

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$ Max	I_D max $T_A = 25^\circ\text{C}$ (Notes 4)
20V	200m Ω @ $V_{GS} = 4.5V$	1.73A
	260m Ω @ $V_{GS} = 2.5V$	1.50A
	400m Ω @ $V_{GS} = 1.8V$	1.27A
	500m Ω @ $V_{GS} = 1.5V$	1.15A

Description and Applications

This MOSFET has been designed to minimize the on-state resistance ($R_{DS(on)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

- Load switch

Features and Benefits

- Low Gate Threshold Voltage
- Fast Switching Speed
- "Lead Free", RoHS Compliant (Note 1)
- Halogen and Antimony Free. "Green" Device (Note 2)
- ESD Protected Gate 2KV
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

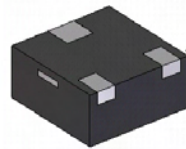
- Case: X1-DFN1212-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.005 grams (approximate)



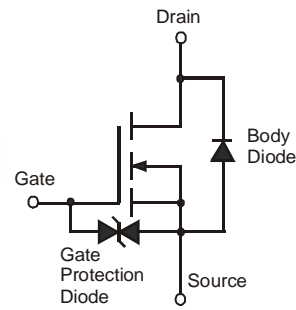
X1-DFN1212-3



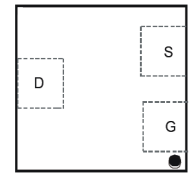
Top View



Bottom View



Equivalent Circuit



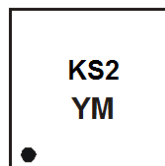
Pin-out Top view

Ordering Information (Note 3)

Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DMN2300UFD-7	KS2	7	8	3000

- Notes:
1. No purposefully added lead
 2. Diodes Inc's "Green" policy can be found on our website at <http://www.diodes.com>.
 3. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information



KS2 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: Y = 2011)
M = Month (ex: 9 = September)

Date Code Key

Year	2011	2012	2013	2014	2015	2016	2017
Code	Y	Z	A	B	C	D	E

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source Voltage		V_{GSS}	± 8	V
Continuous Drain Current	Steady State	I_D	$T_A = 25^\circ\text{C}$ (Note 4)	1.73
			$T_A = 85^\circ\text{C}$ (Note 4)	1.34
			$T_A = 25^\circ\text{C}$ (Note 5)	1.21
Pulsed Drain Current (Note 6)		I_{DM}	6.0	A

Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 4)	P_D	0.96	W
	(Note 5)		0.47	W
Thermal Resistance, Junction to Ambient	(Note 4)	$R_{\theta JA}$	130	$^\circ\text{C/W}$
	(Note 5)		265	$^\circ\text{C/W}$
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes:
- For a device surface mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of 2oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
 - Same as note 4, except the device is mounted on minimum recommended pad layout.
 - Device mounted on minimum recommended pad layout test board, 10 μs pulse duty cycle = 1%.

