

40V P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(on)} max	I _D max (A) T _A = 25°C (Notes 6)	
401/	25mΩ @ V _{GS} = -10V	-8.0	
-40V	45mΩ @ V _{GS} = -4.5V	-6.0	

Description and Applications

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

- Motor control
- Backlighting
- DC-DC Converters
- Printer equipment

Features and Benefits

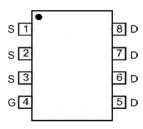
- Low R_{DS(on)} Minimizes conduction losses
- Fast switching speed Minimizes switching losses
- Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

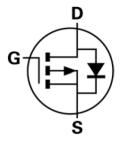
- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0 (Note 1)
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin annealed over Copper lead frame.
 Solderable per MIL-STD-202, Method 208 (23)
- Weight: 0.074 grams (approximate)



Top View



Pin-Out Top View



Device symbol

Ordering Information (Note 4)

ĺ	Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel	
	DMP4025LSS-13	P4025LS	13	12	2.500	

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 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

Marking Information



DII = Manufacturer's Marking
P4025LS = Product Type Marking Code
YYWW = Date Code Marking
YY = Year (ex: 10 = 2010)
WW = Week (01 - 53)





Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V _{DSS}	-40	\/
Gate-Source Voltage	Gate-Source Voltage		V _{GSS}	±20	V
		(Notes 6)		-8.0	
Continuous Drain Current	$V_{GS} = -10V$	T _A = 70°C (Notes 6)	I_{D}	-6.9	
		(Notes 5)		-6.0	_
Pulsed Drain Current	$V_{GS} = -10V$	(Notes 7)	I _{DM}	-30	А
Continuous Source Current (Body diode)	(Notes 7)	Is	-8.0	
Pulsed Source Current (Body	y diode)	(Notes 7)	I _{SM}	-30	

Thermal Characteristics @TA = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Dawar Dissipation	(Notes 5)		1.52	w
Power Dissipation	(Notes 6)	P _D	2.4	VV
Thermal Decistores, Junction to Ambient	(Notes 5)	D	82	
Thermal Resistance, Junction to Ambient	(Notes 6)	R _{θJA}	52	°C/W
Thermal Resistance, Junction to Lead	(Notes 8)	$R_{ heta JL}$	48.85	
Operating and Storage Temperature Range		T _{J,} T _{STG}	-55 to +150	°C

Notes:

- For a device surface mounted on minimum recommended FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
 Same as note (2), except the device is surface mounted on 25mm X 25mm X 1.6mm FR4 PCB.
 Repetitive rating on 25mm X 25mm FR4 PCB, D=0.02, pulse width 300µs pulse width by maximum junction temperature.
 Thermal resistance from junction to solder-point (at the end of the drain lead).



Thermal Characteristics

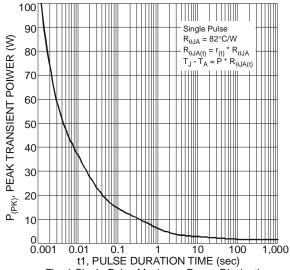
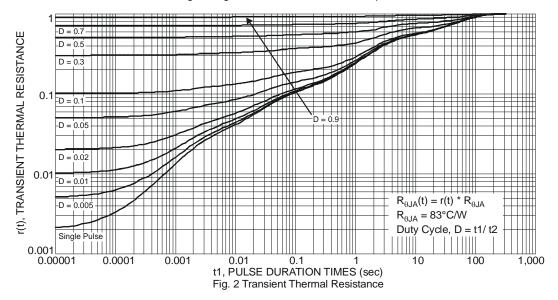


Fig. 1 Single Pulse Maximum Power Dissipation





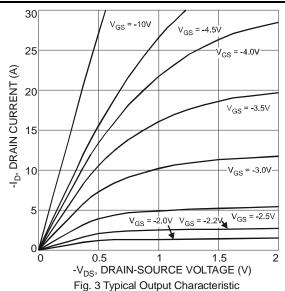
Electrical Characteristics T_A = 25°C unless otherwise specified

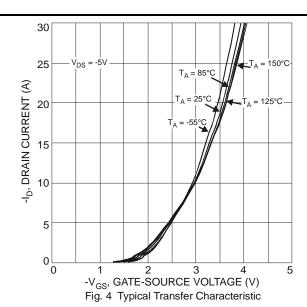
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage	BV _{DSS}	-40	_	_	V	$I_D = -250 \mu A, V_{GS} = 0 V$	
Zero Gate Voltage Drain Current	I _{DSS}	_	_	-1.0	μΑ	$V_{DS} = -40V, V_{GS} = 0V$	
Gate-Source Leakage	IGSS	_	_	±100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$	
ON CHARACTERISTICS					•	•	
Gate Threshold Voltage	V _{GS(th)}	-0.8	-1.3	-1.8	V	$I_D = -250 \mu A, V_{DS} = V_{GS}$	
Static Drain Source On Registeres (Note 0)	0		18	25	mΩ	$V_{GS} = -10V, I_D = -3A$	
Static Drain-Source On-Resistance (Note 9)	R _{DS (ON)}		30	45	11112	$V_{GS} = -4.5V, I_{D} = -3A$	
Forward Transconductance (Notes 9 & 10)	g _{fs}	_	16.6	_	S	$V_{DS} = -5V, I_{D} = -3A$	
Diode Forward Voltage (Note 9)	V_{SD}	_	-0.7	-1.0	V	$I_S = -1A$, $V_{GS} = 0V$	
DYNAMIC CHARACTERISTICS (Note 10)							
Input Capacitance	C _{iss}		1640	_		$V_{DS} = -20V$, $V_{GS} = 0V$ f = 1MHz $V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1MHz$	
Output Capacitance	Coss	_	179	_	pF		
Reverse Transfer Capacitance	C_{rss}	_	128	_			
Gate Resistance	R_g	_	6.43	_	Ω		
Total Gate Charge (Note 11)	Q_g	_	14.0	_		V _{GS} = -4.5V	
Total Gate Charge (Note 11)	Qq	_	33.7	_		V _{DS} = -20V	
Gate-Source Charge (Note 11)	Qgs		5.5	_	nC	$V_{GS} = -10V$ $I_D = -3A$	
Gate-Drain Charge (Note 11)	Q_{gd}	_	7.3	_			
Turn-On Delay Time (Note 11)	t _{D(on)}		6.9	_		·	
Turn-On Rise Time (Note 11)		_	14.7	_		$V_{DD} = -20V, V_{GS} = -10V$	
Turn-Off Delay Time (Note 11)	t _{D(off)}	_	53.7	_	$\int_{I_D} \int_{I_D} \int_{I$		
Turn-Off Fall Time (Note 11)	t _f		30.9	_			

