Product Summary

BV_{DSS}	$R_{DS(ON)}$ max	I_D max T_A = +25°C
-30V	5Ω @ V_{GS} = -4.5V	-0.2A
	6Ω @ V_{GS} = -2.5V	
	7Ω @ V_{GS} = -1.8V	
	10Ω @ V_{GS} = -1.5V	

Description and Applications

This MOSFET has been 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.

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

Features and Benefits

- Low Package Profile, 0.42mm Maximum Package Height
- 0.62mm x 0.62mm 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)**

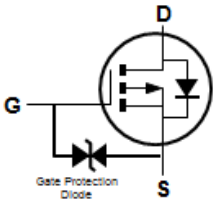
Mechanical Data

- Case: X2-DFN0606-3
- Case 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)

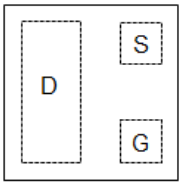




Bottom View



Equivalent Circuit



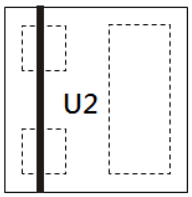
Top View
Package Pin Configuration

Ordering Information (Note 4)

Part Number	Case	Packaging
DMP32D9UFZ-7B	X2-DFN0606-3	10k/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
Bar Denotes Gate and Source Side

U2 = Product Type Marking Code

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	-30	V
Gate-Source Voltage			V_{GSS}	±10	V
Continuous Drain Current (Note 5) V_{GS} = -4.5V	Steady State	T_A = +25°C T_A = +70°C	I_D	-200 -100	mA
Pulsed Drain Current (Note 6)			I_{DM}	-700	mA

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	Steady State	P_D	390	mW
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	322	°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}	-30	—	—	V	V_{GS} = 0V, I_D = -250µA
Zero Gate Voltage Drain Current @T_C = +25°C	I_{DSS}	—	—	-100	nA	V_{DS} = -24V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±10	µA	V_{GS} = ±10V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	-0.4	—	-1.0	V	V_{DS} = V_{GS}, I_D = -250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	—	5	Ω	V_{GS} = -4.5V, I_D = -100mA
		—	—	6		V_{GS} = -2.5V, I_D = -50mA
		—	—	7		V_{GS} = -1.8V, I_D = -20mA
		—	—	10		V_{GS} = -1.5V, I_D = -10mA
		—	6	—		V_{GS} = -1.2V, I_D = -1mA
Diode Forward Voltage	V_{SD}	—	-0.75	-1.0	V	V_{GS} = 0V, I_S = -10mA
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	22.5	—	pF	V_{DS} = -15V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	—	2.9	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	2.1	—	pF	
Total Gate Charge	Q_g	—	0.35	—	nC	V_{GS} = -4.5V, V_{DS} = - 5V, I_D = -200mA
Gate-Source Charge	Q_{gs}	—	0.06	—	nC	
Gate-Drain Charge	Q_{gd}	—	0.09	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	3.1	—	ns	V_{DD} = -10V, V_{GS} = -4.5V, R_G = 6Ω, I_D = -200mA
Turn-On Rise Time	t_R	—	2.3	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	19.9	—	ns	
Turn-Off Fall Time	t_F	—	10.5	—	ns	

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

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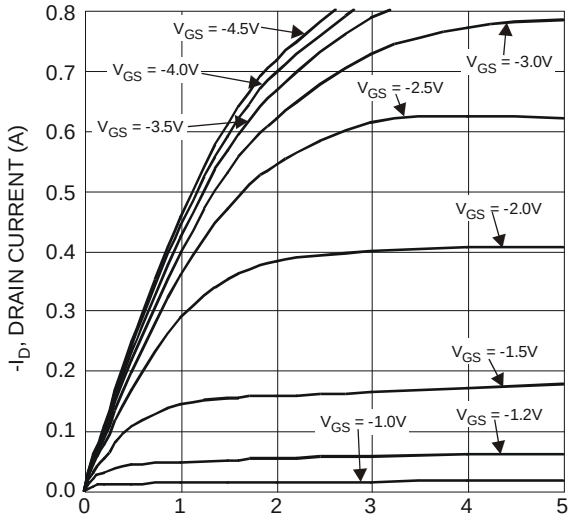


