

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)} \text{ Max}$	$I_D \text{ Max}$ @ $T_A = +25^\circ\text{C}$
-30V	2.4Ω @ $V_{GS} = -10\text{V}$	-400mA
	4Ω @ $V_{GS} = -4.5\text{V}$	-300mA

Description

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

Applications

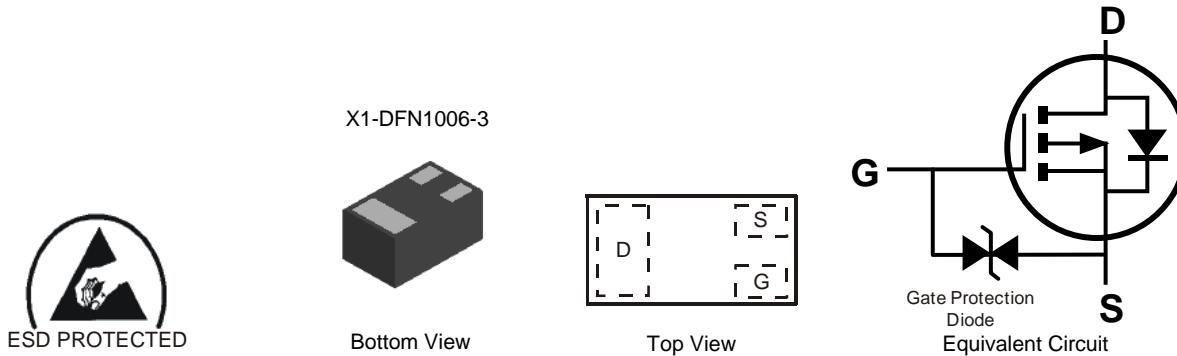
- Load Switch
- Portable Applications
- Power Management Functions

Features

- Low On-Resistance
- Ultra-Small Surfaced 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

Mechanical Data

- Case: X1-DFN1006-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (e4)
- Weight: 0.001 grams (Approximate)



Ordering Information (Note 4)

Part Number	Reel Size (inches)	Quantity per Reel
DMP32D5SFB-7B	7	10,000

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



XH = Product Type Marking Code

Top View
Bar Denotes Gate and Source Side

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}	± 25	V
Continuous Drain Current (Note 5)	$V_{GS} = -10\text{V}$	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	-400 -300	mA
Continuous Drain Current (Note 6)	$V_{GS} = -10\text{V}$	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	-500 -400	mA
Pulsed Drain Current (Note 5)			I_{DM}	-1	A
Maximum Body Diode Continuous Current (Note 6)			I_S	-800	mA

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation	(Note 5)	P_D	0.5	W
	(Note 6)		1.2	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	255	°C/W
	(Note 6)		108	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	$V_{GS} = 0\text{V}, I_D = -1\text{mA}$
Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$	I_{DSS}	-	-	-1	μA	$V_{DS} = -30\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	-	-	± 10	μA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	-1.3	-	-2.3	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	2.4	Ω	$V_{GS} = -10\text{V}, I_D = -200\text{mA}$
				4		$V_{GS} = -4.5\text{V}, I_D = -200\text{mA}$
Diode Forward Voltage	V_{SD}	-	0.8	1.2	V	$V_{GS} = 0\text{V}, I_S = -300\text{mA}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	-	51	100	pF	$V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	-	11	20	pF	
Reverse Transfer Capacitance	C_{rss}	-	9	20	pF	
Total Gate Charge	Q_g	-	0.62	2	nC	$V_{GS} = -4.5\text{V}$
Total Gate Charge	Q_g	-	1.25	4	nC	
Gate-Source Charge	Q_{gs}	-	0.16	0.5	nC	$V_{GS} = -10\text{V}$
Gate-Drain Charge	Q_{gd}	-	0.21	0.5	nC	
Turn-On Delay Time	$t_{D(ON)}$	-	4.3	10	ns	$V_{DS} = -15\text{V}, I_D = -500\text{mA}$
Turn-On Rise Time	t_R	-	7.7	15	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	-	31.9	60	ns	
Turn-Off Fall Time	t_F	-	17.8	40	ns	

Notes:

5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to production testing.

