

Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max T _A = +25°C
-30V	5Ω @ V _{GS} = -4.5V	-0.22A
	6Ω @ V _{GS} = -2.5V	-0.20A
	7Ω @ V _{GS} = -1.8V	-0.18A
	10Ω @ V _{GS} = -1.5V	-0.15A

Features and Benefits

- Low On-Resistance
- Very Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Ultra-Small Surface Mount Package 0.8mm x 0.6mm
- **ESD Protected Gate**
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen- and Antimony-Free. "Green" Device (Note 3)**
- **The DMP32D9UDAQ 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/>

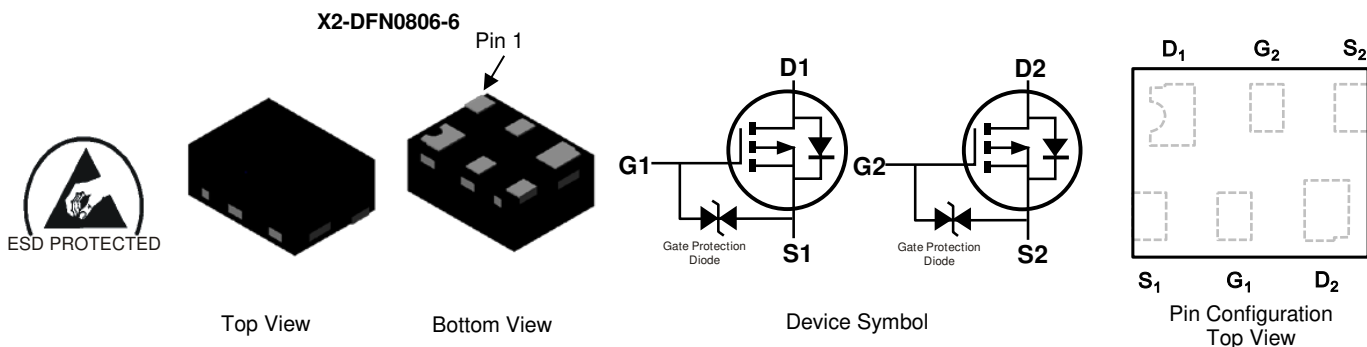
Description and Applications

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 Switch
- Power Management Functions
- Analog Switch

Mechanical Data

- Case: X2-DFN0806-6
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish—Matte Tin Annealed over Copper Lead-Frame. Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.001 grams (Approximate)



Ordering Information (Note 4)

Part Number	Case	Packaging
DMP32D9UDAQ-7B	X2-DFN0806-6	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



Top View

B8 = Product Type Marking Code
Bar denotes Pin 1

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	
Drain-Source Voltage	V_{DSS}	-30	V	
Gate-Source Voltage	V_{GSS}	± 12	V	
Continuous Drain Current (Note 5) $V_{GS} = -4.5\text{V}$	Steady State	$T_A = +25^\circ\text{C}$	-0.22	A
		$T_A = +70^\circ\text{C}$	-0.17	
Maximum Continuous Body Diode Forward Current (Note 5)	I_S	-0.8	A	
Pulsed Drain Current (Note 5)	I_{DM}	-0.8	A	

Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P_D	0.36	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State $R_{\theta JA}$	345	$^\circ\text{C/W}$
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 6)						
Drain-Source Breakdown Voltage	BV_{DSS}	-30	—	—	V	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	@ $T_C = +25^\circ\text{C}$ I_{DSS}	—	—	-100	nA	$V_{DS} = -24\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 10\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(TH)}$	-0.4	—	-1.0	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	1.8	5	Ω	$V_{GS} = -4.5\text{V}, I_D = -100\text{mA}$
		—	2.3	6		$V_{GS} = -2.5\text{V}, I_D = -50\text{mA}$
		—	3	7		$V_{GS} = -1.8\text{V}, I_D = -20\text{mA}$
		—	3.4	10		$V_{GS} = -1.5\text{V}, I_D = -10\text{mA}$
Diode Forward Voltage	V_{SD}	—	-0.6	-1.0	V	$V_{GS} = 0\text{V}, I_S = -10\text{mA}$
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{ISS}	—	21.8	—	pF	$V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	C_{OSS}	—	2.82	—	pF	
Reverse Transfer Capacitance	C_{RSS}	—	1.66	—	pF	
Total Gate Charge	Q_g	—	0.35	—	nC	$V_{GS} = -4.5\text{V}, V_{DS} = -15\text{V}, I_D = -200\text{mA}$
Gate-Source Charge	Q_{gs}	—	0.05	—	nC	
Gate-Drain Charge	Q_{gd}	—	0.10	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	3.5	—	ns	$V_{DD} = -15\text{V}, V_{GS} = -4.5\text{V}, R_g = 2\Omega, I_D = -200\text{mA}$
Turn-On Rise Time	t_R	—	5.2	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	18.8	—	ns	
Turn-Off Fall Time	t_F	—	8.7	—	ns	

- Notes:
- Device mounted on minimum recommended pad layout test board, 10 μs pulse duty cycle = 1%.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to product testing