Figure 1 Typical Output Characteristics

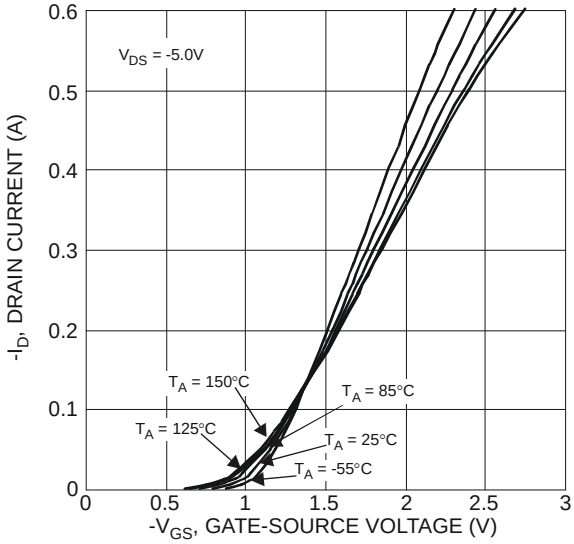


Figure 2 Typical Transfer Characteristics

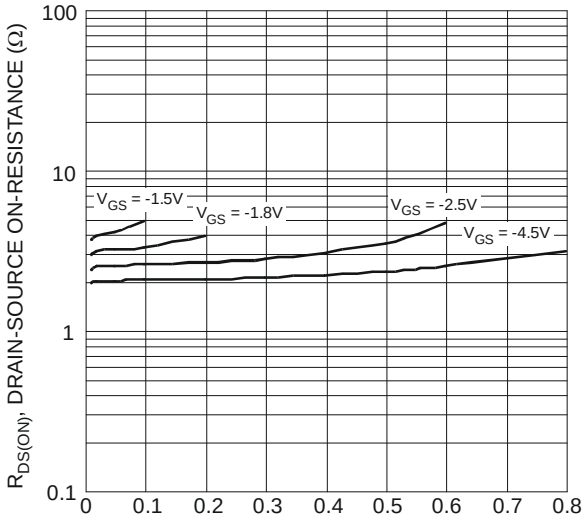


Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

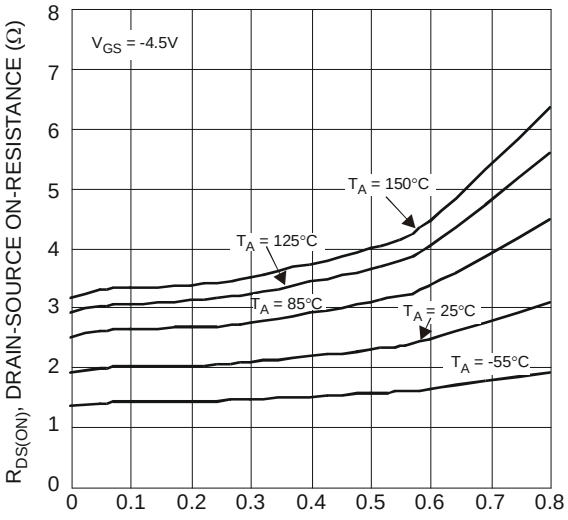


Figure 4 Typical On-Resistance vs.