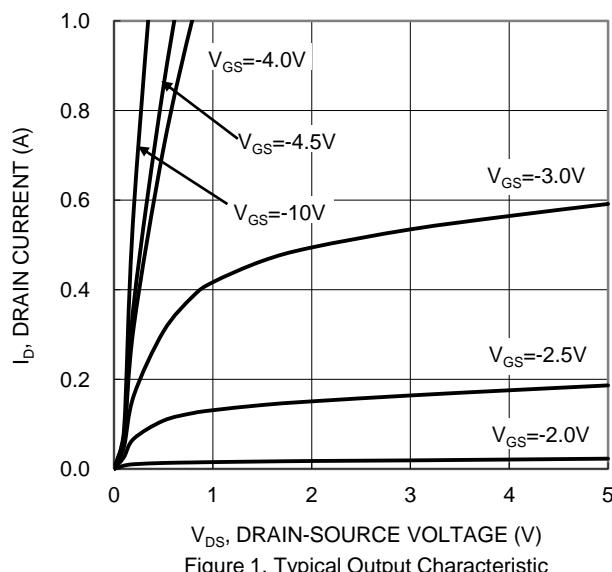


Figure 1. Typical Output Characteristic

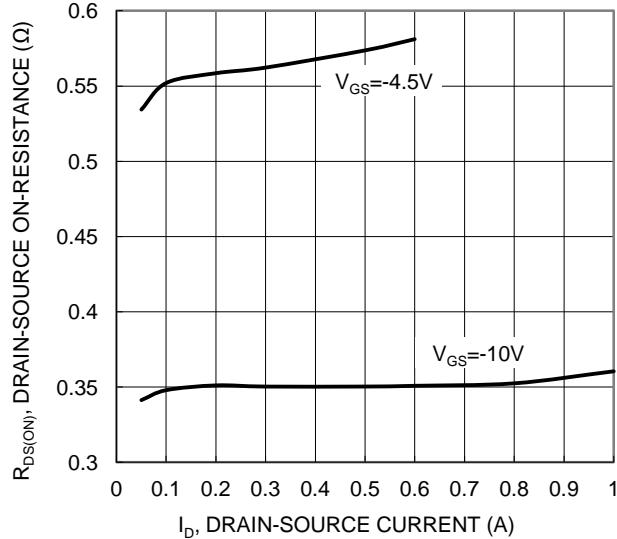


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