Notes:

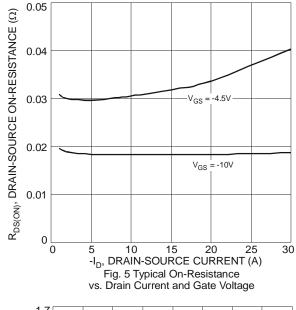
- 9. Measured under pulsed conditions. Pulse width $\leq 300 \mu s;$ duty cycle $\leq 2\%$
- 10. For design aid only, not subject to production testing.11. Switching characteristics are independent of operating junction temperatures.

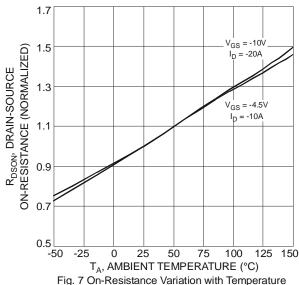
Typical Characteristics











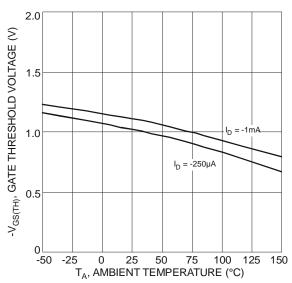
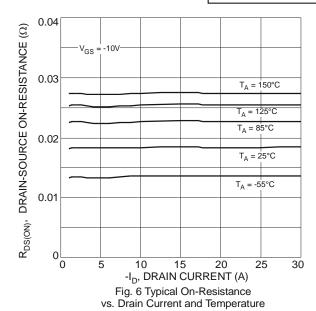


Fig. 9 Gate Threshold Variation vs. Ambient Temperature



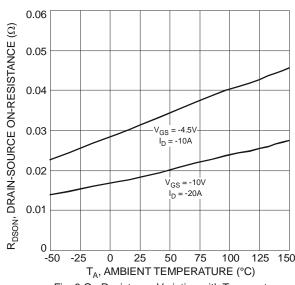


Fig. 8 On-Resistance Variation with Temperature

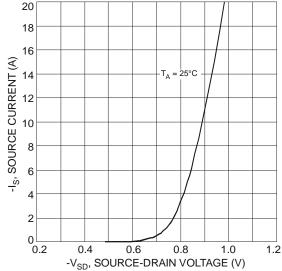
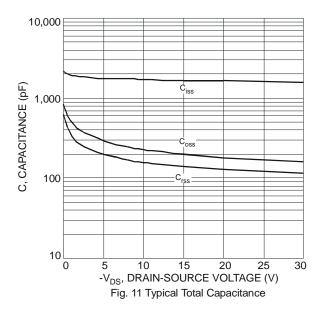
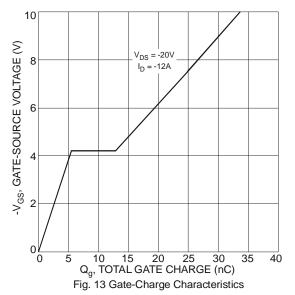
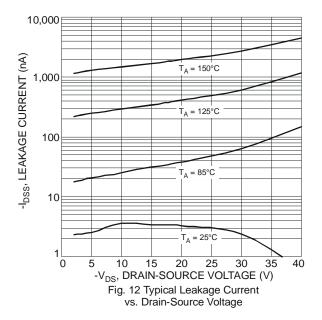


Fig. 10 Diode Forward Voltage vs. Current



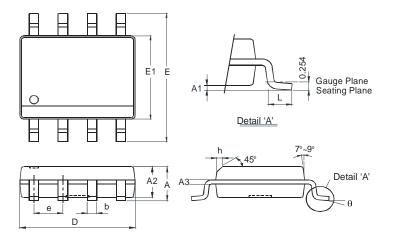






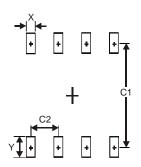


Package Outline Dimensions



SO-8					
Dim	Min	Max			
Α	-	1.75			
A1	0.10	0.20			
A2	1.30	1.50			
A3	0.15	0.25			
b	0.3	0.5			
D	4.85	4.95			
Е	5.90	6.10			
E1	3.85 3.95				
е	1.27	Тур			
h	-	0.35			
L	0.62	0.82			
θ) 0° 8°				
All Dimensions in mm					

Suggested Pad Layout



Dimensions	Value (in mm)		
X	0.60		
Υ	1.55		
C1	5.4		
C2	1.27		





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