

Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max T _A = +25°C
20V	0.99Ω @V _{GS} = 4.5V	530mA
	1.2Ω @V _{GS} = 2.5V	480mA
	1.8Ω @V _{GS} = 1.8V	400mA
	2.4Ω @V _{GS} = 1.5V	340mA

Features and Benefits

- Low Profile Package
- 0.6mm x 0.4mm Package Footprint
- Low On-Resistance
- Very Low Gate Threshold Voltage, 1.0V max
- ESD Protected Gate
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative.**
<https://www.diodes.com/quality/product-definitions/>

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.

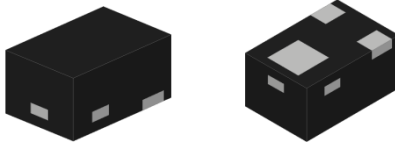
- General-purpose interfacing switches
- Power-management functions
- Analog switches

Mechanical Data

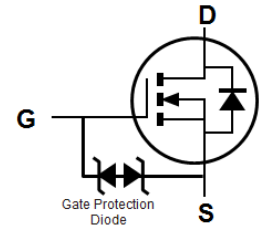
- Package: X2-DFN0604-3
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – NiPdAu over Copper Leadframe; Solderable per MIL-STD-202, Method 208 (e4)
- Weight: 0.001 grams (Approximate)



X2-DFN0604-3



Top View
Package Pin Configuration



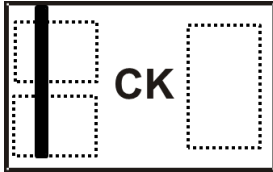
Equivalent Circuit

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMN2992UFO-7B	X2-DFN0604-3	10,000	Tape & Reel
DMN2992UFO-7R	X2-DFN0604-3	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



CK or \bar{CK} = Product Type Marking Code
Bar Denotes Gate and Source Side

Top View

<p>DMN2992UFO-7B</p>	<p style="text-align: center;">Bar Denotes Gate & Source Side</p>
<p>DMN2992UFO-7R</p>	<p style="text-align: center;">Bar Denotes Gate & Source Side</p>

Maximum Ratings (@T_A = +25°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 (Note 5) V _{GS} = 4.5V	Steady State	I _D	T _A = +25°C	530	mA
			T _A = +85°C	430	
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)		I _{DM}	1.55	A	

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	Steady State	P _D	420	mW
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	R _{θJA}	295	°C/W
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 6)						
Drain-Source Breakdown Voltage	BV _{DSS}	20	—	—	V	V _{GS} = 0V, I _D = 250µA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	µA	V _{DS} = 16V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±200	nA	V _{GS} = ±5V, V _{DS} = 0V
		—	—	±150	nA	V _{GS} = ±3V, V _{DS} = 0V
		—	—	±500	nA	V _{GS} = ±3V, V _{DS} = 0V T _A = +75°C (Note 7)
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	V _{GS(TH)}	0.4	—	1.0	V	V _{DS} = V _{GS} , I _D = 250µA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	0.44	0.99	Ω	V _{GS} = 4.5V, I _D = 100mA
		—	0.54	1.2		V _{GS} = 2.5V, I _D = 50mA
		—	0.67	1.8		V _{GS} = 1.8V, I _D = 20mA
		—	0.8	2.4		V _{GS} = 1.5V, I _D = 10mA
Diode Forward Voltage	V _{SD}	—	0.7	1.0	V	V _{GS} = 0V, I _S = 150mA
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C _{iss}	—	15.6	—	pF	V _{DS} = 16V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	5.4	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	4	—	pF	
Total Gate Charge	Q _g	—	0.41	—	nC	V _{GS} = 4.5V, V _{DS} = 10V I _D = 250mA
Gate-Source Charge	Q _{gs}	—	0.07	—	nC	
Gate-Drain Charge	Q _{gd}	—	0.12	—	nC	
Turn-On Delay Time	t _{D(ON)}	—	1.77	—	ns	V _{DD} = 10V, V _{GS} = 4.5V R _L = 47Ω, R _G = 10Ω I _D = 200mA
Turn-On Rise Time	t _R	—	4.5	—	ns	
Turn-Off Delay Time	t _{D(OFF)}	—	22	—	ns	
Turn-Off Fall Time	t _F	—	8.2	—	ns	

- Notes:
- Device mounted on FR-4 PCB, with minimum recommended pad layout.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to product testing.

