

Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max @ T _A = +25°C
60V	1.4Ω @ V _{GS} = 10V	538mA
	1.6Ω @ V _{GS} = 4.5V	519mA

Description and Applications

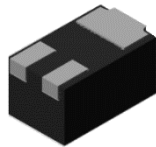
This MOSFET is designed to minimize the on-state resistance (R_{DS(ON)}) yet maintain superior switching performance, making it ideal for high-efficiency power-management applications.

- Load switches
- Portable applications
- Power-management functions

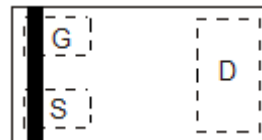
U-DFN1006-3/SWP (Type UX)



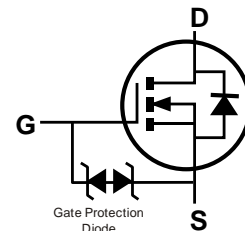
ESD PROTECTED



Bottom View



Top View
Internal Schematic



Equivalent Circuit

Features and Benefits

- Low On-Resistance
- Low Gate Threshold Voltage
- Fast Switching Speed
- Ultra-Small Surface-Mount Package
- ESD Protected
- **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 refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.** <https://www.diodes.com/quality/product-definitions/>

Mechanical Data

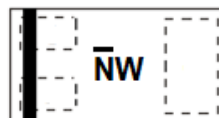
- Package: U-DFN1006-3
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.001 grams (Approximate)

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMN62D1SFBW-7B	U-DFN1006-3/SWP (Type UX)	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



NW = Product Type Marking Code

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	
Drain-Source Voltage	V _{DSS}	60	V	
Gate-Source Voltage	V _{GSS}	±20	V	
Continuous Drain Current (Note 5) V _{GS} = 10V	Steady State	T _A = +25°C	538	mA
		T _A = +70°C	430	
Maximum Continuous Body Diode Forward Current (Note 5)	I _S	538	mA	
Pulsed Drain Current (Note 5)	I _{DM}	1.3	A	

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

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 6)	P _D	0.5	mW
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	245	°C/W
Total Power Dissipation (Note 5)	P _D	0.8	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	151	°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 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	60	—	—	V	V _{GS} = 0, I _D = 250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	μA	V _{DS} = 60V, V _{GS} = 0
Gate-Source Leakage	I _{GSS}	—	—	±10	μA	V _{GS} = ±20V, V _{DS} = 0
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	1.3	—	2.3	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	0.8	1.4	Ω	V _{GS} = 10V, I _D = 40mA
			1.0	1.6		V _{GS} = 4.5V, I _D = 35mA
Diode Forward Voltage	V _{SD}	—	0.8	1.1	V	V _{GS} = 0, I _S = 100mA
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	—	43	—	pF	V _{DS} = 40V, V _{GS} = 0, f = 1.0MHz
Output Capacitance	C _{oss}	—	5.4	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	3.5	—	pF	
Gate Resistance	R _g	—	232	—	Ω	V _{DS} = 0, V _{GS} = 0, f = 1MHz
Total Gate Charge (V _{GS} = 4.5V)	Q _g	—	0.8	—	nC	V _{DS} = 50V, I _D = 100mA
Total Gate Charge (V _{GS} = 10V)	Q _g	—	1.4	—	nC	
Gate-Source Charge	Q _{gs}	—	0.1	—	nC	
Gate-Drain Charge	Q _{gd}	—	0.4	—	nC	
Turn-On Delay Time	t _{D(ON)}	—	3.2	—	ns	V _{DS} = 50V, I _D = 100mA, V _{GS} = 10V, R _g = 6Ω
Turn-On Rise Time	t _r	—	11.7	—	ns	
Turn-Off Delay Time	t _{D(OFF)}	—	37.7	—	ns	
Turn-Off Fall Time	t _f	—	38.1	—	ns	

