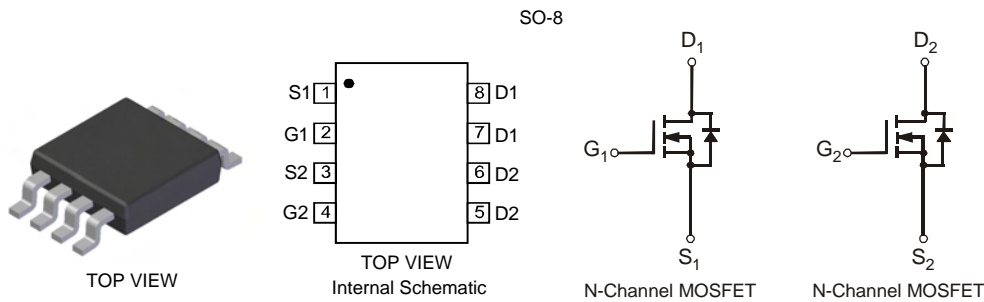


## Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **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
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram
- Terminals: Finish - Matte Tin annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.072 grams (approximate)



## Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic			Symbol	Value	Units
Drain-Source Voltage			$V_{DSS}$	20	V
Gate-Source Voltage			$V_{GSS}$	$\pm 12$	V
Drain Current (Note 3)	Steady State	$T_A = 25^\circ\text{C}$	$I_D$	7.63	A
		$T_A = 85^\circ\text{C}$		4.92	
Pulsed Drain Current (Note 4)			$I_{DM}$	30	A

## Thermal Characteristics

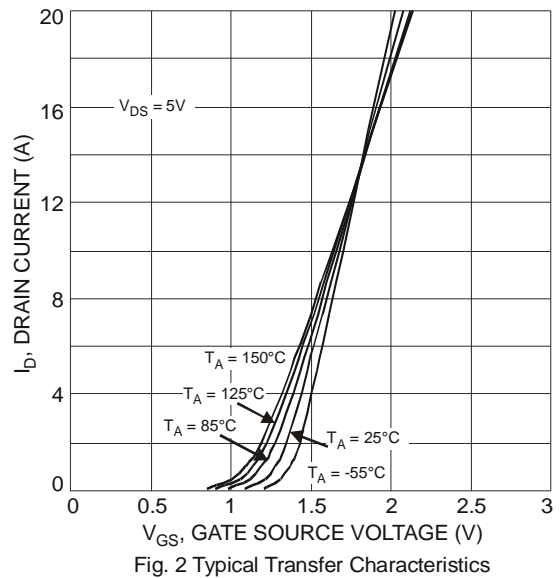
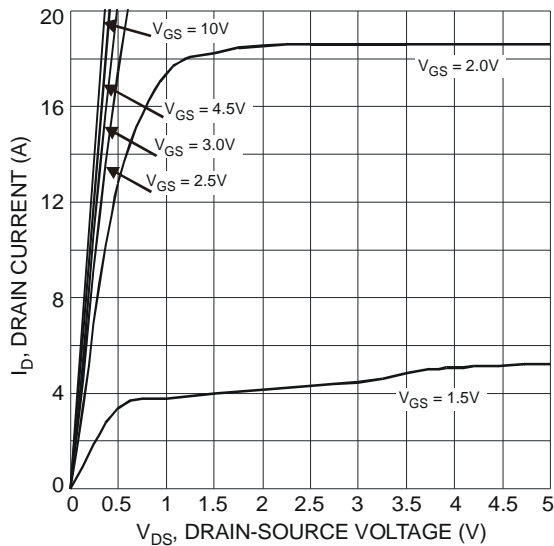
Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 3)	$P_D$	1.16	W
Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	107.4	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

- Notes:
1. No purposefully added lead.
  2. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).
  3. Device mounted on FR-4 PCB with minimum recommended pad layout.
  4. Repetitive rating, pulse width limited by function temperature.

