THE DMN3110SQ IS NOT RECOMMENDED FOR NEW DESIGNS.
PLEASE USE THE DMN3061SQ.

DMN3110SQ

N-CHANNEL ENHANCEMENT MODE MOSFET

Lead-free Green

Product Summary

BV_{DSS}	$R_{DS(ON)}$ Max	I_D Max T_A = +25°C
30V	73mΩ @ V_{GS} = 10V	3.3A
	110mΩ @ V_{GS} = 4.5V	2.7A

Description and Applications

This MOSFET is designed to meet the stringent requirements of automotive applications. It is qualified to AEC-Q101, supported by a PPAP and is ideal for use in:

- General purpose interfacing switches
- Power-management functions
- Boost applications
- Analog switches

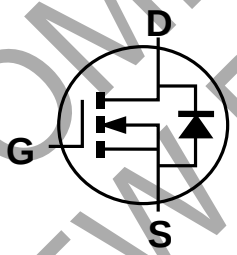
Features and Benefits

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DMN3110SQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
  https://www.diodes.com/quality/product-definitions/

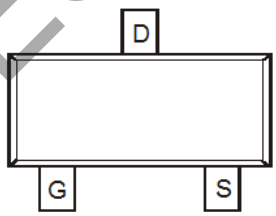
Mechanical Data

- Package: SOT23
- Package 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 e3
- Weight: 0.027 grams (Approximate)

Top View



Equivalent Circuit



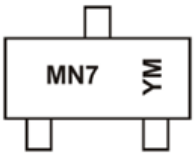
Top View

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMN3110SQ-7	SOT23	3000	Tape & Reel

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ 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 https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



MN7 = Product Type Marking Code
Y or $\overline{Y}$ = Year (ex: K = 2023)
M = Month (ex: 9 = September)

Date Code Key

Year	2018	…	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Code	F	…	K	L	M	N	P	R	S	T	U	V

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	30	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Drain Current (Note 5) V_{GS} = 10V	Steady State	T_A = +25°C T_A = +70°C	I_D	2.5 2.0	A
Continuous Drain Current (Note 5) V_{GS} = 4.5V	Steady State	T_A = +25°C T_A = +70°C	I_D	3.3 2.7	A
Continuous Drain Current (Note 6) V_{GS} = 10V	t≦10sec	T_A = +25°C T_A = +70°C	I_D	3.8 3.1	A
Continuous Drain Current (Note 6) V_{GS} = 4.5V	Steady State	T_A = +25°C T_A = +70°C	I_D	2.7 2.1	A
Pulsed Drain Current (Note 7)			I_{DM}	25	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P_D	0.74	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	173.4	°C/W
Total Power Dissipation (Note 6)	P_D	1.3	W
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	99.1	°C/W
Total Power Dissipation (Note 6) t≦10sec	P_D	1.8	W
Thermal Resistance, Junction to Ambient (Note 6) t≦10sec	$R_{\theta JA}$	72	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Drain-Source Breakdown Voltage	BV_{DSS}	30	—	—	V	V_{GS} = 0V, I_D = 250μA
Zero Gate Voltage Drain Current @T_C = +25°C	I_{DSS}	—	—	1.0	μA	V_{DS} = 30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	$V_{GS(TH)}$	1.0	—	3.0	V	V_{DS} = V_{GS}, I_D = 250μA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	54	73	mΩ	V_{GS} = 10V, I_D = 3.1A
		—	88	110		V_{GS} = 4.5V, I_D = 2A
Forward Transfer Admittance	$\|Y_{fs}\|$	—	4.8	—	mS	V_{DS} = 10V, I_D = 3.1A
Diode Forward Voltage (Note 6)	V_{SD}	—	0.75	1.0	V	V_{GS} = 0V, I_S = 1A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	—	305.8	—	pF	V_{DS} = 15V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	—	39.9	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	39.5	—	pF	
Gate Resistance	R_g	—	1.4	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz
Total Gate Charge (V_{GS} = 4.5V)	Q_g	—	4.1	—	nC	V_{DS} = 10V, I_D = 3A
Total Gate Charge (V_{GS} = 10V)	Q_g	—	8.6	—	nC	
Gate-Source Charge	Q_{gs}	—	1.2	—	nC	
Gate-Drain Charge	Q_{gd}	—	1.5	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	2.6	—	ns	V_{DD} = 15V, V_{GS} = 10V, R_L = 47Ω, R_G = 3Ω
Turn-On Rise Time	t_R	—	4.6	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	13.1	—	ns	
Turn-Off Fall Time	t_F	—	2.5	—	ns	

