



100V P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(on) max}	I _D T _C = +25°C	
-100V	240mΩ @ $V_{GS} = -10V$	-9A	
-1007	$300 \text{m}\Omega$ @ $V_{GS} = -4.5V$	-8A	

Description

This new generation MOSFET is 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

- DC-DC Converters
- **Power Management Functions**
- Analog Switch

Features

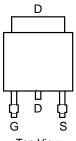
- Low On-Resistance
- Low Input Capacitance
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

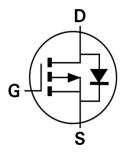
- Case: TO252 (DPAK)
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (63)
- Weight: 0.33 grams (Approximate)







Top View



Internal Schematic

Ordering Information (Note 4)

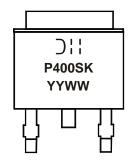
Part Number	Compliance	Case	Packaging	
DMP10H400SK3-13	Standard	TO252	2,500/Tape & Reel	

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 + CI) and
- <1000ppm antimony compounds.

 4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



⊃!! = Manufacturer's Marking P400SK = Product Type Marking Code YYWW = Date Code Marking YY = Year (ex: 13 = 2013) WW = Week (01 - 53)



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

Characteristic	Symbol	Value	Units		
Drain-Source Voltage			V_{DSS}	-100	V
Gate-Source Voltage	V_{GSS}	±20	V		
Continuous Drain Current (Note 5) V _{GS} = -10V	Steady	$T_C = +25^{\circ}C$	- I _D	-9	А
Continuous Drain Current (Note 5) VGS = -10V	State	$T_C = +100$ °C		-5.5	
Maximum Body Diode Forward Current (Note 5)	I _S	-4	Α		
Pulsed Drain Current (10µs pulse, duty cycle = 1%)	I _{DM}	-15	A		

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

Characteristic	Symbol	Value	Units	
Total Power Dissipation (Note 5)	$T_C = +25^{\circ}C$	6	42	W
Total Power Dissipation (Note 5)	$T_{\rm C} = +100^{\circ}{\rm C}$	P _D	17	
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	44	°C/W	
Thermal Resistance, Junction to Case (Note 5)	Rejc	3	3C/VV	
Operating and Storage Temperature Range	$T_{J_i}T_{STG}$	-55 to +150	°C	

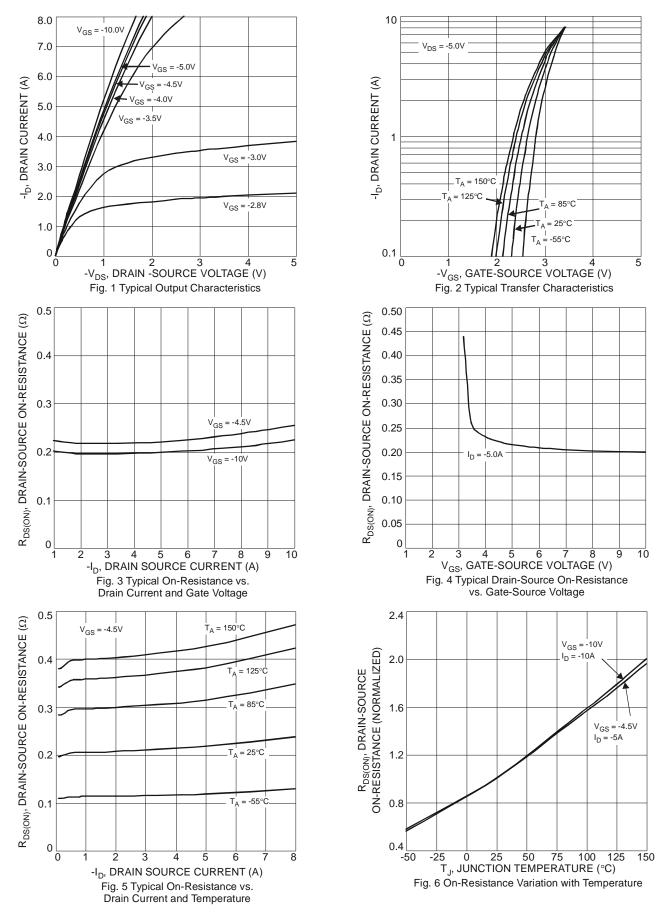
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