**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 5)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	20	-	-	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current $T_J = 25^\circ\text{C}$	$I_{DSS}$	-	-	1	$\mu A$	$V_{DS} = 20V, V_{GS} = 0V$
Gate-Source Leakage	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{GS} = \pm 12V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 5)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	-	1.2	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	-	19	28	m $\Omega$	$V_{GS} = 4.5V, I_D = 6.0A$
			25	41		$V_{GS} = 2.5V, I_D = 5.2A$
Forward Transfer Admittance	$ Y_{fs} $	-	6	-	S	$V_{DS} = 10V, I_D = 6A$
Diode Forward Voltage	$V_{SD}$	-	0.7	1.2	V	$V_{GS} = 0V, I_S = 1.7A$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{iss}$	-	550	-	pF	$V_{DS} = 10V, V_{GS} = 0V,$ $f = 1.0MHz$
Output Capacitance	$C_{oss}$	-	88	-		
Reverse Transfer Capacitance	$C_{rss}$	-	81	-		
Gate Resistance	$R_g$	-	1.34	-	$\Omega$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$
Total Gate Charge (10V)	$Q_g$	-	15.6	-	nC	$V_{GS} = 10V, V_{DS} = 10V,$ $I_D = 6.0A$
Total Gate Charge (4.5V)	$Q_g$	-	7.2	-	nC	$V_{GS} = 4.5V, V_{DS} = 10V,$ $I_D = 6.0A$
Gate-Source Charge	$Q_{gs}$	-	1.0	-		
Gate-Drain Charge	$Q_{gd}$	-	1.9	-		
Turn-On Delay Time	$t_{D(on)}$	-	4.69	-	ns	$V_{DD} = 10V, V_{GEN} = 4.5V,$ $R_g = 1\Omega, I_D = 6.7A$
Turn-On Rise Time	$t_r$	-	13.19	-		
Turn-Off Delay Time	$t_{D(off)}$	-	22.10	-		
Turn-Off Fall Time	$t_f$	-	6.43	-		

Notes: 5. Short duration pulse test used to minimize self-heating effect.  
6. Guaranteed by design. Not subject to production testing.



