

Product Summary

BV_{DSS}	R_{D(S)}(ON)	I_D T_A = +25°C
60V	2Ω @ V _{GS} = 4V	400mA
	2.5Ω @ V _{GS} = 2.5V	350mA

Description and Applications

This MOSFET is designed to meet the stringent requirements of automotive applications. It is qualified to AEC-Q101, supported by PPAP, and is ideal for use in:

- Backlighting
- Power-management functions
- DC-DC converters

Features and Benefits

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **ESD Protected**
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- The DMN62D1LFDQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.

<https://www.diodes.com/quality/product-definitions/>

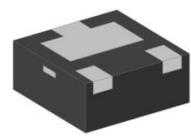
Mechanical Data

- Package: U-DFN1212-3
- Package Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 **e4**
- Terminal Connections: See Diagram
- Weight: 0.005 grams (Approximate)

U-DFN1212-3 (Type C)

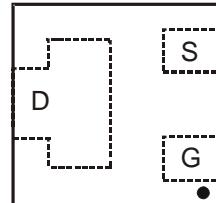


Top View

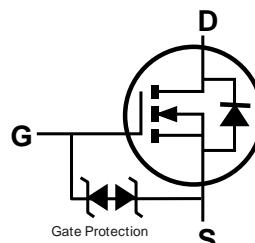


Bottom View

G pin



Pinout Top View



Equivalent Circuit

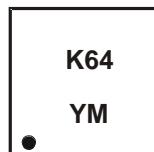
Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
DMN62D1LFDQ-7	U-DFN1212-3 (Type C)	3,000	Tape & Reel
DMN62D1LFDQ-13	U-DFN1212-3 (Type C)	10,000	Tape & Reel

Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



K64 = Product Type Marking Code

YM = Date Code Marking

Y = Year (ex: M = 2025)

M = Month (ex: 9 = September)

Date Code Key

Year	2018	-	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	F	-	M	N	P	R	S	T	U	V	W	X
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}	60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current (Note 5) $V_{GS} = 4\text{V}$	I_D	400 $T_A = +70^\circ\text{C}$ 310	mA
Pulsed Drain Current (Note 6)	I_{DM}	1	A

Thermal Characteristics

Characteristic	Symbol	Max	Unit
Power Dissipation (Note 5)	P_D	0.5	W
Thermal Resistance, Junction to Ambient @ $T_A = +25^\circ\text{C}$ (Note 5)	$R_{\theta JA}$	237	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

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}	60	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$	I_{DSS}	—	—	1	μA	$V_{DS} = 60\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 100	nA	$V_{GS} = \pm 5\text{V}, V_{DS} = 0\text{V}$
		—	—	± 500	nA	$V_{GS} = \pm 10\text{V}, V_{DS} = 0\text{V}$
		—	—	± 2	μA	$V_{GS} = \pm 15\text{V}, V_{DS} = 0\text{V}$
		—	—	—	—	—
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	0.6	—	1	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	0.8	2	Ω	$V_{GS} = 4\text{V}, I_D = 100\text{mA}$
		—	1	2.5		$V_{GS} = 2.5\text{V}, I_D = 50\text{mA}$
		—	1.4	3		$V_{GS} = 1.8\text{V}, I_D = 50\text{mA}$
		—	1.8	—		$V_{GS} = 1.5\text{V}, I_D = 10\text{mA}$
		—	—	—		—
Forward Transfer Admittance	$ Y_{fs} $	—	1.8	—	S	$V_{DS} = 10\text{V}, I_D = 200\text{mA}$
Diode Forward Voltage	V_{SD}	—	0.8	1.3	V	$V_{GS} = 0\text{V}, I_S = 115\text{mA}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	36	—	pF	$V_{DS} = 25\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Output Capacitance	C_{oss}	—	4.6	—		
Reverse Transfer Capacitance	C_{rss}	—	3.6	—		
Gate Resistance	R_g	—	59.8	—	Ω	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Total Gate Charge	Q_g	—	0.55	—	nC	$V_{GS} = 4.5\text{V}, V_{DS} = 10\text{V}, I_D = 250\text{mA}$
Gate-Source Charge	Q_{gs}	—	0.08	—		
Gate-Drain Charge	Q_{gd}	—	0.12	—		
Turn-On Delay Time	$t_{D(ON)}$	—	2.1	—	ns	$V_{GS} = 10\text{V}, V_{DS} = 30\text{V}, R_L = 150\Omega, R_G = 25\Omega, I_D = 200\text{mA}$
Turn-On Rise Time	t_R	—	2.8	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	21	—	ns	
Turn-Off Fall Time	t_F	—	13.9	—	ns	

Notes: 5. Device mounted on FR-4 PCB with minimum recommended pad layout, single sided.

