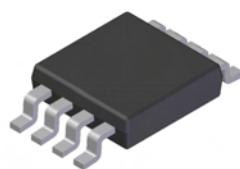


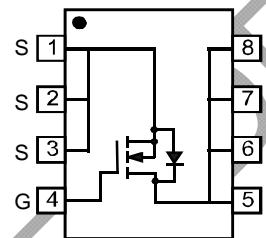
Features

- Low On-Resistance
 - 18.5mΩ @ $V_{GS} = 10V$
 - 31mΩ @ $V_{GS} = 4.5V$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Lead Free By Design/RoHS Compliant (Note 2)**
- "Green" Device (Note 4)**
- Qualified to AEC-Q101 Standards for High Reliability



TOP VIEW

SOP-8L

TOP VIEW
Internal Schematic**Maximum Ratings** @ $T_A = 25^\circ C$ unless otherwise specified

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current (Note 1)	I_D	9	A
Steady State		6.75	
$T_A = 25^\circ C$			
$T_A = 70^\circ C$			
Pulsed Drain Current (Note 3)	I_{DM}	40	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	P_D	2.5	W
Thermal Resistance, Junction to Ambient	R_{JJA}	50	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes:

1. Device mounted on 2 oz copper pad layout with $R_{JJA} = 50^\circ C/W$.
2. No purposefully added lead.
3. Pulse width $\leq 10\mu s$, Duty Cycle $\leq 1\%$.
4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

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}	30	—	—	V	$\text{V}_{\text{GS}} = 0\text{V}$, $\text{I}_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	μA	$\text{V}_{\text{DS}} = 30\text{V}$, $\text{V}_{\text{GS}} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 100	nA	$\text{V}_{\text{GS}} = \pm 20\text{V}$, $\text{V}_{\text{DS}} = 0\text{V}$
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$\text{V}_{\text{GS}(\text{th})}$	1	—	2.1	V	$\text{V}_{\text{DS}} = \text{V}_{\text{GS}}$, $\text{I}_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$\text{R}_{\text{DS}}(\text{ON})$	—	15 26	18.5 31	$\text{m}\Omega$	$\text{V}_{\text{GS}} = 10\text{V}$, $\text{I}_D = 9\text{A}$ $\text{V}_{\text{GS}} = 4.5\text{V}$, $\text{I}_D = 7\text{A}$
Forward Transconductance	g_{fs}	—	5.8	—	S	$\text{V}_{\text{DS}} = 10\text{V}$, $\text{I}_D = 9\text{A}$
Diode Forward Voltage (Note 5)	V_{SD}	0.5	0.7	1.2	V	$\text{V}_{\text{GS}} = 0\text{V}$, $\text{I}_S = 2.1\text{A}$
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	—	741	—	pF	$\text{V}_{\text{DS}} = 15\text{V}$, $\text{V}_{\text{GS}} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	124	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	95	—	pF	
Gate Resistance	R_{G}	0.30	0.88	1.5	Ω	$\text{V}_{\text{DS}} = 0\text{V}$, $\text{V}_{\text{GS}} = 0\text{V}$, $f = 1.0\text{MHz}$
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q_{g}	—	7.6	12	nC	$\text{V}_{\text{DS}} = 15\text{V}$, $\text{V}_{\text{GS}} = 4.5\text{V}$, $\text{I}_D = 9\text{A}$
—	—	—	16.7	25		
Gate-Source Charge	Q_{gs}	—	1.9	—		$\text{V}_{\text{DS}} = 15\text{V}$, $\text{V}_{\text{GS}} = 10\text{V}$, $\text{I}_D = 9\text{A}$
Gate-Drain Charge	Q_{gd}	—	5.2	—	ns	$\text{V}_{\text{GS}} = 10\text{V}$, $\text{V}_{\text{DS}} = 15\text{V}$, $\text{R}_L = 15\Omega$, $\text{R}_{\text{G}} = 6\Omega$
Turn-On Delay Time	$\text{t}_{\text{d}(\text{on})}$	—	4.0	—		
Rise Time	t_r	—	4.4	—		
Turn-Off Delay Time	$\text{t}_{\text{d}(\text{off})}$	—	23.0	—		
Fall Time	t_f	—	9.4	—		

Notes: 5. Short duration pulse test used to minimize self-heating effect.

