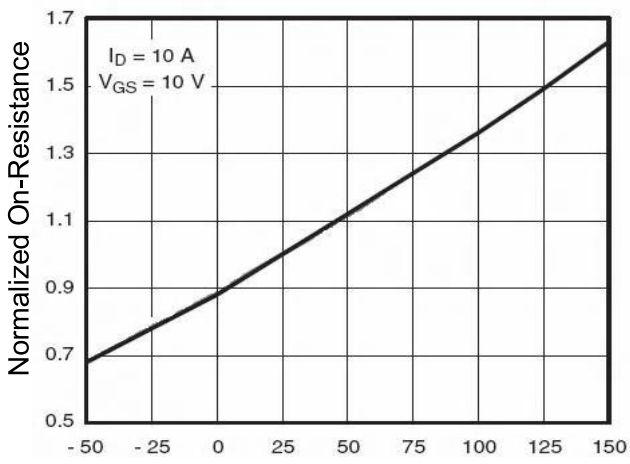


Figure 8 Drain-Source On-Resistance

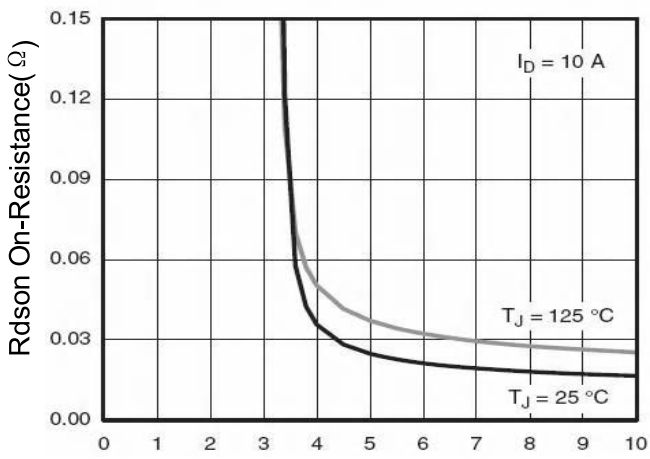


Figure 9 Rdson vs Vgs

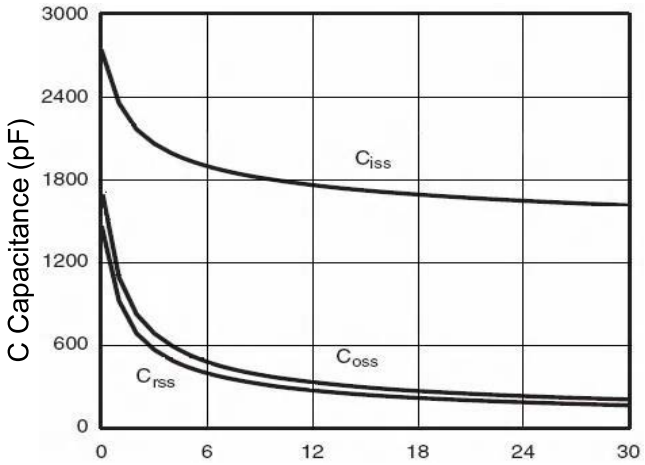


Figure 10 Capacitance vs Vds

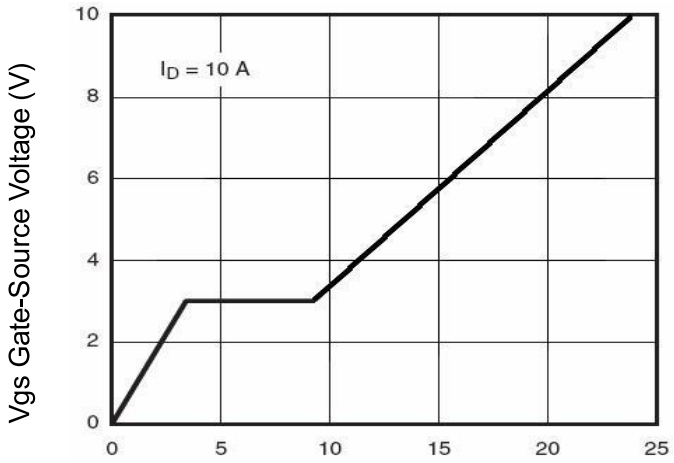


Figure 11 Gate Charge

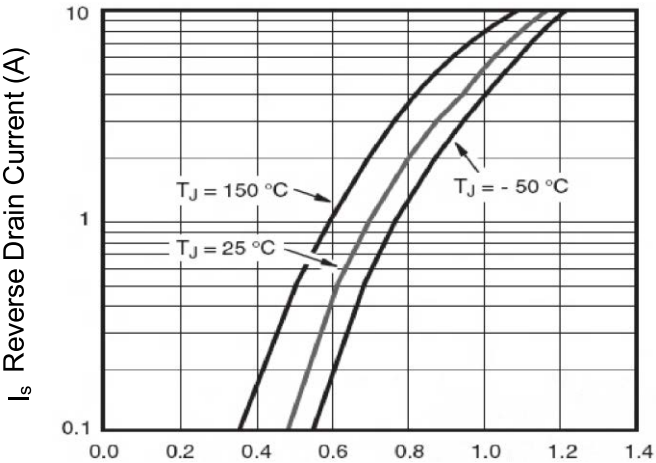


Figure 12 Source- Drain Diode Forward

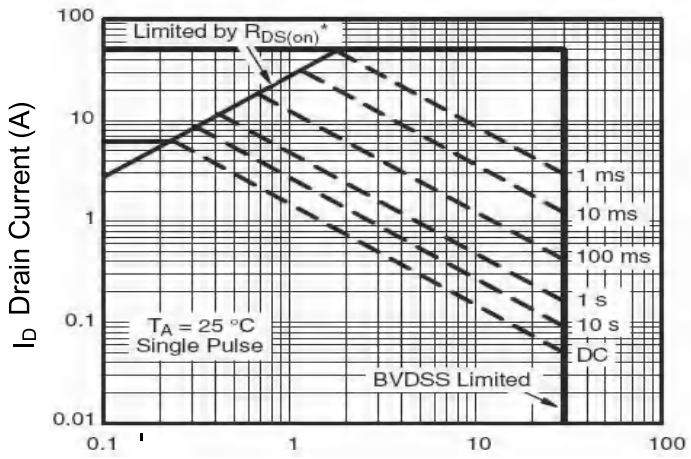


Figure 13 Safe Operation Area

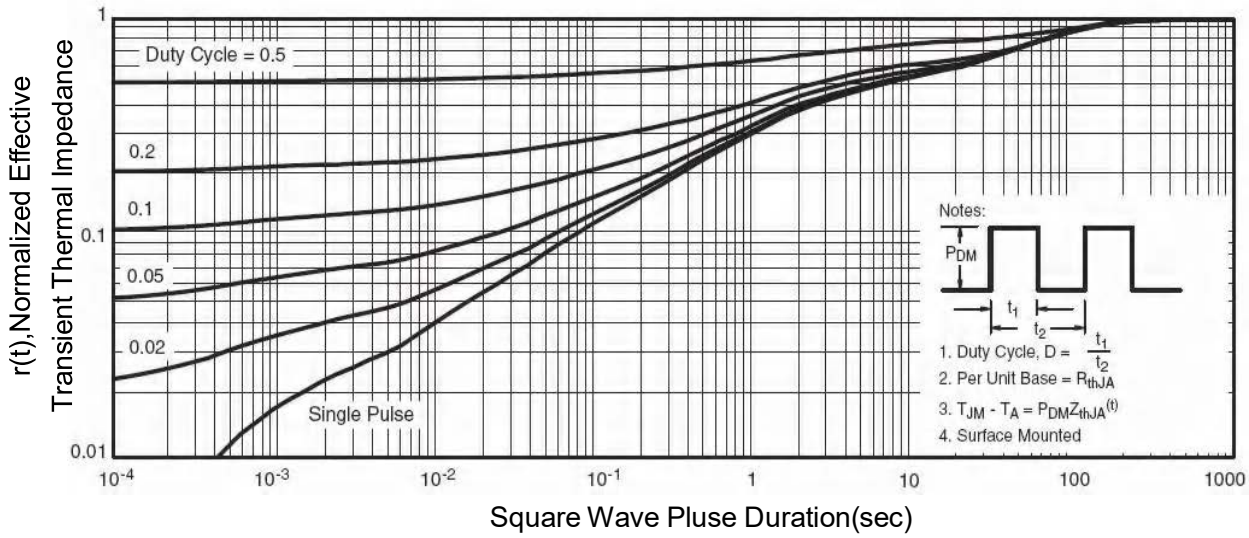