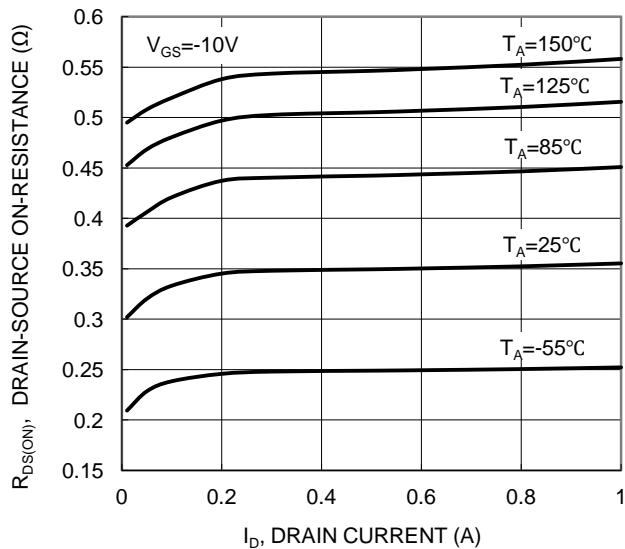


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

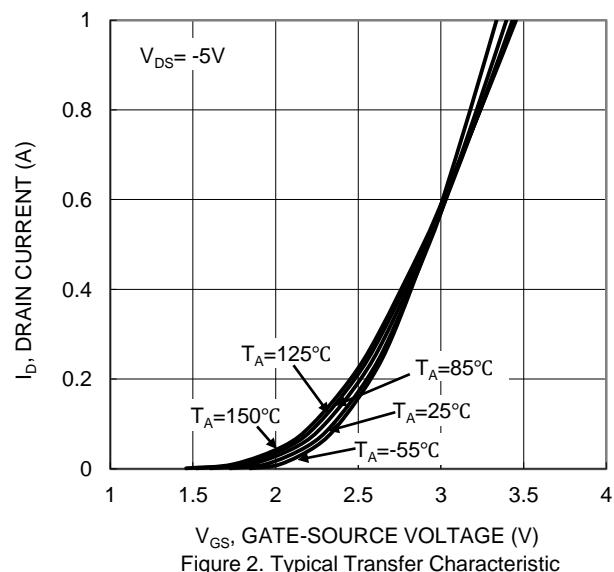


Figure 2. Typical Transfer Characteristic

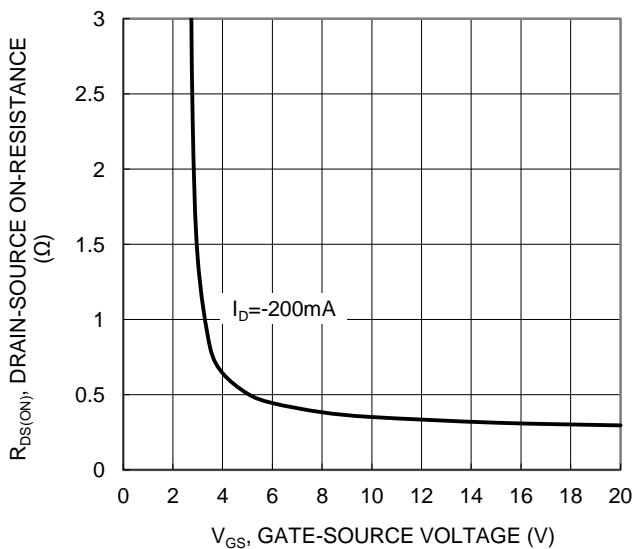