6. Repetitive rating, pulse width limited by junction temperature.

7. Short duration pulse test used to minimize self-heating effect.

8. Guaranteed by design. Not subject to production testing.

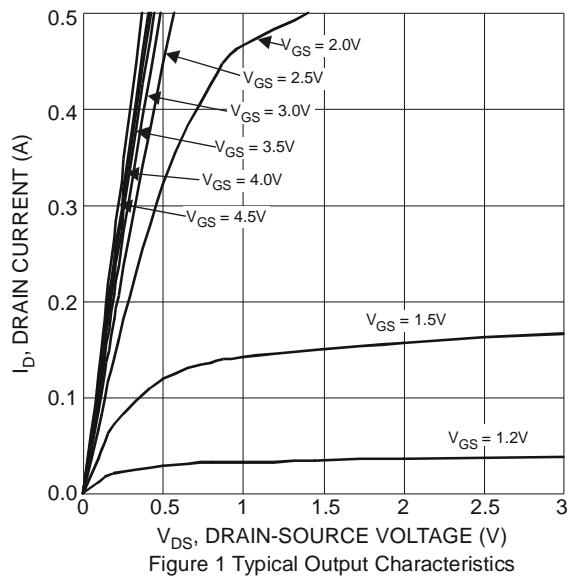


Figure 1 Typical Output Characteristics

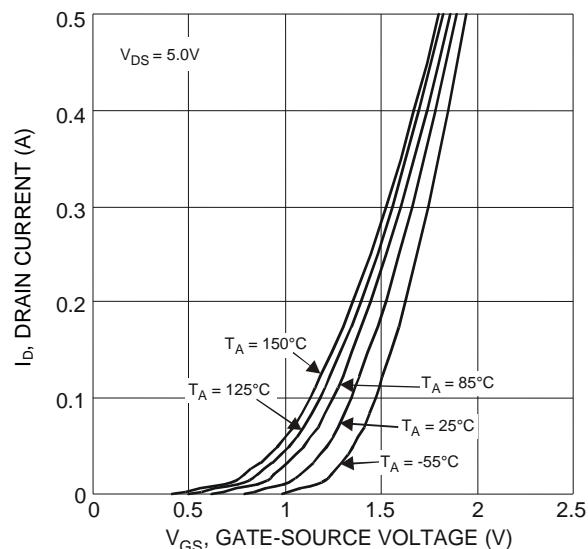