Thermal Characteristics

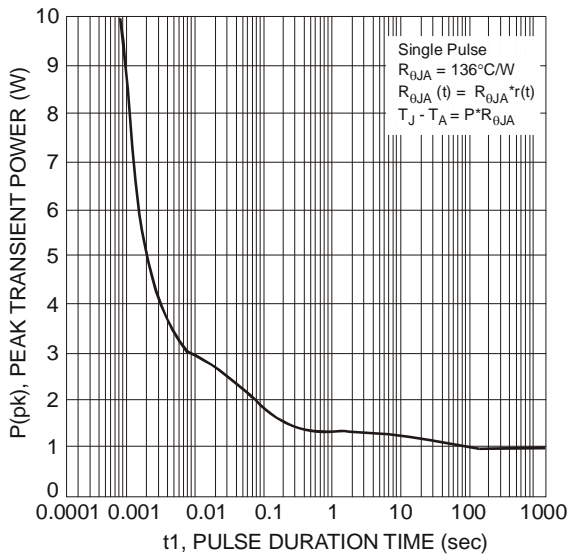


Fig. 1 Single Pulse Maximum Power Dissipation

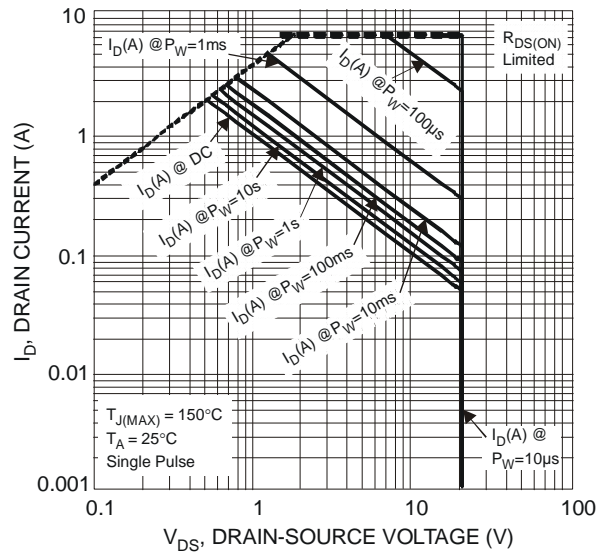
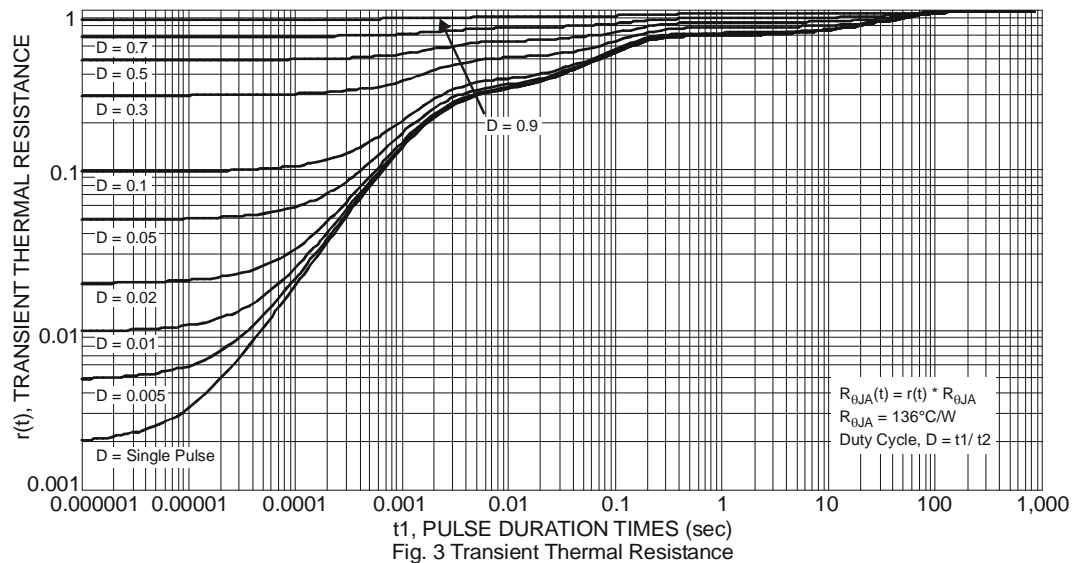


Fig. 2 SOA, Safe Operation Area



Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	20	-	-	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current $T_J = 25^\circ\text{C}$	I_{DSS}	-	-	1	μA	$V_{DS} = 20V, V_{GS} = 0V$
Gate-Source Leakage	I_{GSS}	-	-	± 10	μA	$V_{GS} = \pm 8V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(th)}$	0.45	-	0.95	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	-	-	200	m Ω	$V_{GS} = 4.5V, I_D = 900mA$
				260		$V_{GS} = 2.5V, I_D = 800mA$
				400		$V_{GS} = 1.8V, I_D = 700mA$
				500		$V_{GS} = 1.5V, I_D = 200mA$
Forward Transfer Admittance	$ Y_{fs} $	40	-	-	mS	$V_{DS} = 3V, I_D = 300mA$
Diode Forward Voltage	V_{SD}	-	0.7	1.2	V	$V_{GS} = 0V, I_S = 300mA$
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	-	67.62	-	pF	$V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz$
Output Capacitance	C_{oss}	-	9.74	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	7.58	-	pF	
Gate Resistance	R_g	-	68.51	-	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$
Total Gate Charge (Note 8)	Q_g	-	0.89	2	nC	$V_{GS} = 4.5V, V_{DS} = 15V, I_D = 1A$
Gate-Source Charge	Q_{gs}	-	0.14	-	nC	
Gate-Drain Charge	Q_{gd}	-	0.16	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	4.92	-	ns	$V_{DS} = 10V, I_D = 1A, V_{GS} = 10V, R_G = 6\Omega$
Turn-On Rise Time	t_r	-	6.93	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	21.71	-	ns	
Turn-Off Fall Time	t_f	-	10.62	-	ns	