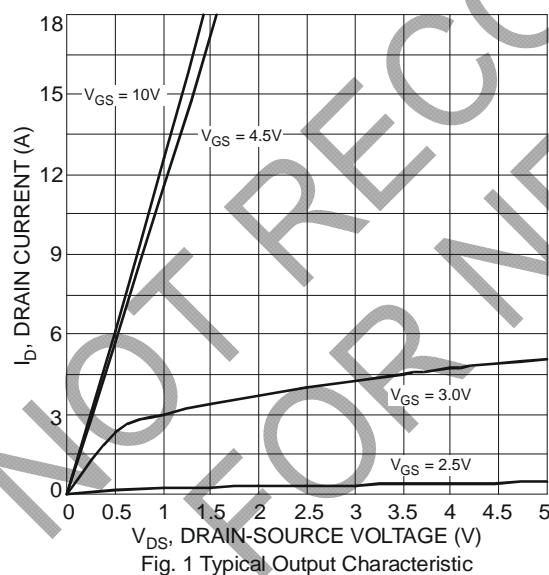


Fig. 1 Typical Output Characteristic

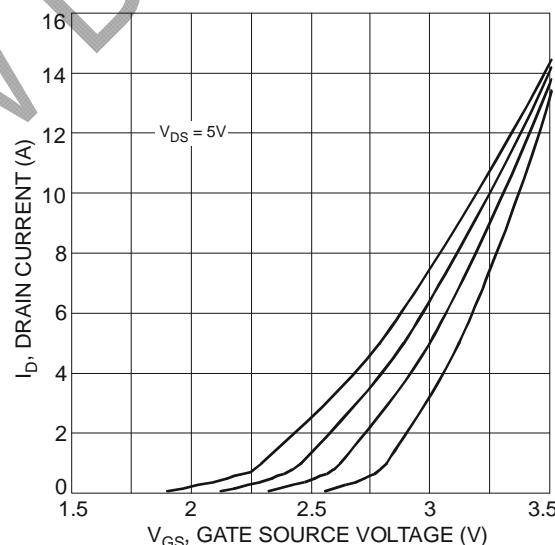
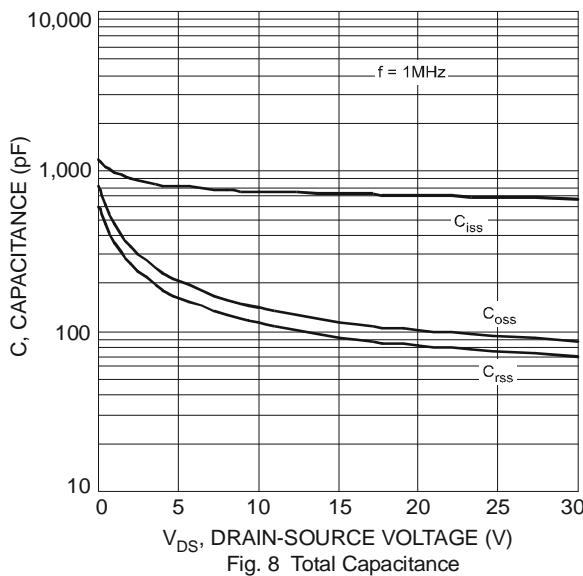
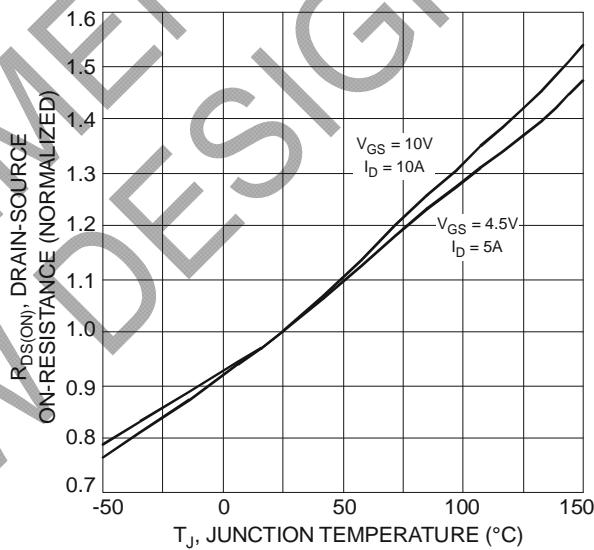