Notes: 5. Device mounted on FR-4 PCB, with minimum recommended pad layout.
6. Device mounted on FR-4 substrate PC board, 2oz copper, on 1inch square copper plate.
7. Device mounted on minimum recommended pad layout test board, 10μs pulse duty cycle = 1%
8. Short duration pulse test used to minimize self-heating effect.

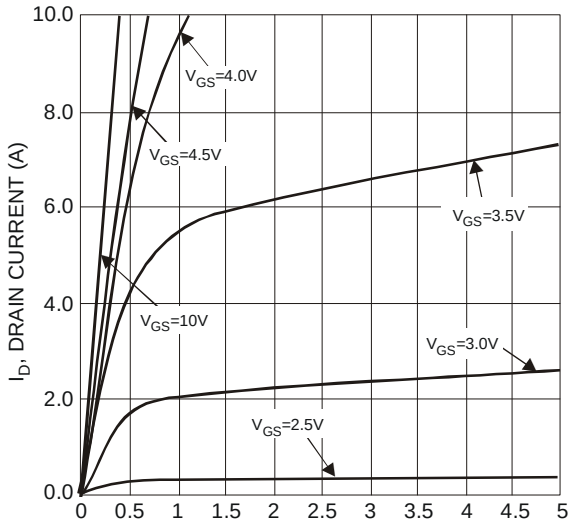


Fig. 1 Typical Output Characteristics

