

## Product Summary

Device	BV <sub>DSS</sub>	R <sub>D(on)</sub> max	I <sub>D</sub> max T <sub>A</sub> = +25°C
PMOS	-20V	1.9Ω @ V <sub>GS</sub> = -4.5V	-328mA
		2.4Ω @ V <sub>GS</sub> = -2.5V	-292mA
		3.4Ω @ V <sub>GS</sub> = -1.8V	-245mA
		5Ω @ V <sub>GS</sub> = -1.5V	-202mA

## Description and Applications

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

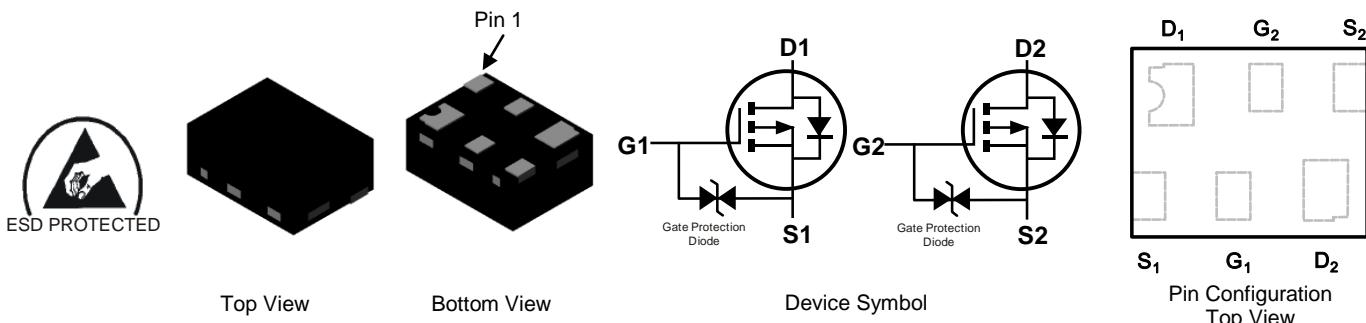
- General Purpose Interfacing Switch
- Power Management Functions
- Analog Switch

## Features and Benefits

- Low On-Resistance
- Very Low Gate Threshold Voltage, -1.0V max
- 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)**

## 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 Leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.001 grams (Approximate)



## Ordering Information (Note 4)

Part Number	Case	Packaging
DMP22D4UDA-7B	X2-DFN0806-6	10,000/Tape & Reel

Notes:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- See [http://www.diodes.com/quality/lead\\_free.html](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.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



Top View

B1 = Product Type Marking Code

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			$V_{DSS}$	-20	V
Gate-Source Voltage			$V_{GSS}$	$\pm 8$	V
Continuous Drain Current (Note 5)	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	$I_D$	-328 -262	mA
Pulsed Drain Current (Note 6)			$I_{DM}$	-1000	mA

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)		$P_D$	310	mW
Thermal Resistance, Junction to Ambient (Note 5)		$R_{\theta JA}$	407	°C/W
Operating and Storage Temperature Range		$T_J, T_{STG}$	-55 to +150	°C