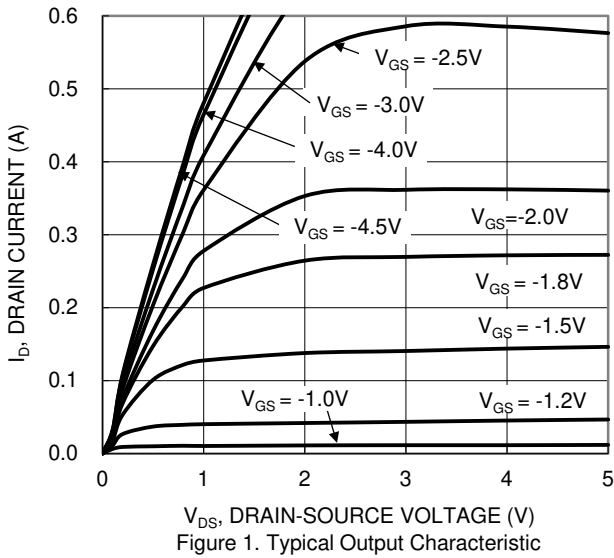


Figure 1. Typical Output Characteristic

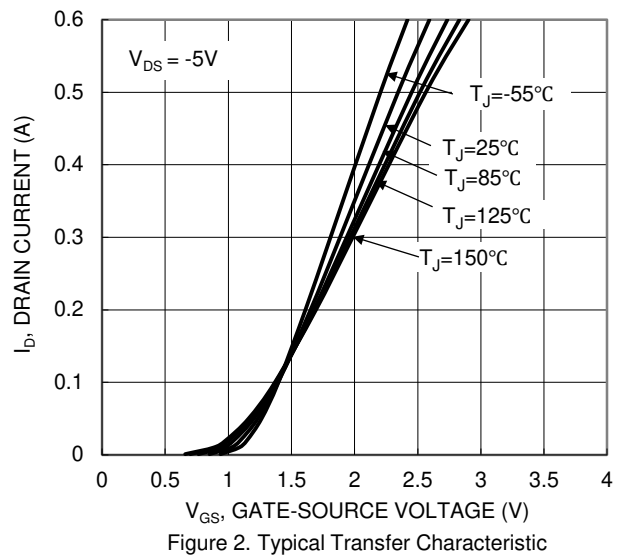


Figure 2. Typical Transfer Characteristic

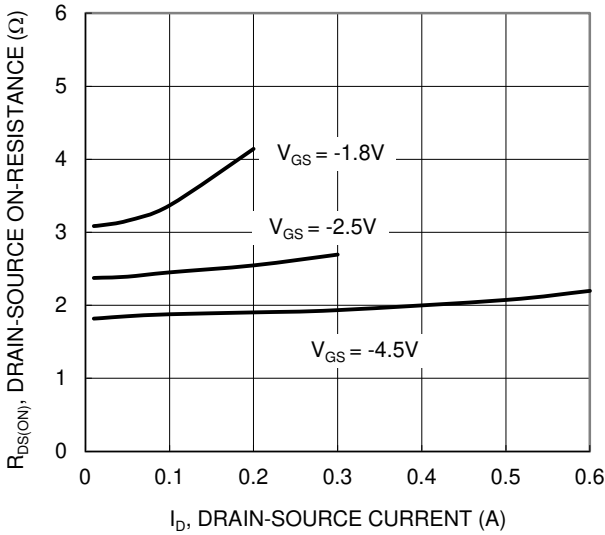


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

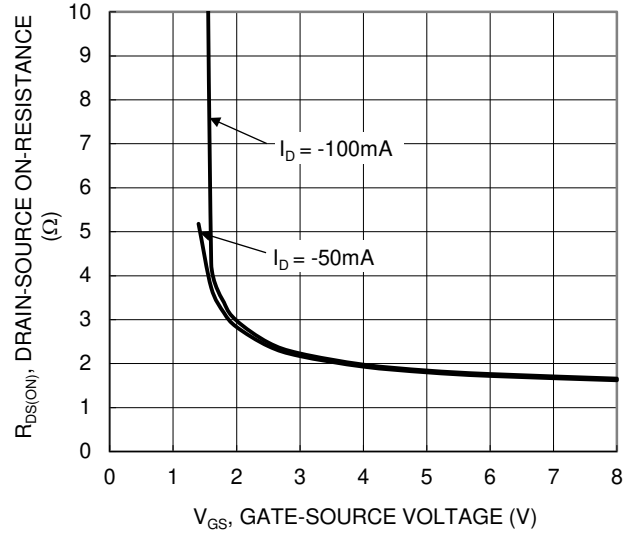


Figure 4. Typical Transfer Characteristic

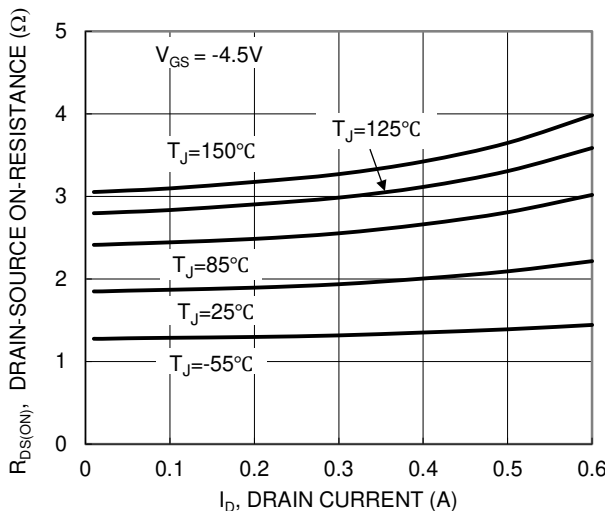


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