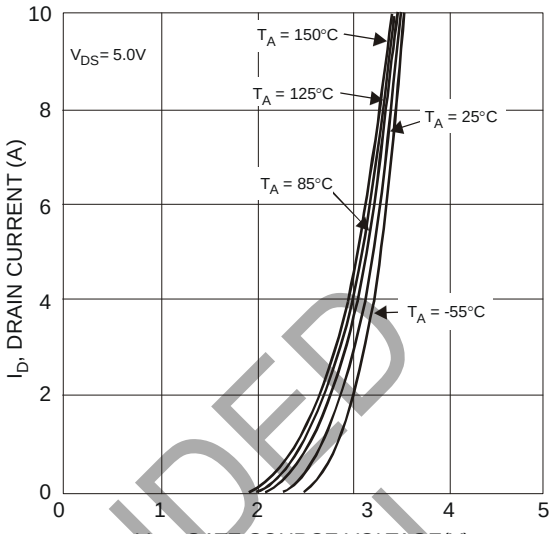


Fig. 2 Typical Transfer Characteristics

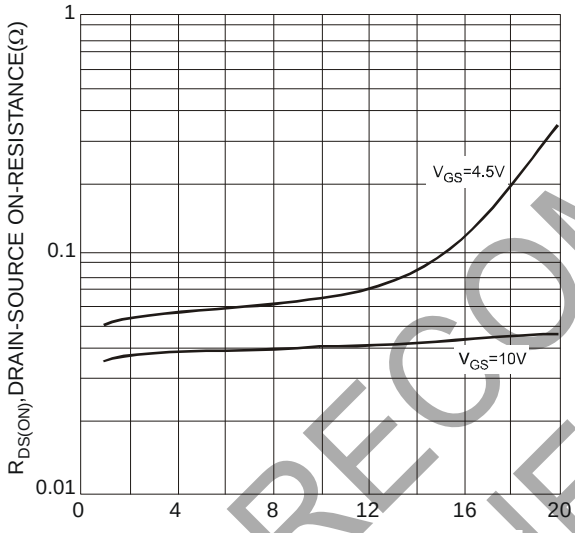


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

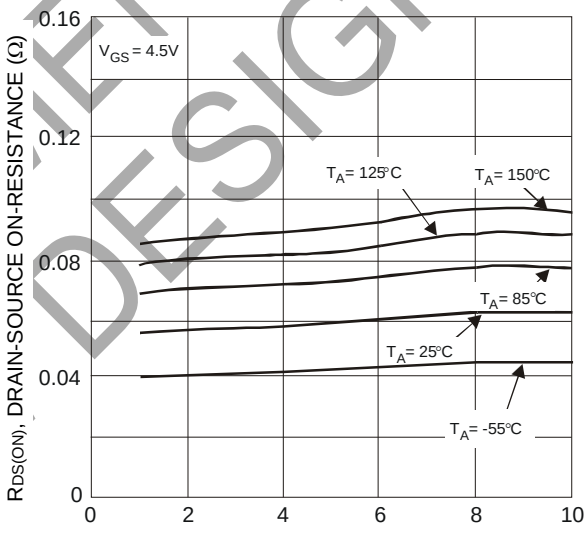


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

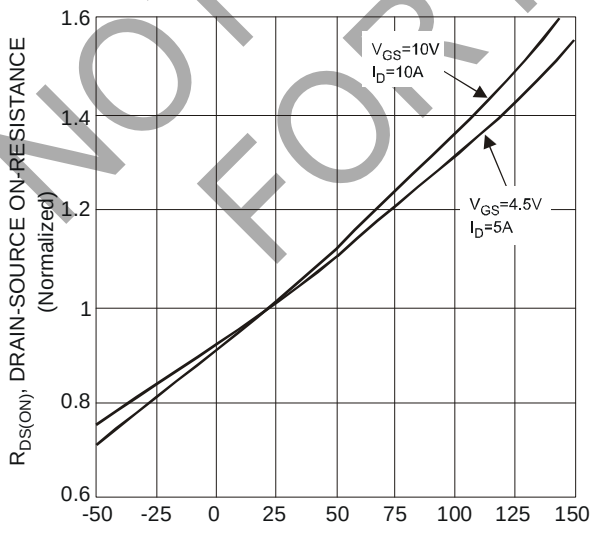


Fig. 5 On-Resistance Variation with Temperature

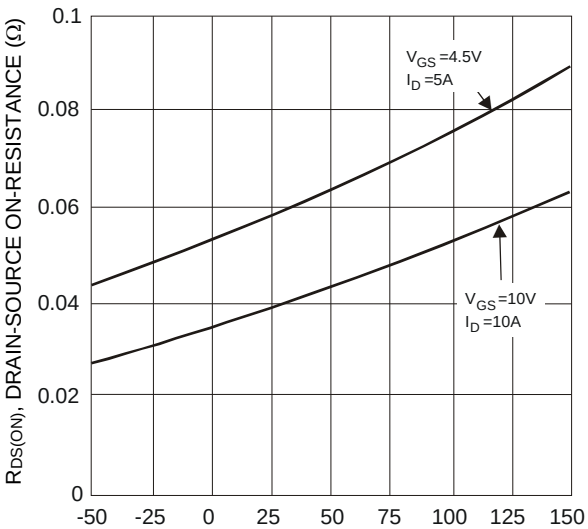


