



DMP10H400SE

100V P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(ON)}	I _D T _A = +25°C	
-100V	250mΩ @ V_{GS} = -10 V	-2.3A	
	300mΩ @ V _{GS} = -4.5V	-2.1A	

Description

This MOSFET is designed to minimize the on-state resistance and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

- Motor Control
- DC-DC Converters
- Power Management Functions
- Uninterrupted Power Supply

Features and Benefits

- Low Gate Drive
- Low Input Capacitance
- Fast Switching Speed
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

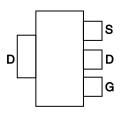
Mechanical Data

- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound.
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram Below
- Terminals: Finish Matte Tin Annealed over Copper Lead Frame.
 Solderable per MIL-STD-202, Method 208 ³
- Weight: 0.112 grams (Approximate)

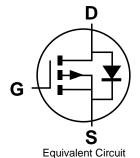
SOT223



Top View



Pin Out - Top View



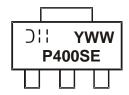
Ordering Information (Note 4)

Part Number	Qualification	Case	Packaging	
DMP10H400SE-13	Standard	SOT223	2,500 / 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



O!! = Manufacturer's Marking P400SE = Marking Code YWW = Date Code Marking Y or Y= Year (ex: 4 = 2014) WW = Week (01 to 53)



Characteristic	Symbol	Value	Unit		
Drain-Source Voltage			V_{DSS}	-100	V
Gate-Source Voltage	V_{GSS}	±20	V		
Continuous Drain Current (Note 5) V _{GS} = -10V	Steady State	$T_C = +25$ °C $T_A = +25$ °C	I _D	-6.0 -2.3	А
Maximum Body Diode Forward Current (Note 5)	Is	-1.9	Α		
Pulsed Drain Current (380μs Pulse, Duty Cycle = 1%	I _{DM}	-10	Α		

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

Characteristic	Symbol	Value	Unit	
Total Power Dissipation (Note 5)	T _A = +25°C	D	2.0	W
Total Fower Dissipation (Note 5)	T _A = +70°C	P _D	1.3	
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	62	°C/W	
Total Power Dissipation (Note 5) $T_C = +25^{\circ}C$		P _D	13.7	W
Thermal Resistance, Junction to Case (Note 5)		R _{0JC}	9.1	°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	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 6)							
Drain-Source Breakdown Voltage	BV_{DSS}	-100	_	_	V	$V_{GS} = 0V, I_{D} = -250\mu A$	
Zero Gate Voltage Drain Current	I _{DSS}	_	_	1	μΑ	$V_{DS} = -80V, V_{GS} = 0V$	
Gate-Source Leakage	I _{GSS}	_	_	±100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 6)							
Gate Threshold Voltage	V _{GS(TH)}	-1.0	-2.2	-3.0	V	$V_{DS} = V_{GS}, I_{D} = -250 \mu A$	
Static Drain-Source On-Resistance		_	203	250	mΩ	$V_{GS} = -10V, I_D = -5A$	
Static Drain-Source On-Resistance	R _{DS(ON)}	_	241	300	1115.2	$V_{GS} = -4.5V, I_D = -5A$	
Diode Forward Voltage	V_{SD}	_	-0.9	-1.2	V	$V_{GS} = 0V, I_{S} = -5A$	
DYNAMIC CHARACTERISTICS (Note 7)							
Input Capacitance	Ciss	_	1239	_			
Output Capacitance	Coss	_	42	_	pF	$V_{DS} = -25V$, $V_{GS} = 0V$, $f = 1.0MHz$	
Reverse Transfer Capacitance	C _{rss}	_	28	_			
Gate Resistance	R_{G}	_	13	_	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz$	
Total Gate Charge (V _{GS} = -4.5V)	Q_g	_	8.4	_			
Total Gate Charge (V _{GS} = -10V)	Q_g	_	17.5	_	nC	$V_{DS} = -60V, I_{D} = -5A$	
Gate-Source Charge	Q_{gs}	_	2.8	_	IIC		
Gate-Drain Charge	Q_{gd}	_	3.2	_			
Turn-On Delay Time	t _{D(ON)}	_	9.1	_		$V_{DD} = -50V, R_G = 9.1\Omega, I_D = -5A$	
Turn-On Rise Time	t _R	_	14.9	_			
Turn-Off Delay Time	t _{D(OFF)}	_	57.4	_	ns		
Turn-Off Fall Time	t _F		34.4	—			
Body Diode Reverse Recovery Time	t _{RR}	_	25.2	_	ns	$V_{GS} = 0V$, $I_S = -5A$, $dI/dt = 100A/\mu s$	
Body Diode Reverse Recovery Charge	Q_{RR}	_	24.5		nC	$V_{GS} = 0V$, $I_S = -5A$, $dI/dt = 100A/\mu s$	

Notes:

- 5. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.6. Short duration pulse test used to minimize self-heating effect.
- 7. Guaranteed by design. Not subject to production testing.