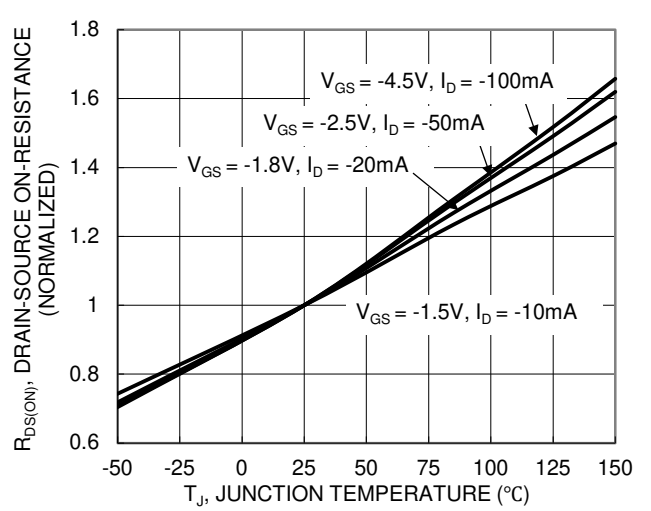


Figure 6. On-Resistance Variation with Junction Temperature

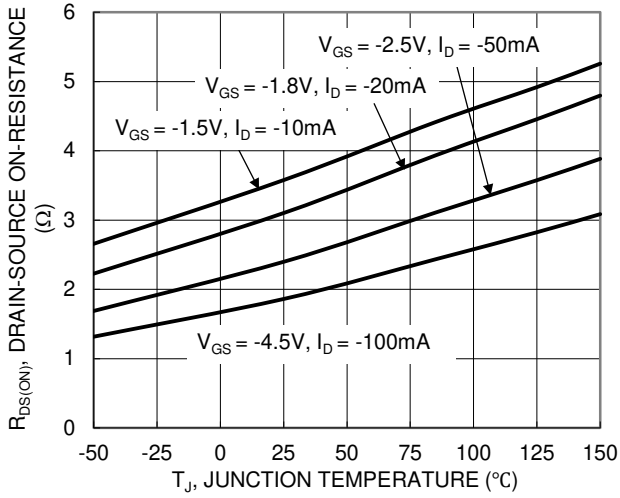


Figure 7. On-Resistance Variation with Junction Temperature

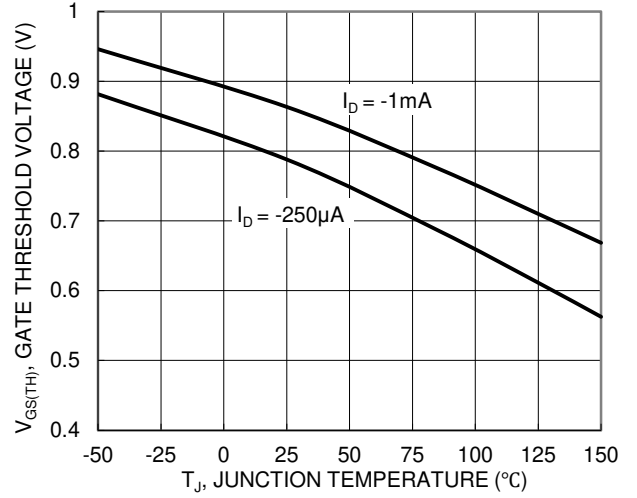


Figure 8. Gate Threshold Variation vs. Junction Temperature

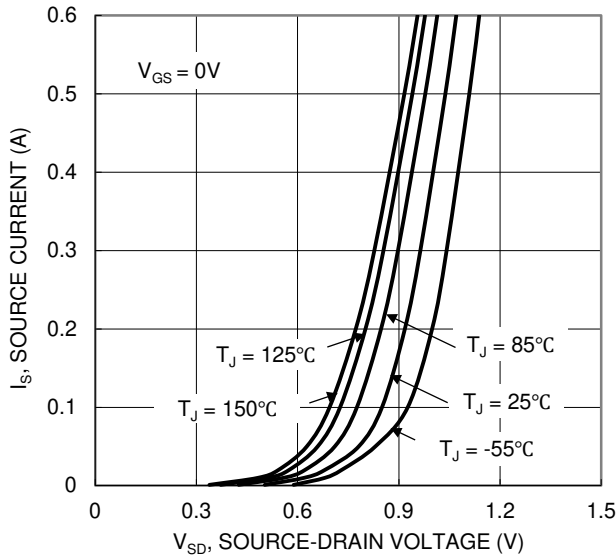


Figure 9. Diode Forward Voltage vs. Current

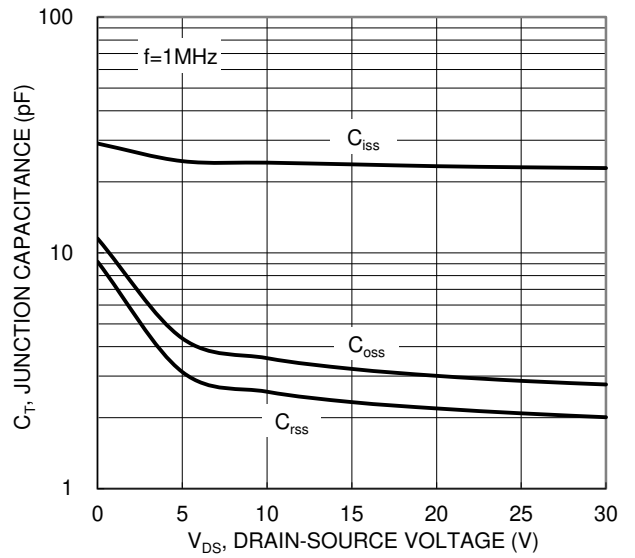


