NEW PRODUCT

Lead-free Green

DMP32D4SW

30V P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$ Max	I_D Max @ T_A = 25°C
-30V	2.4Ω @ V_{GS} = -10V	-250mA
	4Ω @ V_{GS} = -4.5V	-200mA

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

- Load Switch
- Portable Applications
- Power Management Functions

Features

- Low On-Resistance
- 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**

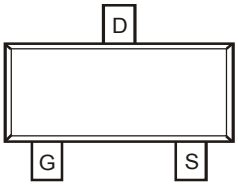
Mechanical Data

- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Weight: 0.006 grams (approximate)

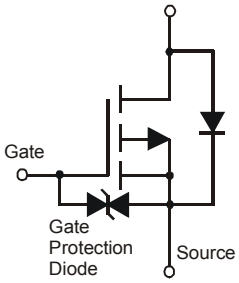
ESD PROTECTED

SOT323

Top View



Top View
Pin-out



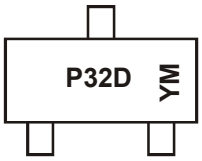
Equivalent Circuit

Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Quantity per reel
DMP32D4SW-7	P32D	7	3,000
DMP32D4SW-13	P32D	13	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



P32D = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: Z = 2012)
M = Month (ex: 9 = September)

Date Code Key

Year	2012	2013	2014	2015	2016	2017	2018
Code	Z	A	B	C	D	E	F

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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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}	±20	V
Continuous Drain Current (Note 6)	V_{GS} = -10V	T_A = +25°C T_A = +70°C	I_D	250 200	mA
Pulsed Drain Current (Note 6)			I_{DM}	-1	A

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

Characteristic		Symbol	Value	Units
Total Power Dissipation	(Note 5)	P_D	300	mW
	(Note 6)		432	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	398	°C/W
	(Note 6)		290	
Thermal Resistance, Junction to Case	(Note 5)	$R_{\theta JC}$	142	
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 = -1mA	
Zero Gate Voltage Drain Current T_J = +25°C	I_{DSS}	-	-	-1	μA	V_{DS} = -30V, V_{GS} = 0V	
Gate-Source Leakage	I_{GSS}	-	-	±10	μA	V_{GS} = ±16V, V_{DS} = 0V	
ON CHARACTERISTICS (Note 7)							
Gate Threshold Voltage	$V_{GS(th)}$	-1.4	-	-2.4	V	V_{DS} = V_{GS}, I_D = -250μA	
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	-	2.4	Ω	V_{GS} = -10V, I_D = -0.5A	
				4		V_{GS} = -4.5V, I_D = -0.3A	
Forward Transfer Admittance	$\|Y_{fs}\|$	-	6	-	S	V_{DS} = -10V, I_D = -400mA	
Diode Forward Voltage	V_{SD}	-	0.8	1.2	V	V_{GS} = 0V, I_S = -300mA	
DYNAMIC CHARACTERISTICS (Note 8)							
Input Capacitance	C_{iss}	-	51.16	-	pF	V_{DS} = -15V, V_{GS} = 0V, f = 1.0MHz	
Output Capacitance	C_{oss}	-	10.85	-	pF		
Reverse Transfer Capacitance	C_{rss}	-	8.88	-	pF		
Gate Resistance	R_g	-	275	-	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz	
Total Gate Charge	Q_g	-	0.6	-	nC	V_{GS} = -4.5V	V_{DS} = -10V, I_D = -1A
Total Gate Charge	Q_g	-	1.2	-	nC	V_{GS} = -10V	
Gate-Source Charge	Q_{gs}	-	0.2	-	nC		
Gate-Drain Charge	Q_{gd}	-	0.3	-	nC		
Turn-On Delay Time	$t_{D(on)}$	-	9.86	-	ns	V_{DS} = -15V, I_D = -1A V_{GS} = -10V, R_G = 6Ω	
Turn-On Rise Time	t_r	-	11.5	-	ns		
Turn-Off Delay Time	$t_{D(off)}$	-	31.8	-	ns		
Turn-Off Fall Time	t_f	-	21.9	-	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.