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	_	-3	V	$V_{DS} = V_{GS}, I_{D} = -250 \mu A$	
Static Drain-Source On-Resistance	D		190	240	mΩ	$V_{GS} = -10V, I_D = -5A$	
Static Dialit-Source Off-Resistance	R _{DS} (ON)		210	300	11152	$V_{GS} = -4.5V, I_{D} = -5A$	
Diode Forward Voltage	V_{SD}		-0.7	-1.2	V	$V_{GS} = 0V, I_{S} = -5A$	
DYNAMIC CHARACTERISTICS (Note 7)							
Input Capacitance	Ciss		1239			V _{DS} = -25V, V _{GS} = 0V, f = 1MHz	
Output Capacitance	Coss		42	_	pF		
Reverse Transfer Capacitance	Crss		28	_			
Gate Resistance	R_{G}		13	_	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1MHz$	
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	V _{DS} = -60 V, I _D = -5A	
Gate-Drain Charge	Q_{gd}		3.2	_			
Turn-On Delay Time	t _{D(on)}	_	9.1	_			
Turn-On Rise Time	t _r	_	14.9	_		$V_{DD} = -50V$, $R_G = 9.1\Omega$, $I_D = -5A$	
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	$V_{GS} = 0V$, $I_{S} = -5A$, $dI/dt = 100A/\mu s$	

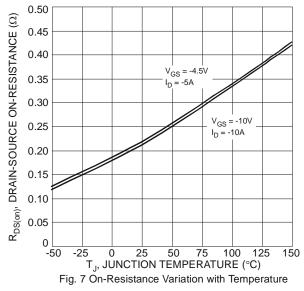
Notes:

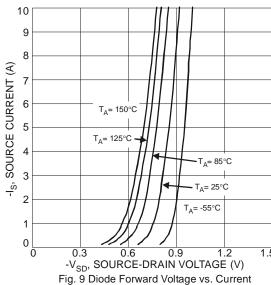
- 5. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.
- 6. Short duration pulse test used to minimize self-heating effect.
- 7. Guaranteed by design; not subject to production testing.

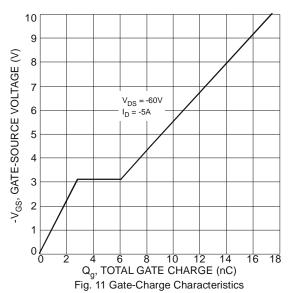












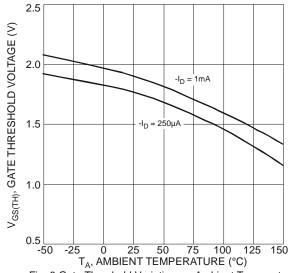
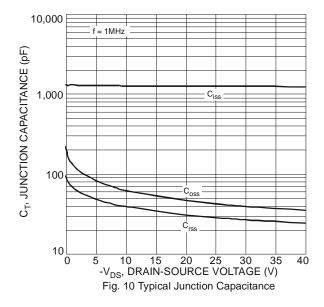
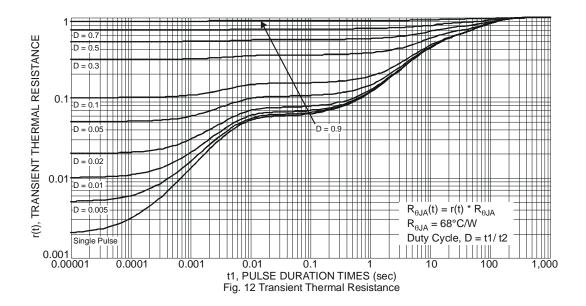


Fig. 8 Gate Threshold Variation vs. Ambient Temperature

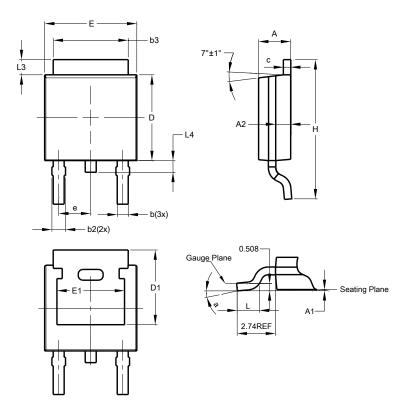






Package Outline Dimensions

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

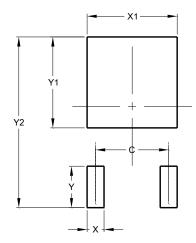


TO252 (DPAK)						
Dim	Min	Max	Тур			
Α	2.19	2.39	2.29			
A1	0.00	0.13	0.08			
A2	0.97	1.17	1.07			
b	0.64	0.88	0.783			
b2	0.76	1.14	0.95			
b3	5.21	5.46	5.33			
C	0.45	0.58	0.531			
D	6.00	6.20	6.10			
D1	5.21	-	-			
Ф	-	1	2.286			
Е	6.45	6.70	6.58			
E1	4.32	1	1			
Ξ	9.40	10.41	9.91			
<u>ا</u> ـ	1.40	1.78	1.59			
L3	0.88	1.27	1.08			
L4	0.64	1.02	0.83			
а	0°	10°	-			
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	4.572			
Х	1.060			
X1	5.632			
Υ	2.600			
Y1	5.700			
Y2	10.700			

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