



**THE DATASHEET OF
DMN1150UFL3-7**



DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

Device	BV _{DSS}	R _{DS(ON)} Max	I _D Max T _A = +25°C
N-Channel	12V	150mΩ @ V _{GS} = 4.5V	2.0A
		185mΩ @ V _{GS} = 2.5V	1.8A

Features and Benefits

- Footprint of just 1.3 mm²
- Ultra-Low Profile Package – 0.35mm Profile
- Low Gate Threshold Voltage
- Fast Switching Speed
- Ultra-Small Surface Mount Package
- ESD Protected Gate
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. “Green” Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

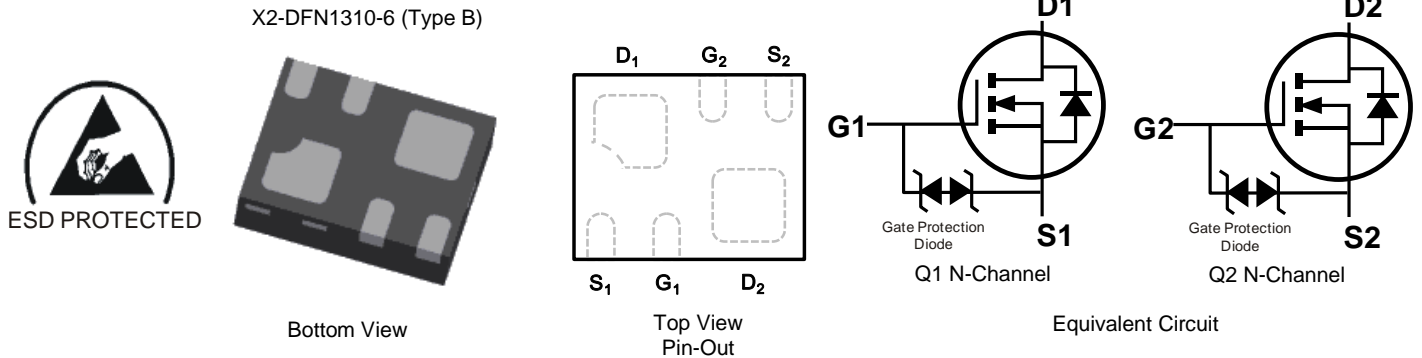
Description and Applications

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

- Motor Control
- Power Management Functions
- Backlighting

Mechanical Data

- Case: X2-DFN1310-6 (Type B)
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – NiPdAu Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (e4)
- Weight: 0.002 grams (Approximate)



Ordering Information (Note 4)

Part Number	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DMN1150UFL3-7	7	8	3,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html 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 <http://www.diodes.com/products/packages.html>.

Marking Information



150 = Product Type Marking Code

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V _{DSS}	12	V
Gate-Source Voltage			V _{GSS}	±6	V
Continuous Drain Current (Note 5) V _{GS} = 4.5V	Steady State	T _A = +25°C	I _D	2.0	A
		T _A = +70°C		1.6	

