



**DMN3150L**

**N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR**

**Features**

- Low On-Resistance:
  - $R_{DS(ON)} < 54m\Omega$  @  $V_{GS} = 10V$
  - $R_{DS(ON)} < 72m\Omega$  @  $V_{GS} = 4.5V$
  - $R_{DS(ON)} < 115m\Omega$  @  $V_{GS} = 2.5V$
- 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 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

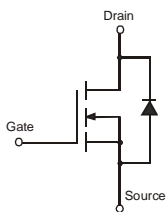
**Mechanical Data**

- Case: SOT-23
- 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: 0.008 grams (approximate)

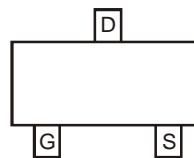
SOT-23



TOP VIEW



EQUIVALENT CIRCUIT



Pin Configuration

**Maximum Ratings** @ $T_A = 25^\circ C$  unless otherwise specified

Characteristic	Symbol	Value	Unit
Drain Source Voltage	$V_{DSS}$	30	V
Gate-Source Voltage	$V_{GSS}$	$\pm 12$	V
Drain Current (Note 1)	$I_D$	3.8	A
		3.1	A
Drain Current (Note 1)	$I_{DM}$	15	A
Body-Diode Continuous Current (Note 1)	$I_S$	2.0	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	$P_D$	1.4	W
Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ C$ (Note 1)	$R_{\theta JA}$	90	$^\circ C/W$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ C$

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 4)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	30	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	800	nA	$V_{DS} = 28V, V_{GS} = 0V$
Gate-Body Leakage	$I_{GSS}$	—	—	$\pm 80$ $\pm 800$	nA	$V_{GS} = \pm 12V, V_{DS} = 0V$ $V_{GS} = \pm 19V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 4)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	0.62	0.92	1.4	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	39	54	m $\Omega$	$V_{GS} = 10V, I_D = 3.8A$
		—	52	72		$V_{GS} = 4.5V, I_D = 3.6A$
		—	90	115		$V_{GS} = 2.5V, I_D = 3.1A$
Forward Transconductance	$ Y_{fs} $	—	3	—	S	$V_{DS} = 5V, I_D = 3.1A$
Source-Drain Diode Forward Voltage	$V_{SD}$	—	—	1.16	V	$V_{GS} = 0V, I_S = 2.0A$
<b>DYNAMIC CHARACTERISTICS</b>						
Gate Resistance	$R_g$	-	4.17	-	$\Omega$	$V_{DS} = 0V, V_{GS} = 0V,$ $f = 1\text{MHz}$
Total Gate Charge (10V)	$Q_g$	-	8.2	-	nC	$V_{GS} = 10V, V_{DS} = 10V,$ $I_D = 3.8A$
Total Gate Charge (4.5V)	$Q_g$	-	3.7	-	nC	$V_{GS} = 4.5V, V_{DS} = 10V,$ $I_D = 3.8A$
Gate-Source Charge	$Q_{gs}$	-	0.7	-	nC	
Gate-Drain Charge	$Q_{gd}$	-	1.1	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	1.14	-	ns	$V_{DD} = 15V, V_{GEN} = 10V,$ $R_{GEN} = 6\Omega, R_L = 3.9\Omega$
Turn-On Rise Time	$t_r$	-	3.49	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	15.02	-	ns	
Turn-Off Fall Time	$t_f$	-	3.26	-	ns	
Input Capacitance	$C_{iss}$	—	305	—	pF	$V_{DS} = 5V, V_{GS} = 0V$ $f = 1.0\text{MHz}$
Output Capacitance	$C_{oss}$	—	74	—	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	48	—	pF	

- Notes:
1. Device mounted on FR-4 PCB.  $t \leq 5$  sec.
  2. No purposefully added lead.
  3. Short duration pulse test used to minimize self-heating effect.