



N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV _{SSS}	Rss(on) max	I _S T _A = +25°C
12V	$5.9 \text{m}\Omega$ @ $V_{GS} = 4.5 \text{V}$	16.6A
120	$9.0 \text{m}\Omega$ @ $V_{GS} = 2.5 \text{V}$	12.1A

Description

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

Applications

- Battery Management
- Load Switch
- Battery Protection

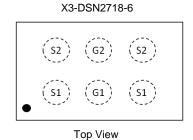
Features

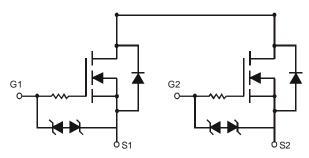
- CSP with Footprint 2.70mm x 1.81mm
- Height = 0.21mm for Low Profile
- ESD Protection of Gate
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

Mechanical Data

- Case: X3-DSN2718-6
- Terminal Connections: See Diagram Below
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish NiPdAu. Solderable per MIL-STD-202, Method 208 @4







Equivalent Circuit

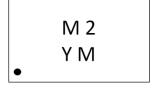
Ordering Information (Note 4)

Ī	Part Number	Case	Packaging
	DMN1006UCA6-7	X3-DSN2718-6	3000/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 http://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
- 4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



 $\begin{array}{l} M2 = Product\ Type\ Marking\ Code \\ YM = Date\ Code\ Marking \\ Y\ or\ \overline{Y} = Year\ (ex:\ F = 2018) \\ M\ or\ \overline{M} = Month\ (ex:\ 9 = September) \end{array}$

Date Code Key

Year	2017	2018	20	019	2020	2021	I	2022		2023	202	24	2025
Code	Е	F		G	Н			J		K	L		М
Month	Jan	Feb	Mar	Apr	May	Jun	Ju	I A	ug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7		8	9	0	N	D

March 2018



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

Characteristic	Symbol	Value	Unit		
Source-Source Voltage	V _{SSS}	12	V		
Gate-Source Voltage			V _{GSS}	±12	V
Continuous Source Current (Note 5) V _{GS} = 4.5V	Steady State	$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	Is	16.6 13.2	А
Continuous Source Current (Note 5) V _{GS} = 2.5V	Steady State	$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	Is	12.1 9.7	А
Pulsed Source Current (Note 6)	I _{SM}	80	Α		

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 7)	P _D	1.0	W
Thermal Resistance, Junction to Ambient @T _A = +25°C (Note 7)	$R_{\theta JA}$	124.6	°C/W
Power Dissipation (Note 5)	P _D	2.4	W
Thermal Resistance, Junction to Ambient @T _A = +25°C (Note 5)	R _{θJA}	51.5	°C/W
Operating and Storage Temperature Range	T_{J}, T_{STG}	-55 to +150	°C

