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[Diodes Incorporated](#)
[DMN2040LTS-13](#)

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DMN2040LTS

DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

Features

- Dual N-Channel MOSFET
- 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: TSSOP-8L
- 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 Below
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.039 grams (approximate)

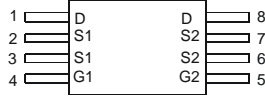
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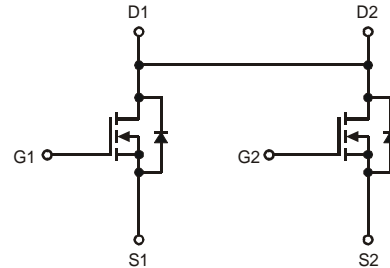
TOP VIEW



BOTTOM VIEW



Top View
Pin Configuration



Internal Schematic

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V _{DSS}	20	V
Gate-Source Voltage			V _{GSS}	±12	V
Continuous Drain Current (Note 3)	Steady State	T _A = 25°C	I _D	6.7	A
		T _A = 70°C		4.9	A
Pulsed Drain Current (Note 4)			I _{DM}	30	A

Thermal Characteristics

Characteristic			Symbol	Value	Unit
Power Dissipation (Note 3)			P _D	0.89	W
Thermal Resistance, Junction to Ambient @T _A = 25°C			R _{θJA}	140	°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 junction temperature.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV_{DSS}	20	-	-	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1.0	μA	$V_{DS} = 20V, V_{GS} = 0V$
Gate-Source Leakage	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 12V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	-	1.2	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	-	19	26	m Ω	$V_{GS} = 4.5V, I_D = 6.0A$
		-	26	36		$V_{GS} = 2.5V, I_D = 5.2A$
Forward Transfer Admittance	$ Y_{fs} $	-	8	-	S	$V_{DS} = 10V, I_D = 6A$
Diodes Forward Voltage	V_{SD}	-	0.7	1.2	V	$I_S = 1.7A, V_{GS} = 0V$
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C_{iss}	-	570	-	pF	$V_{DS} = 10V, V_{GS} = 0V,$ $f = 1.0MHz$
Output Capacitance	C_{oss}	-	85	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	75	-	pF	
Gate Resistance	R_g	-	1.23	-	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$
SWITCHING CHARACTERISTICS (Note 6)						
Total Gate Charge	Q_g	-	5.2	-	nC	$V_{GS} = 4.5V, V_{DS} = 10V,$ $I_D = 7A$
Gate-Source Charge	Q_{gs}	-	0.86	-	nC	
Gate-Drain Charge	Q_{gd}	-	1.25	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	5.2	-	ns	$V_{DD} = 10V, V_{GS} = 4.5V,$ $R_L = 1.5\Omega, R_G = 1\Omega$
Turn-On Rise Time	t_r	-	13.5	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	19.8	-	ns	
Turn-Off Fall Time	t_f	-	6.1	-	ns	

