DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

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NEW PRODUCT

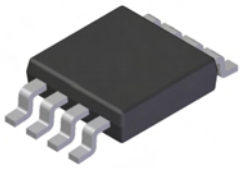
Features

- 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**

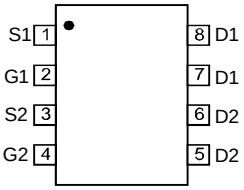
Mechanical Data

- 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)

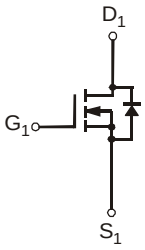
SO-8



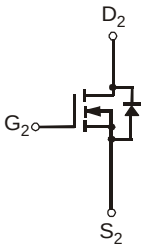
TOP VIEW



TOP VIEW
Internal Schematic



N-Channel MOSFET



N-Channel MOSFET

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	20	V
Gate-Source Voltage			V_{GSS}	±12	V
Drain Current (Note 3)	Steady State	T_A = 25°C T_A = 85°C	I_D	7.63 4.92	A
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°C	$R_{\theta JA}$	107.4	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°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.
3. Device mounted on FR-4 PCB with minimum recommended pad layout.
4. Repetitive rating, pulse width limited by function temperature.

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Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV_{DSS}	20	-	-	V	V_{GS} = 0V, I_D = 250µA
Zero Gate Voltage Drain Current T_J = 25°C	I_{DSS}	-	-	1	µA	V_{DS} = 20V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	-	-	±100	nA	V_{GS} = ±12V, V_{DS} = 0V
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	-	1.2	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	19	28	mΩ	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
DYNAMIC CHARACTERISTICS						
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	-	Ω	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} = 4.5 V, 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 = 1Ω, 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.