Notes: 5. Device mounted on FR-4 PCB, with minimum recommended pad layout.  
6. Device mounted on minimum recommended pad layout test board, 10µs pulse duty cycle = 1%.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	-20	—	—	V	$V_{GS} = 0\text{V}$ , $I_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	-1	$\mu\text{A}$	$V_{DS} = -16\text{V}$ , $V_{GS} = 0\text{V}$
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 5\text{V}$ , $V_{DS} = 0\text{V}$
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	-0.4	-0.7	-1.0	V	$V_{DS} = V_{GS}$ , $I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	1.2	1.9	$\Omega$	$V_{GS} = -4.5\text{V}$ , $I_D = -100\text{mA}$
		—	1.6	2.4		$V_{GS} = -2.5\text{V}$ , $I_D = -50\text{mA}$
		—	1.9	3.4		$V_{GS} = -1.8\text{V}$ , $I_D = -20\text{mA}$
		—	2.4	5		$V_{GS} = -1.5\text{V}$ , $I_D = -10\text{mA}$
Diode Forward Voltage	$V_{SD}$	—	-0.6	-1.1	V	$V_{GS} = 0\text{V}$ , $I_S = -10\text{mA}$
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	$C_{iss}$	—	28.5	—	pF	$V_{DS} = -15\text{V}$ , $V_{GS} = 0\text{V}$ , $f = 1.0\text{MHz}$
Output Capacitance	$C_{oss}$	—	3.9	—	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	2.4	—	pF	
Gate Resistance	$R_G$	—	398	—	$\Omega$	$V_{DS} = 0\text{V}$ , $V_{GS} = 0\text{V}$ , $f = 1.0\text{MHz}$
Total Gate Charge	$Q_g$	—	0.4	—	nC	$V_{GS} = -4.5\text{V}$ , $V_{DS} = -10\text{V}$ , $I_D = -250\text{mA}$
Gate-Source Charge	$Q_{gs}$	—	0.07	—	nC	
Gate-Drain Charge	$Q_{qd}$	—	0.07	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	5.2	—	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	$t_R$	—	4.3	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	31	—	ns	
Turn-Off Fall Time	$t_F$	—	15.4	—	ns	

Notes: 7. Short duration pulse test used to minimize self-heating effect.  
8. Guaranteed by design. Not subject to product testing.

