





DMN4025LSD

40V DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(on)} max	I _D max (A) T _A = 25°C (Notes 3 & 5)
40V	25m Ω @ V _{GS} = 10V	7.4
407	40mΩ @ V _{GS} = 4.5V	6.2

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.

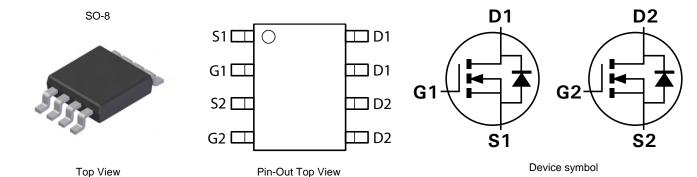
- Motor control
- Backlighting
- DC-DC Converters
- Printer equipment

Features and Benefits

- Low R_{DS(on)} Minimizes conduction losses
- Fast switching speed Minimizes switching losses
- "Green" component and RoHS compliant (Note 1)
- 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
- Weight: 0.074 grams (approximate)



Ordering Information (Note 1)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DMN4025LSD-13	N4025LD	13	12	2,500

1. Diodes, Inc. defines "Green" products as those which are RoHS compliant and contain no halogens or antimony compounds; further information about Diodes Inc.'s "Green" Policy can be found on our website. For packaging details, go to our website.

Marking Information

Note:



DII = Manufacturer's Marking
N4025LD = 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	V
Gate-Source Voltage	Gate-Source Voltage			±20	V
Continuous Drain Current V _{GS} = 10V	(Notes 3 & 5)		7.4		
	V _{GS} = 10V	$T_A = 70^{\circ}C \text{ (Notes 3 & 5)}$	l _D	5.8	
		(Notes 2 & 5)		5.6	
		(Notes 2 & 6)		6.7	Α
Pulsed Drain Current	$V_{GS} = 10V$	(Notes 4 & 5)	I _{DM}	29.0	
Continuous Source Current (Body diode)		(Notes 3 & 5)	Is	3.0	
Pulsed Source Current (Body diode) (Notes 4 & 5)		I _{SM}	29.0		

Thermal Characteristics @TA = 25°C unless otherwise specified

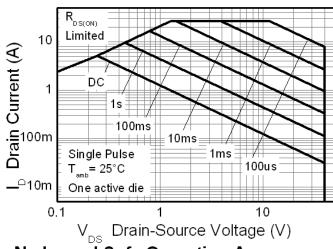
Characteristic		Symbol	Value	Unit	
D D: : ::	(Notes 2 & 5)		1.25 10		
Power Dissipation Linear Derating Factor	(Notes 2 & 6)	P _D	1.8 14.3	W mW/°C	
	(Notes 3 & 5)		2.14 17.2		
	(Notes 2 & 5)		100		
Thermal Resistance, Junction to Ambient	(Notes 2 & 6)	R _{θJA}	70	00.004	
	(Notes 3 & 5)		58	°C/W	
Thermal Resistance, Junction to Lead	(Notes 5 & 7)	R _{0JL}	51		
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C	

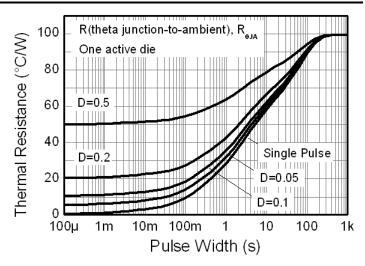
Notes:

- 2. For a device surface mounted on 25mm x 25mm x 1.6mm 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.
- 3. Same as note (2), except the device is measured at $t \le 10$ sec.
- 4. Same as note (2), except the device is pulsed with D = 0.02 and pulse width $300\mu s$. 5. For a dual device with one active die.
- 6. For a device with two active die running at equal power.
- 7. Thermal resistance from junction to solder-point (at the end of the drain lead).



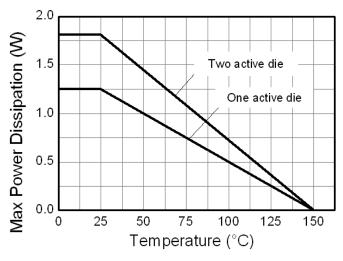
Thermal Characteristics

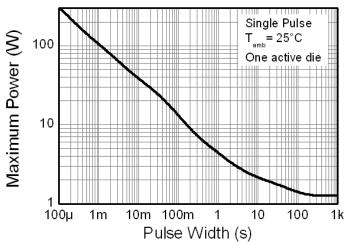




N-channel Safe Operating Area

Transient Thermal Impedance





Derating Curve

Pulse Power Dissipation



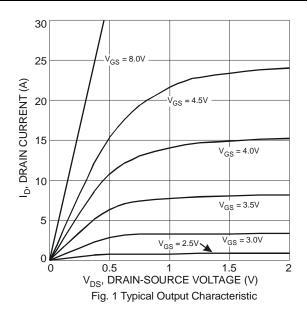
Electrical Characteristics T_A = 25°C unless otherwise specified

