

## Product Summary

BV <sub>DSS</sub>	R <sub>DS(ON)</sub>	I <sub>D</sub> T <sub>A</sub> = +25°C
30V	460mΩ @ V <sub>GS</sub> = 4.5V	1.3A
	560mΩ @ V <sub>GS</sub> = 2.5V	1.2A

## Description

This MOSFET is designed to minimize the on-state resistance (R<sub>DS(ON)</sub>) yet maintain superior switching performance, making it ideal for high efficiency power management applications.

## Applications

- Load switches
- Portable applications
- Power management functions

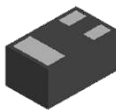
## Features and Benefits

- 0.4mm Ultra Low Profile Package for Thin Application
- 0.6mm<sup>2</sup> Package Footprint, 10 Times Smaller than SOT23
- Low V<sub>GS(TH)</sub>, Can Be Driven Directly from A Battery
- Low R<sub>DS(ON)</sub>
- **ESD Protected Gate**
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DIODES™ DMN3732UFB4Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

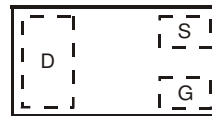
<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

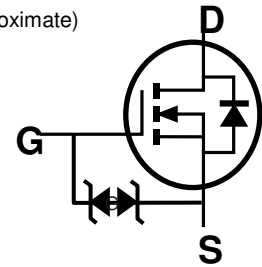
- Package: X2-DFN1006-3
- Package Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – NiPdAu over Copper Leadframe; Solderable per MIL-STD-202, Method 208@4
- Weight: 0.001 grams (Approximate)



ESD PROTECTED



Equivalent Circuit



X2-DFN1006-3

## Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (Inches)	Tape Width (mm)	Tape Pitch (mm)	Packing	
						Qty.	Carrier
DMN3732UFB4Q-7B	X2-DFN1006-3	BF	7	8	2	10,000	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

<b>DMN3732UFB4Q-7B</b>	<p>Top View Bar Denotes Gate and Source Side</p>	<b>BF</b> = Product Type Marking Code

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DSS</sub>	30	V
Gate-Source Voltage	V <sub>GSS</sub>	±8	
Continuous Drain Current (Note 6) V <sub>GS</sub> = 4.5V	Steady State	T <sub>A</sub> = +25°C	1.3
		T <sub>A</sub> = +70°C	1.1
Maximum Continuous Body Diode Forward Current (Note 6)	I <sub>S</sub>	1.1	A
Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)	I <sub>DM</sub>	3.3	A

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P <sub>D</sub>	0.49	W
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	253	°C/W
Total Power Dissipation (Note 6)	P <sub>D</sub>	1.12	W
Thermal Resistance, Junction to Ambient (Note 6)	R <sub>θJA</sub>	112	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 10μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	1	μA	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	±3	μA	V <sub>GS</sub> = ±8V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	0.45	—	0.95	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	230	460	mΩ	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 200mA
		—	250	560		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 100mA
		—	278	730		V <sub>GS</sub> = 1.8V, I <sub>D</sub> = 75mA
Diode Forward Voltage	V <sub>SD</sub>	—	0.7	1.2	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 300mA
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	C <sub>iSS</sub>	—	40.8	—	pF	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oSS</sub>	—	7.6	—	pF	
Reverse Transfer Capacitance	C <sub>rSS</sub>	—	4.6	—	pF	
Total Gate Charge	Q <sub>g</sub>	—	0.9	—	nC	V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 1A
Gate-Source Charge	Q <sub>gs</sub>	—	0.05	—	nC	
Gate-Drain Charge	Q <sub>gd</sub>	—	0.3	—	nC	
Turn-On Delay Time	t <sub>D(ON)</sub>	—	1.1	—	ns	V <sub>DS</sub> = 10V, I <sub>D</sub> = 1A V <sub>GS</sub> = 10V, R <sub>G</sub> = 6Ω
Turn-On Rise Time	t <sub>R</sub>	—	15.9	—	ns	
Turn-Off Delay Time	t <sub>D(OFF)</sub>	—	20.7	—	ns	
Turn-Off Fall Time	t <sub>F</sub>	—	20.0	—	ns	
Reverse Recovery Time	t <sub>RR</sub>	—	59	—	ns	I <sub>F</sub> = 1A, di/dt = 100A/μs
Reverse Recovery Charge	Q <sub>R</sub>	—	25	—	nC	I <sub>F</sub> = 1A, di/dt = 100A/μs

- 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 production testing.