Drain Current and Temperature

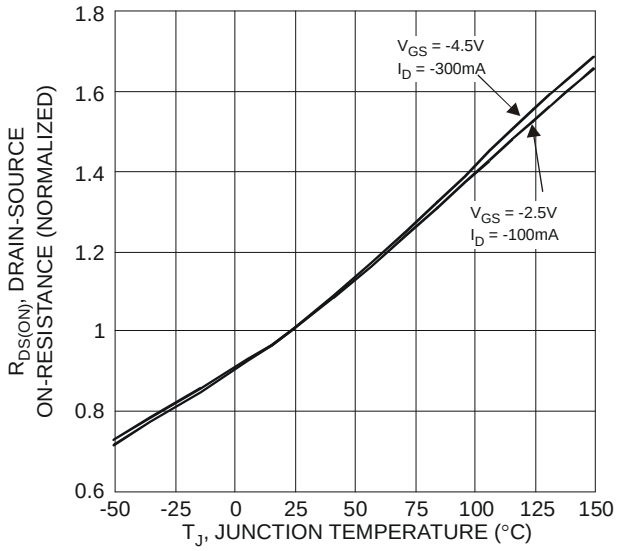


Figure 5 On-Resistance Variation with Temperature

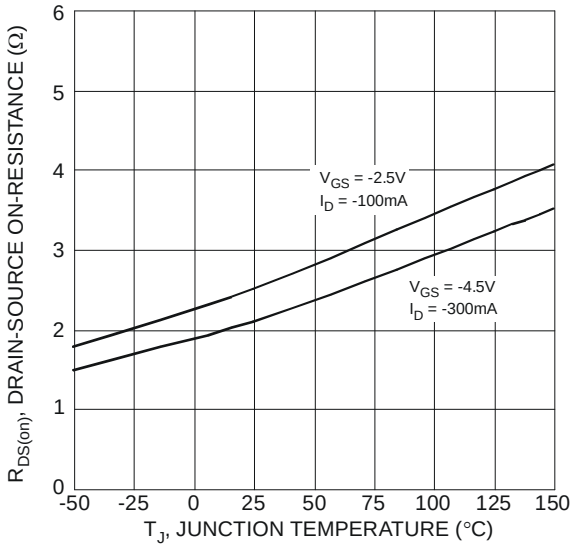


Figure 6 On-Resistance Variation with Temperature

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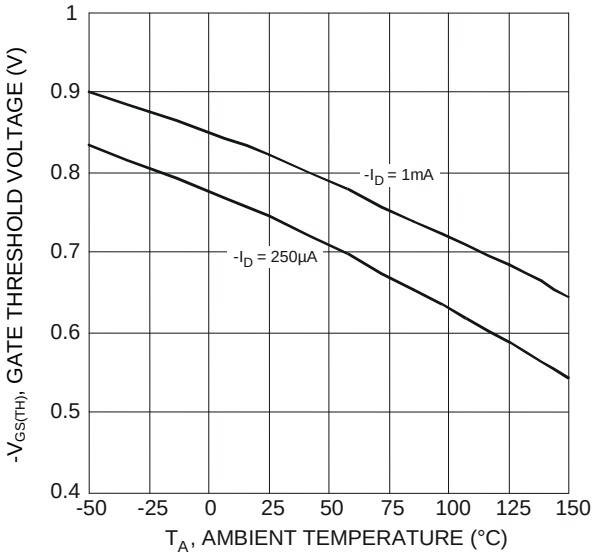


