



DMN2050L

N-CHANNEL ENHANCEMENT MODE MOSFET

NEW PRODUCT

Features

- Low On-Resistance
 - 29mΩ @V_{GS} = 4.5V
 - 50mΩ @V_{GS} = 2.5V
 - 100mΩ @V_{GS} = 2.0V
- Very Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- **Lead, Halogen and Antimony Free, RoHS Compliant**
- **"Green" Device (Notes 2, 3 and 6)**
- **Qualified to AEC-Q101 Standards for High Reliability**

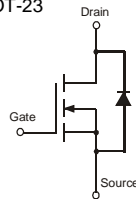
Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: See Diagram
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.008 grams (approximate)

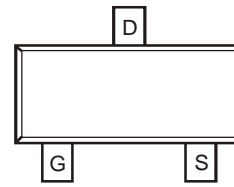


TOP VIEW

SOT-23



Equivalent Circuit



TOP VIEW

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V _{DSS}	20	V
Gate-Source Voltage	V _{GSS}	±12	V
Drain Current (Note 1)	I _D	5.9	A
Pulsed Drain Current (Note 4)	I _{DM}	21	A

Thermal Characteristics

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 1)	P _D	1.4	W
Thermal Resistance, Junction to Ambient (Note 1)	R _{θJA}	90	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

- Notes:
1. Device mounted on FR-4 PCB, on 2oz Copper pad layout with R_{θJA} = 90°C/W.
 2. No purposefully added lead. Halogen and Antimony Free.
 3. 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	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	$V_{GS(th)}$	0.45	—	1.4	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	24	29	m Ω	$V_{GS} = 4.5V, I_D = 5.0A$
			42	50		$V_{GS} = 2.5V, I_D = 3.1A$
			68	100		$V_{GS} = 2.0V, I_D = 1.5A$
Forward Transfer Admittance	$ Y_{fs} $	—	8	—	S	$V_{DS} = 5V, I_D = 2.1A$
Diode Forward Voltage (Note 5)	V_{SD}	—	0.9	1.4	V	$V_{GS} = 0V, I_S = 2.0A$
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	—	532	—	pF	$V_{DS} = 10V, V_{GS} = 0V$ $f = 1.0MHz$
Output Capacitance	C_{oss}	—	144	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	117	—	pF	
Gate Resistance	R_G	—	1.3	—	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz$
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q_g	—	6.7	—	nC	$V_{DS} = 10V, V_{GS} = 4.5V, I_D = 5.0A$
Gate-Source Charge	Q_{gs}	—	0.8	—		$V_{DS} = 10V, V_{GS} = 4.5V, I_D = 5.0A$
Gate-Drain Charge	Q_{gd}	—	3.0	—		$V_{DS} = 10V, V_{GS} = 4.5V, I_D = 5.0A$

Notes: 4. Short duration pulse test used to minimize self-heating effect.

5. Product manufactured with Green Molding Compound and does not contain Halogens or Sb_2O_3 Fire Retardants.