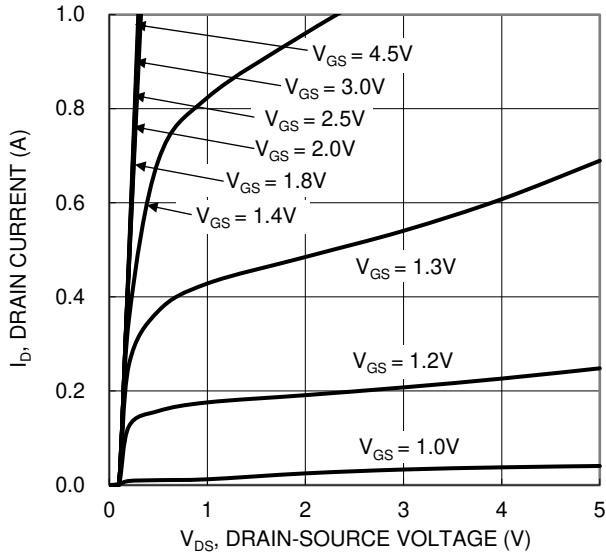


Figure 1. Typical Output Characteristic

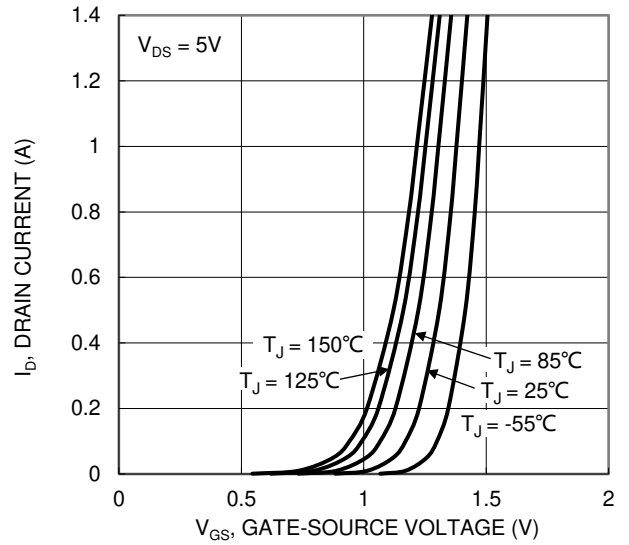


Figure 2. Typical Transfer Characteristic

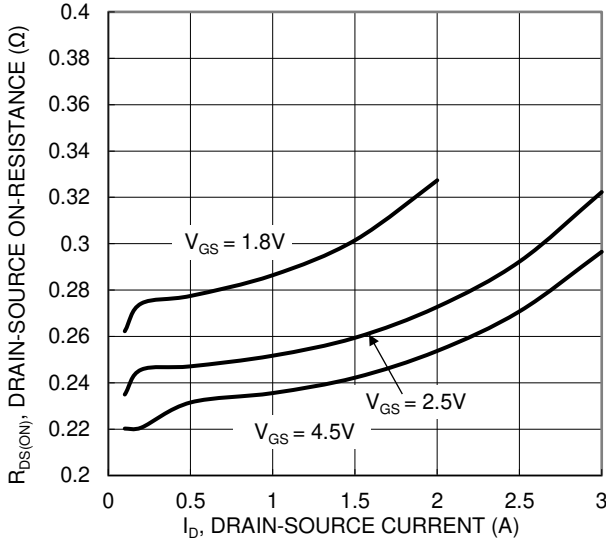


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

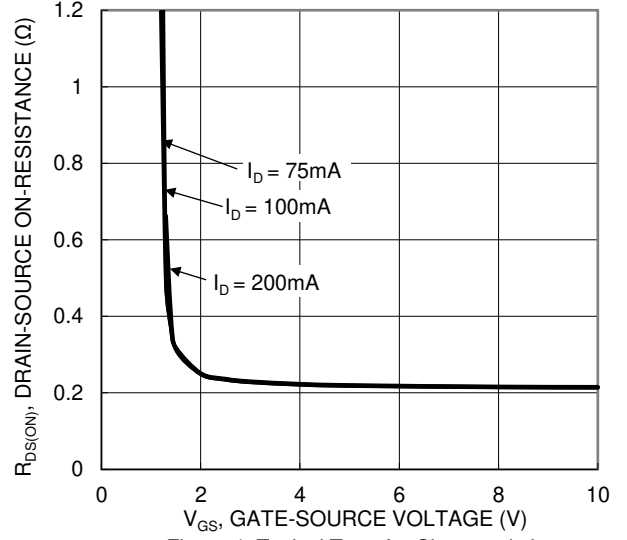


Figure 4. Typical Transfer Characteristic

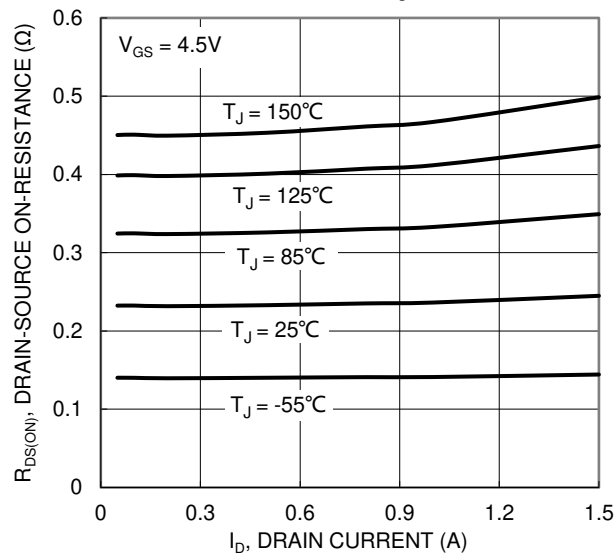


