



DMP3099L

May 2013

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P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(ON)} max	I _D max T _A = +25°C
-30V	65mΩ @ V _{GS} = -10V	-3.8A
-30 V	99mΩ @ V _{GS} = -4.5V	-3.0A

Description

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.

Applications

- Backlighting
- Power Management Functions
- DC-DC Converters

Features and Benefits

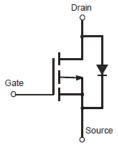
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

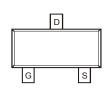
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin annealed over Copper leadframe.
 Solderable per MIL-STD-202, Method 208 (3)
- Terminal Connections: See Diagram
- Weight: 0.008 grams (approximate)







Equivalent Circuit



Top View Pin Configuration

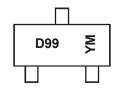
Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
DMP3099L-7	Standard	SOT23	3000/Tape & Reel
DMP3099L-13	Standard	SOT23	10000/Tape & Reel

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



D99= Product Type Marking Code YM = Date Code Marking

YM = Date Code Marking Y = Year (ex: V = 2008)

M = Month (ex: 9 = September)

Date Code Key

Year	2008		2009	2010		2011	2012		2013	2014		2015
Code	V		W	Х		Υ	Z		Α	В		С
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D



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

Characterist	tic		Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	-30	V
Gate-Source Voltage		V_{GSS}	±20	V	
Drain Current (Note 5) V_{GS} = -10V Steady T_A = +25°C T_A = +70°C			I _D	-3.8 -2.9	А
Pulsed Drain Current (Note 6)			I _{DM}	-11	A

Thermal Characteristics

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 5)	P_{D}	1.08	W
Thermal Resistance, Junction to Ambient @T _A = +25°C (Note 5)	$R_{\theta JA}$	115	°C/W
Operating and Storage Temperature Range	$T_{J_1}T_{STG}$	-55 to +150	°C

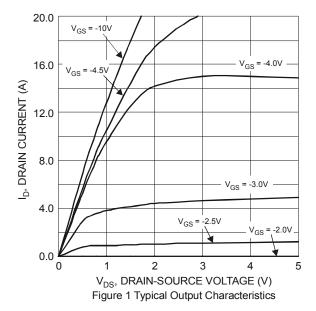
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

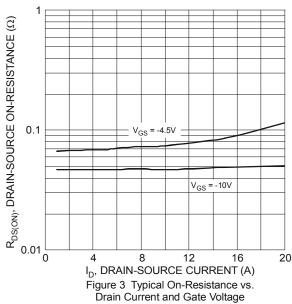
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition			
OFF CHARACTERISTICS (Note 7)									
Drain-Source Breakdown Voltage	BV _{DSS}	-30	_	_	V	$V_{GS} = 0V, I_D = -250\mu A$			
Zero Gate Voltage Drain Current	I_{DSS}	_	_	-800	nA	$V_{DS} = -30V, V_{GS} = 0V$			
Gate-Source Leakage	I _{GSS}		_	±100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$			
ON CHARACTERISTICS (Note 7)									
Gate Threshold Voltage	$V_{GS(th)}$	-1.0	_	-2.1	V	$V_{DS} = V_{GS}, I_{D} = -250 \mu A$			
Statia Drain Source On Desistance	_			65	mΩ	$V_{GS} = -10V, I_D = -3.8A$			
Static Drain-Source On-Resistance	R _{DS(ON)}	_	_	99	11122	$V_{GS} = -4.5V$, $I_D = -3.0A$			
Forward Transfer Admittance	Y _{fs}	_	3.6	_	S	$V_{DS} = -5V, I_{D} = -2.7A$			
Diode Forward Voltage (Note 6)	V_{SD}	_	_	-1.26	V	$V_{GS} = 0V, I_{S} = -2.7A$			
DYNAMIC CHARACTERISTICS (Note 8)									
Input Capacitance	C _{iss}	_	563	_	pF	$V_{DS} = -25V, V_{GS} = 0V,$			
Output Capacitance	Coss	_	48	_	pF	v _{DS}			
Reverse Transfer Capacitance	C_{rss}	_	41	_	pF	11 - 1.0IVINZ			
Gate Resistance	R_G	_	10.3	_	Ω	$V_{GS} = 0V V_{DS} = 0V, f = 1MHz$			
SWITCHING CHARACTERISTICS (Note 8)									
Total Cata Charge	0	_	5.2	_		$V_{DS} = -15V$, $V_{GS} = -4.5V$,			
Total Gate Charge	Q_g	_ 11		nC	$I_D = -3.8A$				
Gate-Source Charge	Q _{gs}		1.7		IIC	$V_{DS} = -15V$, $V_{GS} = -10V$, $I_{D} = -3.8A$			
Gate-Source Charge Gate-Drain Charge	Q_{gs}		1.7	_					
				_					
Turn-On Delay Time	t _{d(on)}		4.8	_		151/1/ 401/			
Rise Time	t _r		5.0	_	ns	$V_{DS} = -15V, V_{GS} = -10V,$			
Turn-Off Delay Time	t _{d(off)}	_	31	_		$I_D = -1A, R_G = 6.0\Omega$			
Fall Time	t _f	_	15						