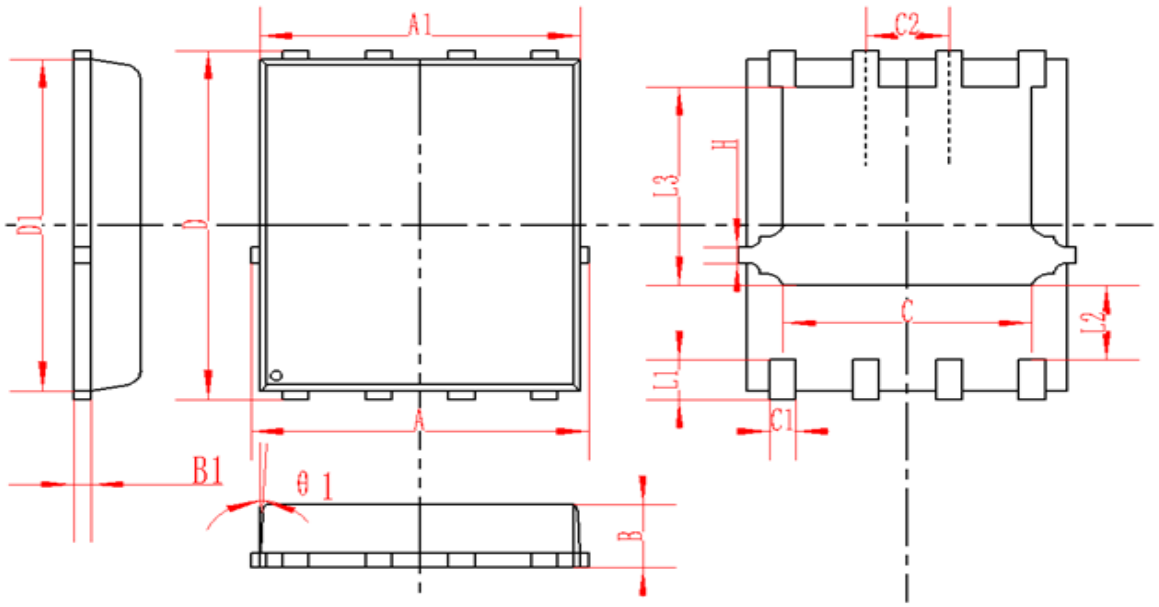


Figure 14 Normalized Maximum Transient Thermal Impedance

DFN5X6-8L(DFN(5x6)) Package Information



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.95	5	5.05	0.195	0.197	0.199
A1	4.82	4.9	4.98	0.190	0.193	0.196
D	5.98	6	6.02	0.235	0.236	0.237
D1	5.67	5.75	5.83	0.223	0.226	0.230
B	0.9	0.95	1	0.035	0.037	0.039
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:

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