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

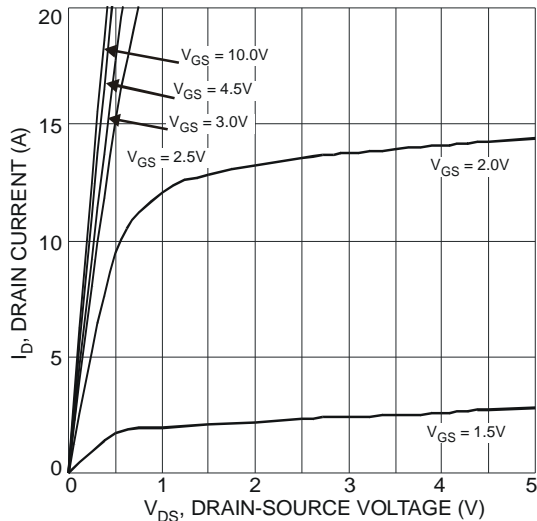


Fig. 1 Typical Output Characteristics

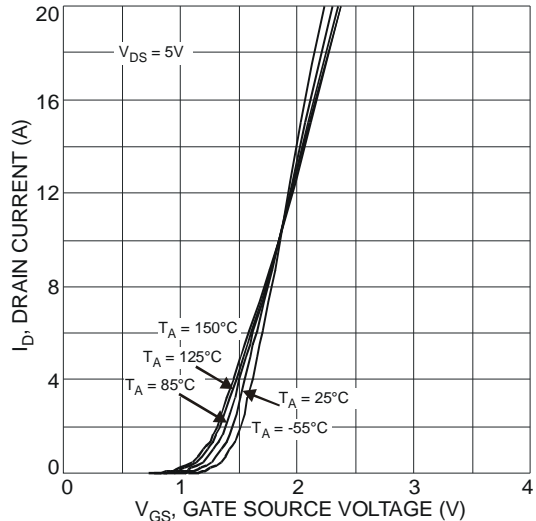


Fig. 2 Typical Transfer Characteristics



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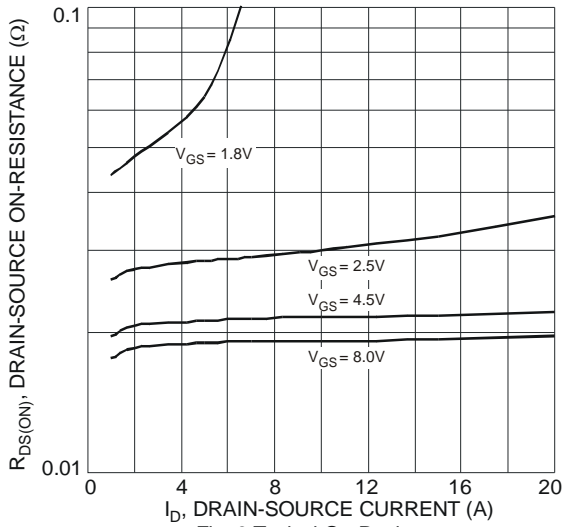