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

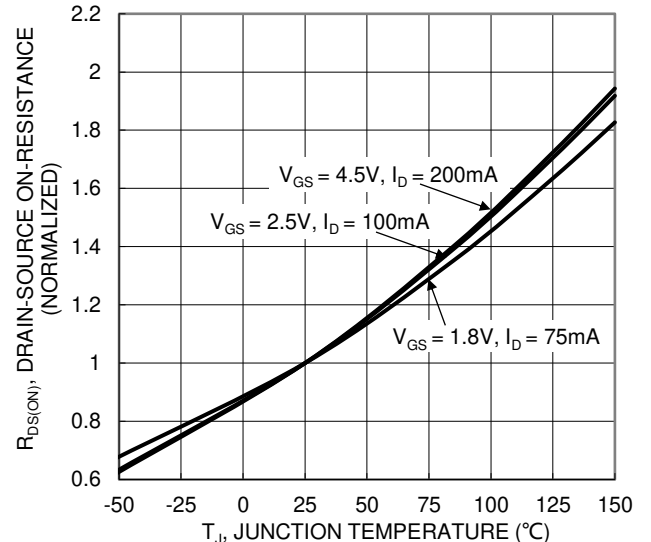


Figure 6. On-Resistance Variation with Junction Temperature

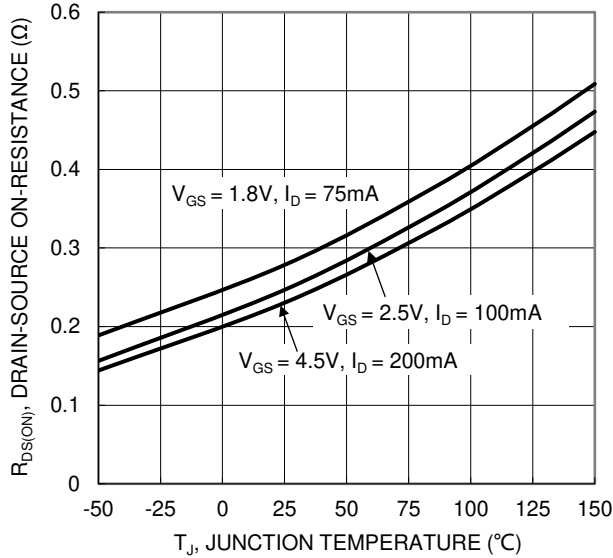


Figure 7. On-Resistance Variation with Junction Temperature

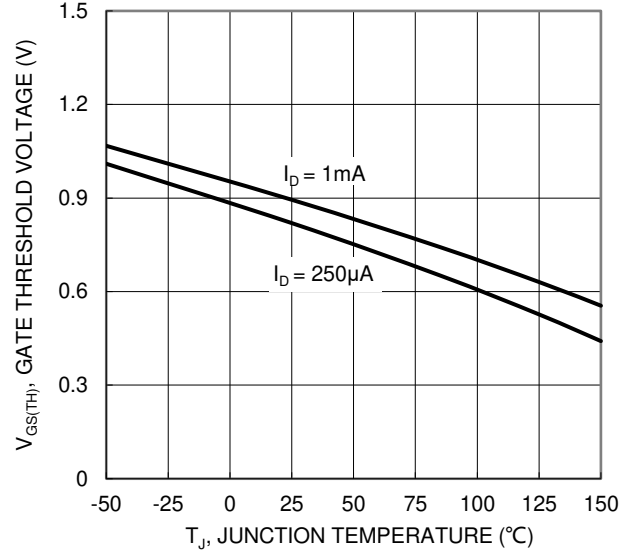


Figure 8. Gate Threshold Variation vs. Junction Temperature

