

THE DMN5L06WK IS NOT RECOMMENDED FOR NEW DESIGNS. PLEASE USE THE [DMN52D0UW](#).

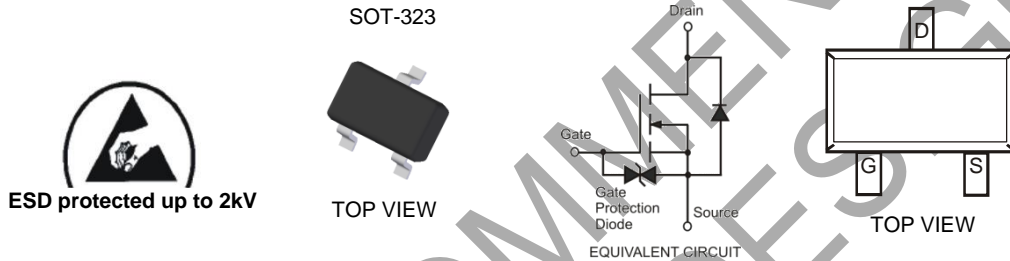
N-CHANNEL ENHANCEMENT MODE MOSFET

Features

- Low On-Resistance
- Very Low Gate Threshold Voltage (1.0V max)
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **ESD Protected up to 2kV**
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.**
<https://www.diodes.com/quality/product-definitions/>
- **An automotive-compliant part is available under separate datasheet ([DMN5L06WKQ](#))**

Mechanical Data

- Package: SOT-323
- Package 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 Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208 (e3)
- Terminal Connections: See Diagram
- Weight: 0.006 grams (Approximate)

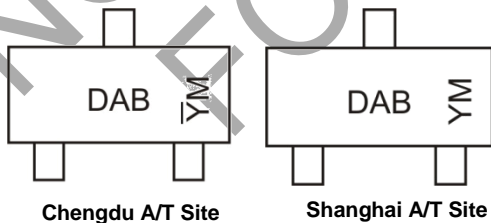


Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMN5L06WK-7	SOT-323	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



DAB = Product Type Marking Code
 YM = Date Code Marking for SAT (Shanghai Assembly/Test site)
 Y̅M = Date Code Marking for CAT (Chengdu Assembly/Test site)
 Y or Y̅ = Year (ex: L = 2024)
 M = Month (ex: 5 = May)

Date Code Key

Year	2006	...	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Code	T	...	L	M	N	P	R	S	T	U	V	W

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}	50	V
Gate-Source Voltage	V _{GSS}	±20	V
Drain Current (Note 5)	I _D	Continuous	300
		Pulsed (Note 6)	800

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

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P _D	250	mW
Thermal Resistance, Junction to Ambient	R _{θJA}	500	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-65 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	50	—	—	V	V _{GS} = 0, I _D = 10μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	60	nA	V _{DS} = 50V, V _{GS} = 0
Gate-Body Leakage	I _{GSS}	—	—	1	μA	V _{GS} = ±12V, V _{DS} = 0
				500	nA	V _{GS} = ±10V, V _{DS} = 0
				50	nA	V _{GS} = ±5V, V _{DS} = 0
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(th)}	0.49	—	1.0	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	—	3.0	Ω	V _{GS} = 1.8V, I _D = 50mA
				2.5	Ω	V _{GS} = 2.5V, I _D = 50mA
				2.0	Ω	V _{GS} = 5.0V, I _D = 50mA
On-State Drain Current	I _{D(ON)}	0.5	1.4	—	A	V _{GS} = 10V, V _{DS} = 7.5V
Forward Transconductance	Y _{fs}	200	—	—	mS	V _{DS} = 10V, I _D = 0.2A
Source-Drain Diode Forward Voltage	V _{SD}	0.5	—	1.4	V	V _{GS} = 0, I _S = 115mA
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	—	—	50	pF	V _{DS} = 25V, V _{GS} = 0, f = 1.0MHz
Output Capacitance	C _{oss}	—	—	25	pF	
Reverse Transfer Capacitance	C _{rss}	—	—	5.0	pF	
Turn-On Delay Time	t _{D(on)}	—	2.1	—	ns	V _{DD} = 30V, V _{GS} = 10V, R _G = 25Ω, I _D = 200mA
Turn-On Rise Time	t _r	—	1.8	—	ns	
Turn-Off Delay Time	t _{D(off)}	—	14.4	—	ns	
Turn-Off Fall Time	t _f	—	8.4	—	ns	

- Notes:
5. Device mounted on FR-4 PCB.
 6. Pulse width ≤ 10μs, Duty Cycle ≤ 1%.
 7. Short duration pulse test used to minimize self-heating effect.
 8. Guaranteed by design. Not subject to production testing.