Fig. 6 On-Resistance Variation with Temperature

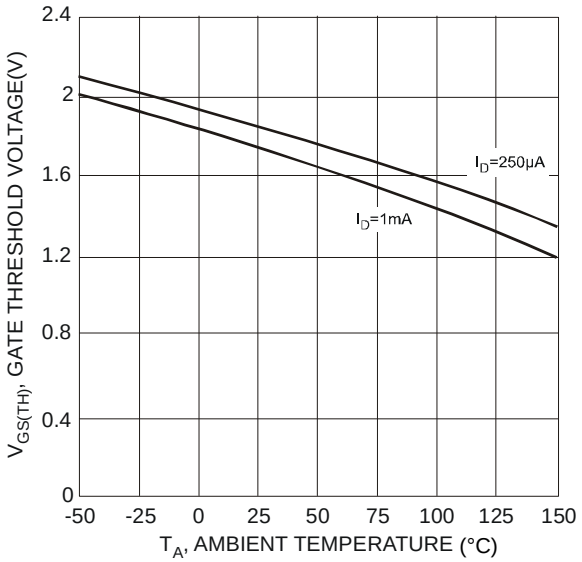


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

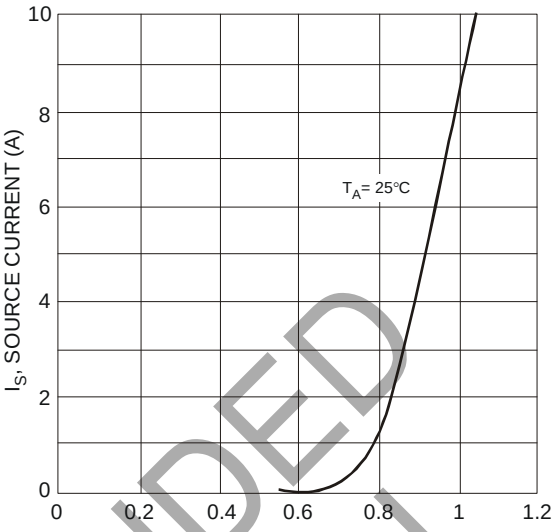


Fig. 8 Diode Forward Voltage vs. Current

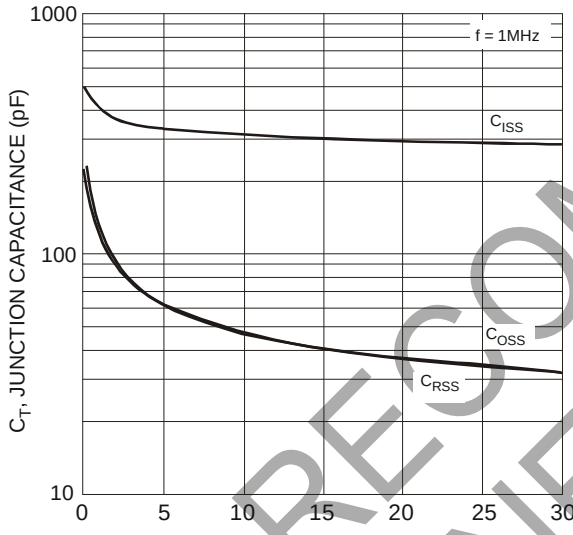


Fig. 9 Typical Junction Capacitance

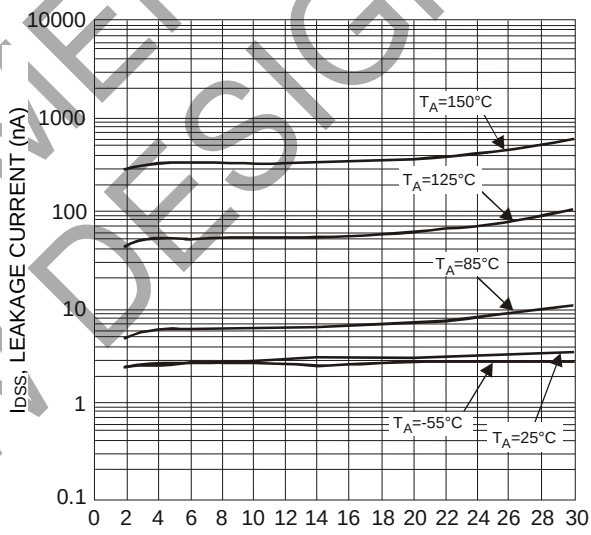


Fig. 10 Typical Drain-Source Leakage Current vs. Voltage