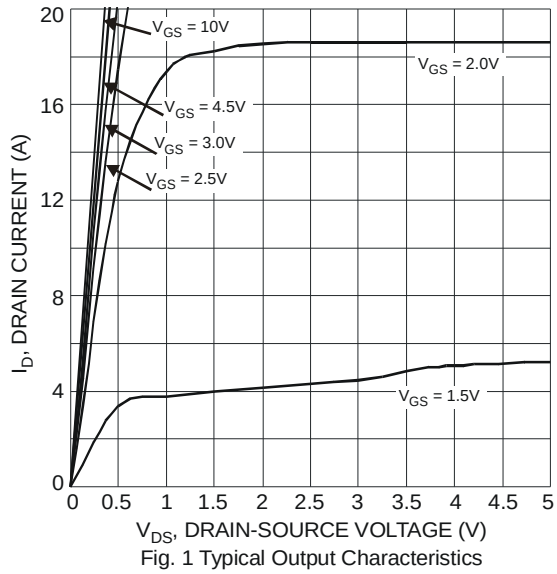

Fig. 1 Typical Output Characteristics

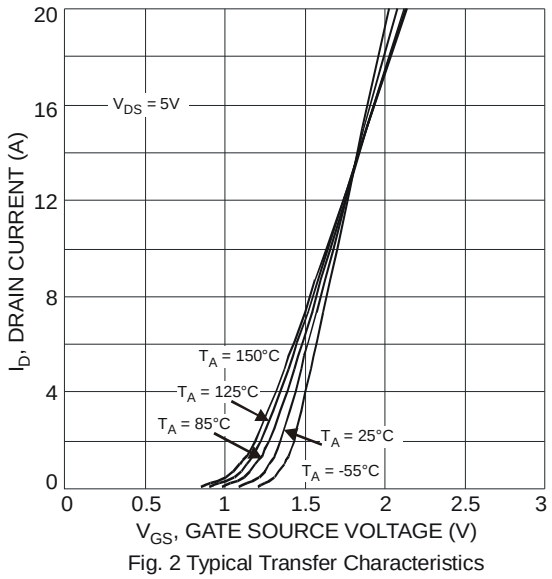

Fig. 2 Typical Transfer Characteristics

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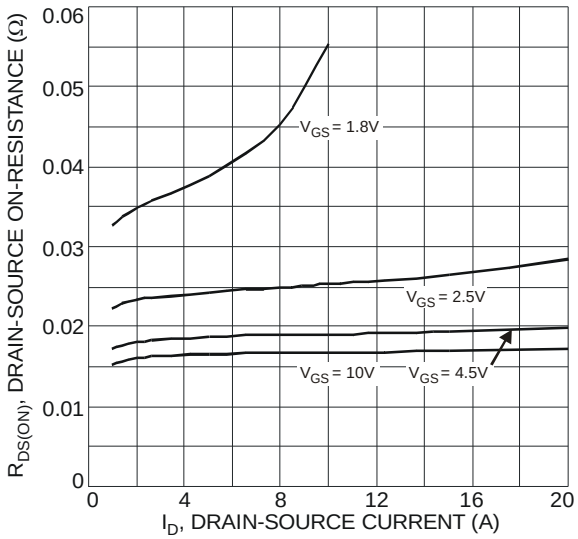