Notes: 7. Short duration pulse test used to minimize self-heating effect.
8. Guarantee by design.

DMN2300UFD

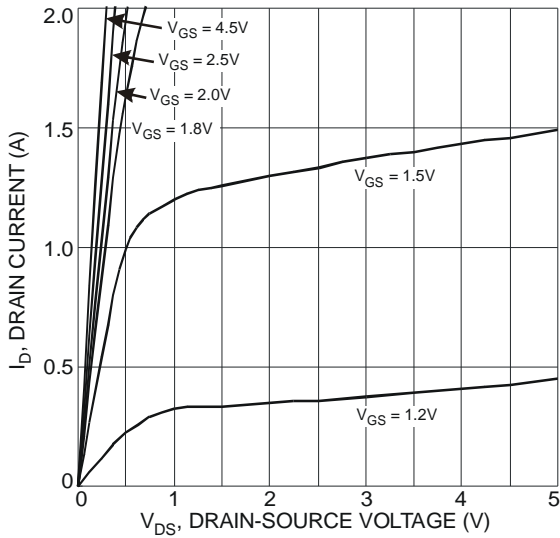


Fig. 4 Typical Output Characteristic

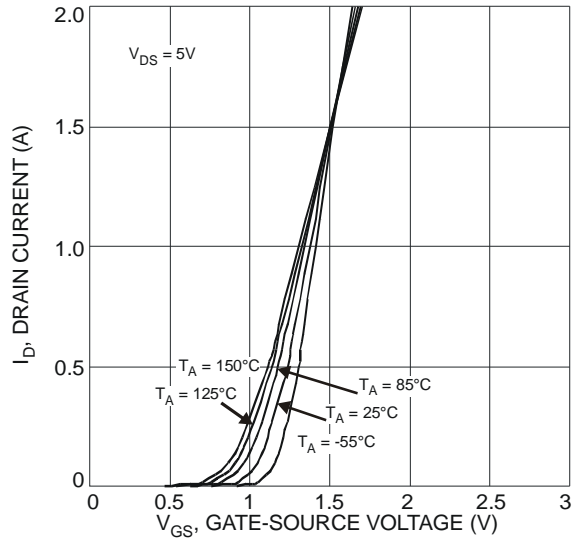


Fig. 5 Typical Transfer Characteristic

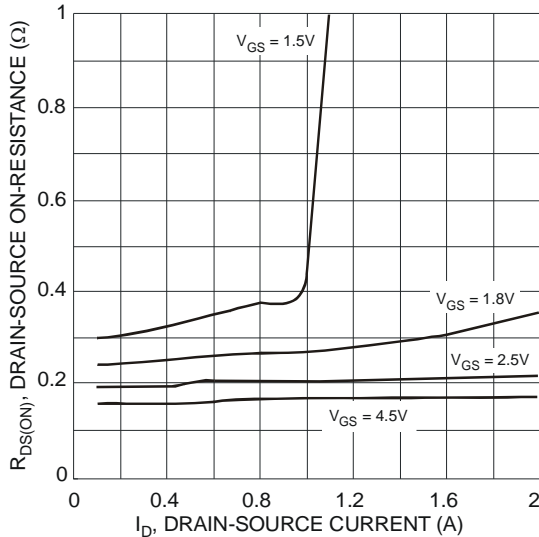


Fig. 6 Typical On-Resistance vs. Drain Current and Gate Voltage

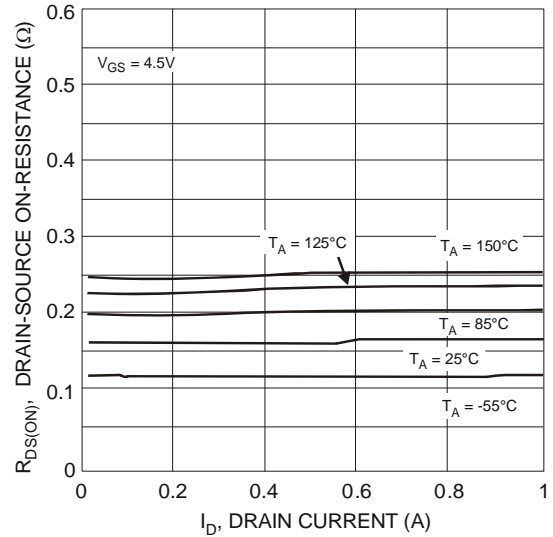


Fig. 7 Typical On-Resistance vs. Drain Current and Temperature