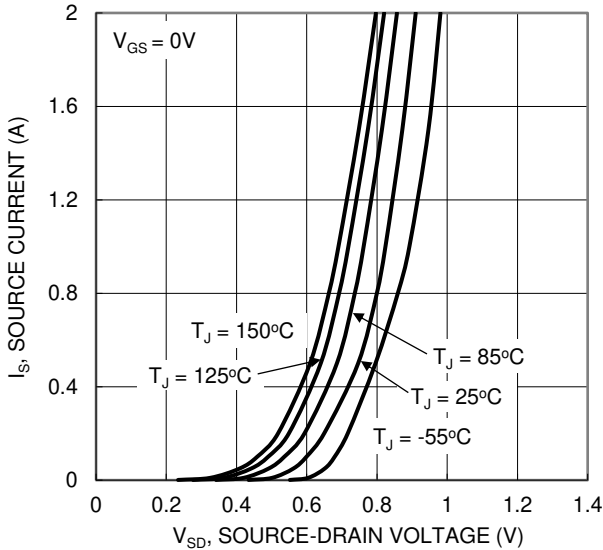


Figure 9. Diode Forward Voltage vs. Current

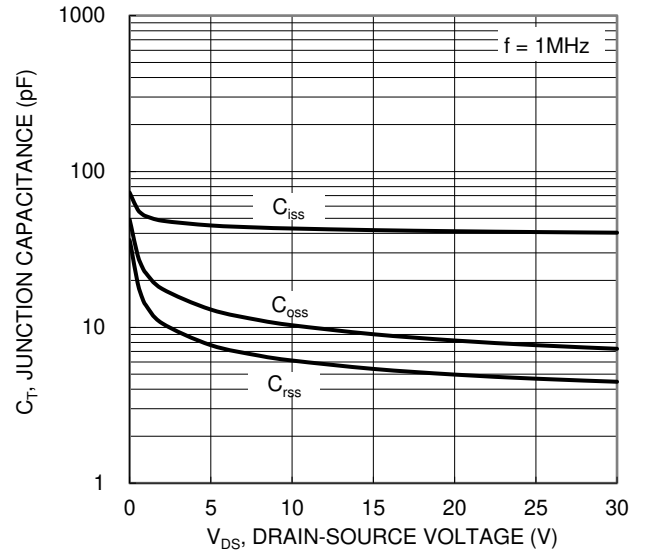


Figure 10. Typical Junction Capacitance

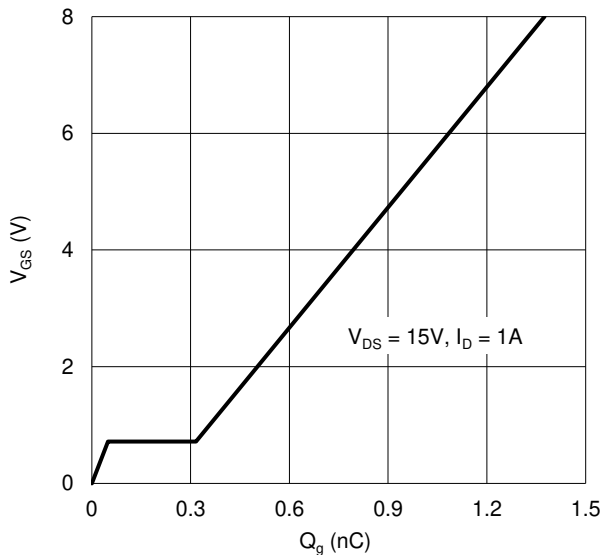


Figure 11. Gate Charge

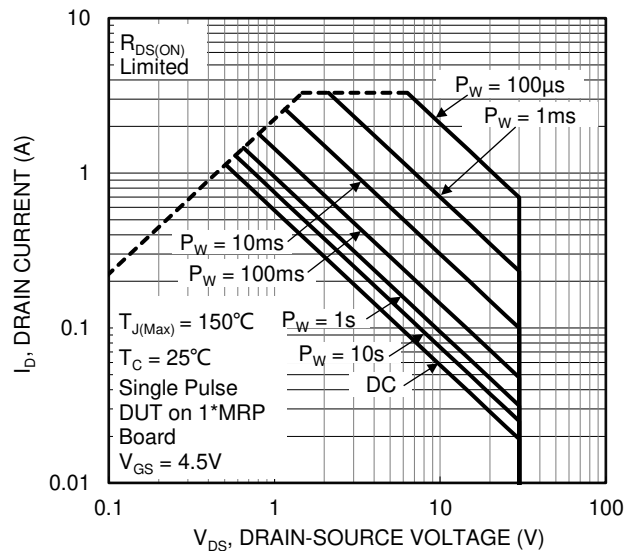


Figure 12. SOA, Safe Operation Area

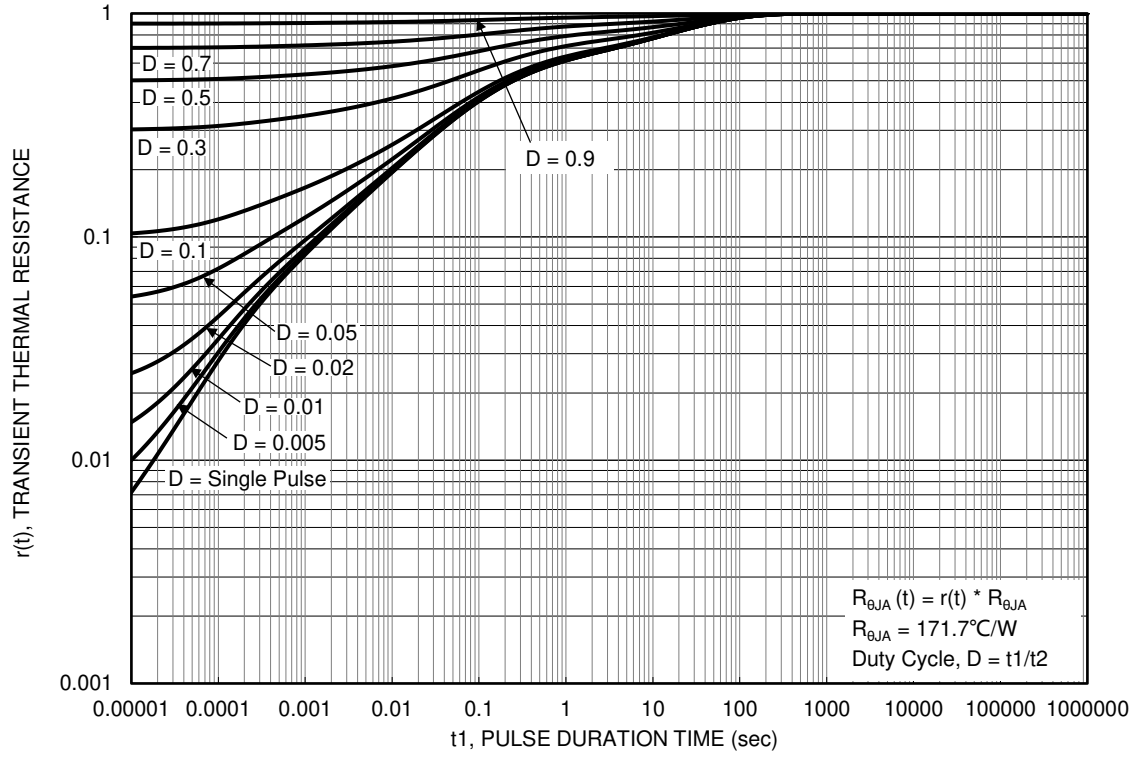