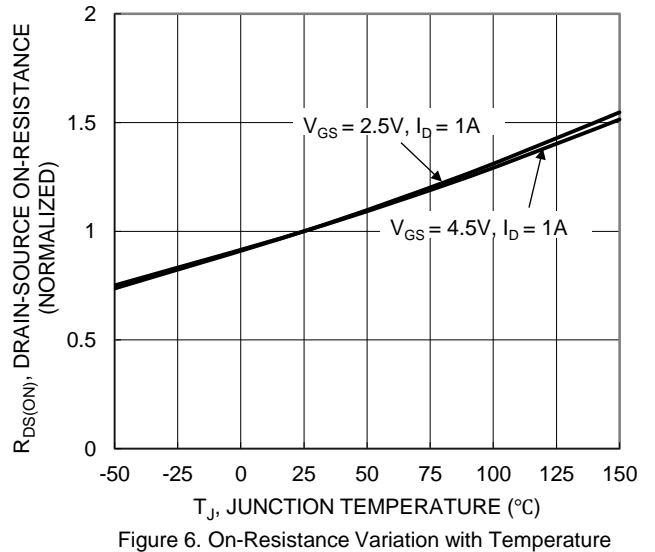
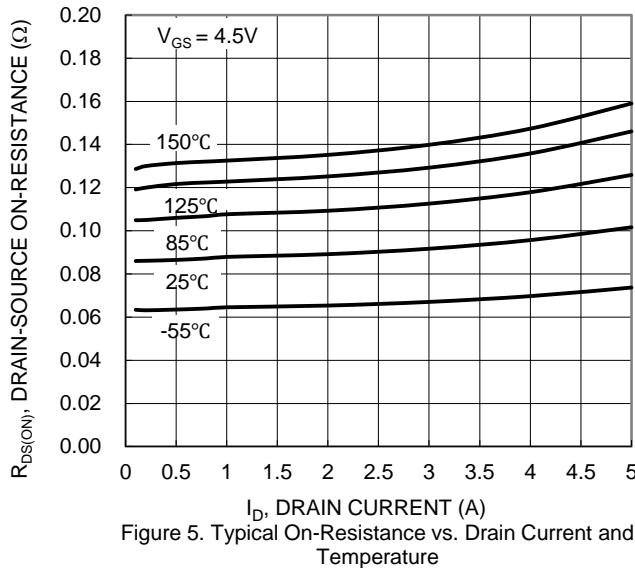
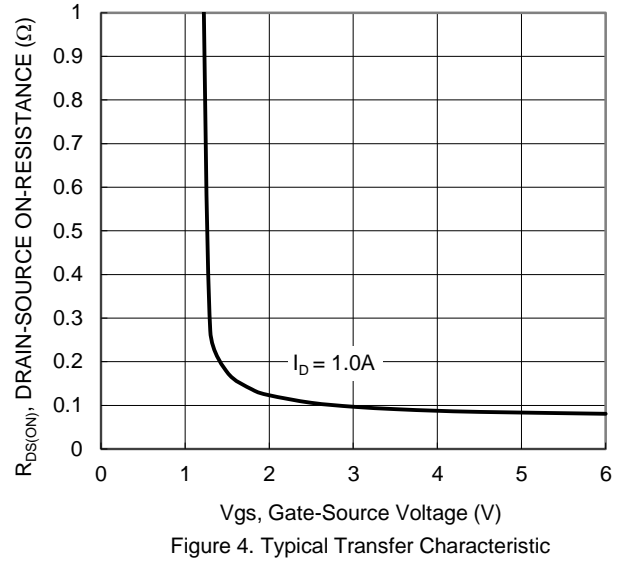
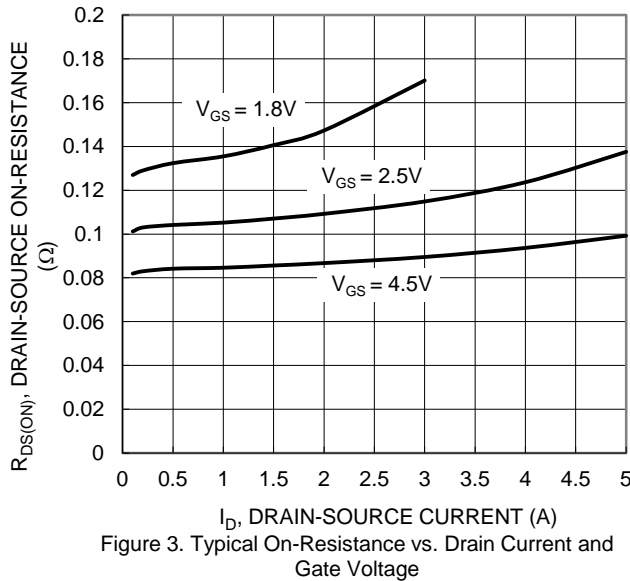
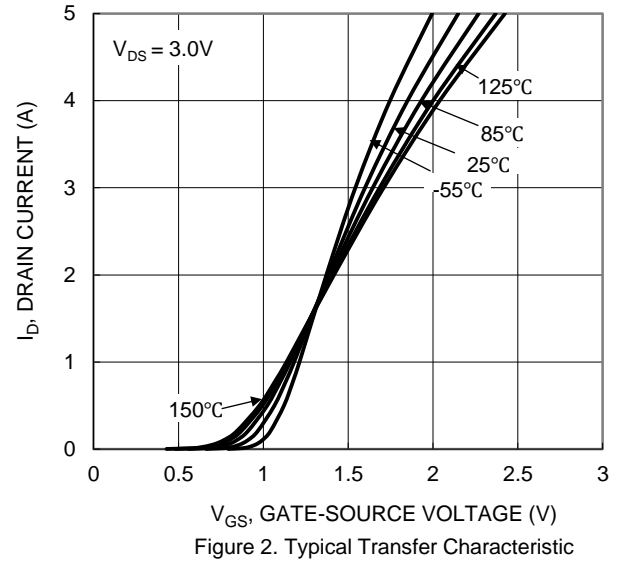
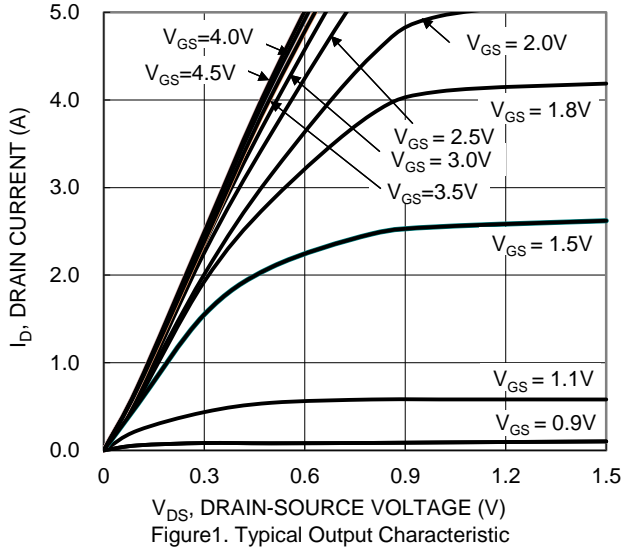
Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