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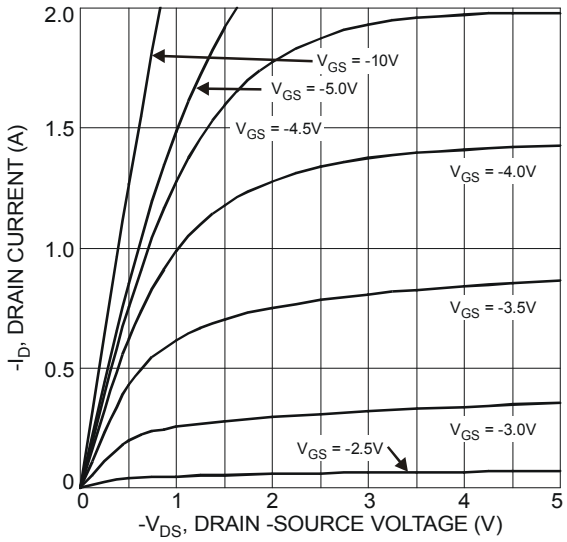

Figure 1 Typical Output Characteristics

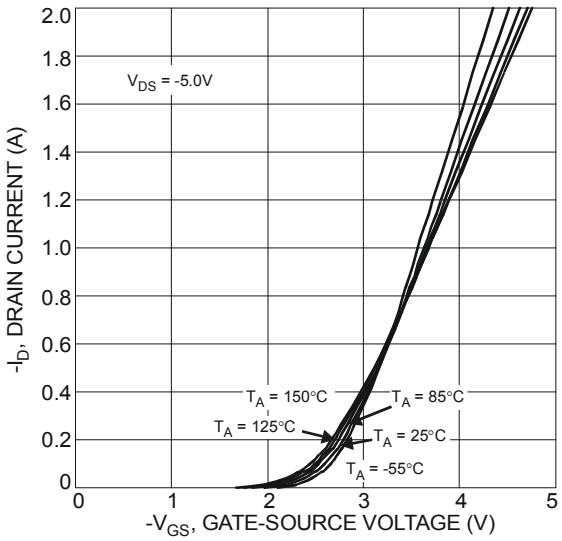

Figure 2 Typical Transfer Characteristics

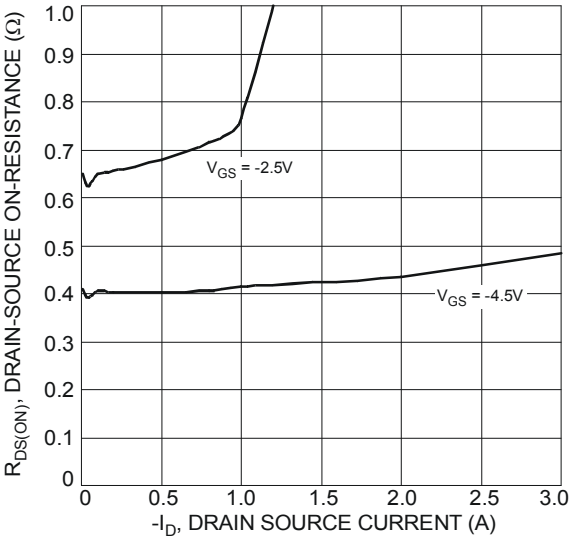

Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

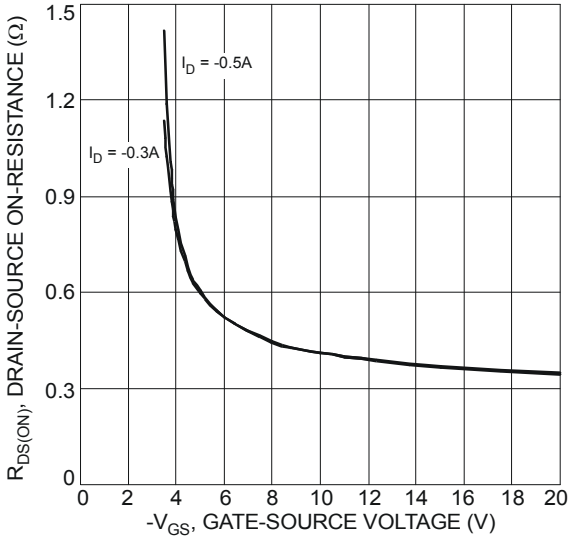