Fig. 3 Typical On-Resistance
vs. Drain Current and Gate Voltage

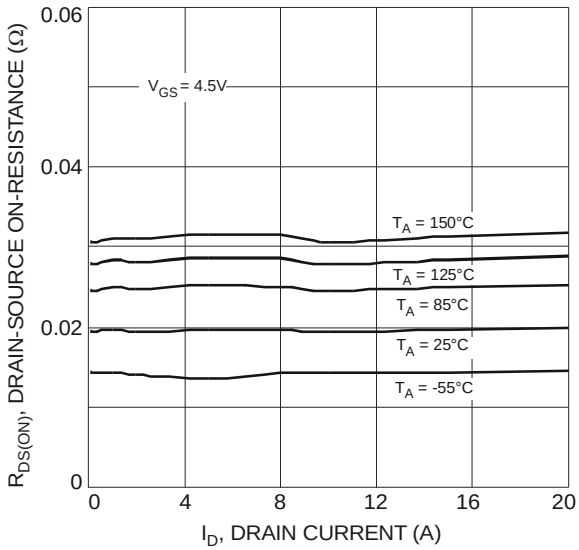

Fig. 4 Typical Drain-Source On-Resistance
vs. Drain Current and Temperature

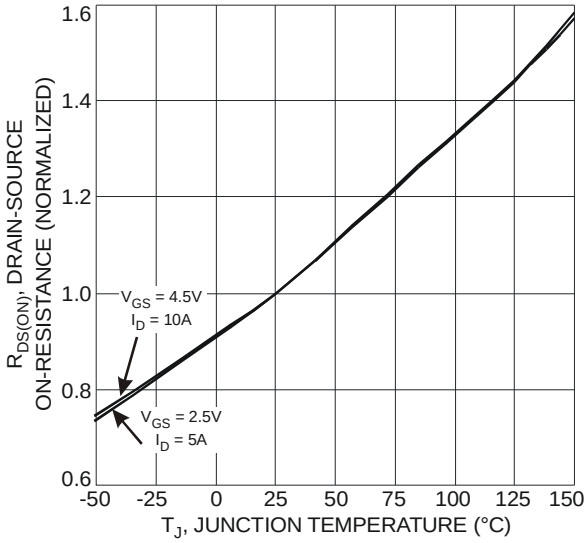

Fig. 5 On-Resistance Variation with Temperature

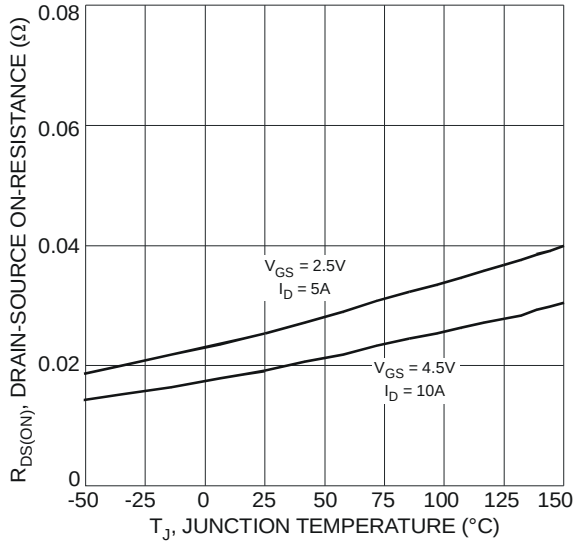

Fig. 6 On-Resistance Variation with Temperature

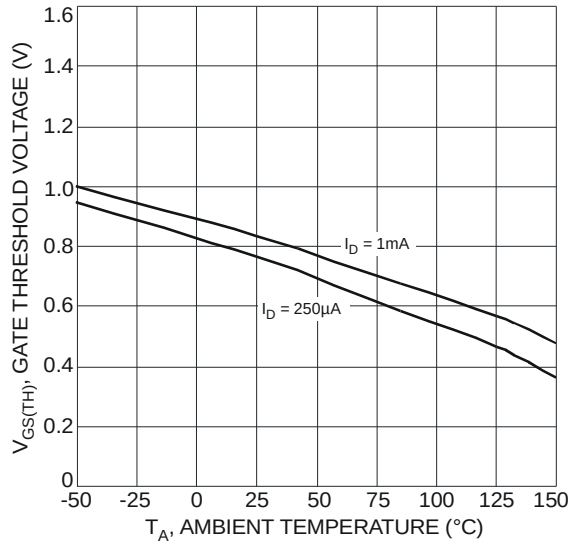

Fig. 7 Gate Threshold Variation vs. Ambient Temperature

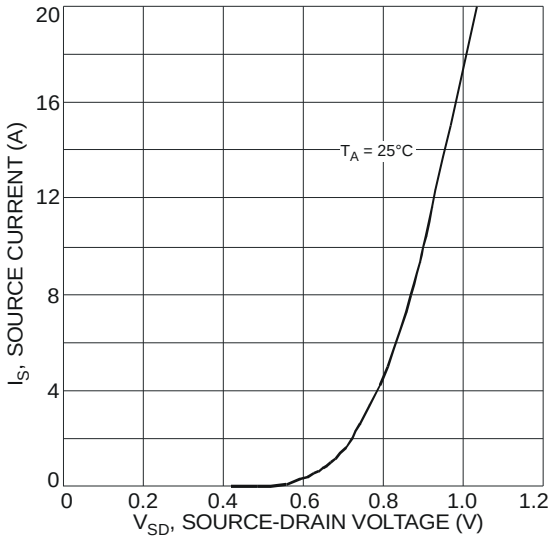

Fig. 8 Diode Forward Voltage vs. Current

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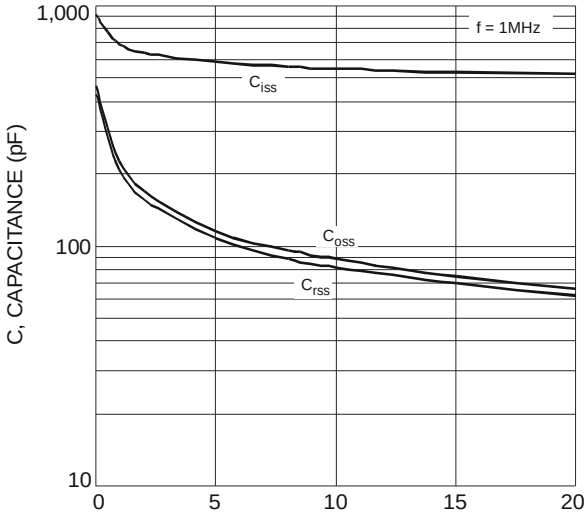