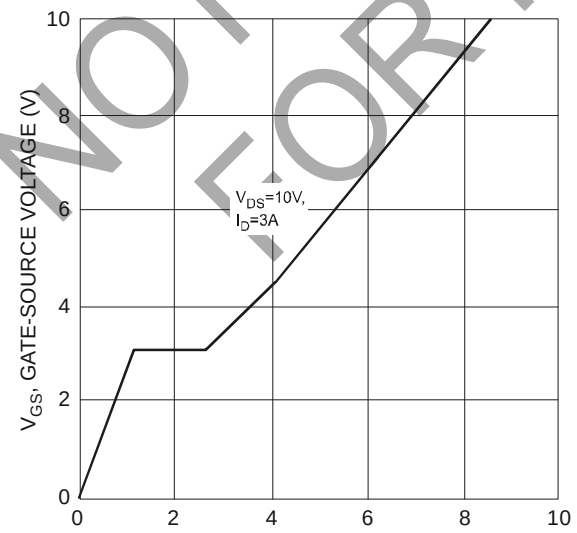


Fig. 11 Gate-Charge Characteristics

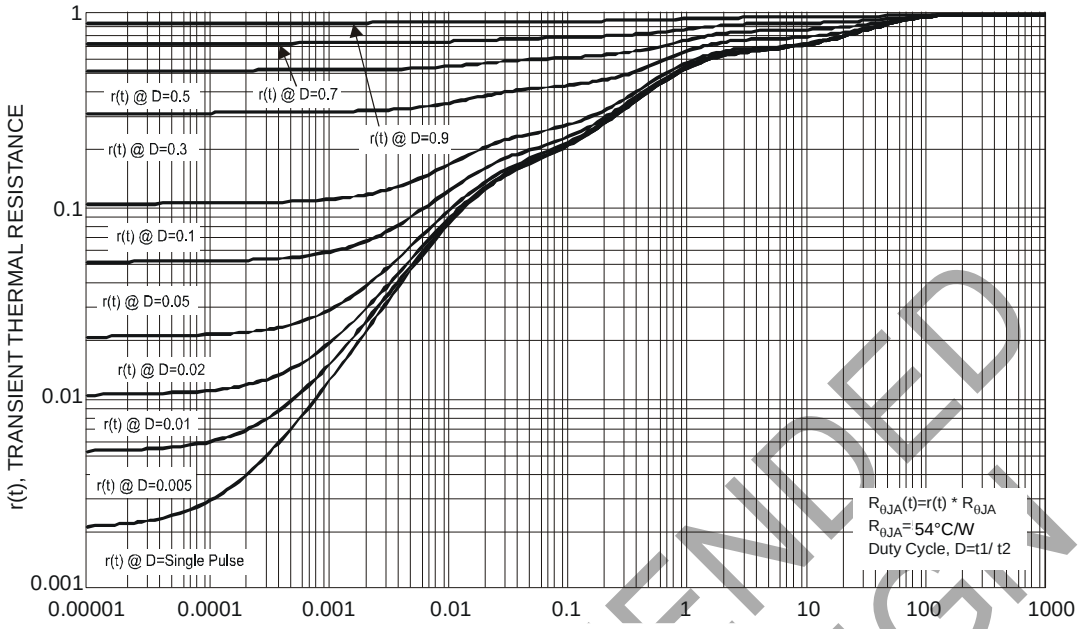
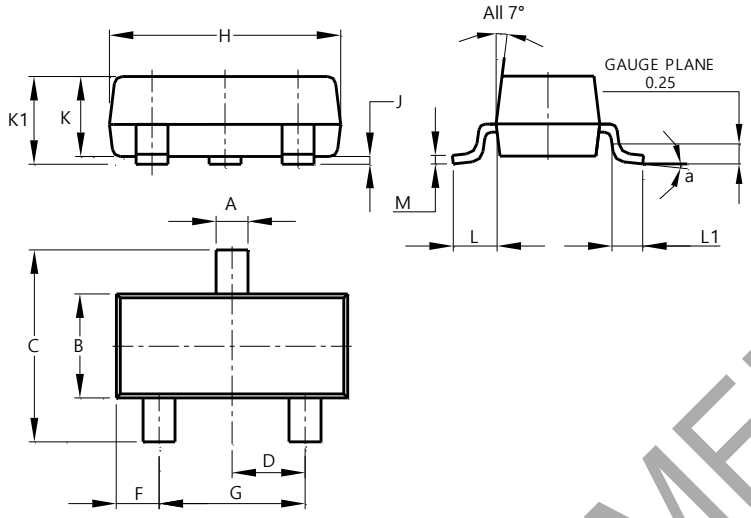


Fig. 12 Transient Thermal Resistance

Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT23

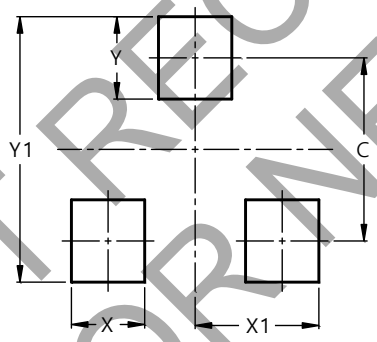


SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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