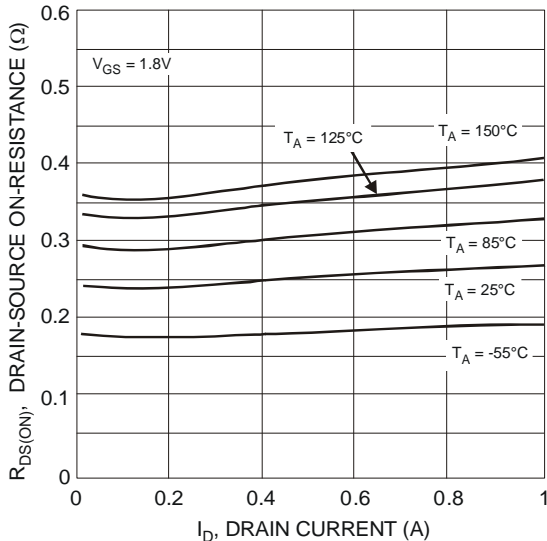


Fig. 8 Typical On-Resistance vs. Drain Current and Temperature

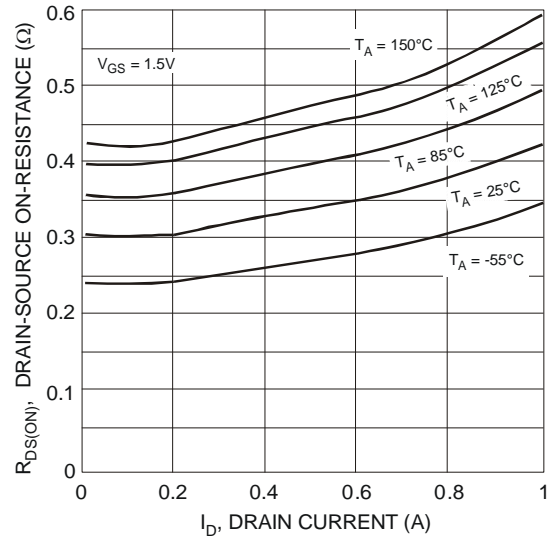


Fig. 9 Typical On-Resistance vs. Drain Current and Temperature

DMN2300UFD

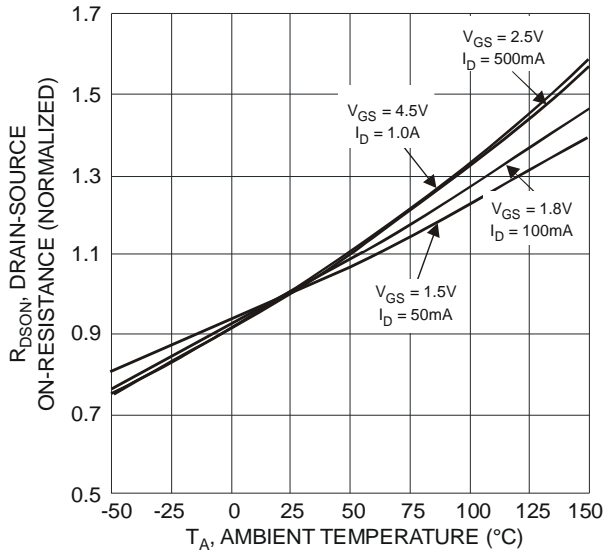


Fig. 10 On-Resistance Variation with Temperature

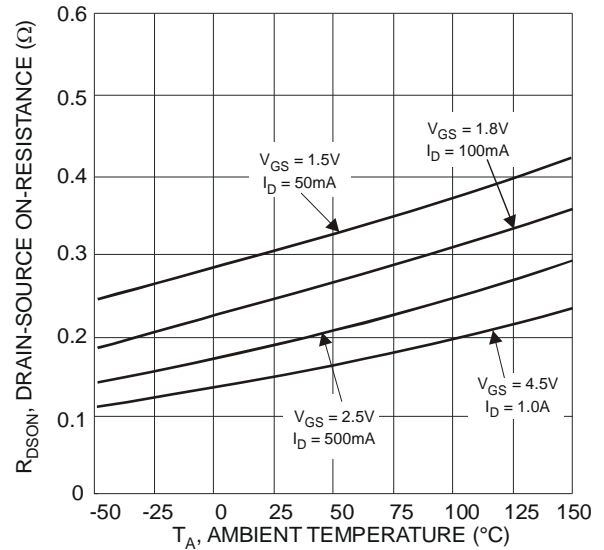


Fig. 11 On-Resistance Variation with Temperature

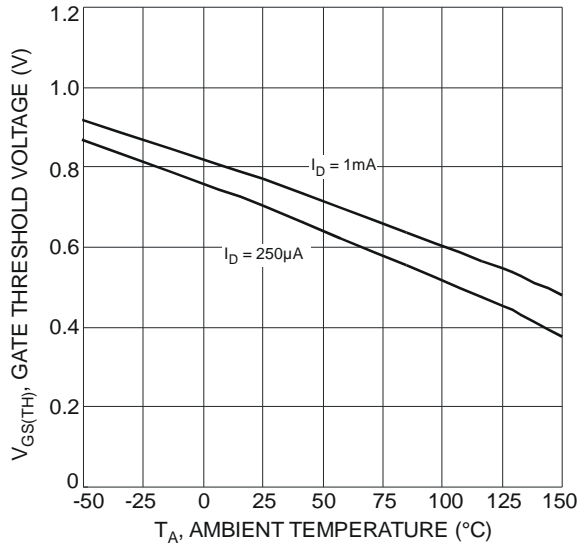


Fig. 12 Gate Threshold Variation vs. Ambient Temperature