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

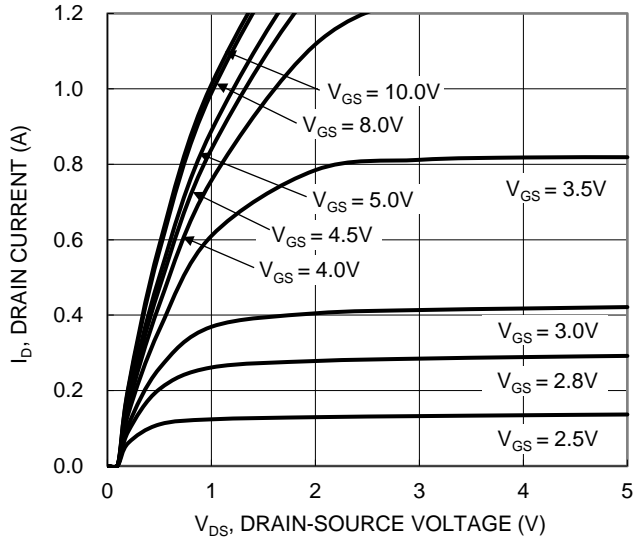


Figure 1. Typical Output Characteristic

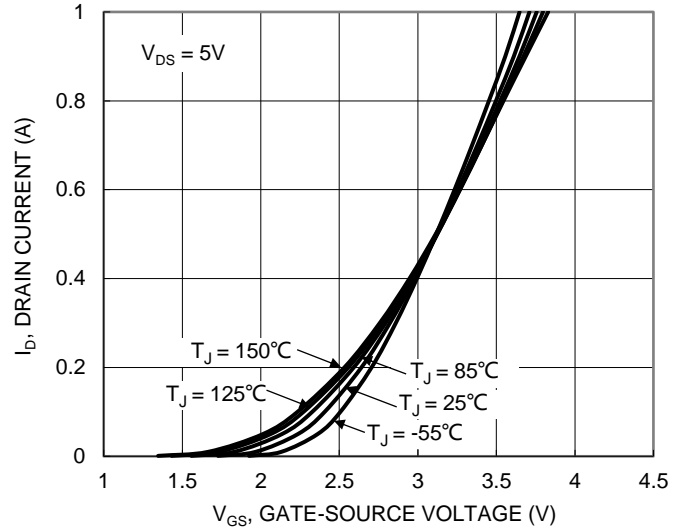


Figure 2. Typical Transfer Characteristic

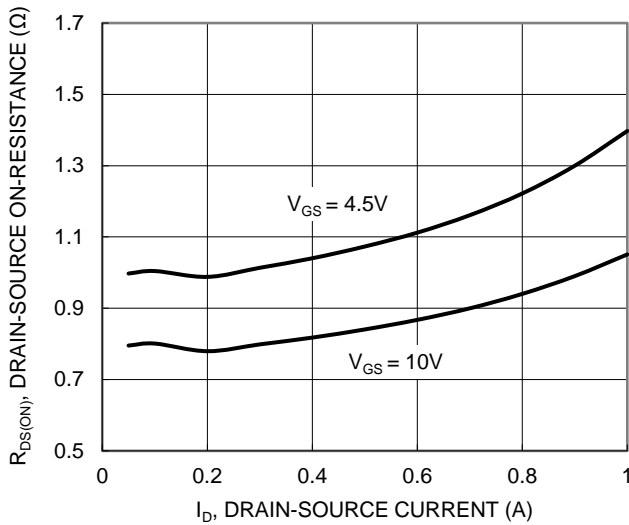


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

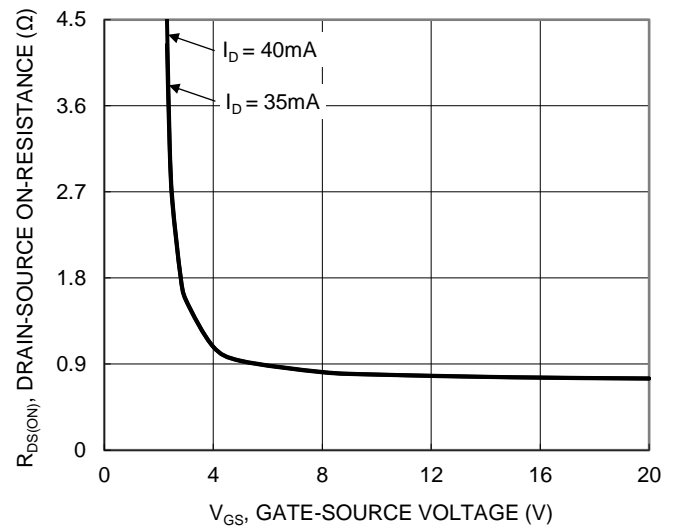