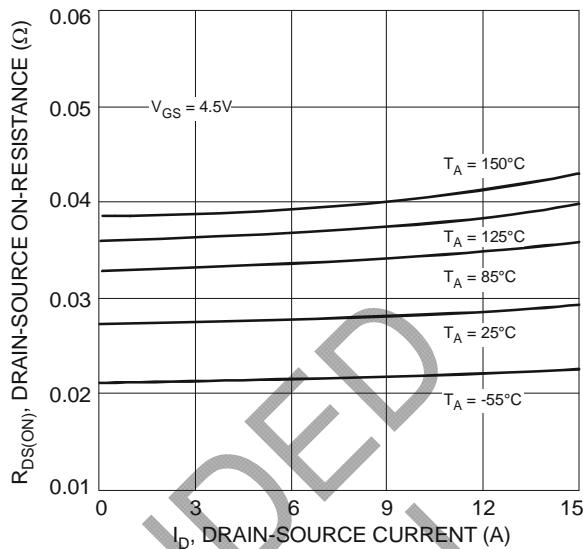
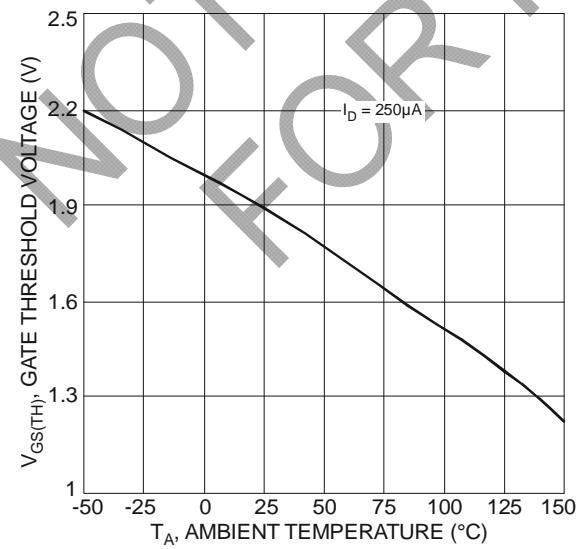
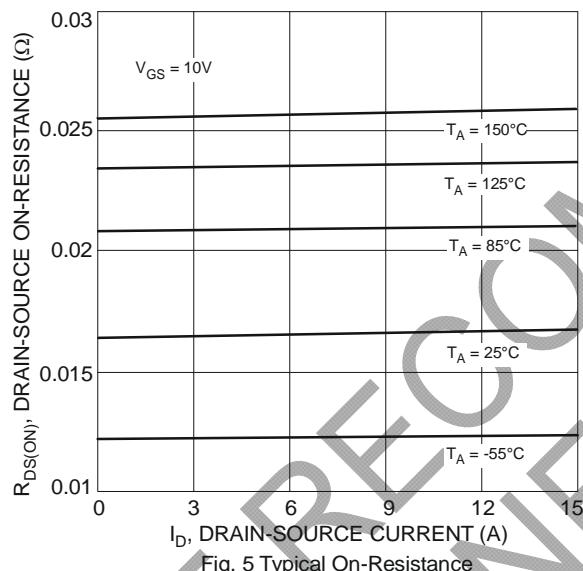
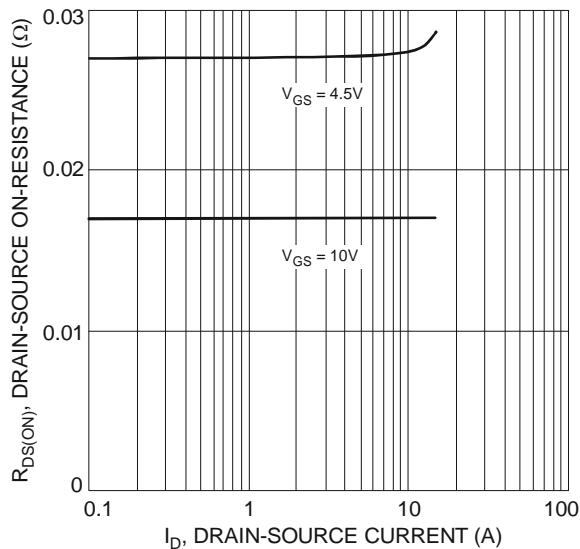


