DMN5L06WK-7 Datasheet

https://www.DiGi-Electronics.com

DiGi Electronics Part Number	DMN5L06WK-7-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	DMN5L06WK-7
Description	MOSFET N-CH 50V 300MA SOT323
Detailed Description	N-Channel 50 V 300mA (Ta) 250mW (Ta) Surface Mount SOT-323

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RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
DMN5L06WK-7	Diodes Incorporated
Series:	Product Status:
-	Obsolete
FET Type:	Technology:
N-Channel	MOSFET (Metal Oxide)
Drain to Source Voltage (Vdss):	Current - Continuous Drain (Id) @ 25°C:
50 V	300mA (Ta)
Drive Voltage (Max Rds On, Min Rds On):	Rds On (Max) @ Id, Vgs:
1.8V, 5V	2Ohm @ 50mA, 5V
Vgs(th) (Max) @ Id:	Vgs (Max):
1V @ 250µA	±20V
Input Capacitance (Ciss) (Max) @ Vds:	FET Feature:
50 pF @ 25 V	-
Power Dissipation (Max):	Operating Temperature:
250mW (Ta)	-65°C ~ 150°C (TJ)
Mounting Type:	Supplier Device Package:
Surface Mount	SOT-323
Package / Case:	Base Product Number:
SC-70, SOT-323	DMN5L06

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.21.0095	

THE DMN5L06WK IS NOT RECOMMENDED FOR NEW DESIGNS. PLEASE USE THE DMN52D0UW.

Lead-free Green

DMN5L06WK

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)**

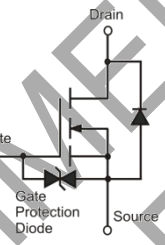
Mechanical Data

- 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)

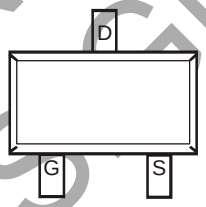
ESD protected up to 2kV

SOT-323

TOP VIEW



EQUIVALENT CIRCUIT



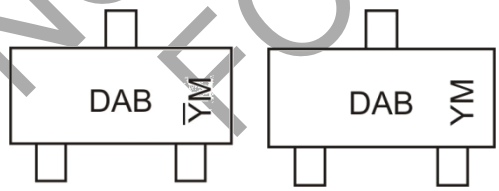
TOP VIEW

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



Chengdu A/T Site **Shanghai A/T Site**

DAB = Product Type Marking Code
YM = Date Code Marking for SAT (Shanghai Assembly/Test site)
$\overline{Y}$M = Date Code Marking for CAT (Chengdu Assembly/Test site)
Y or $\overline{Y}$ = 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)	Continuous Pulsed (Note 6)	I_D	300 800	mA

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	$R_{\theta JA}$	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	@T_C = +25°C	I_{DSS}	—	—	60	nA	V_{DS} = 50V, V_{GS} = 0
Gate-Body Leakage		I_{GSS}	—	—	1 500 50	μA nA nA	V_{GS} = ±12V, V_{DS} = 0 V_{GS} = ±10V, V_{DS} = 0 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 2.5 2.0	Ω	V_{GS} = 1.8V, I_D = 50mA V_{GS} = 2.5V, I_D = 50mA 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.