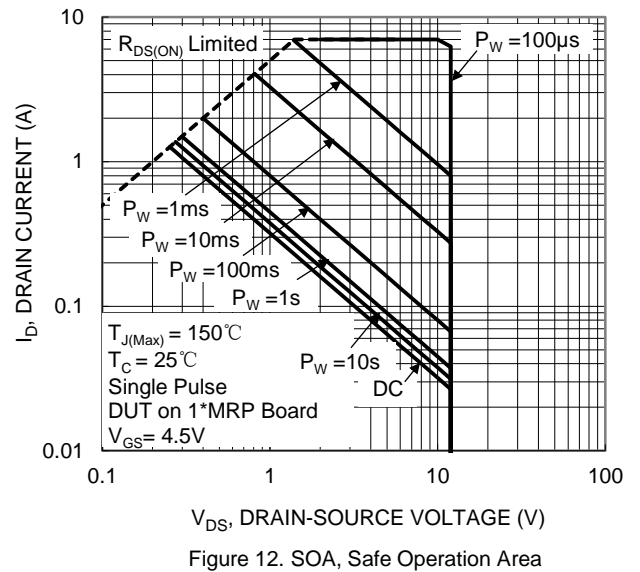
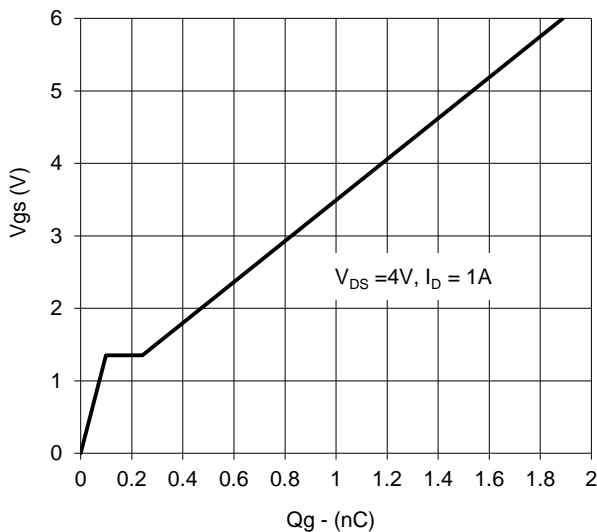
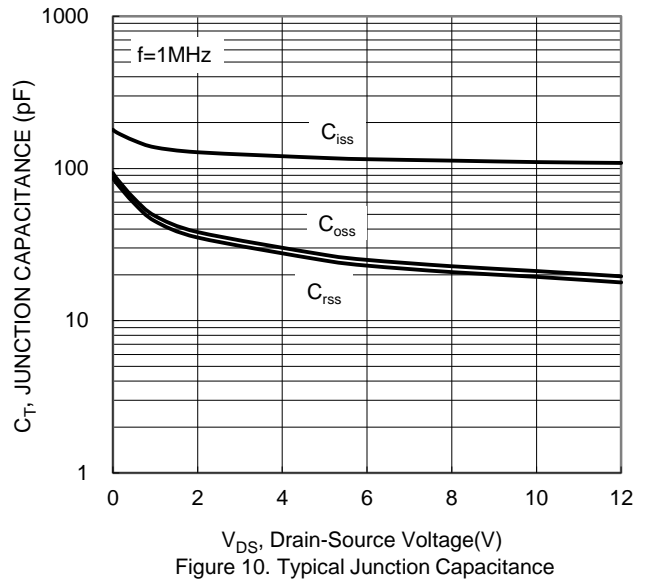
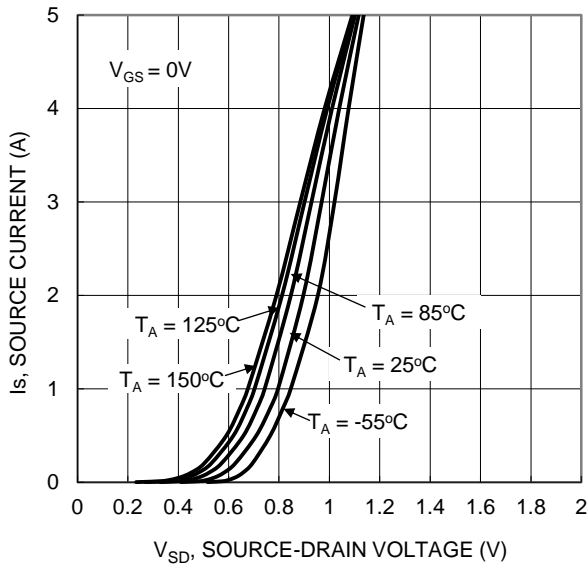
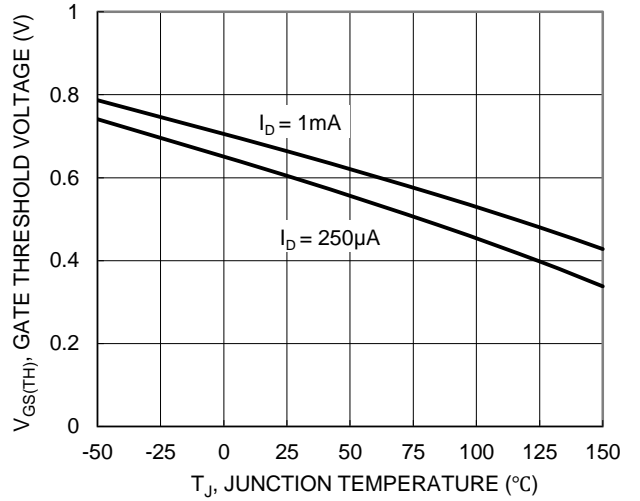
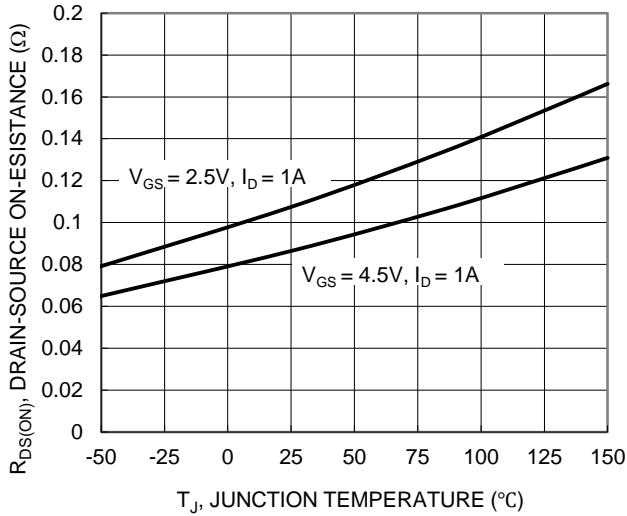
Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	T _A = +25°C	P _D	0.39	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	R _{θJA}	320	°C/W
Total Power Dissipation (Note 6)	T _A = +25°C	P _D	0.9	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	R _{θJA}	141	°C/W
Thermal Resistance, Junction to Case (Note 6)		R _{θJC}	49	
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	12	—	—	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current T _J = +25°C	I _{DSS}	—	—	1	μA	V _{DS} = 12V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±10	μA	V _{GS} = ±6V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	0.35	0.42	1.0	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	119	150	mΩ	V _{GS} = 4.5V, I _D = 1A
			141	185		V _{GS} = 2.5V, I _D = 1A
			175	210		V _{GS} = 1.8V, I _D = 1A
Diode Forward Voltage	V _{SD}	—	0.7	1.2	V	V _{GS} = 0V, I _S = 150mA
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{ISS}	—	115	—	pF	V _{DS} = 6V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{OSS}	—	25	—	pF	
Reverse Transfer Capacitance	C _{RSS}	—	23	—	pF	
Gate Resistance	R _G	—	90	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge	Q _G	—	1.4	—	nC	V _{DS} = 4V, V _{GS} = 4.5V, I _D = 1A
Gate-Source Charge	Q _{GS}	—	0.1	—	nC	
Gate-Drain Charge	Q _{GD}	—	0.1	—	nC	
Turn-On Delay Time	t _{D(ON)}	—	4.0	—	ns	V _{GS} = 6V, V _{DS} = 4V, R _G = 1Ω, I _D = 1A
Turn-On Rise Time	t _R	—	7.4	—	ns	
Turn-Off Delay Time	t _{D(OFF)}	—	44	—	ns	
Turn-Off Fall Time	t _F	—	19	—	ns	