Figure 4. Typical Transfer Characteristic

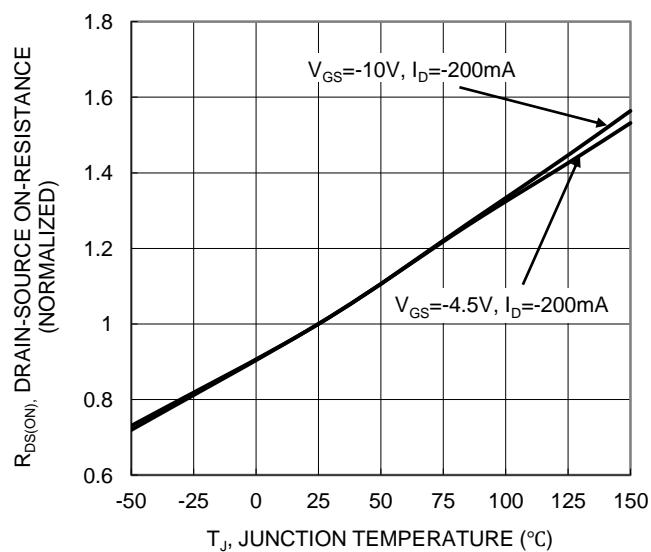
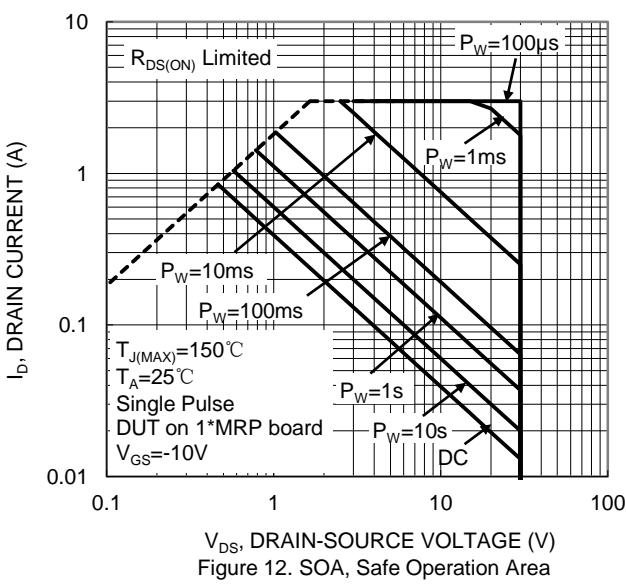
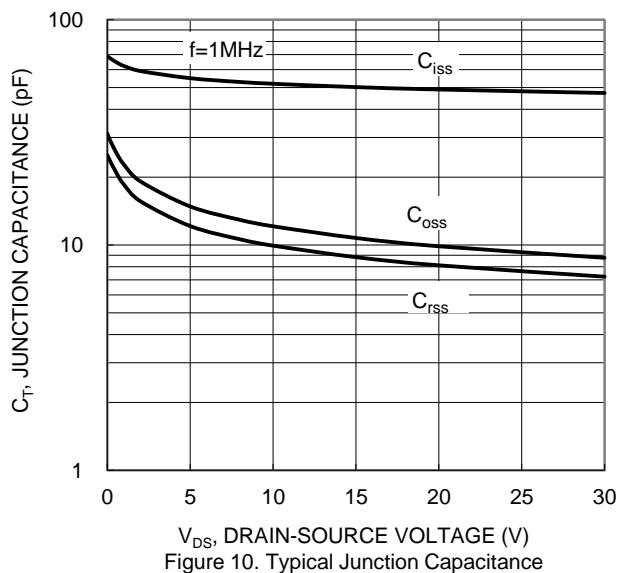