85°C

4

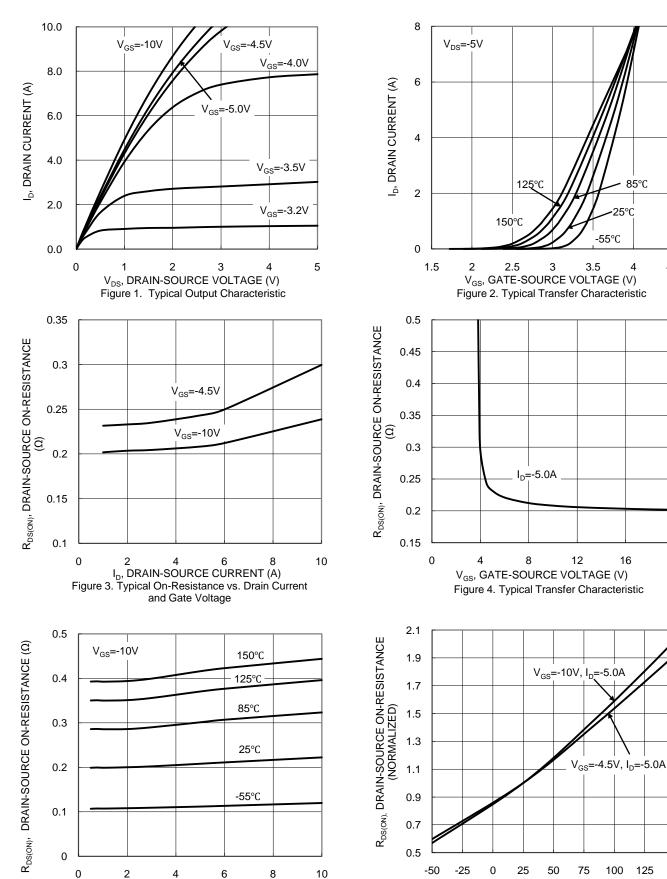
4.5

20

16

-55°C





I_D, DRAIN CURRENT (A)

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

Junction Temperature

150

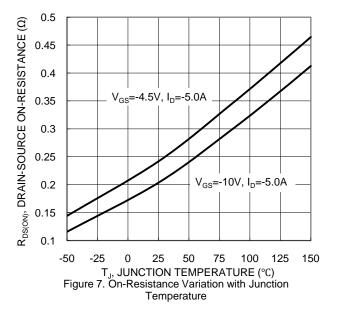
100 125

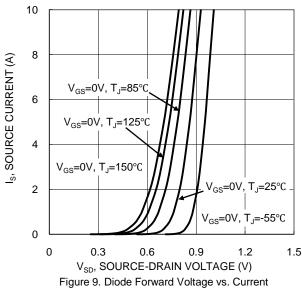
T_J, JUNCTION TEMPERATURE (°C)

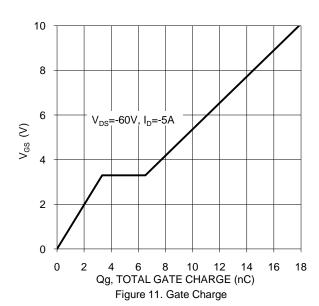
Figure 6. On-Resistance Variation with Junction

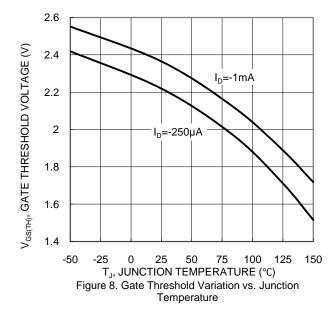
Temperature

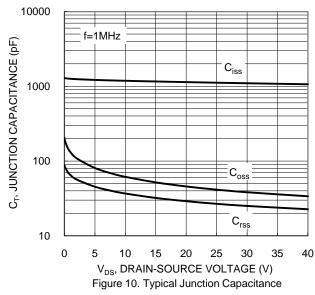


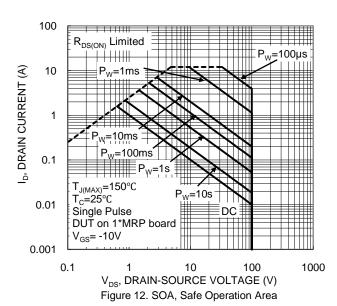




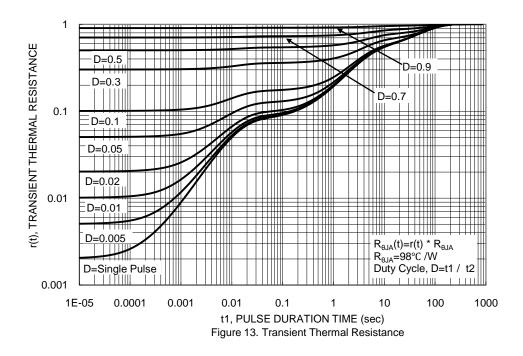






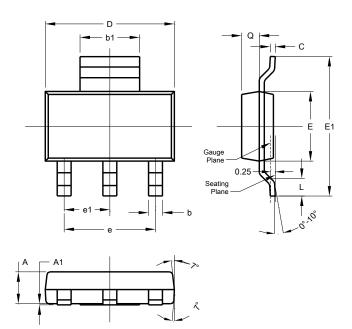






Package Outline Dimensions

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

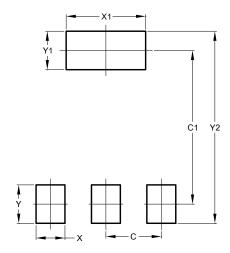


SOT223					
Dim	Min	Max	Тур		
Α	1.55	1.65	1.60		
A1	0.010	0.15	0.05		
b	0.60	0.80	0.70		
b1	2.90	3.10	3.00		
C	0.20	0.30	0.25		
D	6.45	6.55	6.50		
Е	3.45	3.55	3.50		
E1	6.90	7.10	7.00		
е	-	-	4.60		
e1	-	-	2.30		
L	0.85	1.05	0.95		
Q	0.84	0.94	0.89		
All Dimensions in mm					



Suggested Pad Layout

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



Dimensions	Value (in mm)
С	2.30
C1	6.40
Х	1.20
X1	3.30
Υ	1.60
Y1	1.60
Y2	8.00

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