Figure 7 Gate Threshold Variation vs. Ambient Temperature

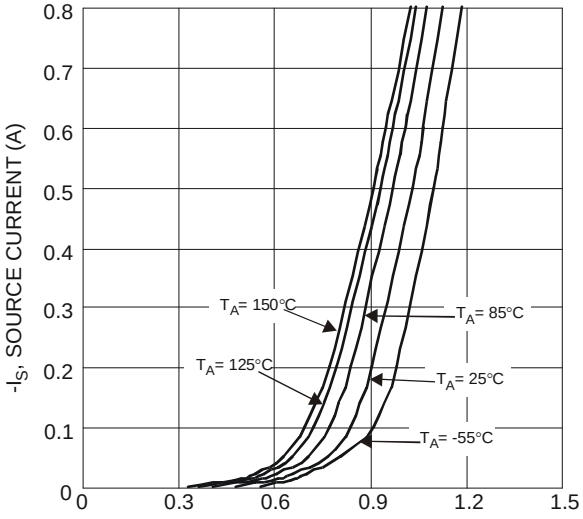


Figure 8 Diode Forward Voltage vs. Current

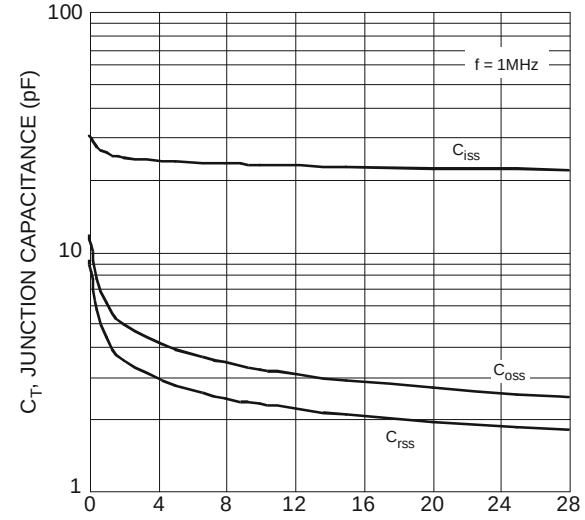


Figure 9 Typical Junction Capacitance

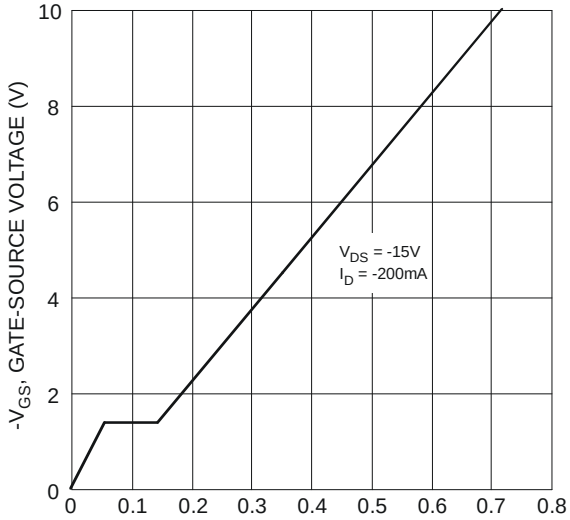


Figure 10 Gate-Charge Characteristics

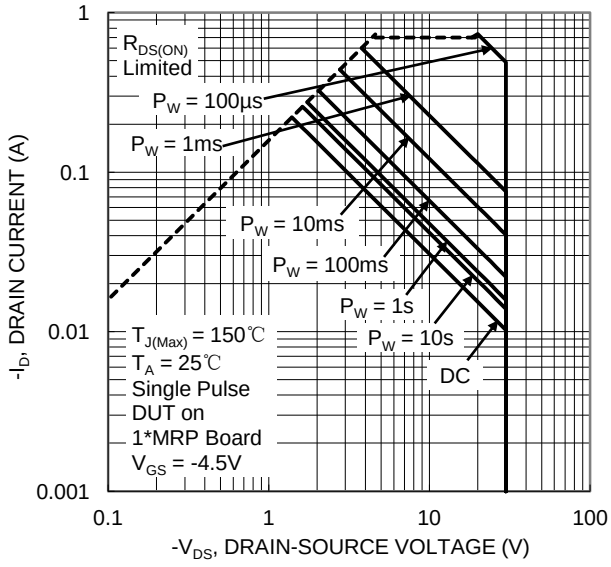


Figure 11 SOA, Safe Operation Area

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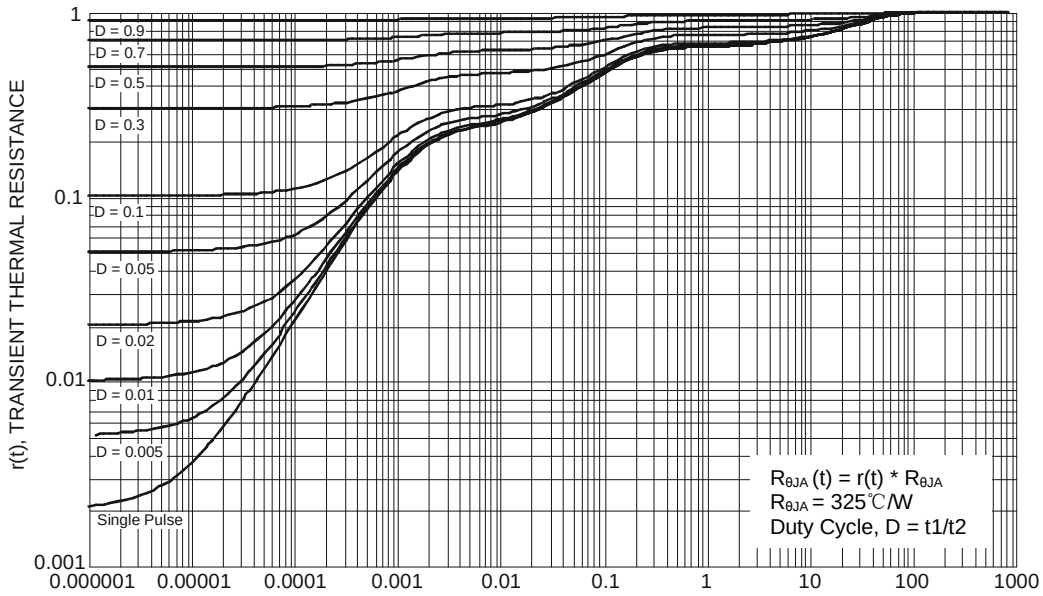


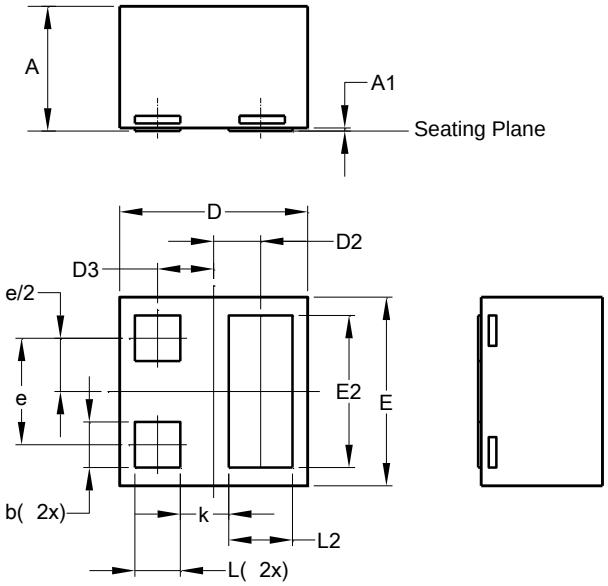
Figure 12 Transient Thermal Resistance

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Package Outline Dimensions

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

X2-DFN0606-3

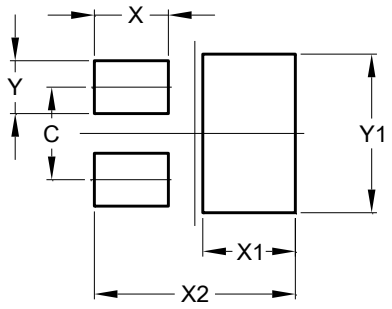


X2-DFN0606-3			
Dim	**Min**	**Max**	**Typ**
A	0.36	0.42	0.39
A1	0	0.05	0.02
b	0.10	0.20	0.15
D	0.57	0.67	0.62
D2	0.155 BSC		
D3	0.185 BSC		
E	0.57	0.67	0.62
E2	0.40	0.60	0.50
e	0.35 BSC		
k	0.16 REF		
L	0.09	0.21	0.15
L2	0.11	0.31	0.21
All Dimensions in mm			

Suggested Pad Layout

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

X2-DFN0606-3



Dimensions	Value (in mm)
C	0.350
X	0.280
X1	0.350
X2	0.760
Y	0.200
Y1	0.600

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