Figure 4 Typical Drain-Source On-Resistance vs. Gate-Source Voltage

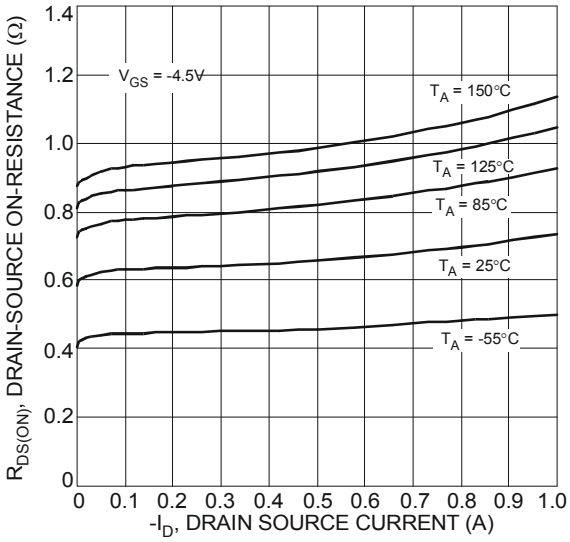

Figure 5 Typical On-Resistance vs. Drain Current and Temperature

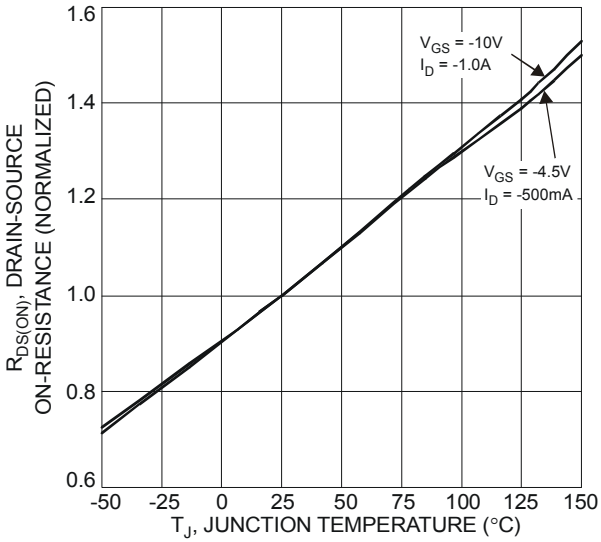

Figure 6 On-Resistance Variation with Temperature

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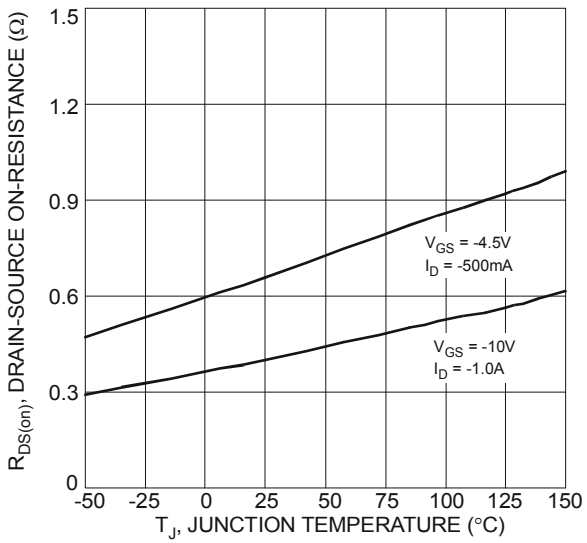