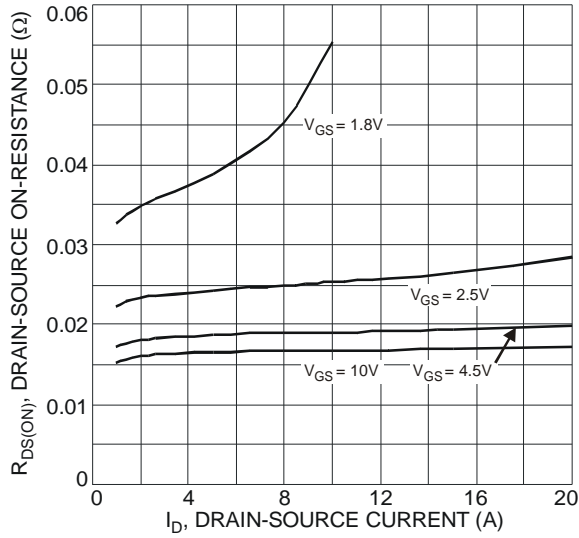


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

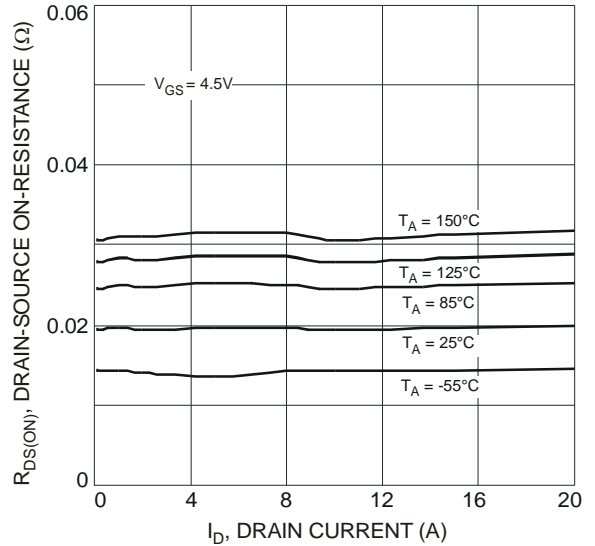


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

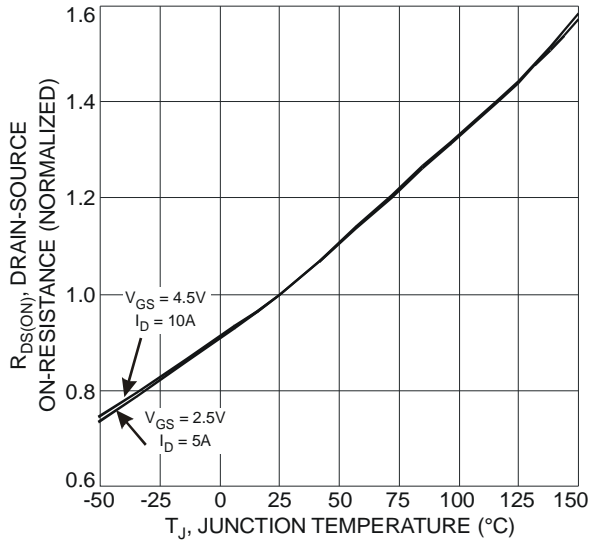


Fig. 5 On-Resistance Variation with Temperature

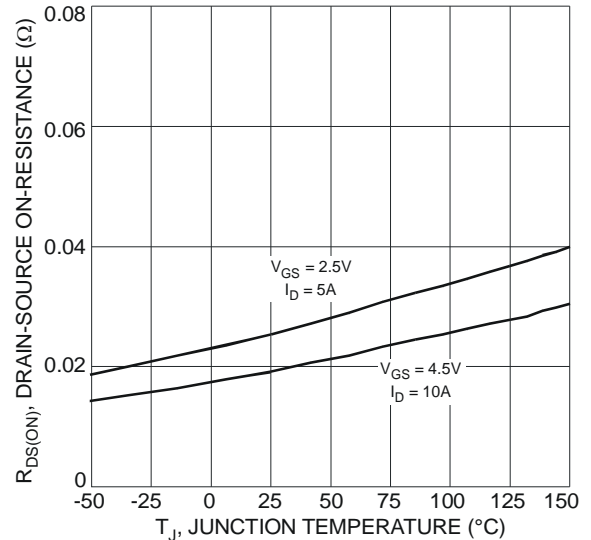


Fig. 6 On-Resistance Variation with Temperature

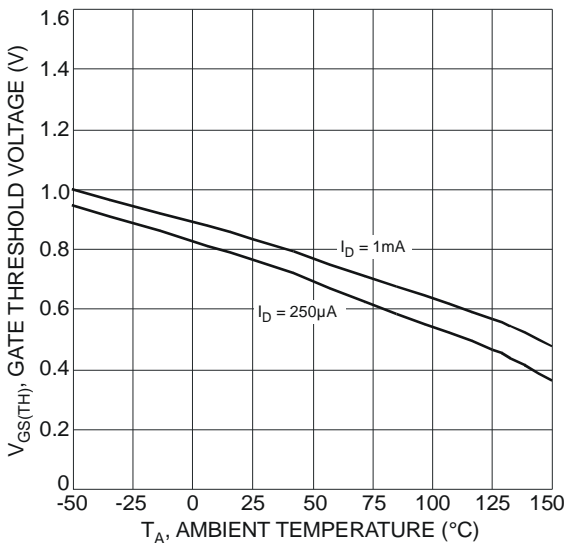