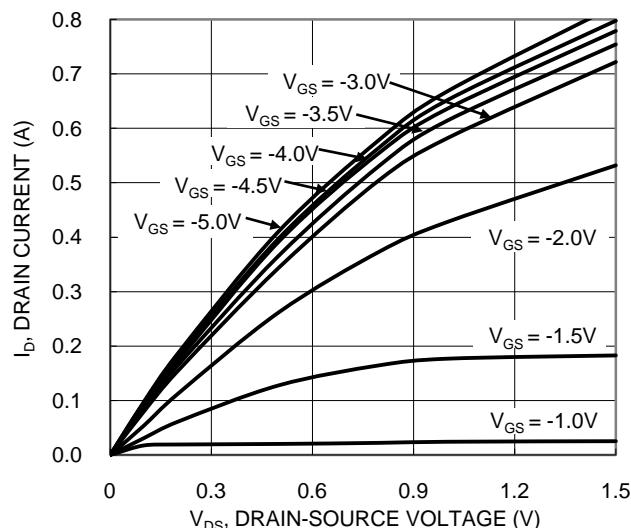


Figure 1. Typical Output Characteristic

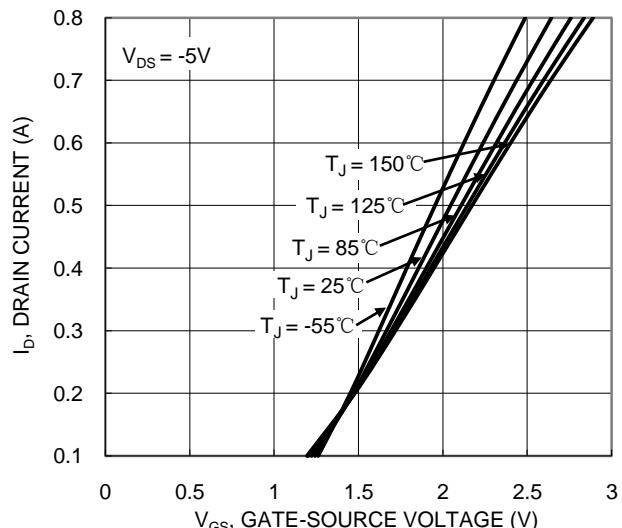


Figure 2. Typical Transfer Characteristic

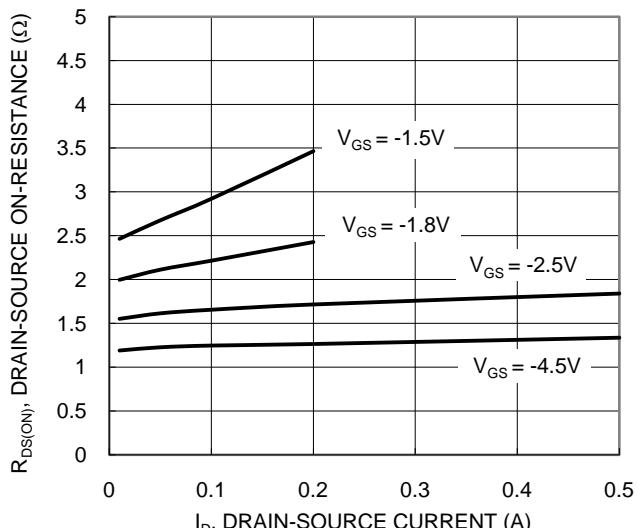


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