Fig. 9 Typical Capacitance

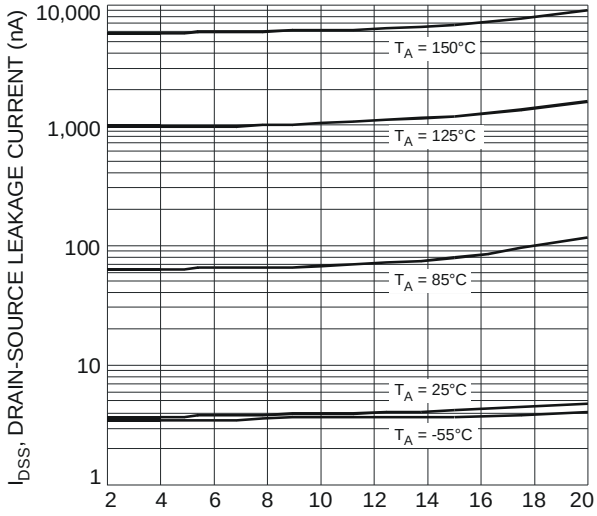


Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

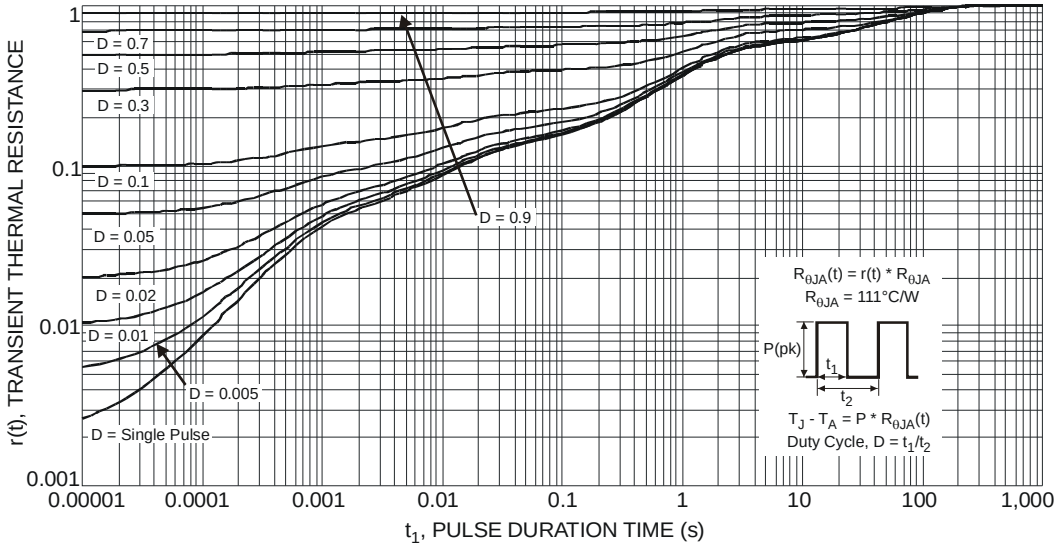


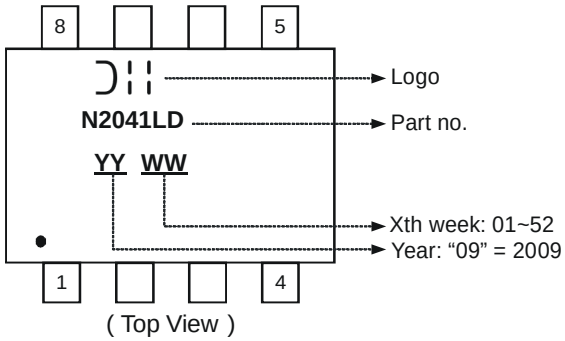
Fig. 11 Transient Thermal Response

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



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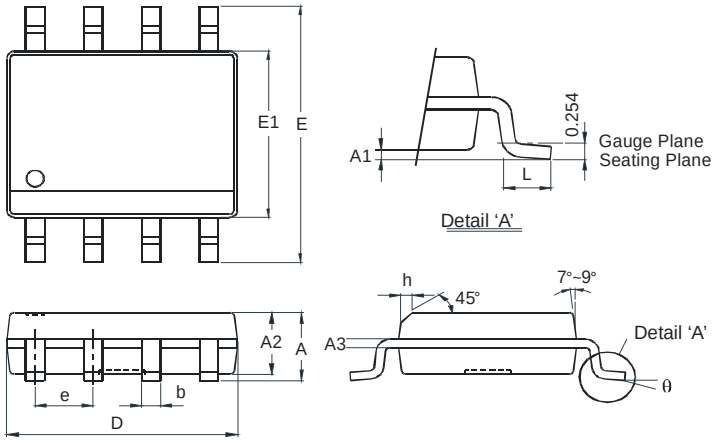
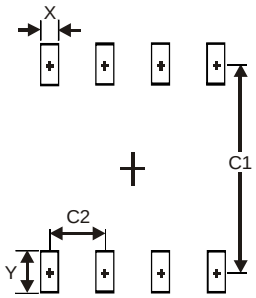
Package Outline Dimensions



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

NEW PRODUCT

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