Figure 4. Typical Transfer Characteristic

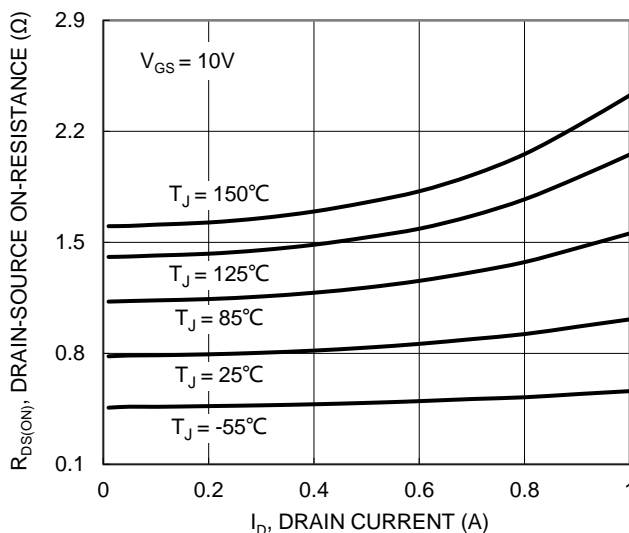


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

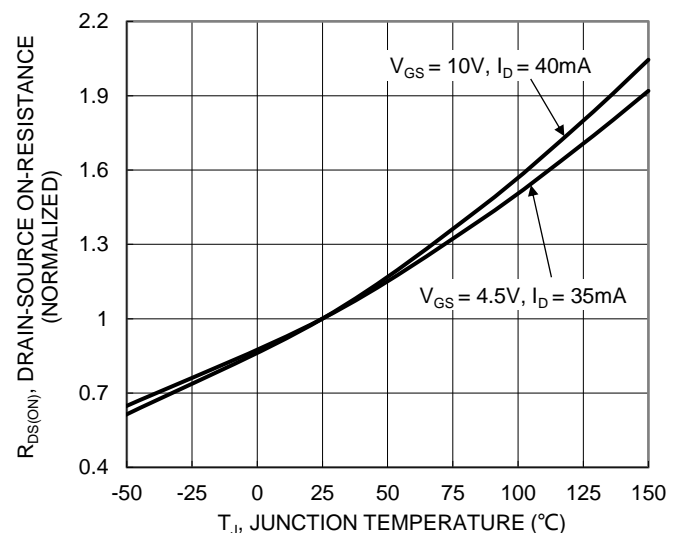


Figure 6. On-Resistance Variation with Junction Temperature

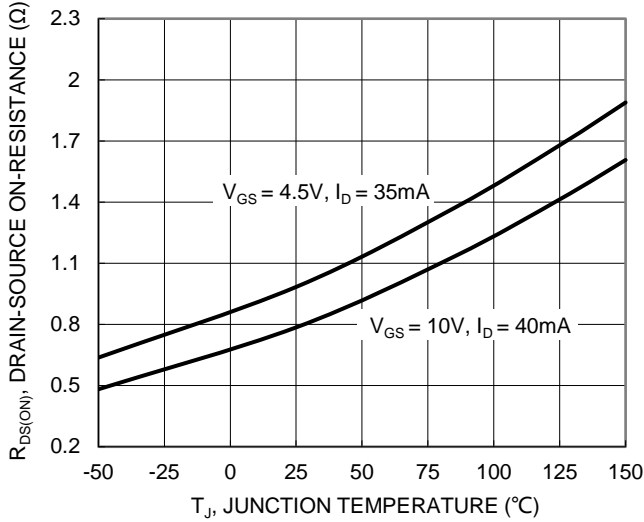


Figure 7. On-Resistance Variation with Junction Temperature

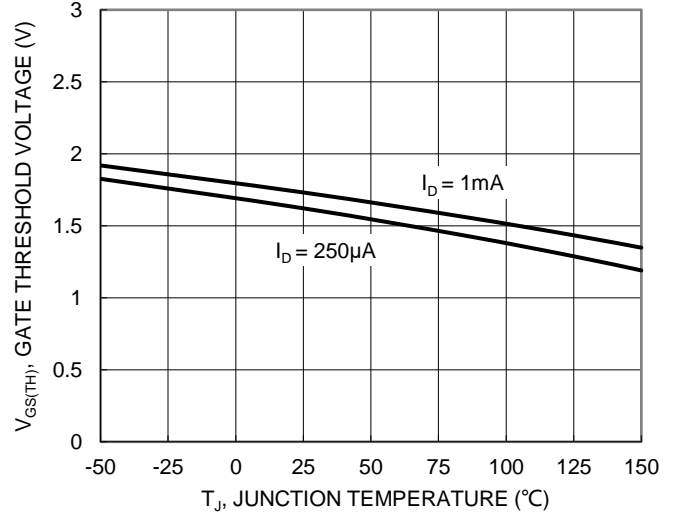