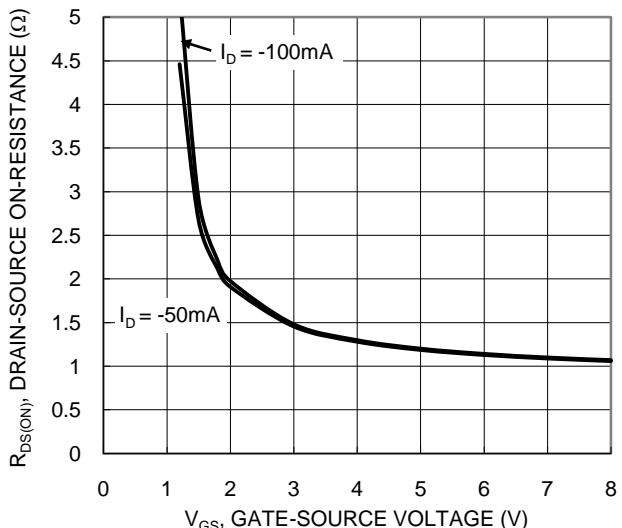


Figure 4. Typical Transfer Characteristic

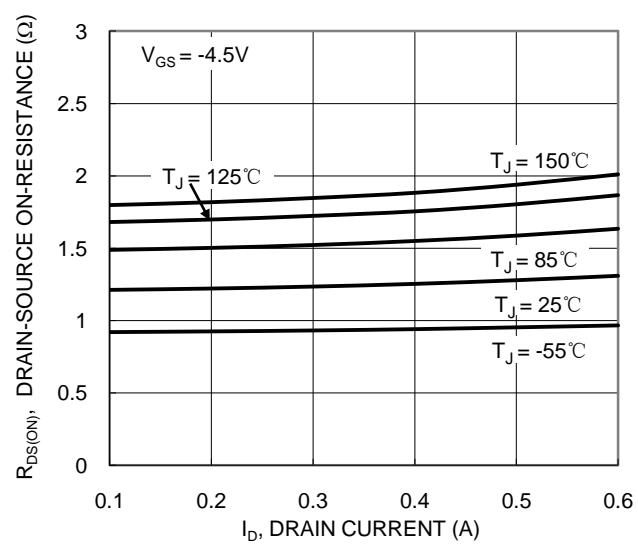


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

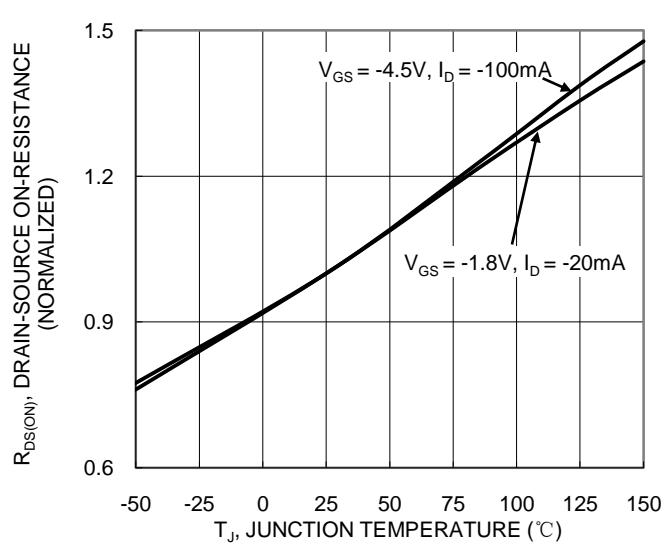