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
 - Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to product testing.





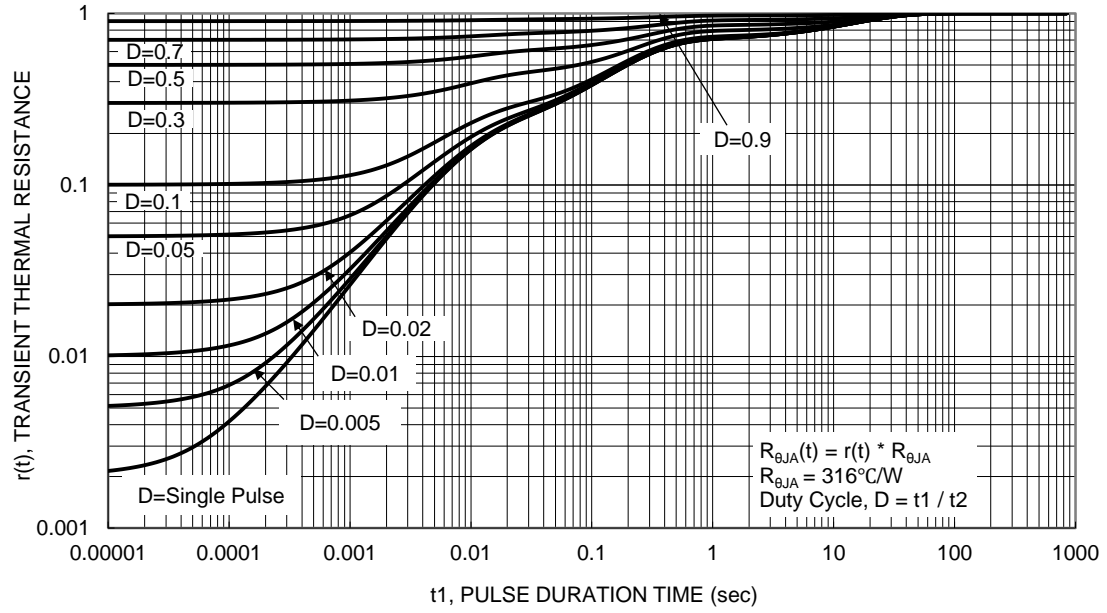
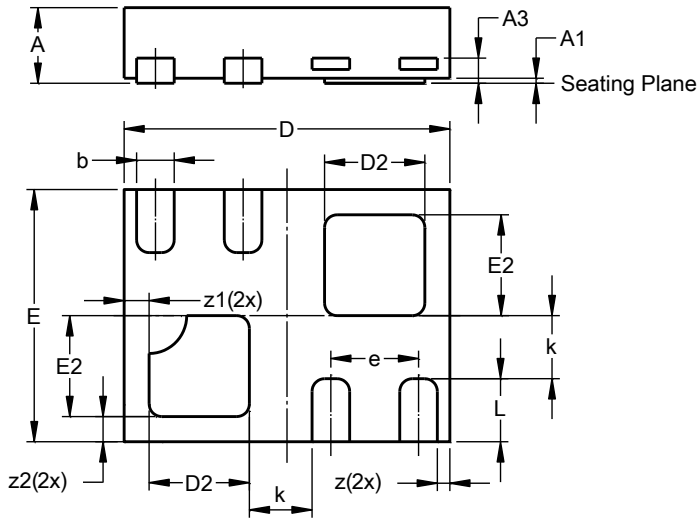


