



**THE DATASHEET OF  
DMN3052LSS-13**



### Product Summary

$V_{(BR)DSS}$	$R_{DS(ON) \max}$	$I_D \max$ $T_A = +25^\circ C$
30V	30mΩ @ $V_{GS} = 10V$	7.1A
	40mΩ @ $V_{GS} = 4.5V$	6.2A
	63mΩ @ $V_{GS} = 2.5V$	4.9A

### Description and Applications

This MOSFET has been designed to minimize the on-state resistance ( $R_{DS(on)}$ ) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

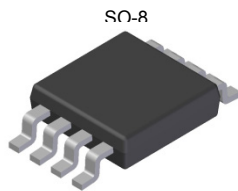
- Backlighting
- Power Management Functions
- DC-DC Converters

### Features and Benefits

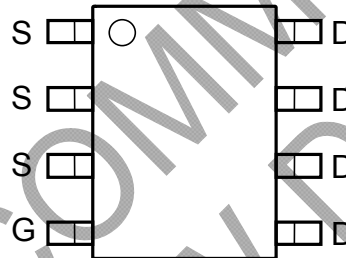
- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

### Mechanical Data

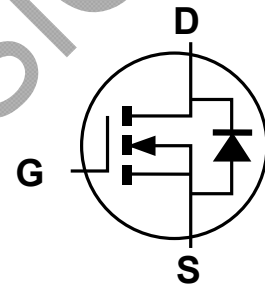
- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections Indicator: See diagram
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.074 grams (approximate)



TOP VIEW



Top View  
Internal Schematic



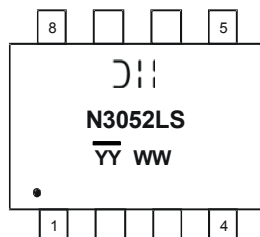
Equivalent circuit

### Ordering Information (Note 4)

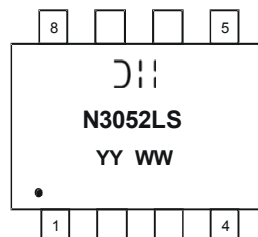
Part Number	Case	Packaging
DMN3052LSS-13	SO-8	2500/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

### Marking Information



Chengdu A/T Site



Shanghai A/T Site

- ⌋|| = Manufacturer's Marking
- N3052LS = Product Type Marking Code
- YYWW = Date Code Marking
- YY or YY = Year (ex: 13 = 2013)
- WW = Week (01 - 53)
- YY = Date Code Marking for SAT (Shanghai Assembly/ Test site)
- YY = Date Code Marking for CAT (Chengdu Assembly/ Test site)

### Maximum Ratings (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V <sub>DSS</sub>	30	V
Gate-Source Voltage			V <sub>GSS</sub>	±12	V
Drain Current (Note 5)	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	7.1	A
		T <sub>A</sub> = +70°C		5.7	
Pulsed Drain Current (Note 6)			I <sub>DM</sub>	28	A