Figure 2 Typical Transfer Characteristics

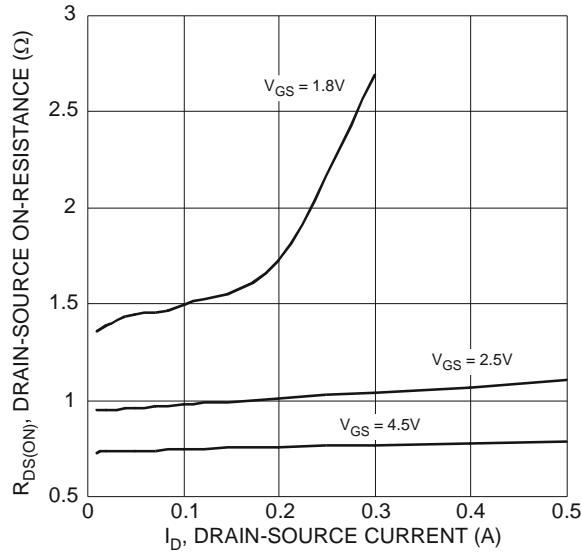


Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

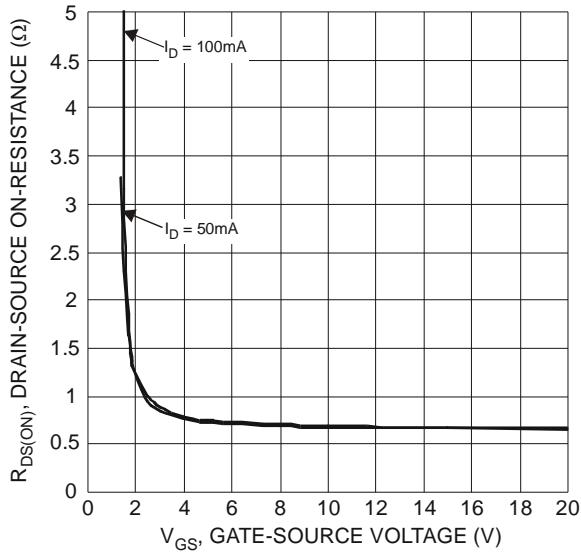


Figure 4 Typical Drain-Source On-Resistance
vs. Gate-Source Voltage

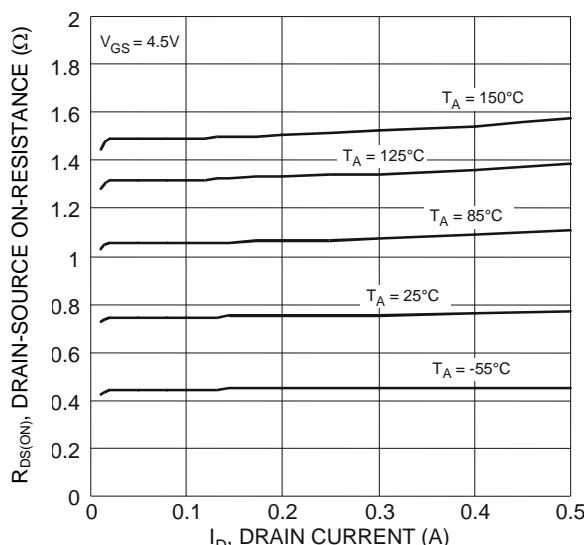


Figure 5 Typical On-Resistance vs.