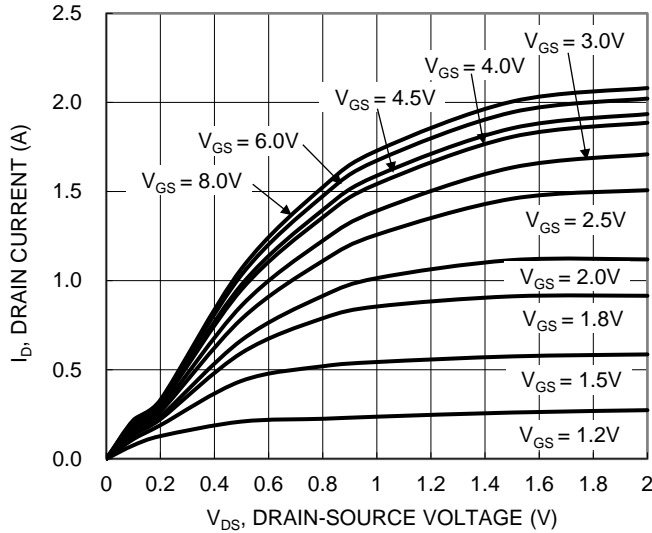


Figure 1. Typical Output Characteristic

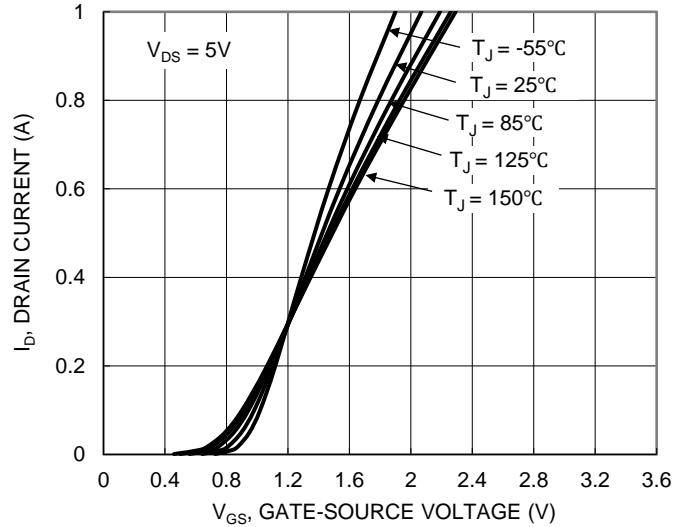


Figure 2. Typical Transfer Characteristic

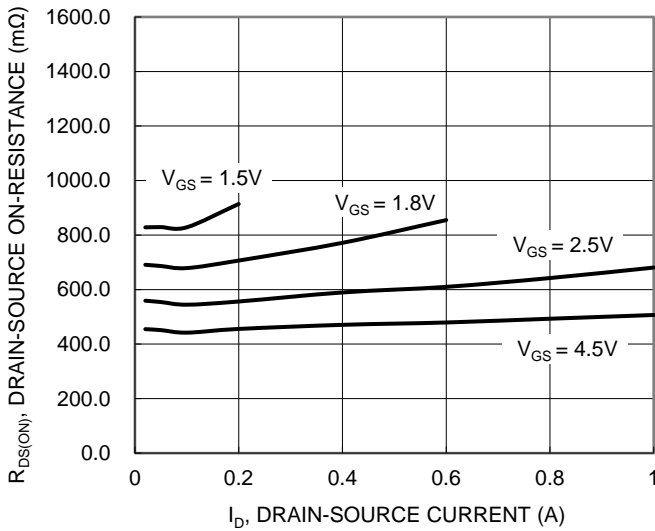


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

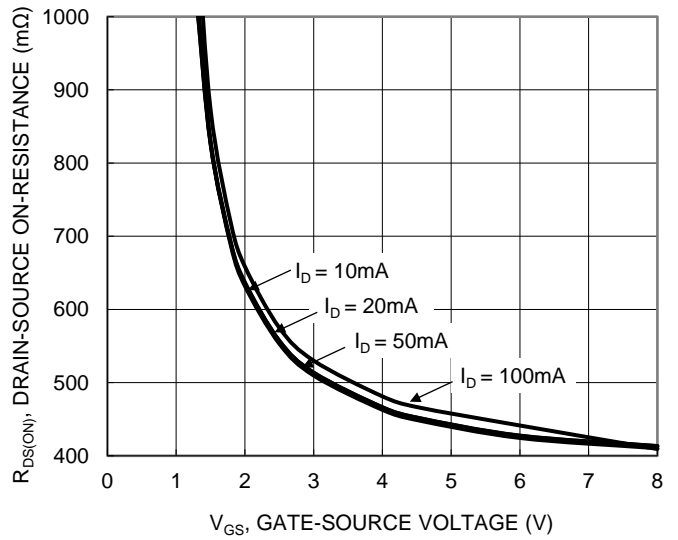


Figure 4. Typical Transfer Characteristic