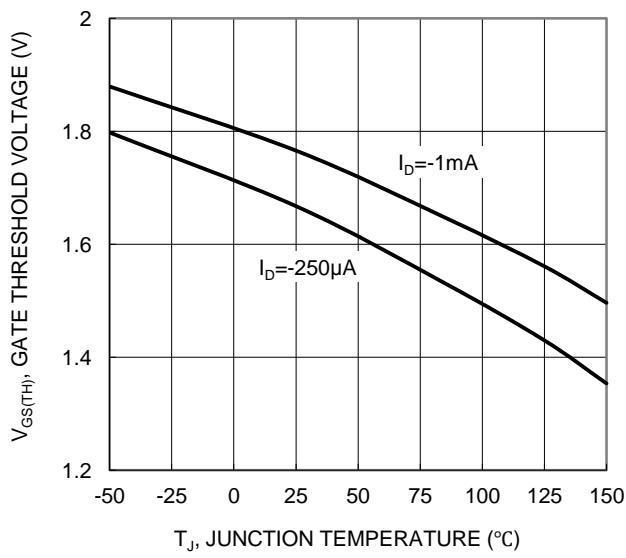
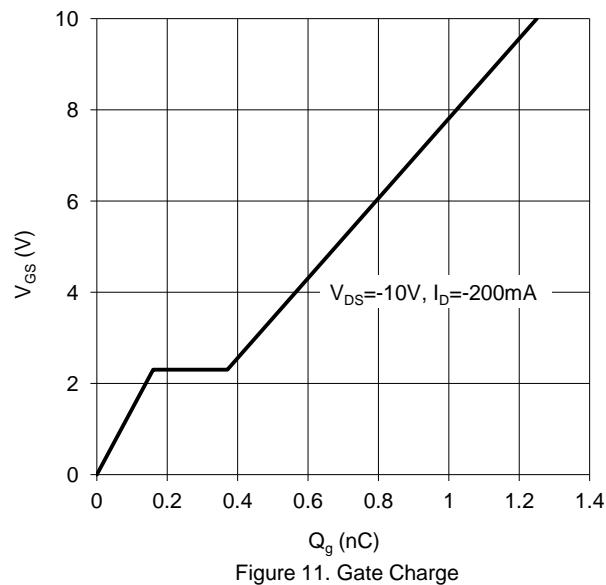
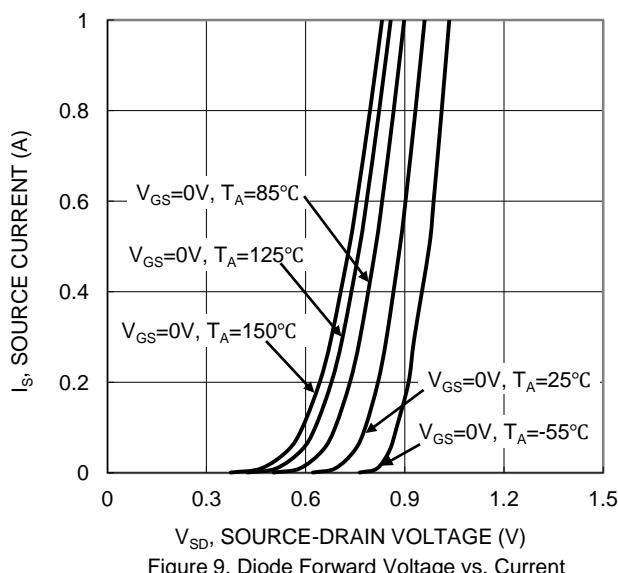
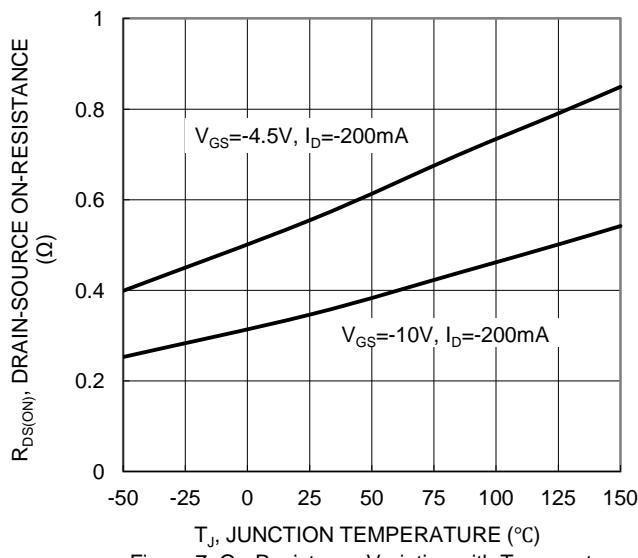
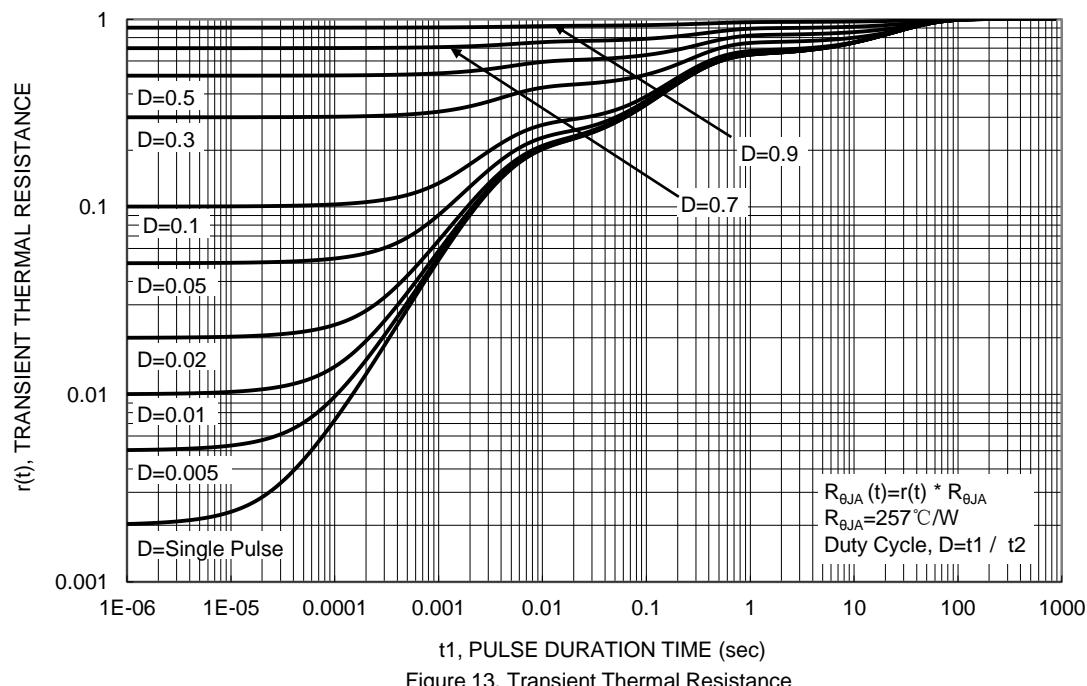