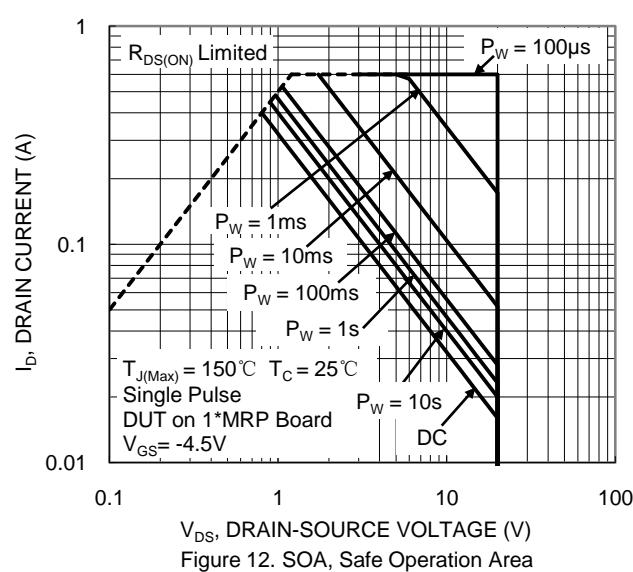
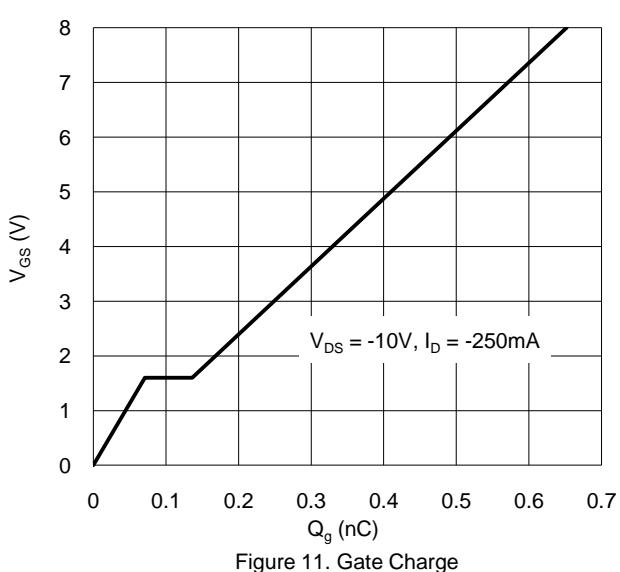
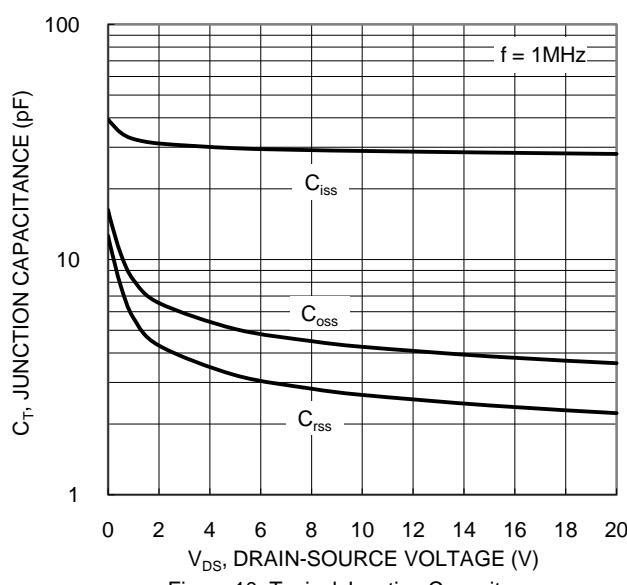
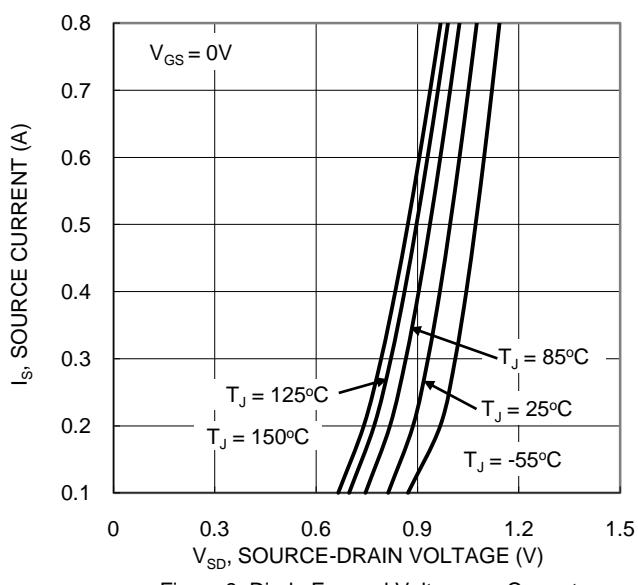
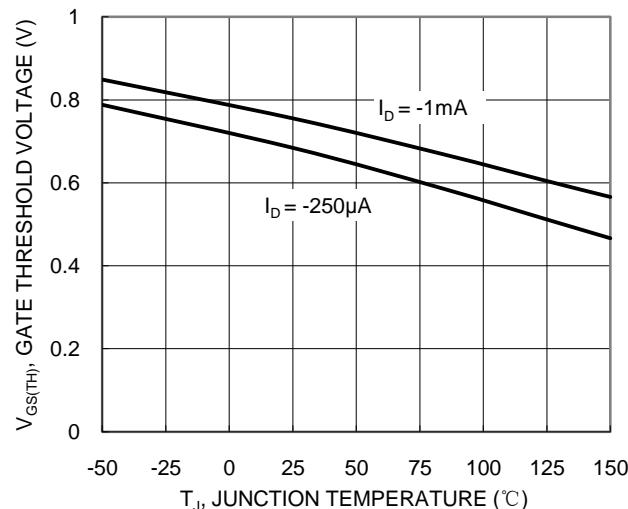
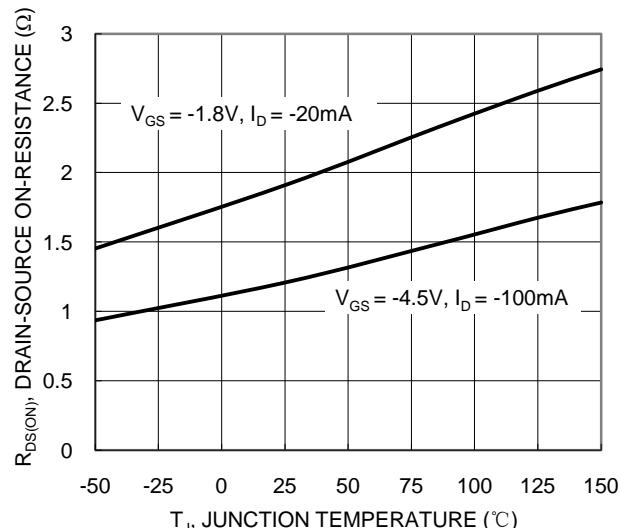