Drain Current and Temperature

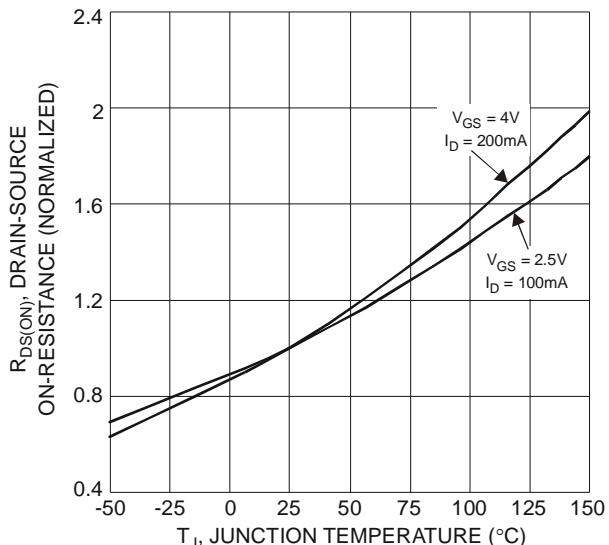
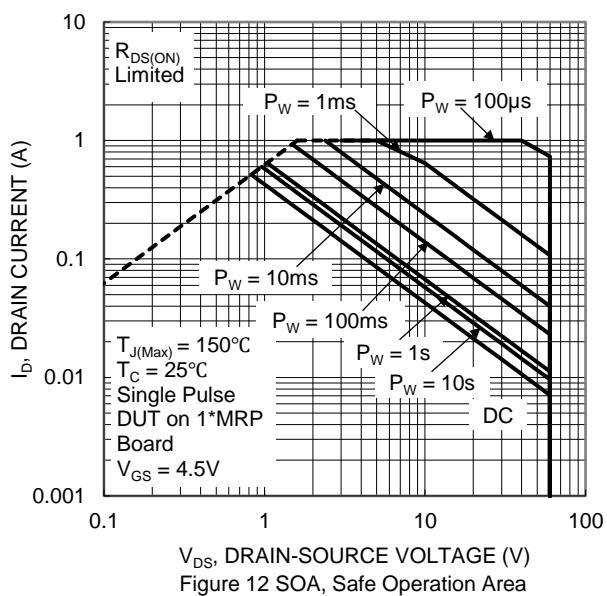
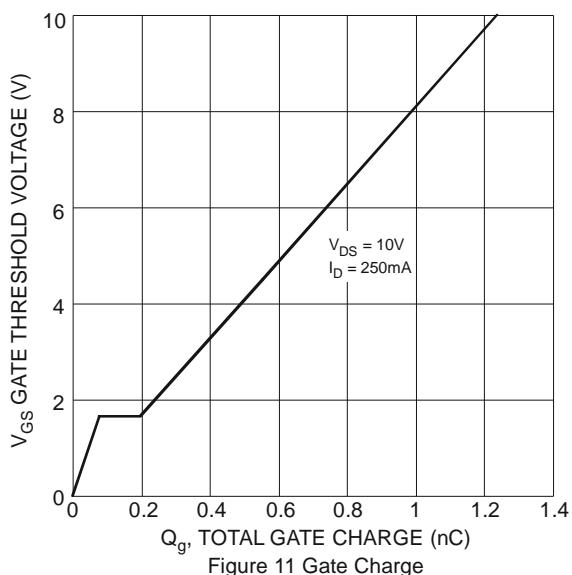
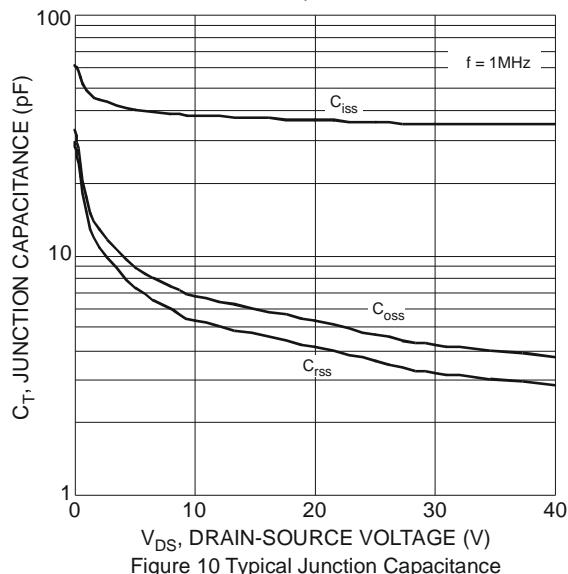
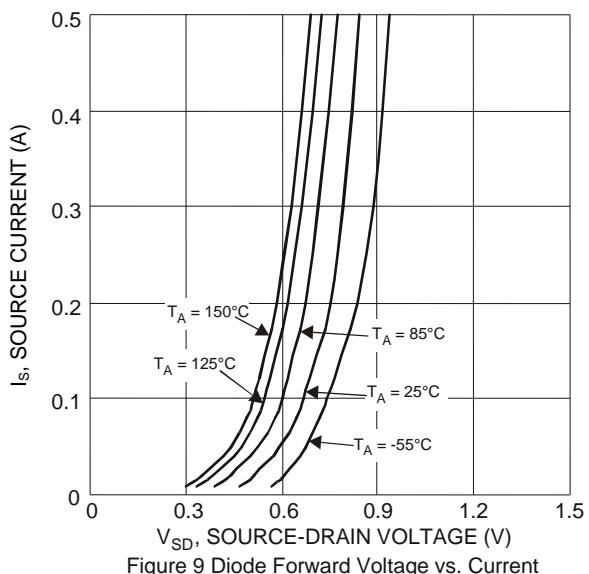
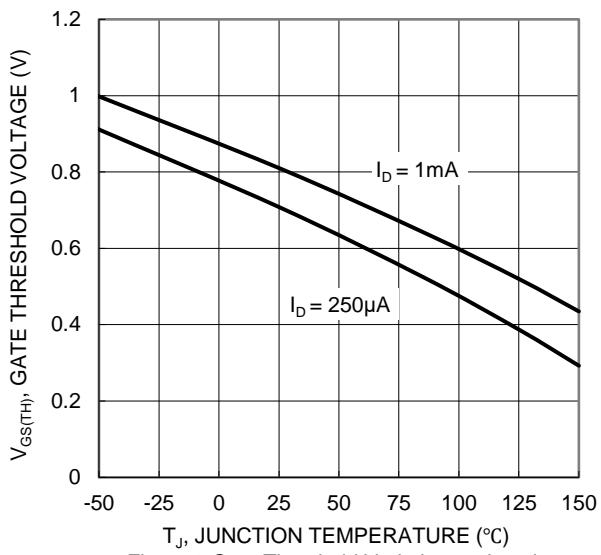
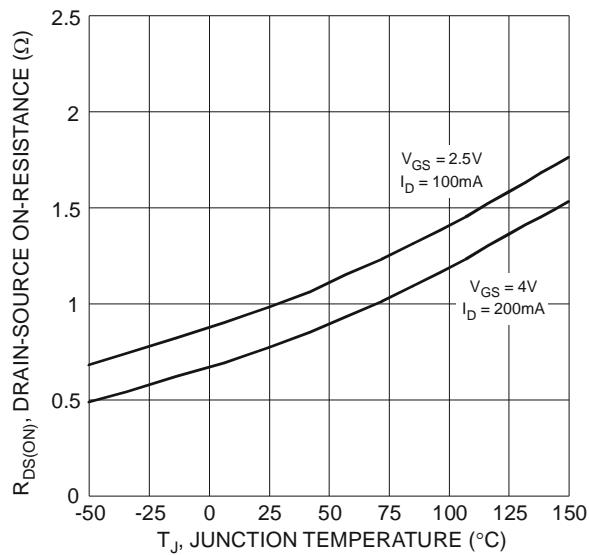