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

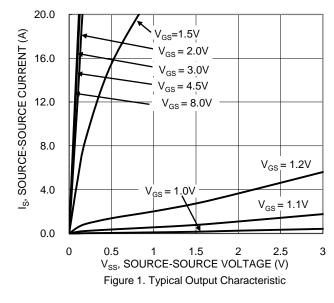
Oh avantaviatia	Compleal	Min	T	Mari	11!4	Test Condition	
Characteristic	Symbol	Min	Тур	Max	Unit	lest Condition	
OFF CHARACTERISTICS (Note 8)				1		T	
Source-Source Breakdown Voltage	BV _{SSS}	12	-	-	V	$V_{GS} = 0V$, $I_S = 1mA$	
Zero Gate Voltage Drain Current T _J = +25°C	I _{SSS}	-	-	1	μA	$V_{SS} = 10V V_{GS} = 0V$	
Gate-Source Leakage	I_{GSS}	-	-	±10	μΑ	$V_{GS} = \pm 8V, V_{SS} = 0V$	
ON CHARACTERISTICS (Note 8)							
Gate Threshold Voltage	V _{GS(TH)}	0.5	-	1.3	V	Vss = 6V, $Is = 1mA$	
		3.5	5.0	5.9		$V_{GS} = 4.5V, I_{S} = 3A$	
		3.6	5.2	6.3		$V_{GS} = 4.0V, I_{S} = 3A$	
Static Source-Source On-Resistance	R _{SS(ON)}	3.8	5.3	6.5	mΩ	$V_{GS} = 3.8V, I_{S} = 3A$	
	, ,	3.8	5.5	8.0		$V_{GS} = 3.1V, I_{S} = 3A$	
		4.2	6.0	9.0		$V_{GS} = 2.5V, I_{S} = 3A$	
Diode Forward Voltage	V _{SS}	-	0.7	1.2	V	$V_{GS} = 0V, I_{S} = 3A$	
DYNAMIC CHARACTERISTICS (Note 9)							
Input Capacitance	C _{iss}	-	2,360	-		N	
Output Capacitance	Coss	-	666	-	pF	$V_{SS} = 6V, V_{GS} = 0V,$ f = 1.0MHz	
Reverse Transfer Capacitance	C _{rss}	-	325	-		1 = 1.000112	
Total Gate Charge	Qq	-	35.2	-			
Gate-Source Charge	Q _{qs}	-	7.0	-	nC	$V_{SS} = 6V, V_{GS} = 4.5V,$	
Gate-Drain Charge	Q_{gd}	-	8.3	-	nC	I _S = 18A	
Gate Charge at V _{TH}	Q _{g(TH)}	-	4.2	-			
Turn-On Delay Time	t _{D(ON)}	-	615	-			
Turn-On Rise Time	t _R	-	1,447	-	1	$V_{SS} = 6V, V_{GS} = 4.5V,$	
Turn-Off Delay Time	t _{D(OFF)}	-	2,736	-	ns	Is = 3A	
Turn-Off Fall Time	t _F	-	3812	-			

Notes:

- 5. Device mounted on FR-4 material with 1inch² (6.45cm²), 2oz. (0.071mm thick) Cu.
- 6. Repetitive rating, pulse width limited by junction temperature.
- 7. Device mounted on FR-4 PCB with minimum recommended pad layout, single sided.
- 8. Short duration pulse test used to minimize self-heating effect.
- 9. Guaranteed by design. Not subject to production testing.







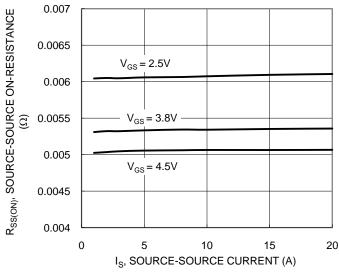


Figure 3. Typical On-Resistance vs. Source Current and Gate Voltage

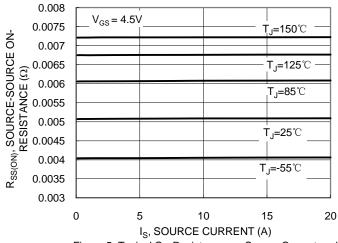
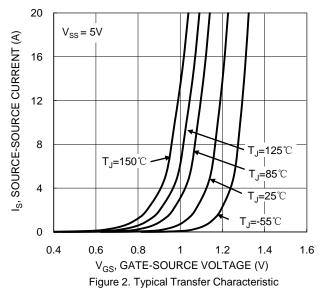
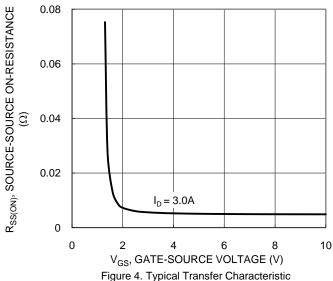