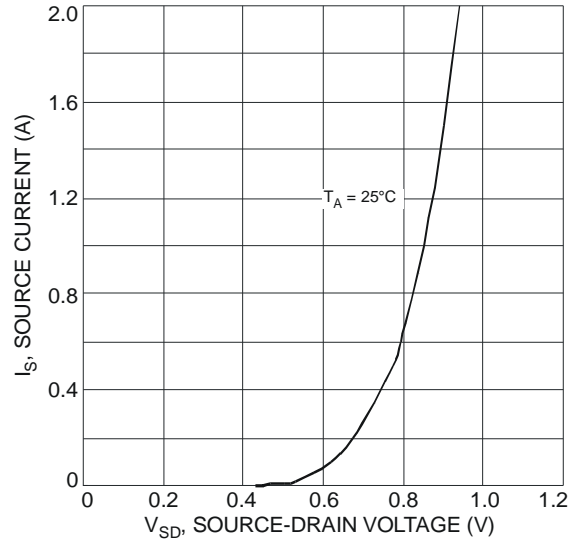


Fig. 13 Diode Forward Voltage vs. Current

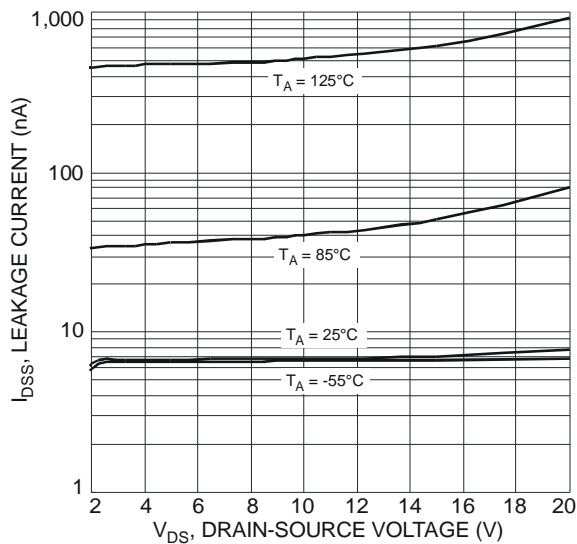


Fig. 14 Typical Leakage Current vs. Drain-Source Voltage

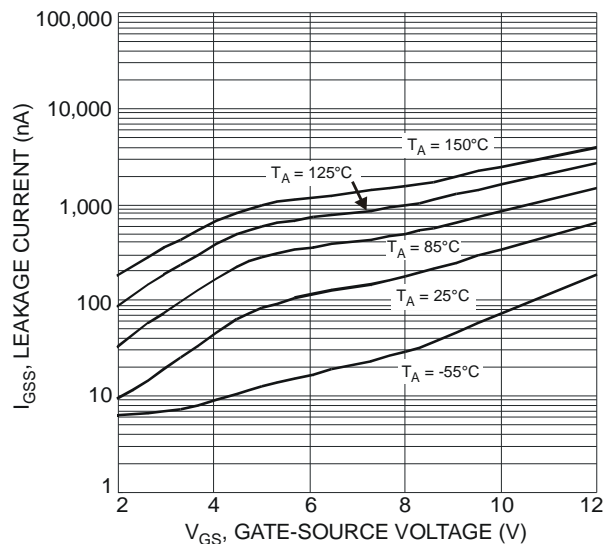


Fig. 15 Leakage Current vs. Gate-Source Voltage

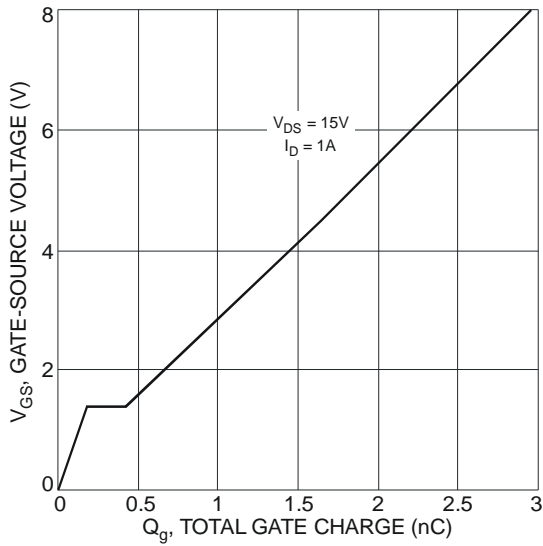
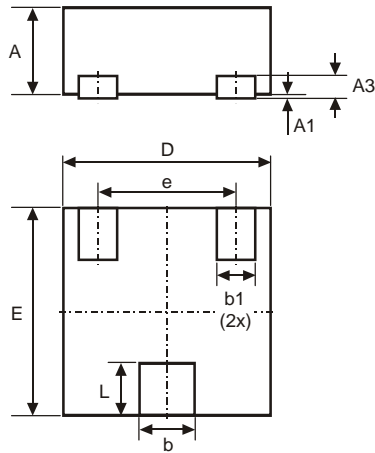


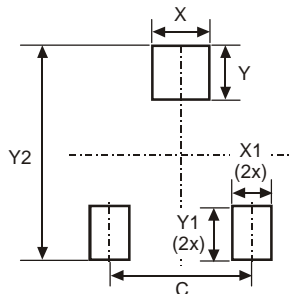
Fig. 16 Gate-Charge Characteristics

Package Outline Dimensions



X1-DFN1212-3			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0	0.05	0.02
A3	-	-	0.13
b	0.27	0.37	0.32
b1	0.17	0.27	0.22
D	1.15	1.25	1.20
E	1.15	1.25	1.20
e	-	-	0.80
L	0.25	0.35	0.30
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
C	0.80
X	0.42
X1	0.32
Y	0.50
Y1	0.50
Y2	1.50

IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or
2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2011, Diodes Incorporated

www.diodes.com

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А