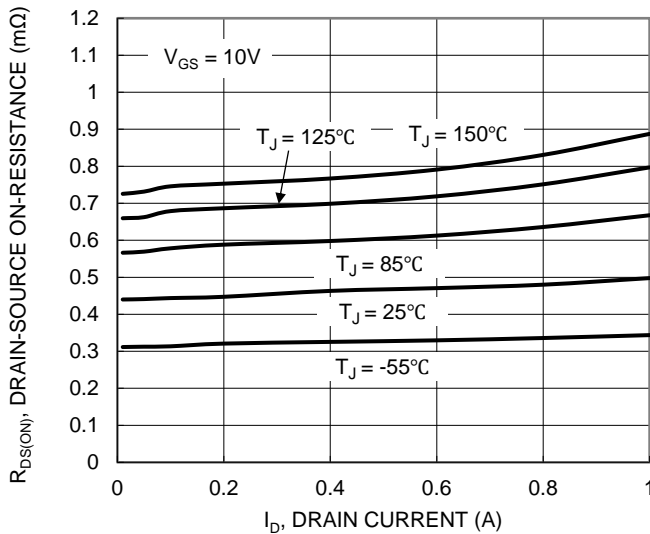


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

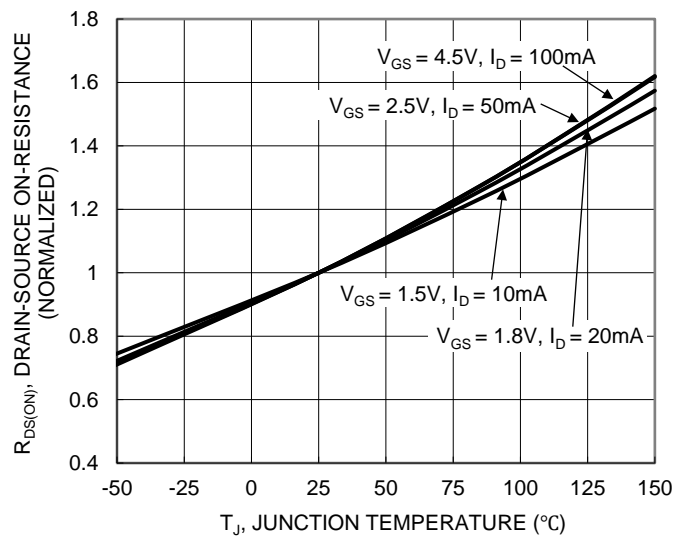


Figure 6. On-Resistance Variation with Temperature

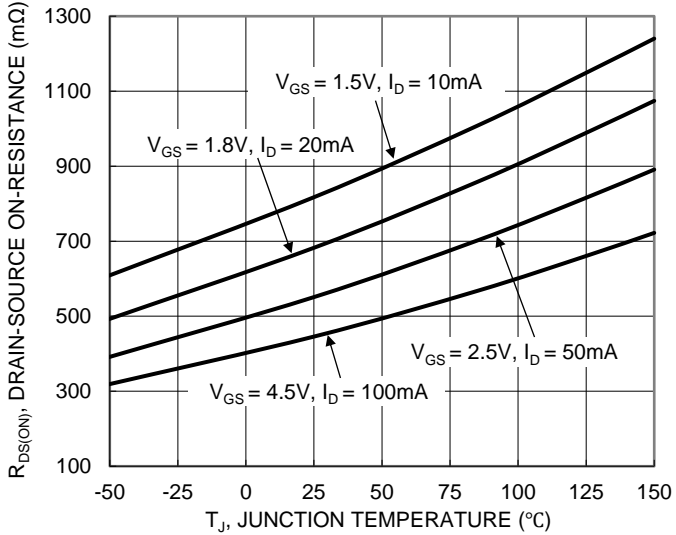


Figure 7. On-Resistance Variation with Temperature

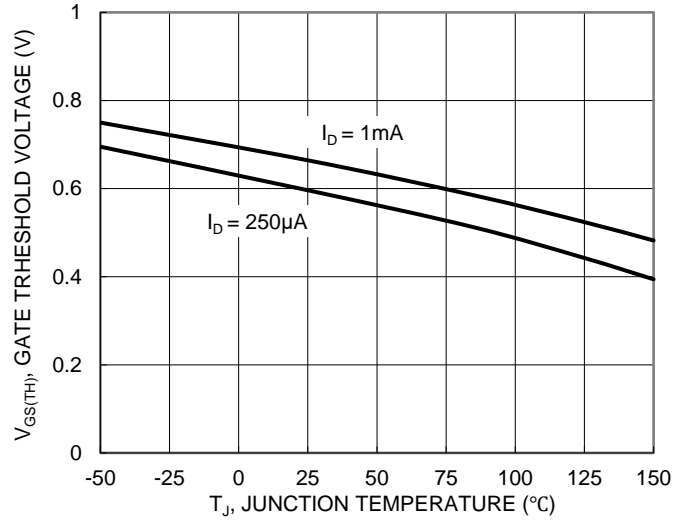