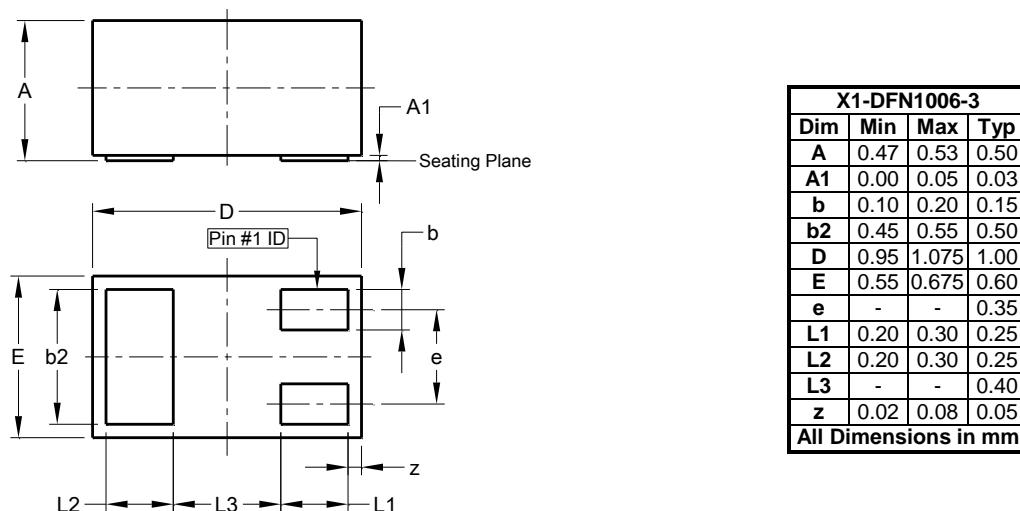
Figure 6. On-Resistance Variation with Temperature





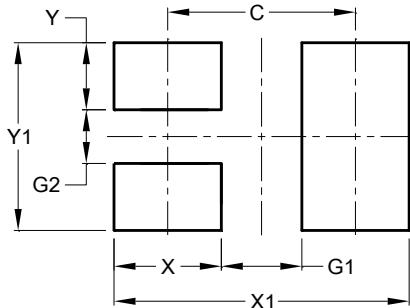
Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
C	0.70
G1	0.30
G2	0.20
X	0.40
X1	1.10
Y	0.25
Y1	0.70

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