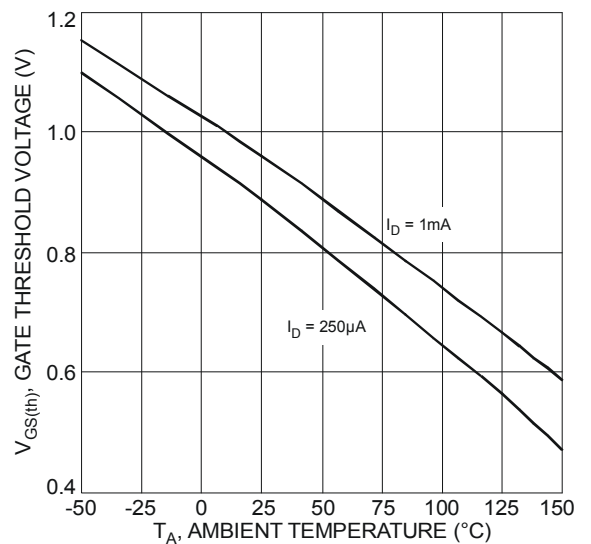
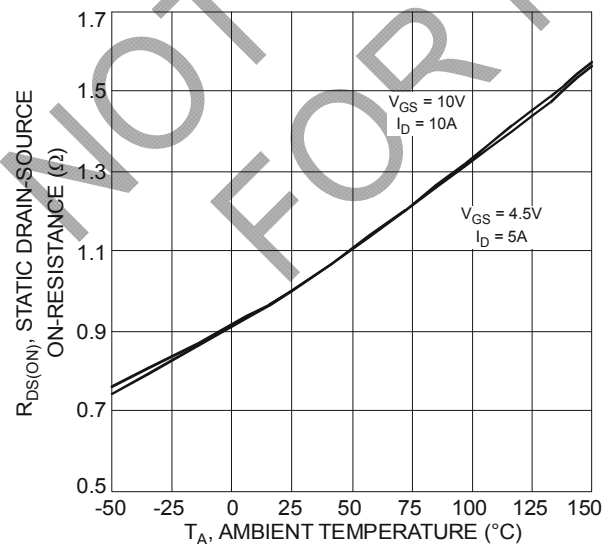
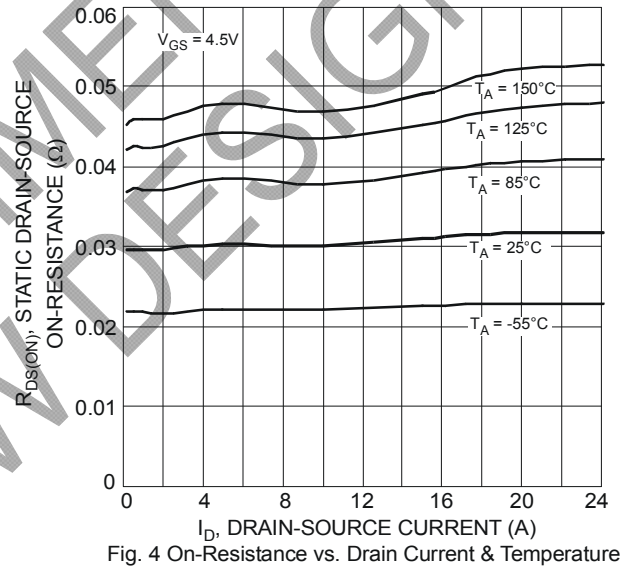
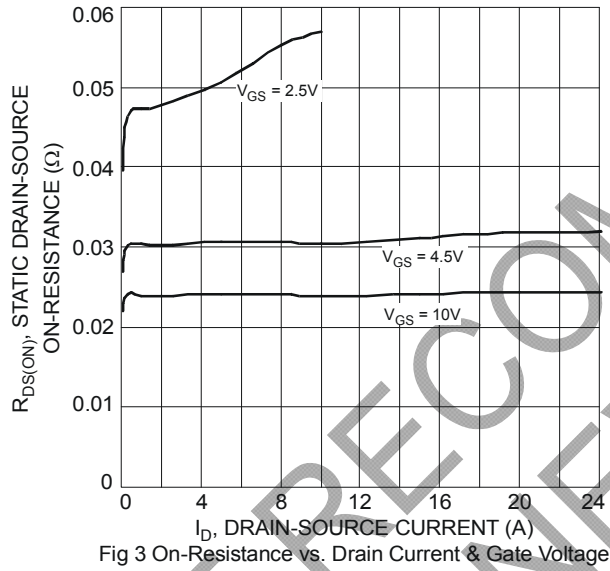
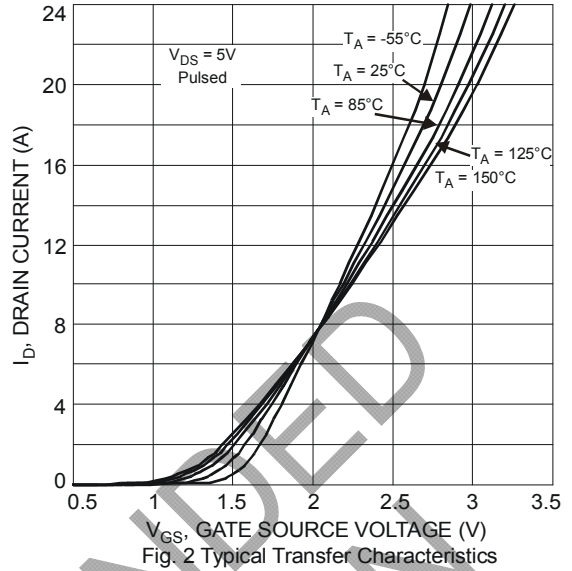
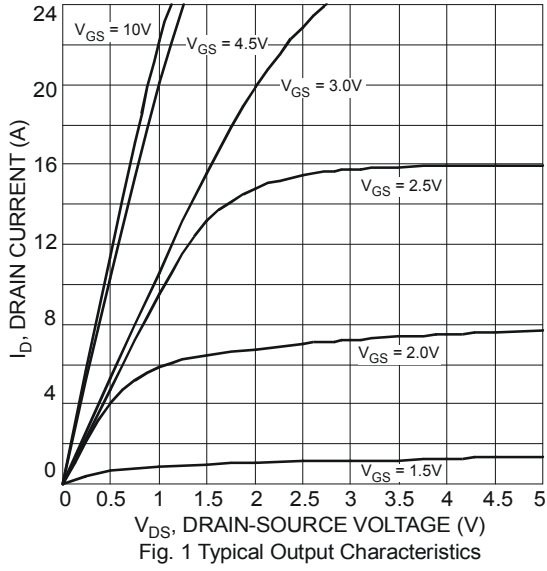
### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P <sub>D</sub>	2.5	W
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	50	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

### Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	1	μA	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	±80 ±800	nA	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V V <sub>GS</sub> = ±19V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	0.62	0.9	1.2	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	24	30	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 7.1A
			30	40		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 6.4A
			50	63		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 5.0A
Forward Transconductance	g <sub>fs</sub>	—	10	—	S	V <sub>DS</sub> = 5V, I <sub>D</sub> = 5.1A
Diode Forward Voltage (Note 7)	V <sub>SD</sub>	—	0.78	1.16	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 2.1A
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	C <sub>iss</sub>	—	555	—	pF	V <sub>DS</sub> = 5V, V <sub>GS</sub> = 0V f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	109	—	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	82	—	pF	

- Notes:
5. Device mounted on 2 oz copper pad layout with R<sub>θJA</sub> = 50°C/W.
  6. Pulse width ≤10μs, Duty Cycle ≤1%.
  7. Short duration pulse test used to minimize self-heating effect.



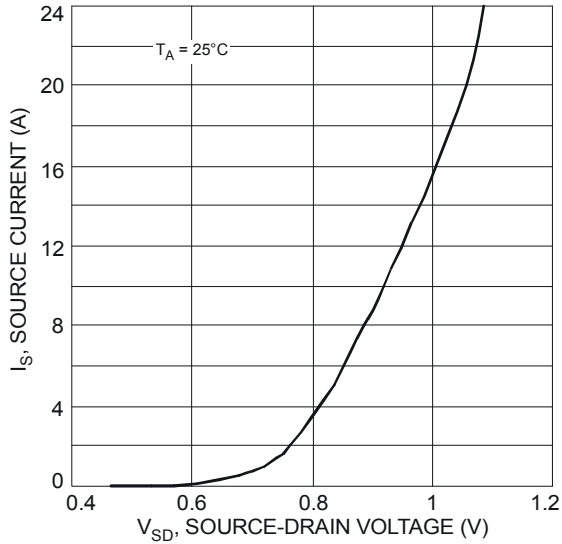


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

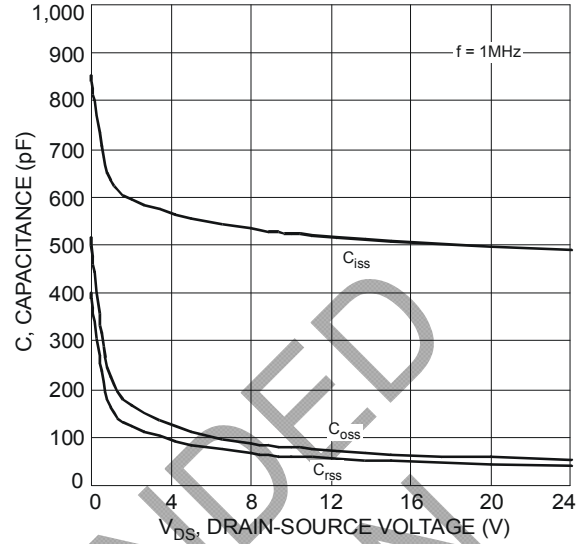


Fig. 8 Typical Total Capacitance

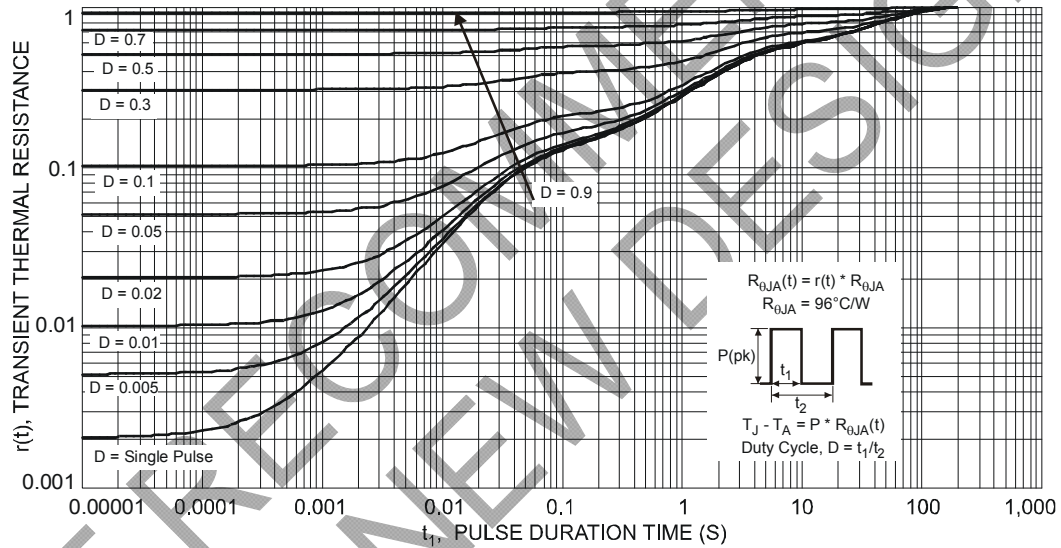
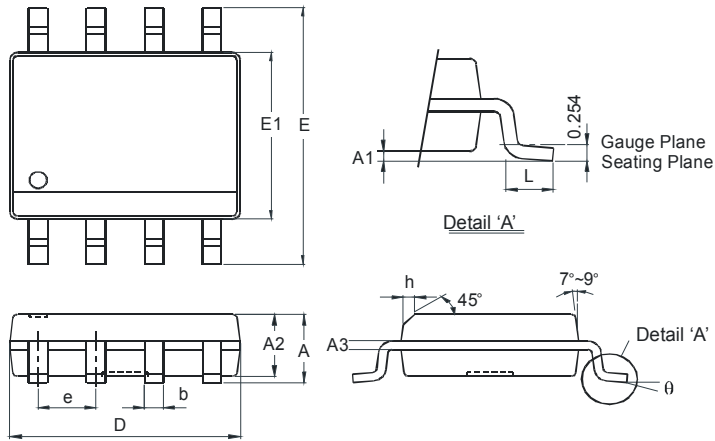


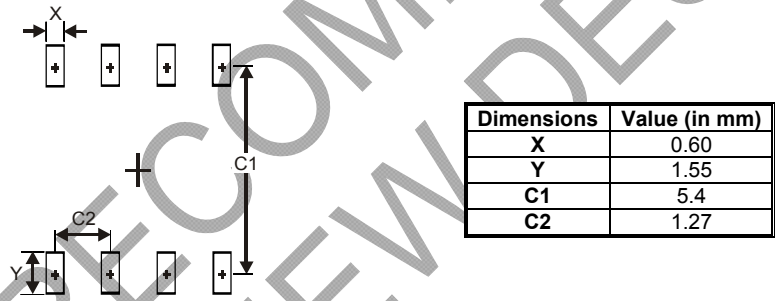
Fig. 9 Transient Thermal Resistance

**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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