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

X2-DFN1310-6 (Type B)

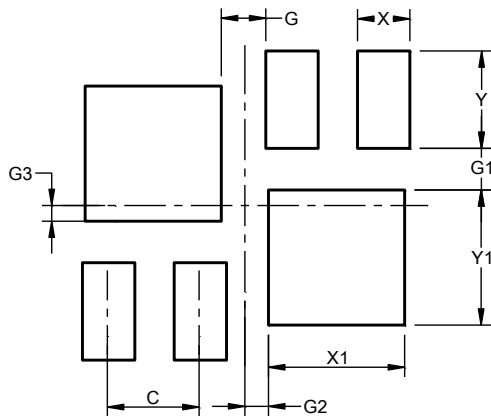


X2-DFN1310-6 (Type B)			
Dim	Min	Max	Typ
A	0.25	0.35	0.30
A1	0	0.05	0.02
A3	--	--	0.100
b	0.10	0.20	0.15
D	1.25	1.35	1.30
D2	0.30	0.50	0.40
E	0.95	1.05	1.00
E2	0.30	0.50	0.40
e	--	--	0.35
k	0.15	--	--
L	0.20	0.30	0.25
z	--	--	0.05
z1	--	--	0.10
z2	--	--	0.10
All Dimensions in mm			

Suggested Pad Layout

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

X2-DFN1310-6 (Type B)



Dimensions	Value (in mm)
C	0.350
G	0.17
G1	0.16
G2	0.09
G3	0.06
X	0.20
X1	0.52
Y	0.375
Y1	0.52

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