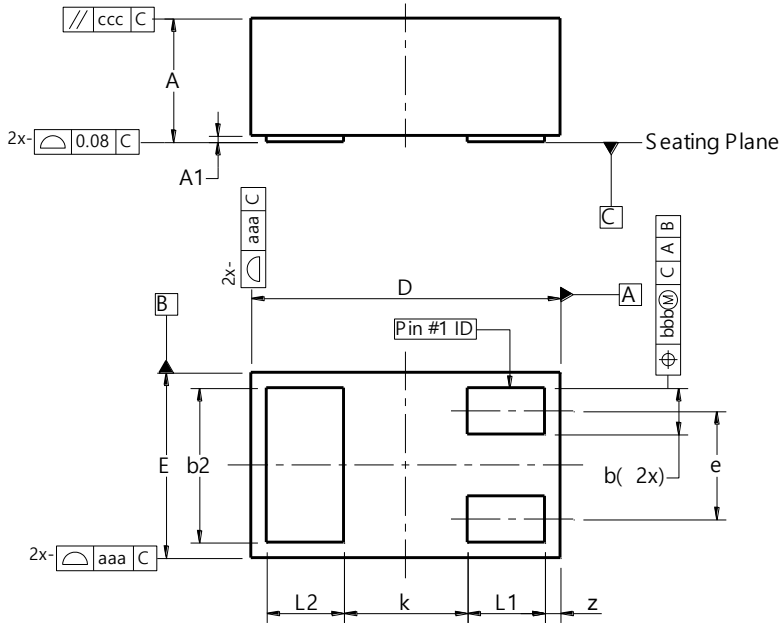


Figure 13. Transient Thermal Resistance

**Package Outline Dimensions**

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

**X2-DFN1006-3**

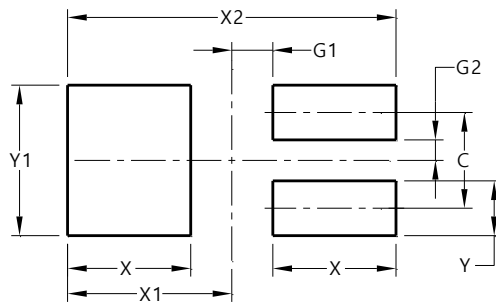


X2-DFN1006-3			
Dim	Min	Max	Typ
A	—	0.40	—
A1	0.00	0.05	0.03
b	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.05	1.00
E	0.55	0.65	0.60
e	-	-	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
k	-	-	0.40
z	0.02	0.08	0.05
aaa	0.15		
bbb	0.05		
ccc	0.05		
<b>All Dimensions in mm</b>			

**Suggested Pad Layout**

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

**X2-DFN1006-3**



Dimensions	Value (in mm)
C	0.350
G1	0.150
G2	0.075
X	0.450
X1	0.600
X2	1.200
Y	0.200
Y1	0.550

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