Fig. 2 Typical Transfer Characteristics



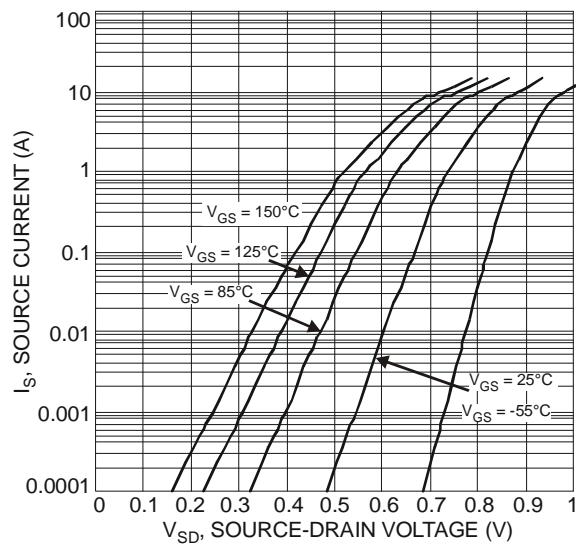


Fig. 9 Diode Forward Voltage vs. Current

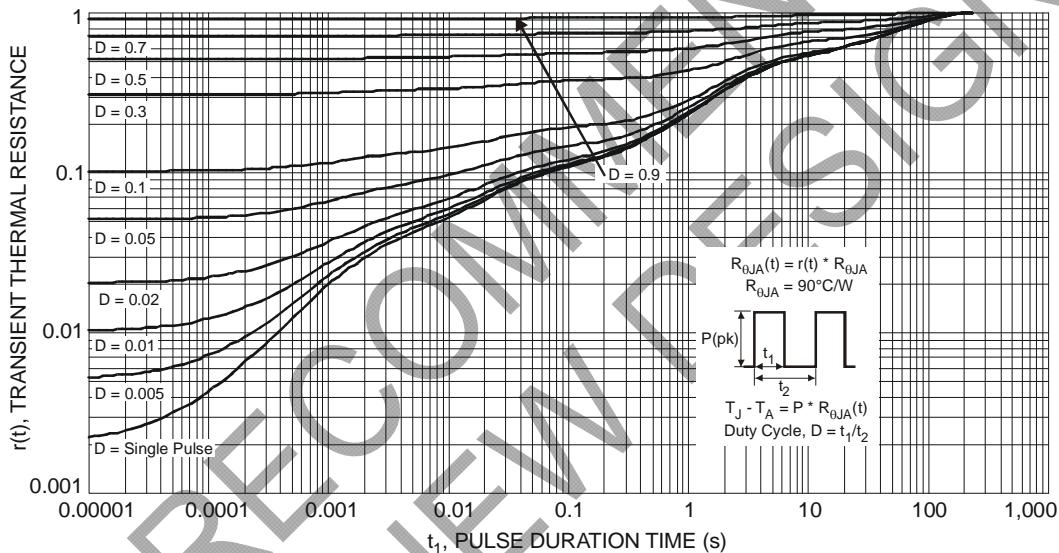


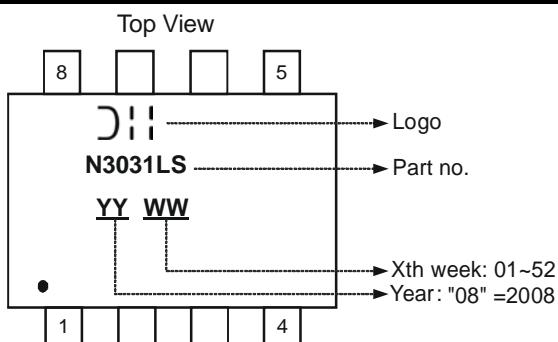
Fig. 10 Transient Thermal Response

Ordering Information (Note 6)

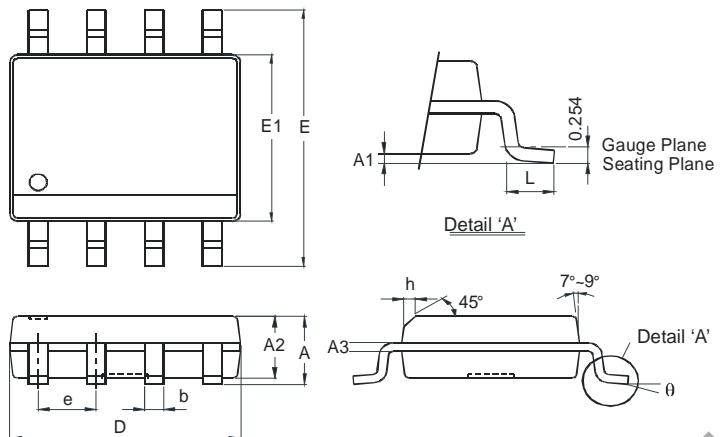
Part Number	Case	Packaging
DMN3031LSS-13	SO-8	2500/Tape & Reel

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



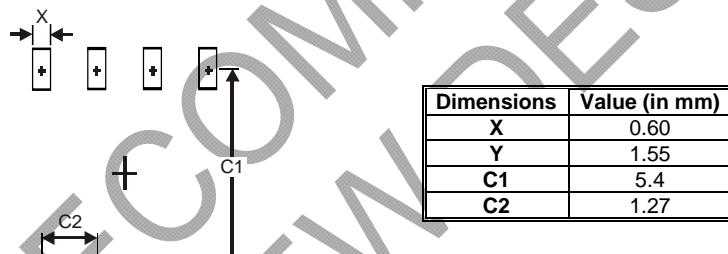
Package Outline Dimensions



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



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