Figure 5. Typical On-Resistance vs. Source Current and Junction Temperature





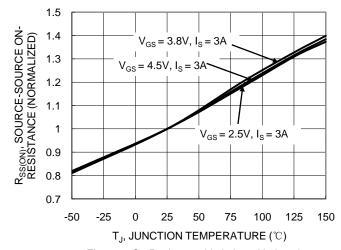


Figure 6. On-Resistance Variation with Junction Temperature





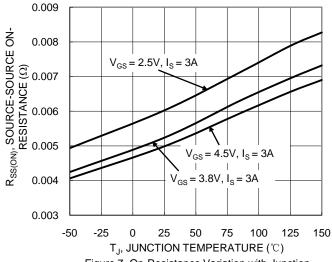


Figure 7. On-Resistance Variation with Junction Temperature

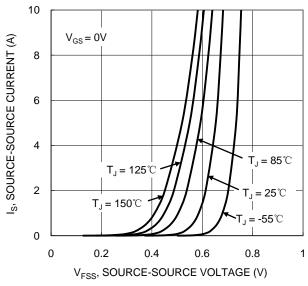


Figure 9. Diode Forward Voltage vs. Current

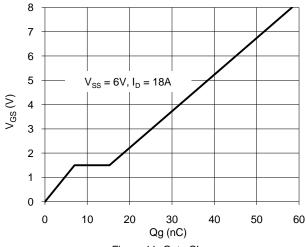


Figure 11. Gate Charge

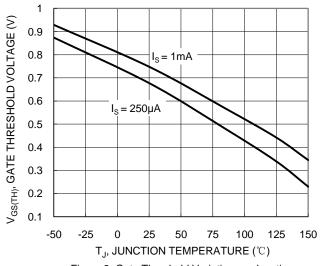
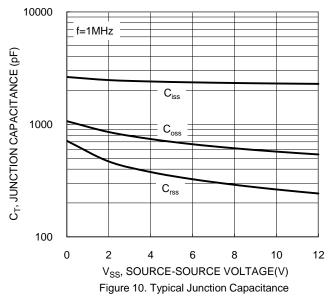
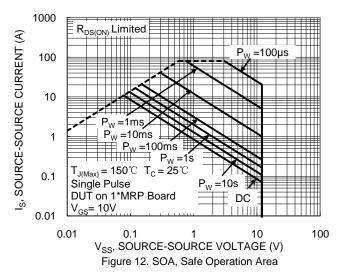


Figure 8. Gate Threshold Variation vs. Junction Temperature







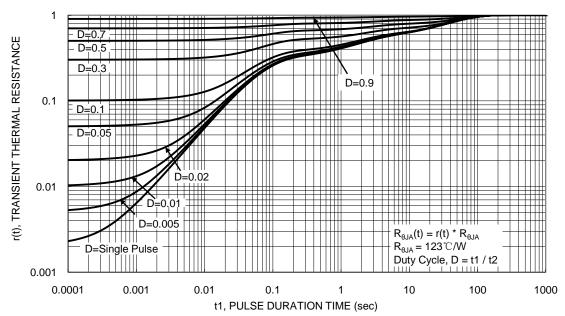


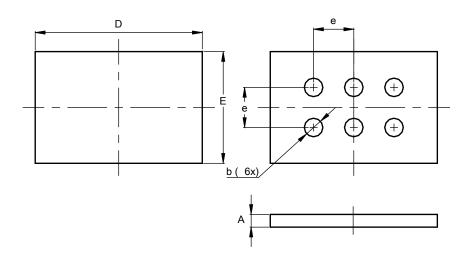
Figure 13. Transient Thermal Resistance



Package Outline Dimensions

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

X3-DSN2718-6

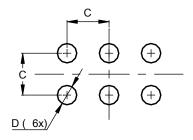


X3-DSN2718-6							
Dim Min Max T							
Α	0.16	0.26	0.21				
b	0.27	0.33	0.30				
D	2.65	2.75	2.70				
Е	1.76	1.86	1.81				
e 0.62 0.68 0.65							
All Dimensions in mm							

Suggested Pad Layout

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

X3-DSN2718-6



Dimensions	Value (in mm)
С	0.65
D	0.30



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многоканальный

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