



**DMN2020LSN**

**N-CHANNEL ENHANCEMENT MODE MOSFET**

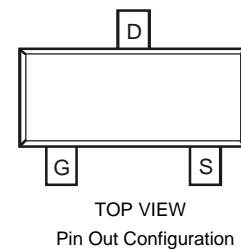
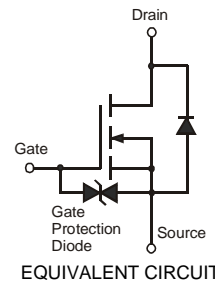
**Features**

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- ESD Protected Up To 2KV
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**Mechanical Data**

- Case: SC-59
- Case Material - Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.014 grams (approximate)

SC-59



**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
Continuous Drain Current	Steady State	$T_A = 25^\circ\text{C}$	$I_D$	6.9	A
		$T_A = 85^\circ\text{C}$		4.5	
Pulsed Drain Current (Note 4)			$I_{DM}$	30	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Units
Power Dissipation (Note 3)	$P_D$	0.61	W
Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ\text{C}$ (Note 3)	$R_{\theta JA}$	204	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

- Notes:
1. No purposefully added lead.
  2. Device mounted on FR-4 PCB, with minimum recommended pad layout.
  3. Repetitive rating, pulse width limited by junction temperature.



## DMN2020LSN

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 5)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	20	-	-	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
Zero Gate Voltage Drain Current T <sub>J</sub> = 25°C	I <sub>DSS</sub>	-	-	1.0	μA	V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	-	-	±10	μA	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 5)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	0.5	1.0	1.5	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	-	13	20	mΩ	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 9.4A
			18	28		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 8.3A
Forward Transfer Admittance	Y <sub>fs</sub>	-	16	-	S	V <sub>DS</sub> = 5V, I <sub>D</sub> = 9.4A
Diode Forward Voltage	V <sub>SD</sub>	-	0.7	1.2	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1.3A
<b>DYNAMIC CHARACTERISTICS (Note 6)</b>						
Input Capacitance	C <sub>iss</sub>	-	1149	-	pF	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	-	157	-	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	-	142	-	pF	
Gate Resistance	R <sub>g</sub>	-	1.51	-	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge	Q <sub>g</sub>	-	11.6	-	nC	V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 10V, I <sub>D</sub> = 9.4A
Gate-Source Charge	Q <sub>gs</sub>	-	2.7	-	nC	
Gate-Drain Charge	Q <sub>gd</sub>	-	3.4	-	nC	
Turn-On Delay Time	t <sub>D(on)</sub>	-	11.67	-	ns	V <sub>DD</sub> = 10V, V <sub>GS</sub> = 4.5V, R <sub>GEN</sub> = 6Ω, I <sub>D</sub> = 1A
Turn-On Rise Time	t <sub>r</sub>	-	12.49	-	ns	
Turn-Off Delay Time	t <sub>D(off)</sub>	-	35.89	-	ns	
Turn-Off Fall Time	t <sub>f</sub>	-	12.33	-	ns	

Notes: 4. Short duration pulse test used to minimize self-heating effect.  
5. Guaranteed by design. Not subject to production testing.