Notes:

- 5. Device mounted on FR-4 PCB on 2 oz., 0.5 in. 2 copper pads and t \leq 5 sec. 6. Pulse width \leq 10 μ S, Duty Cycle \leq 1%.
- 7. Short duration pulse test used to minimize self-heating effect.
- 8. Guaranteed by design. Not subject to production testing.







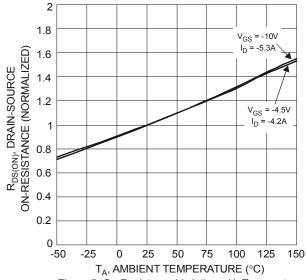
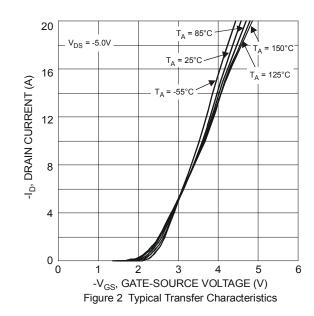
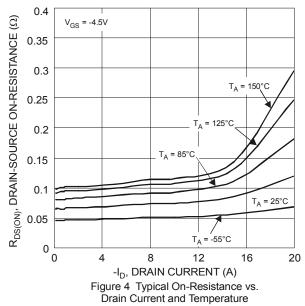


Figure 5 On-Resistance Variation with Temperature





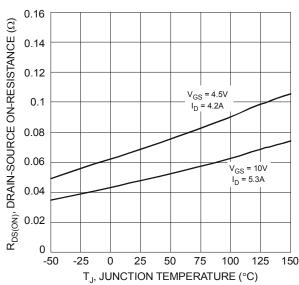


Figure 6 On-Resistance Variation with Temperature



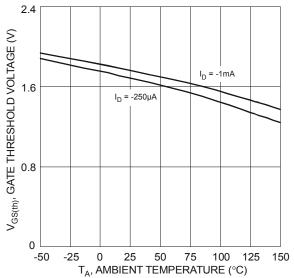
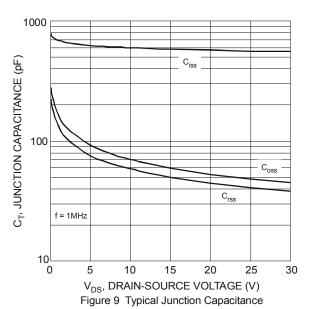
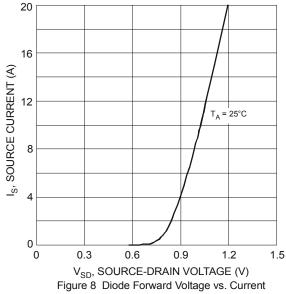
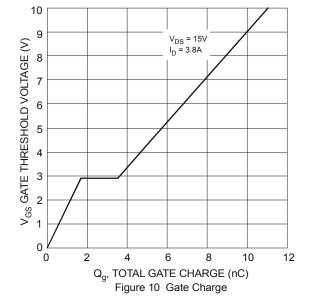


Figure 7 Gate Threshold Variation vs. Ambient Temperature



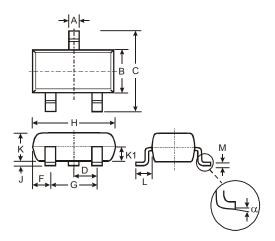






Package Outline Dimensions

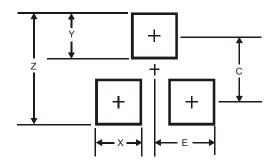
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT23							
Dim	Min	Max	Тур				
Α	0.37	0.51	0.40				
В	1.20	1.40	1.30				
С	2.30	2.50	2.40				
D	0.89	1.03	0.915				
F	0.45	0.60	0.535				
G	1.78	2.05	1.83				
Н	2.80	3.00	2.90				
J	0.013	0.10	0.05				
K	0.903	1.10	1.00				
K1	-	-	0.400				
L	0.45	0.61	0.55				
M	0.085	0.18	0.11				
α	0°	8°	-				
All Dimensions in mm							

Suggested Pad Layout

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



Dimensions	Value (in mm)
Z	2.9
Х	0.8
Υ	0.9
С	2.0
E	1.35



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