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

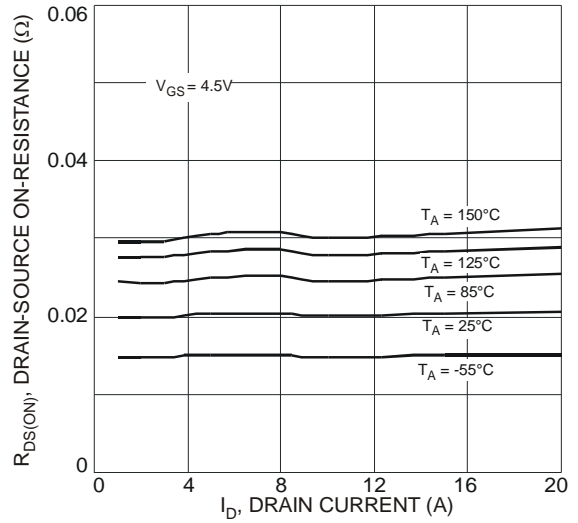


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

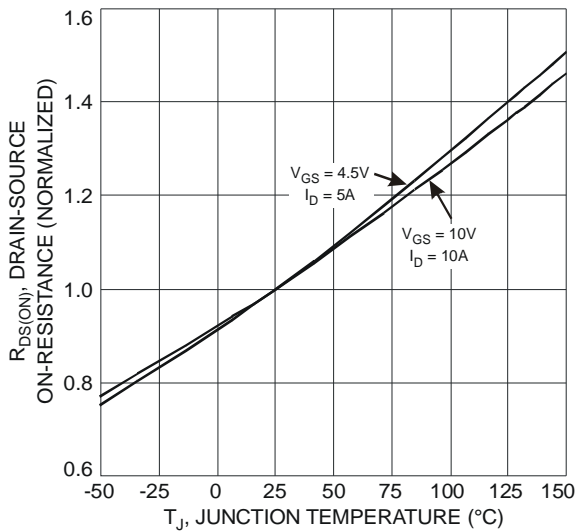


Fig. 5 On-Resistance Variation with Temperature

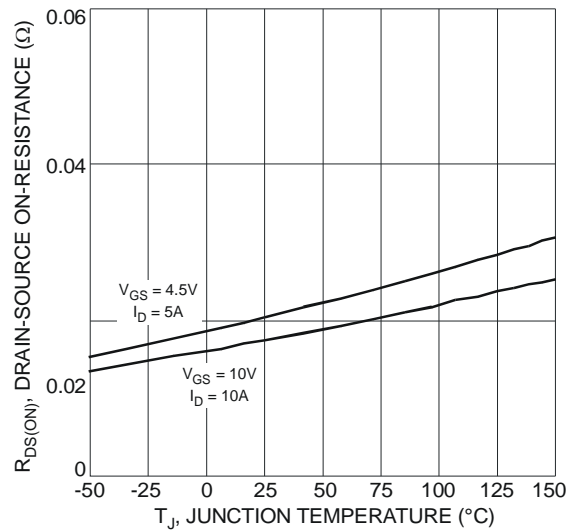


Fig. 6 On-Resistance Variation with Temperature

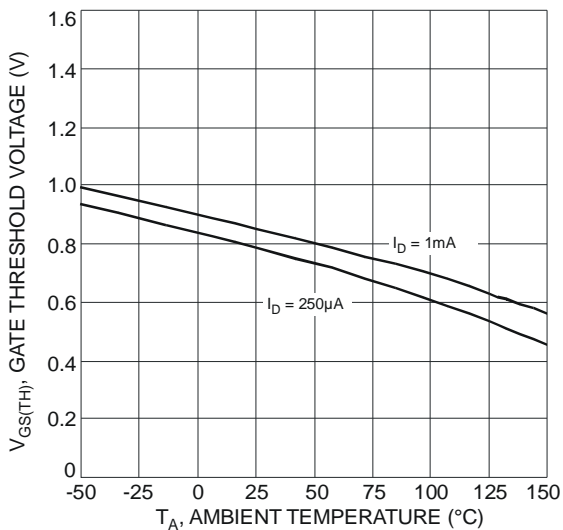


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

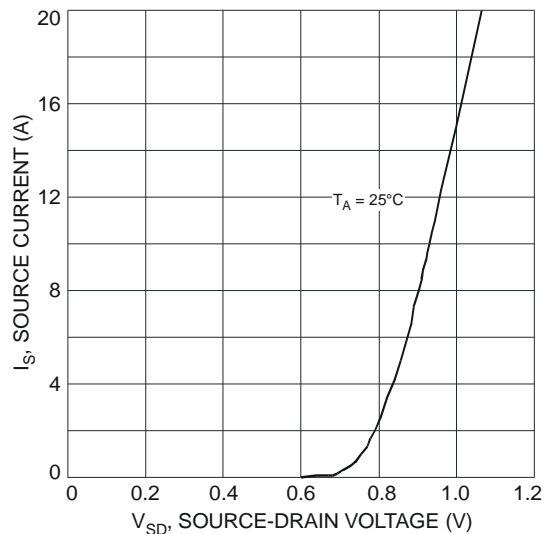
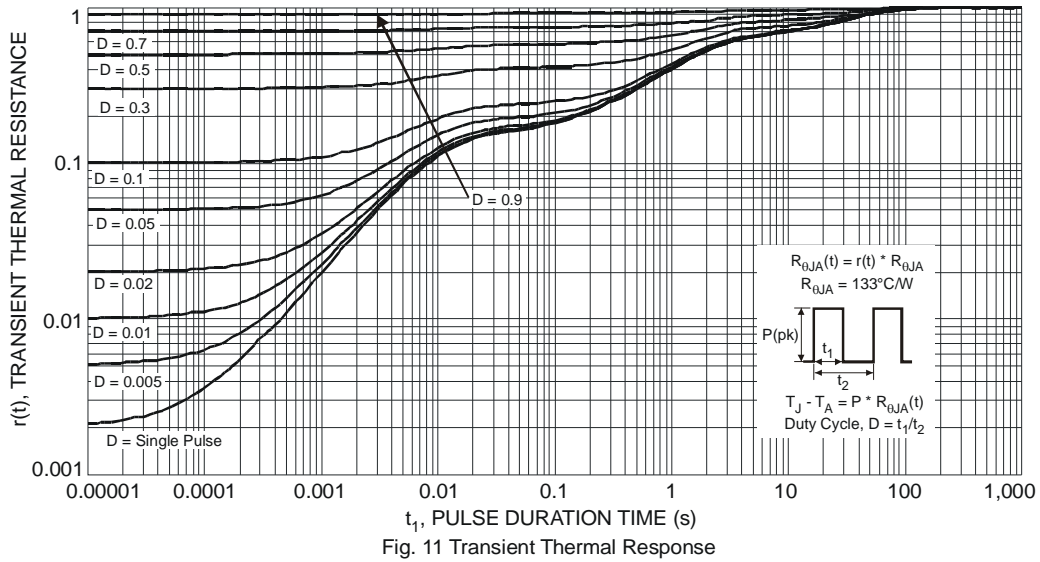
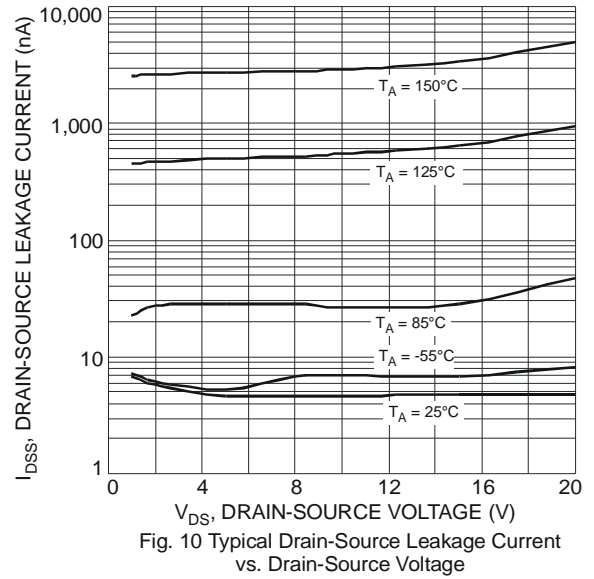
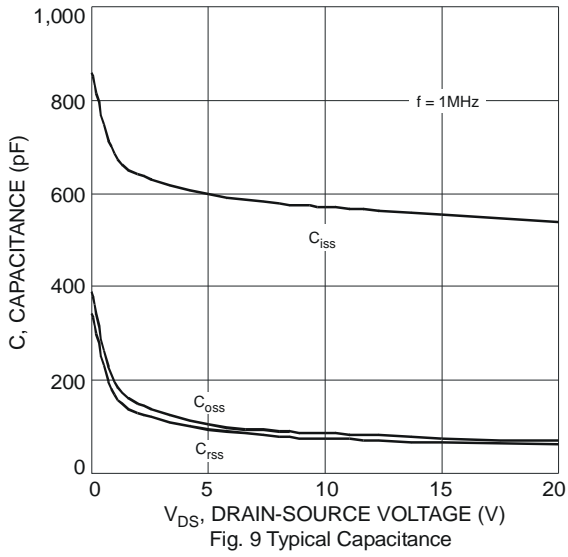