Figure 8. Gate Threshold Variation vs. Junction Temperature

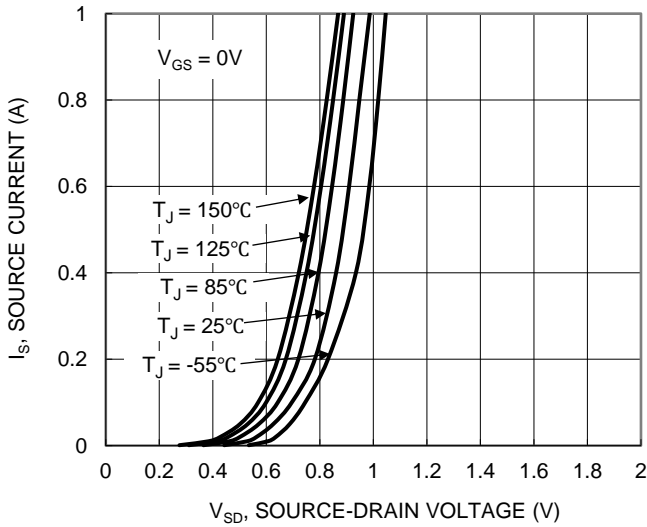


Figure 9. Diode Forward Voltage vs. Current

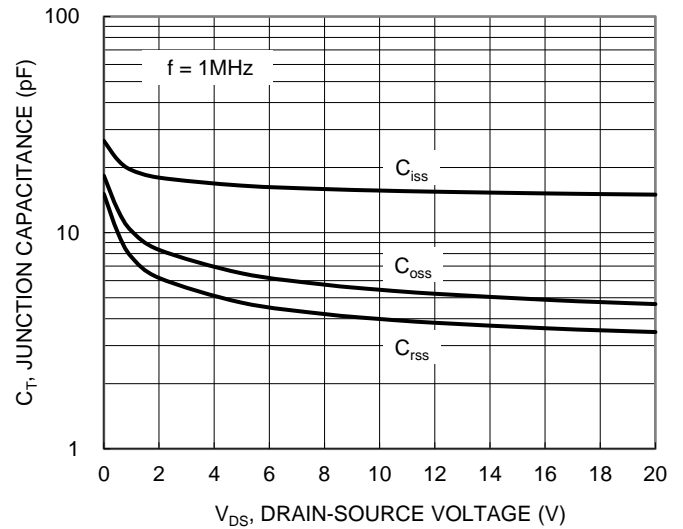


Figure 10. Typical Junction Capacitance

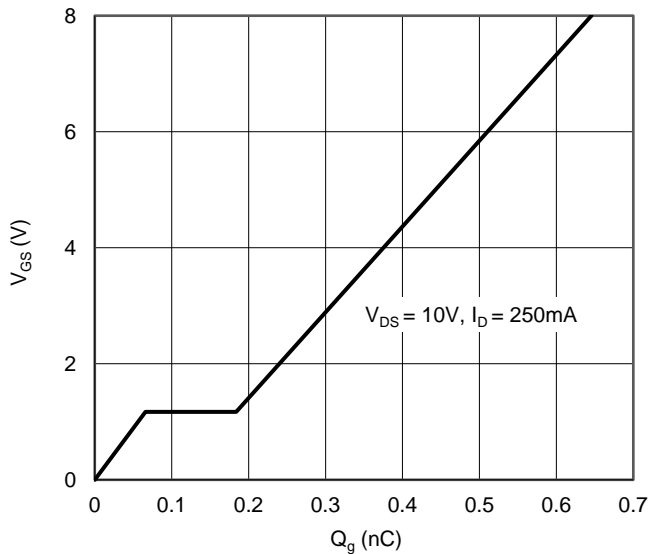


Figure 11. Gate Charge

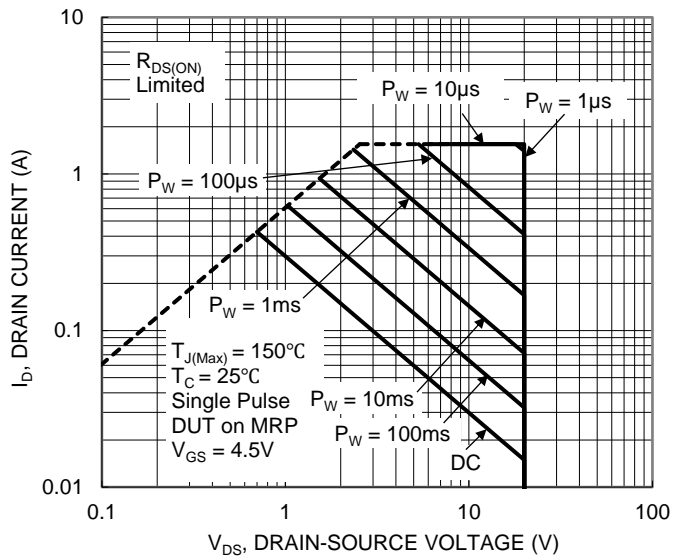


Figure 12. SOA, Safe Operation Area