Figure 6. On-Resistance Variation with Temperature



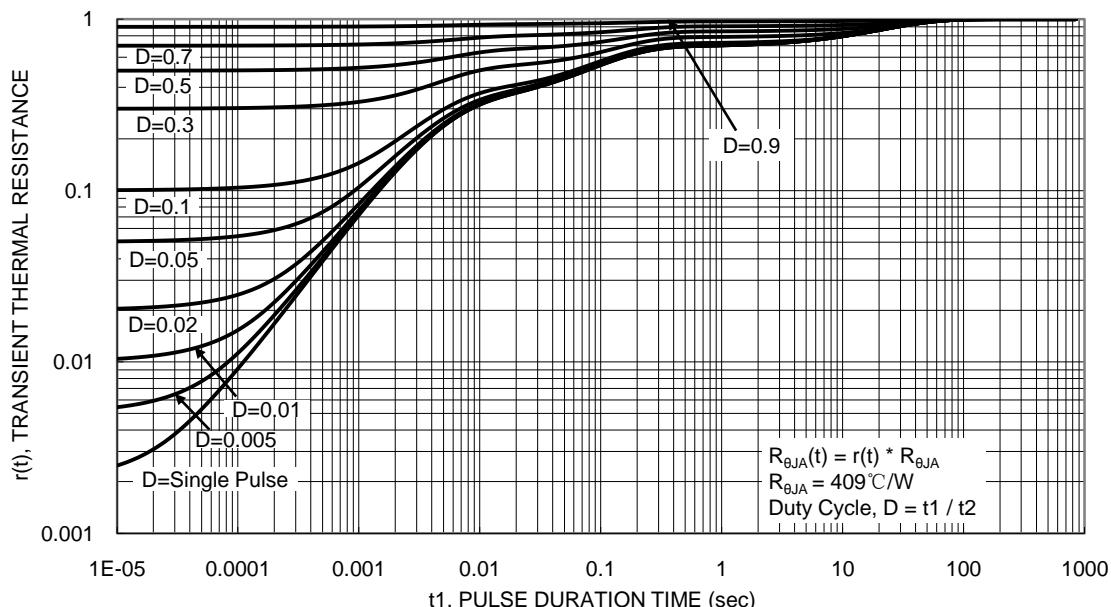
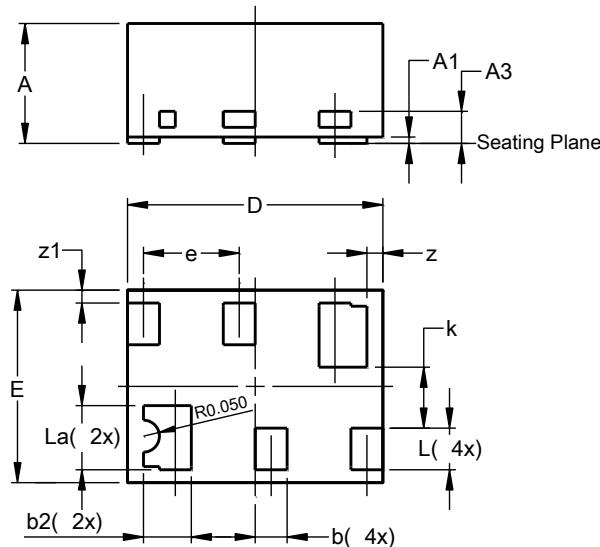


Figure 13. Transient Thermal Resistance

## Package Outline Dimensions

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

**X2-DFN0806-6**



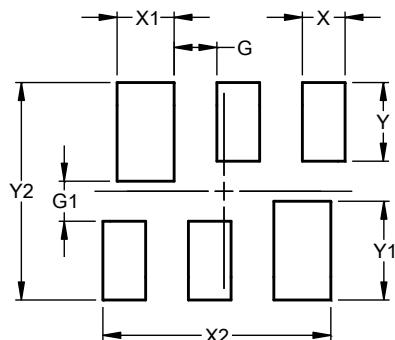
X2-DFN0806-6			
Dim	Min	Max	Typ
A	--	0.40	0.36
A1	0.00	0.03	0.02
A3	--	--	0.10
b	0.07	0.15	0.10
b2	0.10	0.20	0.15
D	0.75	0.85	0.80
E	0.55	0.65	0.60
e	--	--	0.30
k	--	--	0.19
L	0.10	0.18	0.13
La	0.17	0.25	0.20
z	--	--	0.05
z1	--	--	0.04

All Dimensions in mm

## Suggested Pad Layout

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

**X2-DFN0806-6**



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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