Figure 7 On-Resistance Variation with Temperature

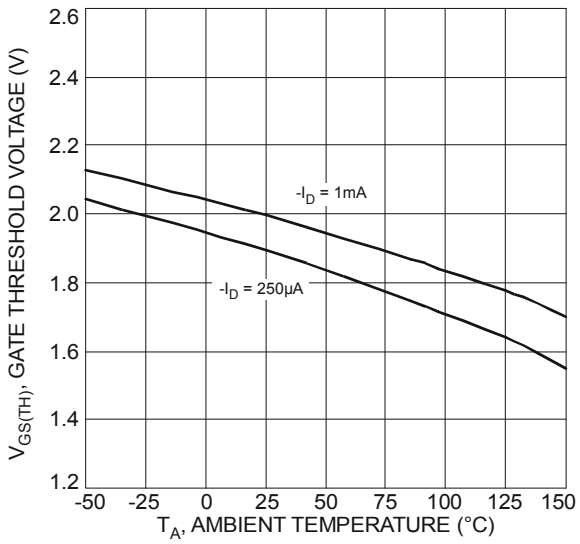

Figure 8 Gate Threshold Variation vs. Ambient Temperature

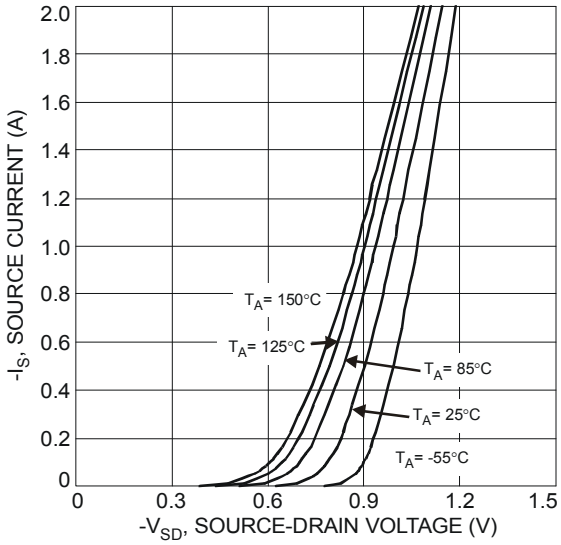

Figure 9 Diode Forward Voltage vs. Current

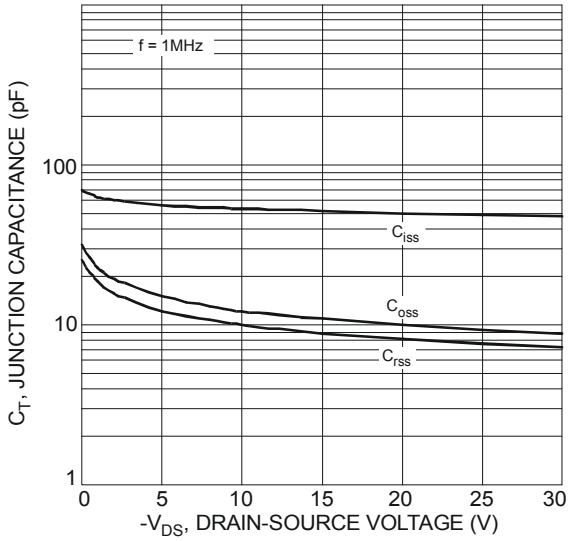

Figure 10 Typical Junction Capacitance

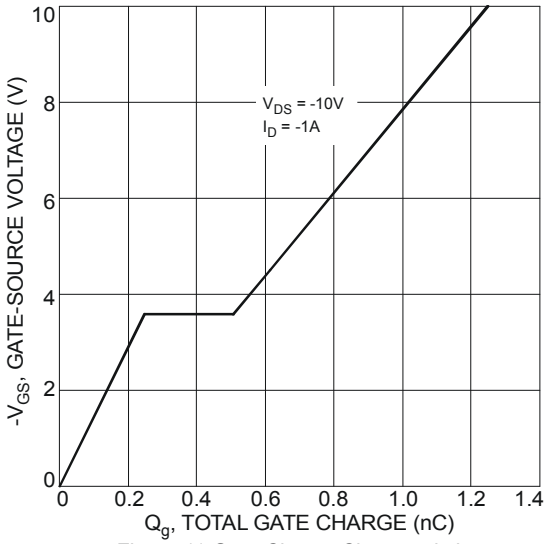

Figure 11 Gate-Charge Characteristics

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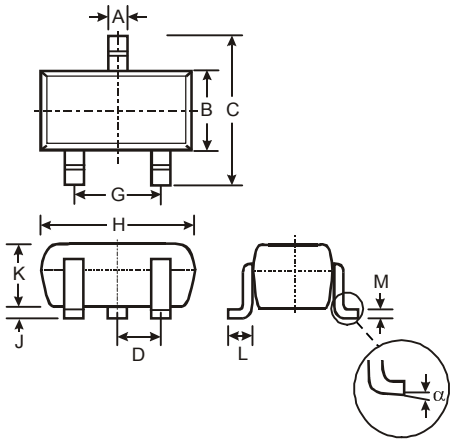
Package Outline Dimensions

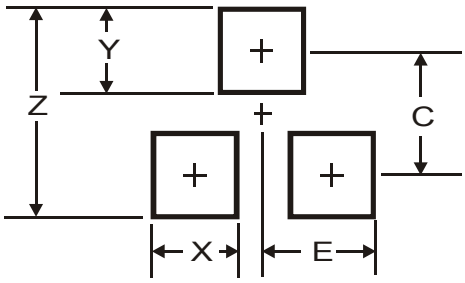
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT323			
Dim	**Min**	**Max**	**Typ**
A	0.25	0.40	0.30
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	-	-	0.65
G	1.20	1.40	1.30
H	1.80	2.20	2.15
J	0.0	0.10	0.05
K	0.90	1.00	0.95
L	0.25	0.40	0.30
M	0.10	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	2.8
X	0.7
Y	0.9
C	1.9
E	1.0

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