Figure 6 On-Resistance Variation with Temperature



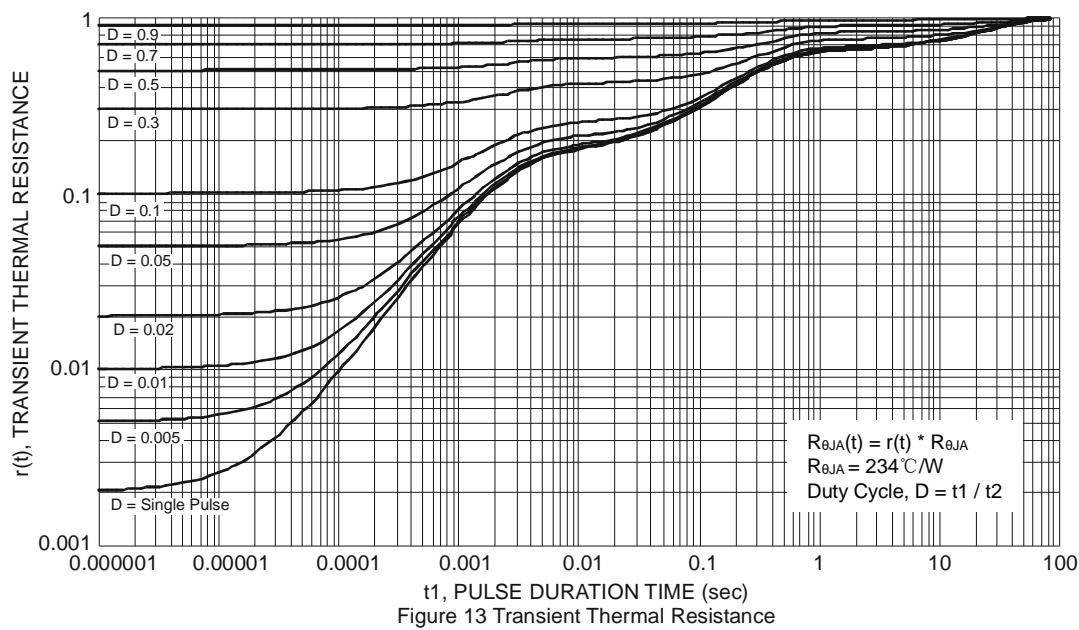
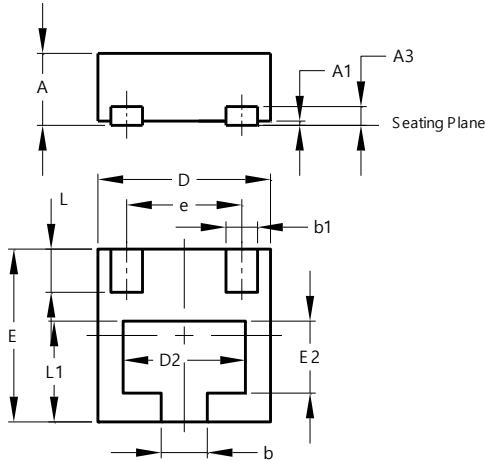


Figure 13 Transient Thermal Resistance

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

U-DFN1212-3 (Type C)



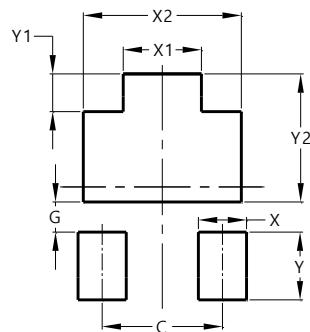
U-DFN1212-3 Type C			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0	0.05	0.02
A3	-	-	0.13
b	0.27	0.37	0.32
b1	0.17	0.27	0.22
D	1.15	1.25	1.20
D2	0.75	0.95	0.85
e	-	-	0.80
E	1.15	1.25	1.20
E2	0.40	0.60	0.50
L	0.25	0.35	0.30
L1	0.65	0.75	0.70

All Dimensions in mm

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

U-DFN1212-3 (Type C)



Dimensions	Value (in mm)
C	0.800
G	0.200
X	0.320
X1	0.520
X2	1.050
Y	0.450
Y1	0.250
Y2	0.850

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