Fig. 8 Diode Forward Voltage vs. Current



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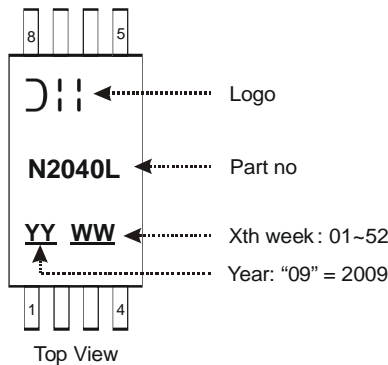


Ordering Information (Note 7)

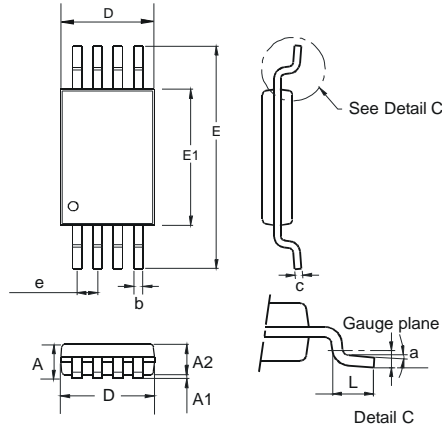
Part Number	Case	Packaging
DMN2040LTS-13	TSSOP-8L	2500 / Tape & Reel

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

Marking Information

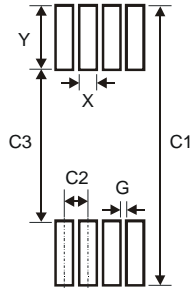


Package Outline Dimensions



TSSOP-8L			
Dim	Min	Max	Typ
a	0.09	–	–
A	–	1.20	–
A1	0.05	0.15	–
A2	0.825	1.025	0.925
b	0.19	0.30	–
c	0.09	0.20	–
D	2.90	3.10	3.025
e	–	–	0.65
E	–	–	6.40
E1	4.30	4.50	4.425
L	0.45	0.75	0.60
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
X	0.45
Y	1.78
C1	7.72
C2	0.65
C3	4.16
G	0.20



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