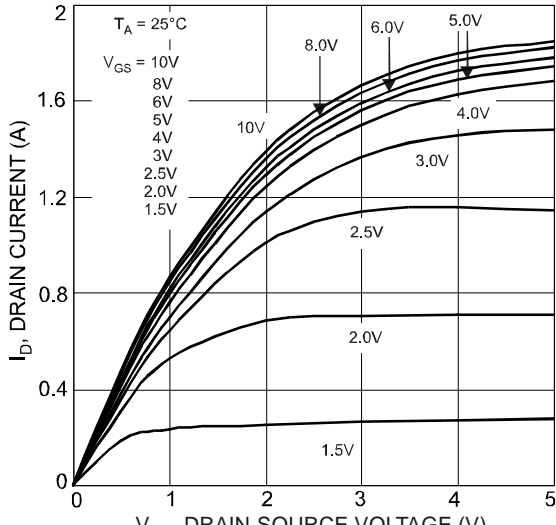


Fig. 1 Typical Output Characteristics

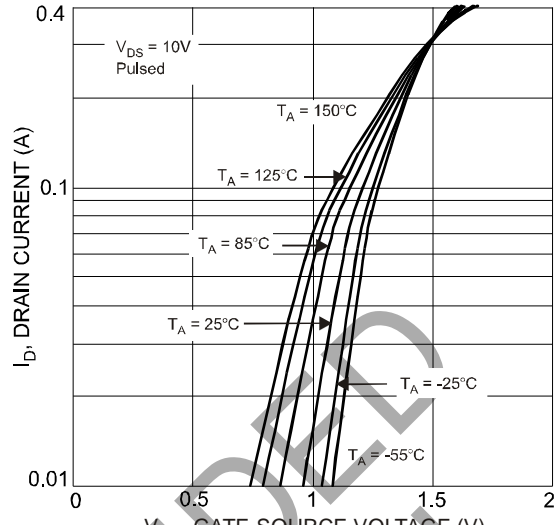


Fig. 2 Typical Transfer Characteristics

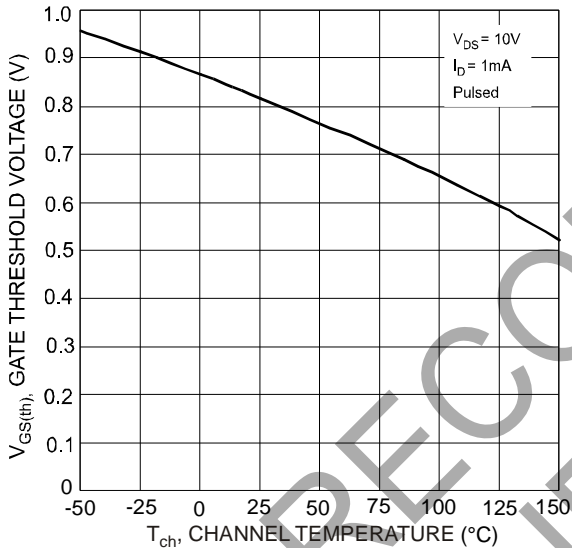


Fig. 3 Gate Threshold Voltage vs. Channel Temperature

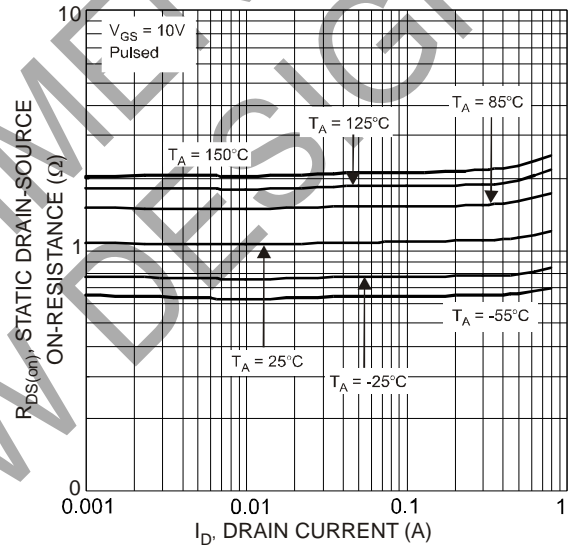


Fig. 4 Static Drain-Source On-Resistance vs. Drain Current

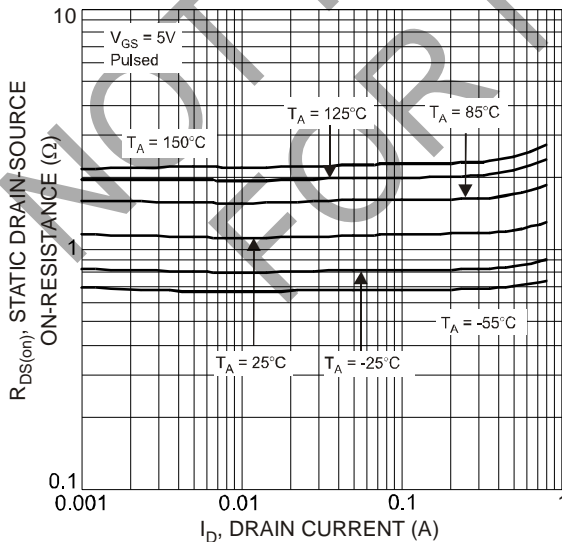


Fig. 5 Static Drain-Source On-Resistance vs. Drain Current

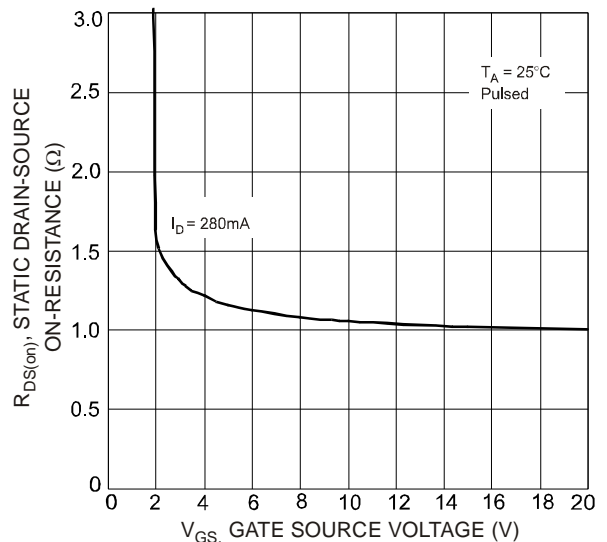


Fig. 6 Static Drain-Source On-Resistance vs. Gate-Source Voltage