Figure 10. Typical Junction Capacitance

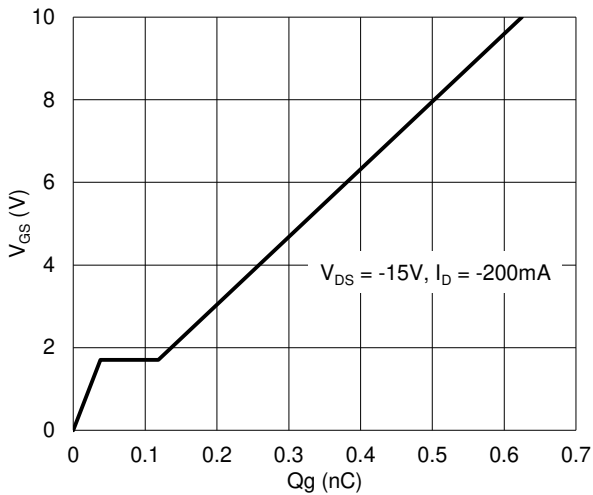


Figure 11. Gate Charge

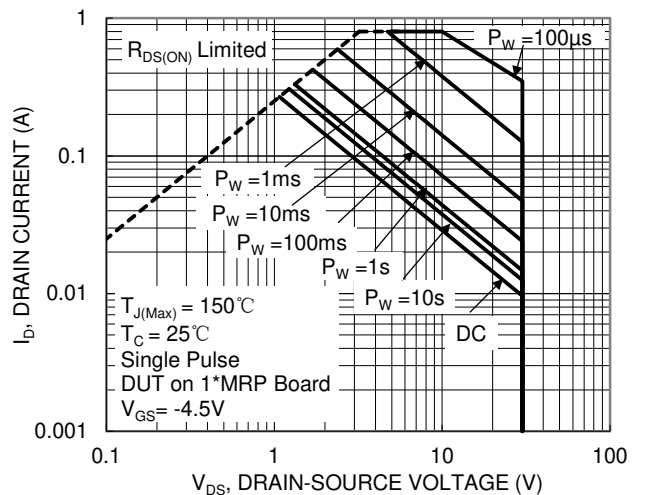


Figure 12. SOA, Safe Operation Area

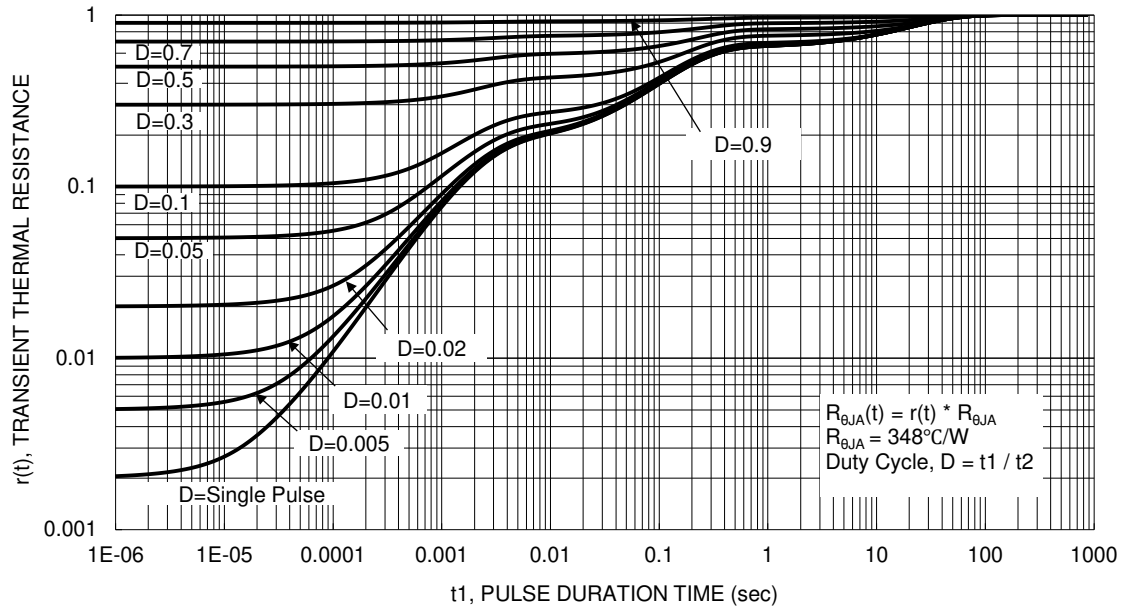
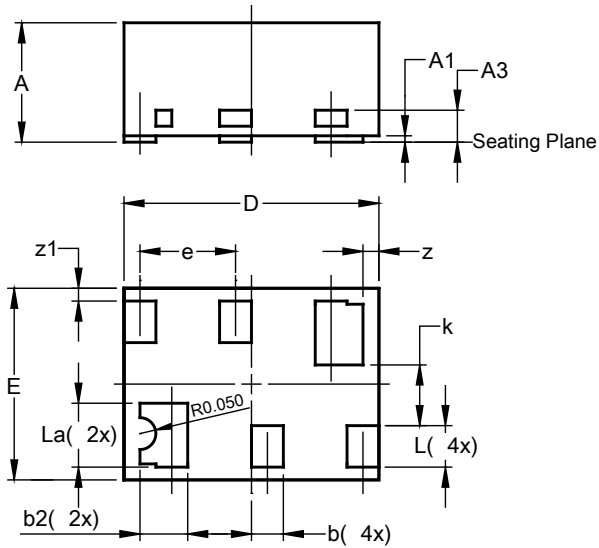


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

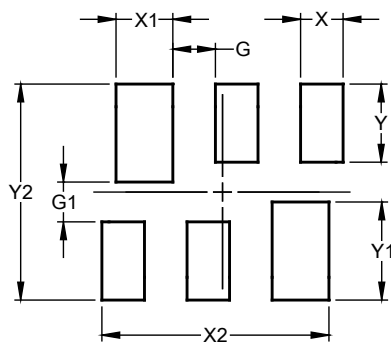
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



X2-DFN0806-6			
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
b2	0.10	0.20	0.15
D	0.75	0.85	0.80
E	0.55	0.65	0.60
e	--	--	0.30
k	--	--	0.19
L	0.10	0.18	0.13
La	0.17	0.25	0.20
z	--	--	0.05
z1	--	--	0.04
All Dimensions in mm			

Suggested Pad Layout

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



Dimensions	Value (in mm)
G	0.150
G1	0.140
X	0.150
X1	0.200
X2	0.800
Y	0.275
Y1	0.345
Y2	0.760

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