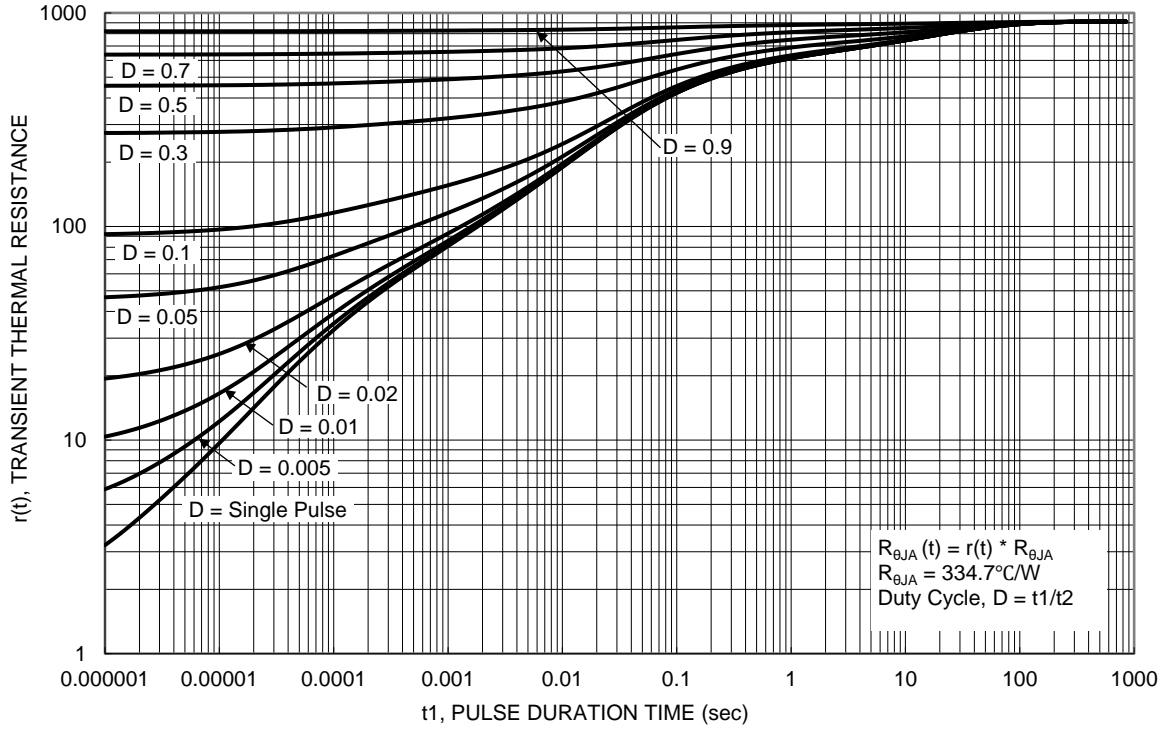
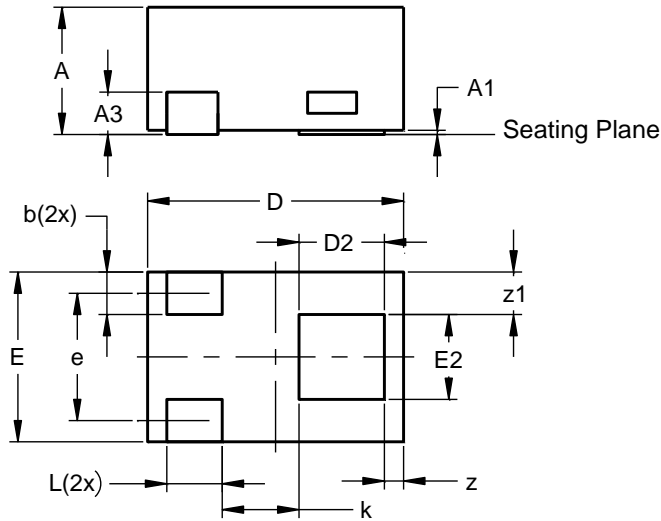


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

X2-DFN0604-3

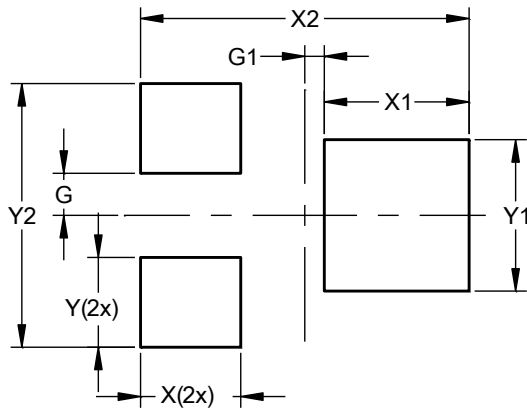


X2-DFN0604-3			
Dim	Min	Max	Typ
A	--	0.40	0.36
A1	0.00	0.03	0.02
A3	--	--	0.10
b	0.07	0.15	0.10
D	0.55	0.65	0.60
D2	0.15	0.25	0.20
E	0.35	0.45	0.40
E2	0.15	0.25	0.20
e	--	--	0.30
k	0.15	--	--
L	0.10	0.18	0.13
z	--	--	0.045
z1	--	--	0.10
All Dimensions in mm			

Suggested Pad Layout

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

X2-DFN0604-3



Dimensions	Value (in mm)
G	0.075
G1	0.035
X	0.180
X1	0.260
X2	0.590
Y	0.160
Y1	0.270
Y2	0.470

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