Figure 8. Gate Threshold Variation vs. Junction Temperature

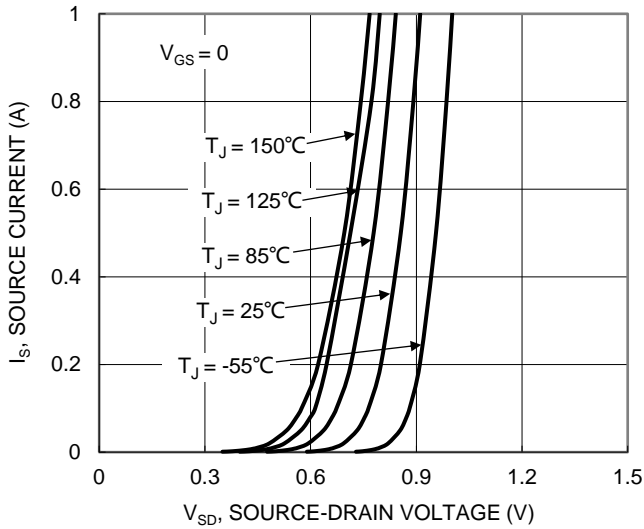


Figure 9. Diode Forward Voltage vs. Current

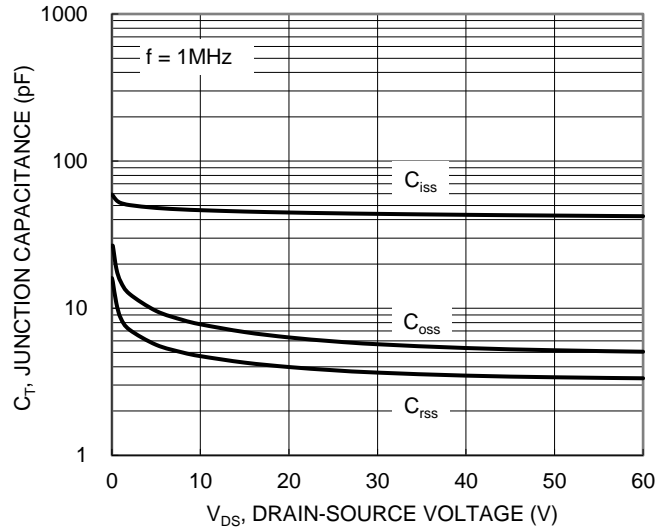


Figure 10. Typical Junction Capacitance

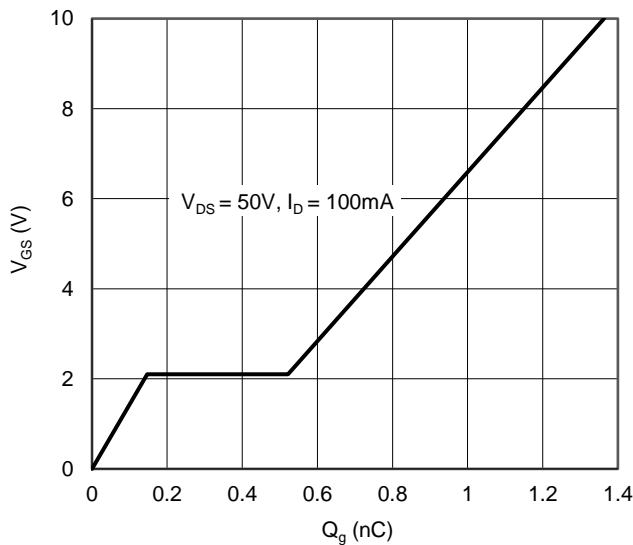


Figure 11. Gate Charge

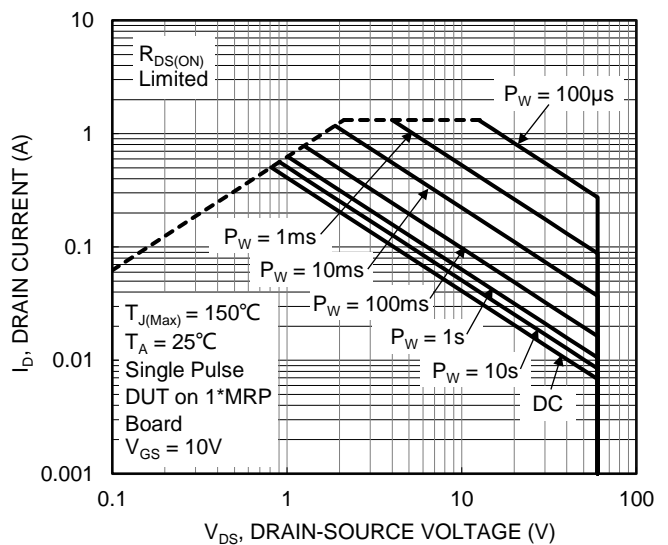


Figure 12. SOA, Safe Operation Area