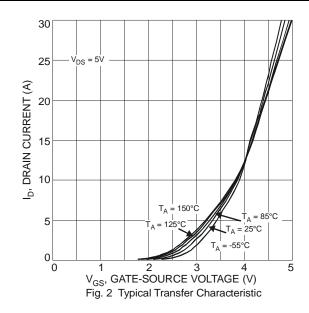
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage	BV _{DSS}	40	_	_	V	$I_D = 250 \mu A, V_{GS} = 0 V$	
Zero Gate Voltage Drain Current	I _{DSS}	_	_	1.0	μΑ	$V_{DS} = 40V, V_{GS} = 0V$	
Gate-Source Leakage	I _{GSS}	_	_	±100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$	
ON CHARACTERISTICS				<u>.</u>			
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-Resistance (Note 8)			0.013	0.025	Ω	$V_{GS} = 10V, I_{D} = 3A$	
Static Drain-Source On-Resistance (Note 6)	R _{DS (ON)}	_	0.028	0.040		$V_{GS} = 4.5V, I_D = 3A$	
Forward Transconductance (Notes 8 & 9)	g _{fs}	_	12.6	_	S	$V_{DS} = 5V, I_{D} = 3A$	
Diode Forward Voltage (Note 8)	V _{SD}	_	0.7	1.0	V	$I_{S} = 1A, V_{GS} = 0V$	
DYNAMIC CHARACTERISTICS (Note 9)							
Input Capacitance	C _{iss}	_	1790	_		1/ 201/ 1/ 21/	
Output Capacitance	Coss	_	160	_	pF	$V_{DS} = 20V$, $V_{GS} = 0V$ f = 1MHz	
Reverse Transfer Capacitance	C _{rss}	_	120	_			
Gate Resistance	R_g	_	1.03	_	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1MHz$	
Total Gate Charge (Note 10)	Qg	_	16.0	_		V _{GS} = 4.5V	
Total Gate Charge (Note 10)	Q_{g}	_	37.6	_	nC	V _{DS} = 20V	
Gate-Source Charge (Note 10)	Q _{gs}	_	7.8	_	nC	$V_{GS} = 10V$ $I_D = 3A$	
Gate-Drain Charge (Note 10)	Q_{gd}	_	6.6	_			
Turn-On Delay Time (Note 10)	t _{D(on)}	_	8.1	_	_		
Turn-On Rise Time (Note 10)	t _r	_	15.1	_	20	V _{DD} = 20V, V _{GS} = 10V	
Turn-Off Delay Time (Note 10)	t _{D(off)}	_	24.3	_	ns	$I_D = 3A$	
Turn-Off Fall Time (Note 10)	t _f	_	5.3	_			

Notes:

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

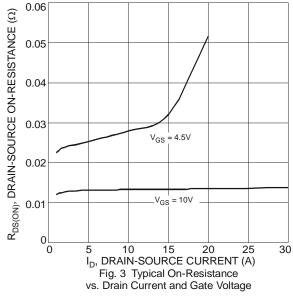
Typical Characteristics

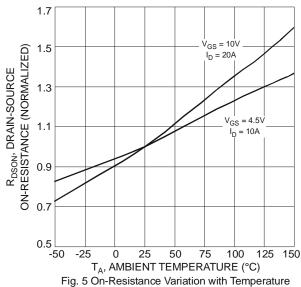






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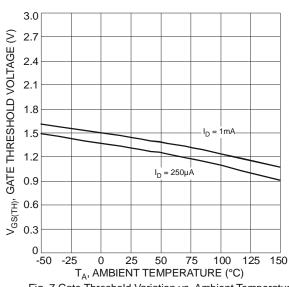
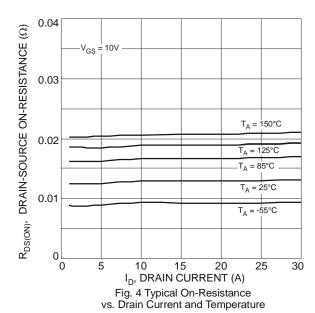


Fig. 7 Gate Threshold Variation vs. Ambient Temperature



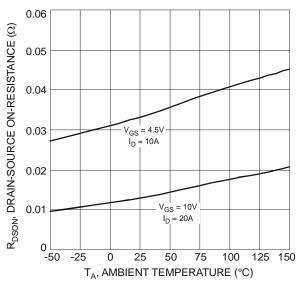
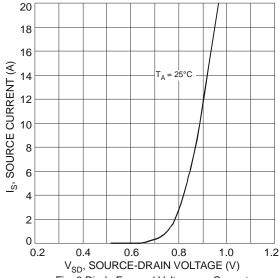
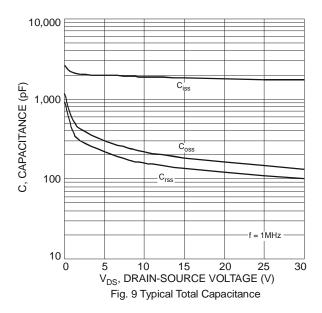


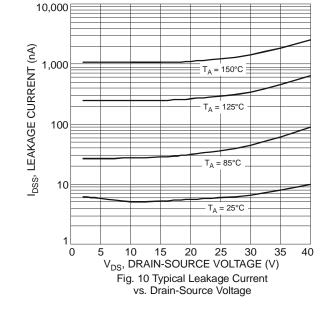
Fig. 6 On-Resistance Variation with Temperature

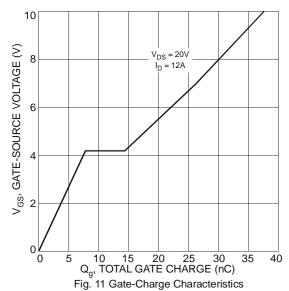




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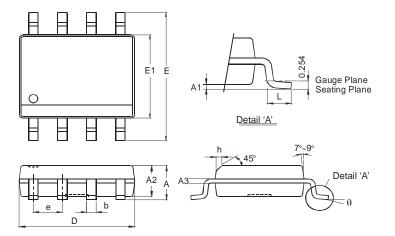






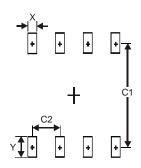


Package Outline Dimensions



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	e 1.27 Typ				
h	-	0.35			
٦	0.62	0.82			
θ	0°	8°			
All Dimensions in mm					

Suggested Pad Layout



Dimensions	Value (in mm)
Х	0.60
Y	1.55
C1	5.4
C2	1.27





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