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

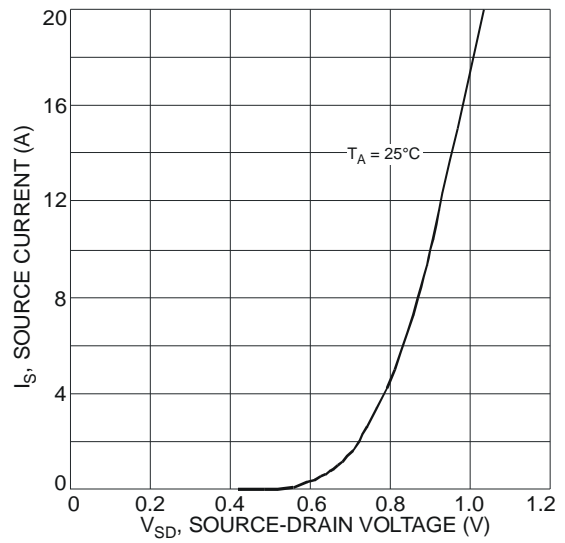
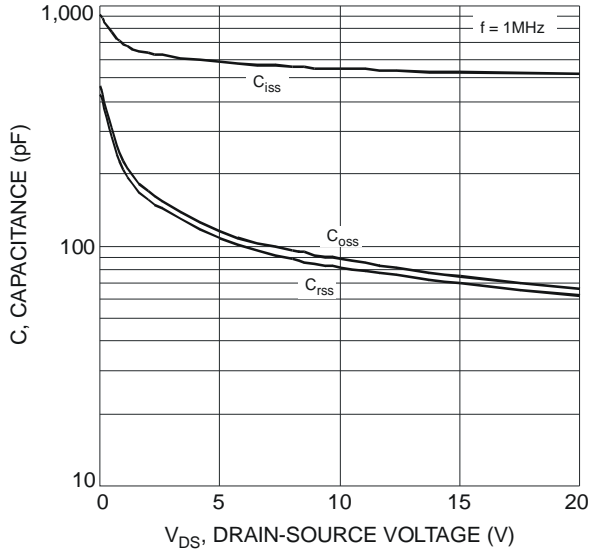
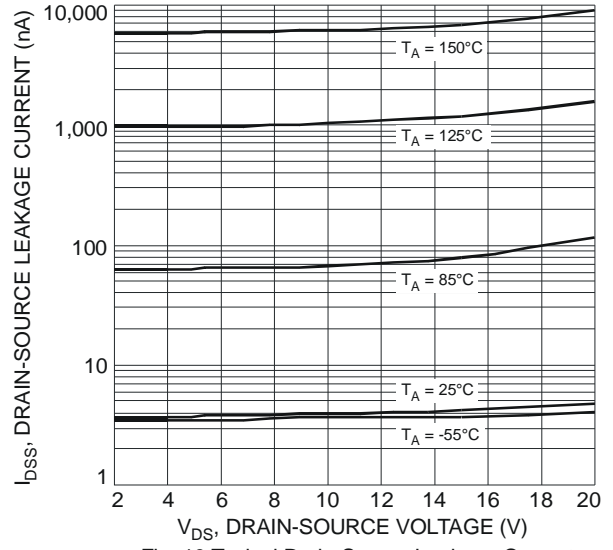


Fig. 8 Diode Forward Voltage vs. Current



V<sub>DS</sub>, DRAIN-SOURCE VOLTAGE (V)  
Fig. 9 Typical Capacitance



V<sub>DS</sub>, DRAIN-SOURCE VOLTAGE (V)  
Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