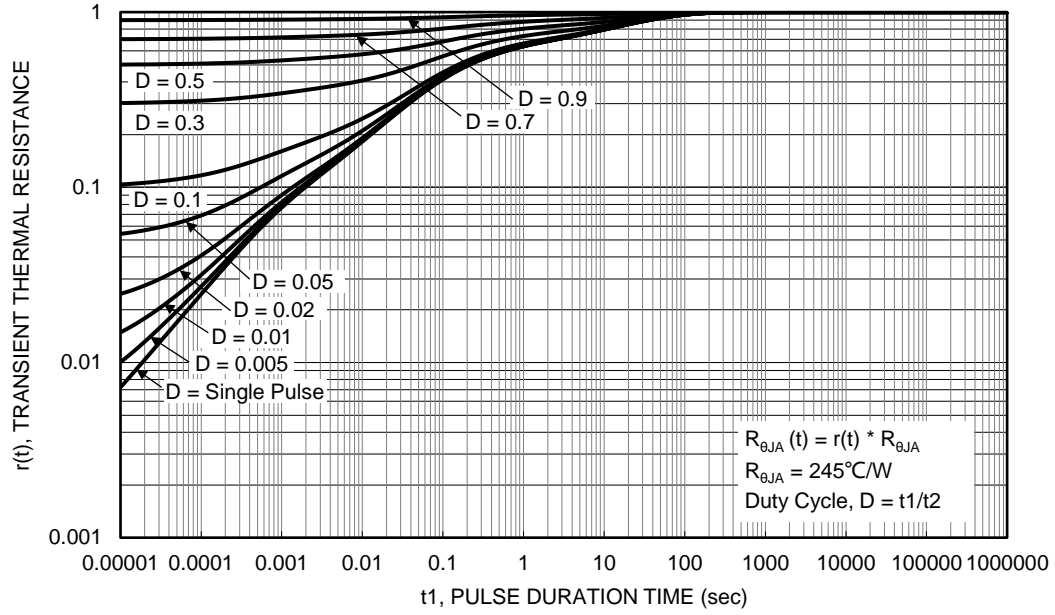
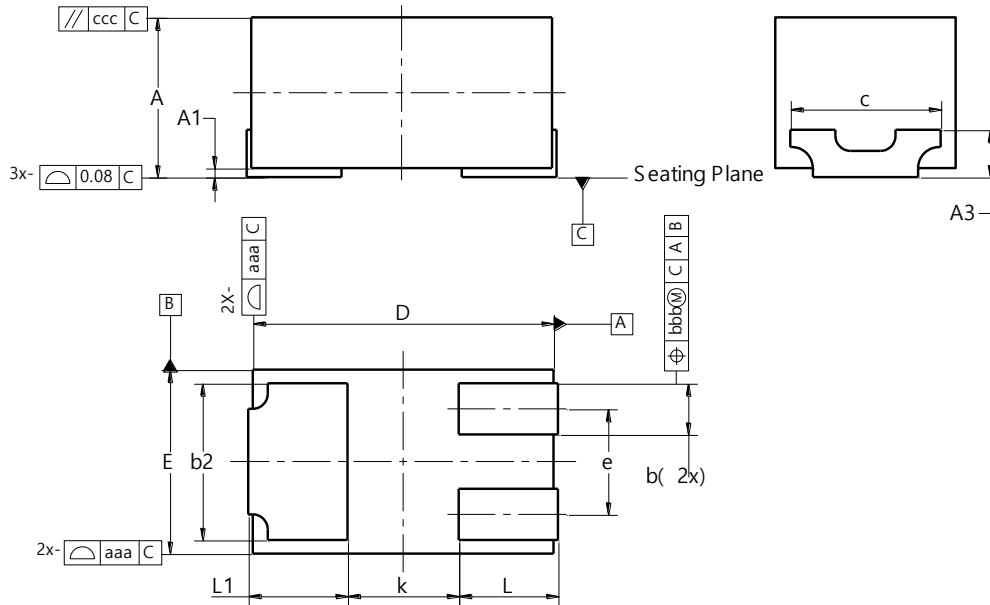


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

U-DFN1006-3/SWP (Type UX)

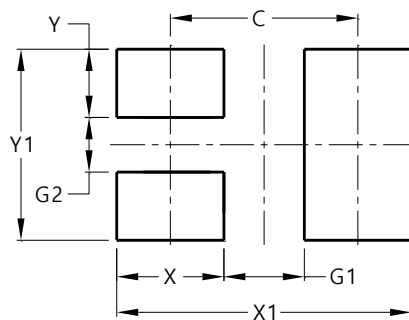


U-DFN1006-3/SWP (Type UX)			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0.00	0.05	0.03
A3	0.17 REF		
b	0.12	0.22	0.17
b2	0.47	0.57	0.52
D	0.95	1.05	1.00
E	0.55	0.65	0.60
e	--	--	0.35
k	0.37 REF		
L	0.28	0.38	0.33
L1	0.28	0.38	0.33
c	0.50 REF		
aaa	0.15		
bbb	0.05		
ccc	0.05		
All Dimensions in mm			

Suggested Pad Layout

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

U-DFN1006-3/SWP (Type UX)



Dimensions	Value (in mm)
C	0.700
G	0.300
G1	0.200
X	0.400
X1	1.100
Y	0.250
Y1	0.700

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