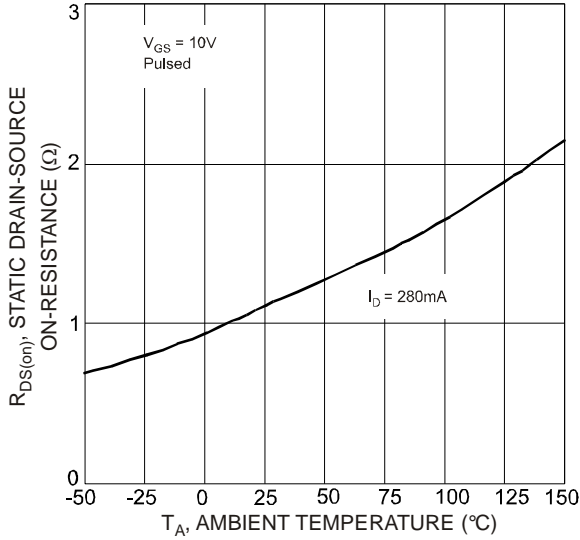


Fig. 7 Static Drain-Source On-State Resistance vs. Ambient Temperature

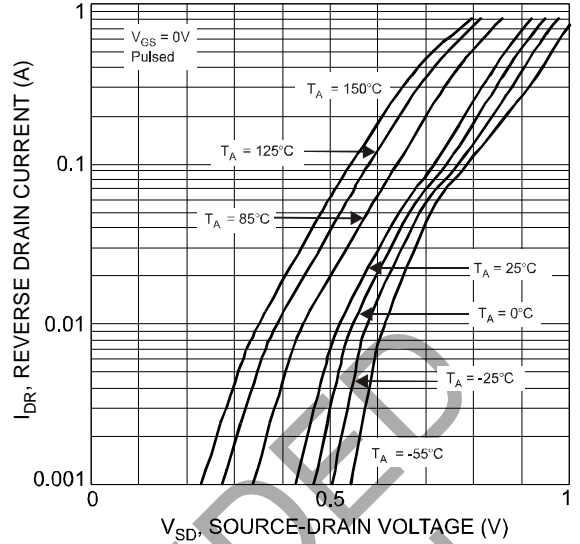


Fig. 8 Reverse Drain Current vs. Source-Drain Voltage

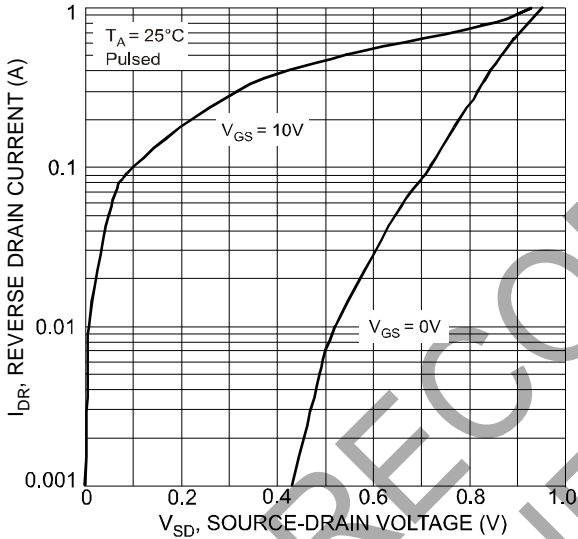


Fig. 9 Reverse Drain Current vs. Source-Drain Voltage

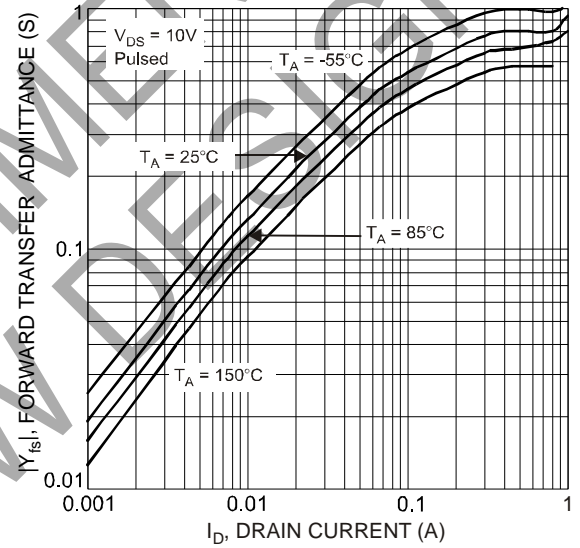


Fig.10 Forward Transfer Admittance vs. Drain Current

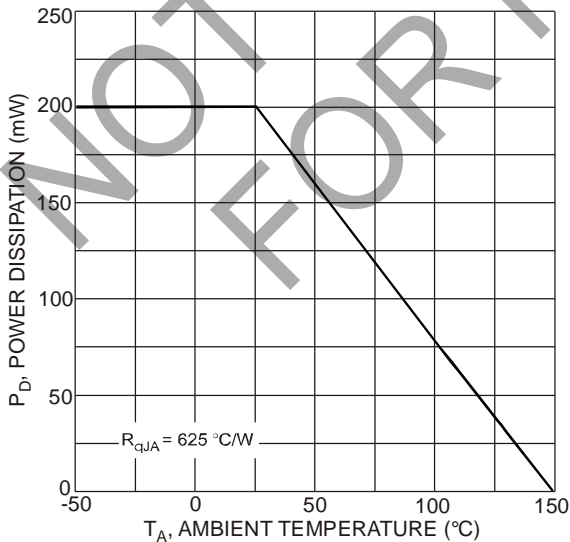
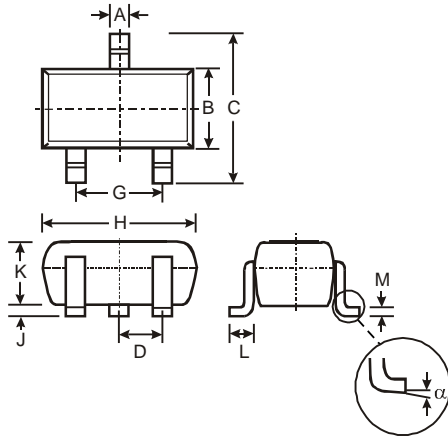


Fig. 11 Derating Curve - Total

Package Outline Dimensions

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

SOT-323

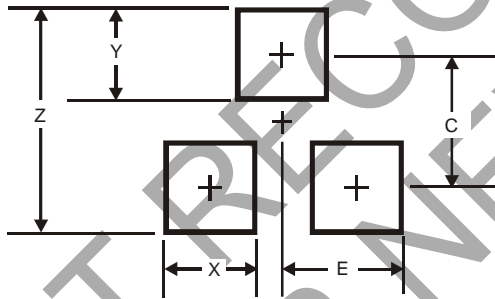


SOT-323			
Dim	Min	Max	Typ
A	0.25	0.40	0.30
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	-	-	0.65
G	1.20	1.40	1.30
H	1.80	2.20	2.15
J	0.0	0.10	0.05
K	0.90	1.00	0.95
L	0.25	0.40	0.30
M	0.10	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout

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

SOT-323



Dimensions	Value (in mm)
Z	2.8
X	0.7
Y	0.9
C	1.9
E	1.0

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