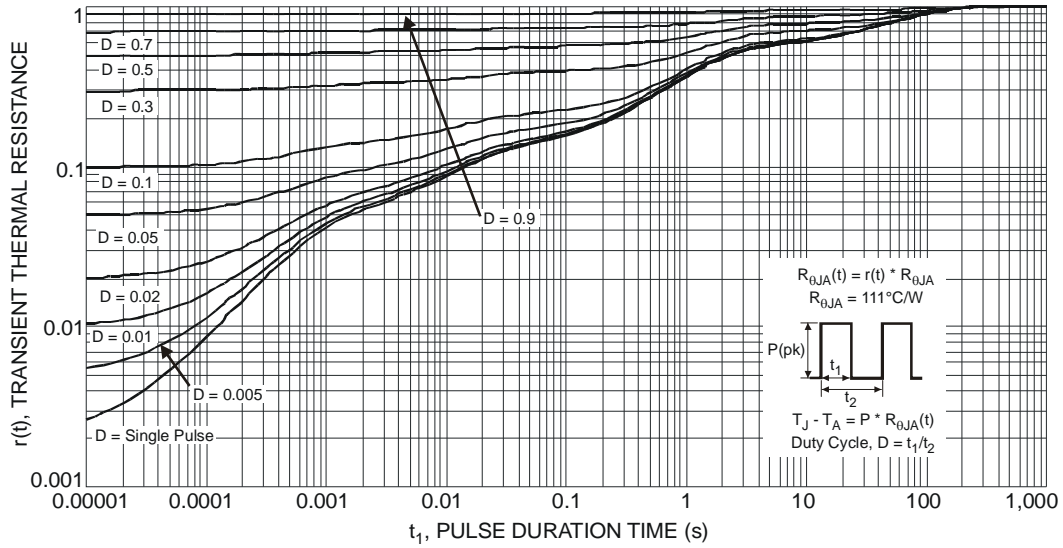


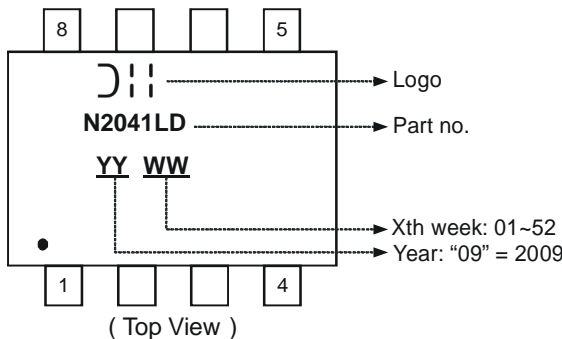
Fig. 11 Transient Thermal Response

**Ordering Information** (Note 7)

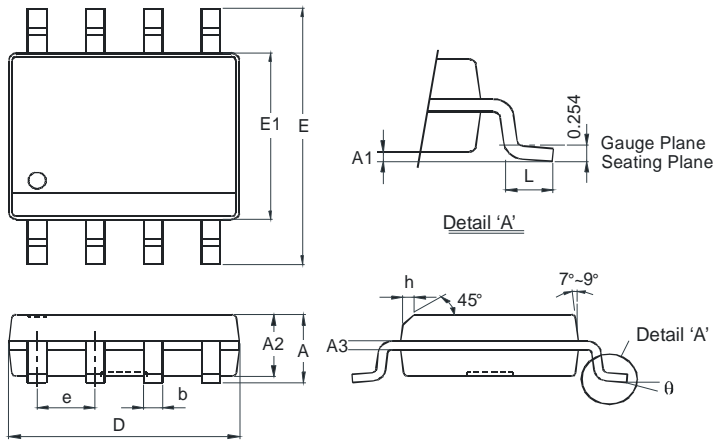
Part Number	Case	Packaging
DMN2041LSD-13	SO-8	2500/Tape & Reel

Notes: 7. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**

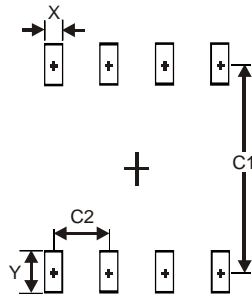


**Package Outline Dimensions**



SO-8		
Dim	Min	Max
A	-	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
E	5.90	6.10
E1	3.85	3.95
e	1.27 Typ	
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
Y	1.55
C1	5.4
C2	1.27

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