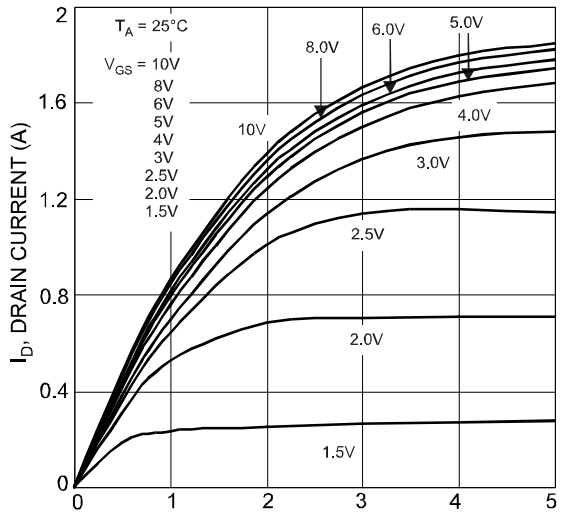


Fig. 1 Typical Output Characteristics

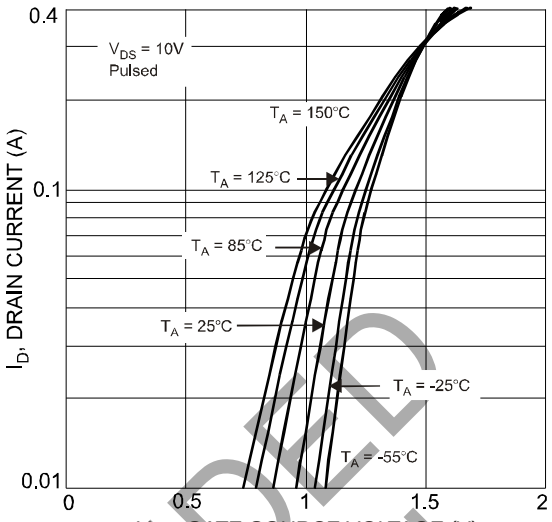


Fig. 2 Typical Transfer Characteristics

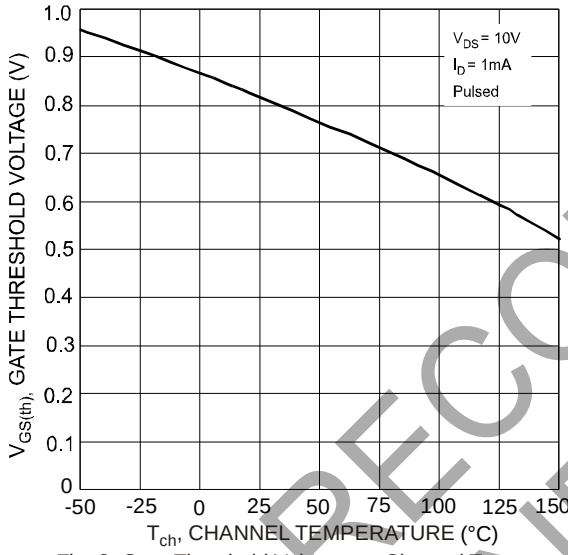


Fig. 3 Gate Threshold Voltage vs. Channel Temperature

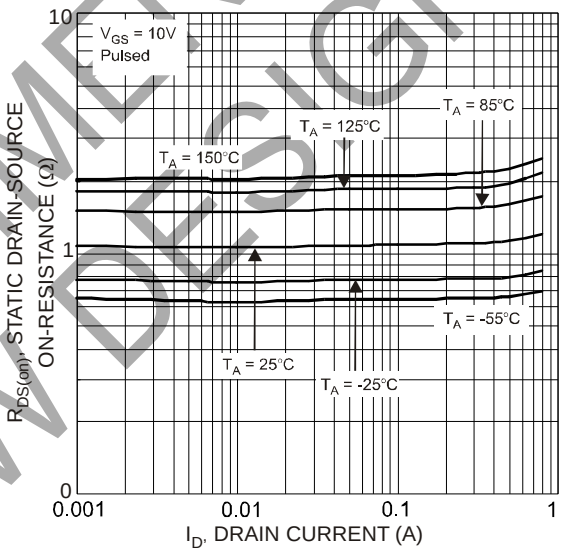


Fig. 4 Static Drain-Source On-Resistance vs. Drain Current

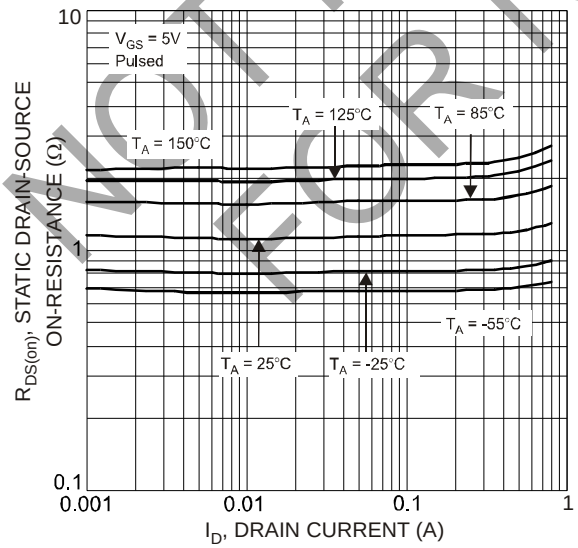


Fig. 5 Static Drain-Source On-Resistance vs. Drain Current

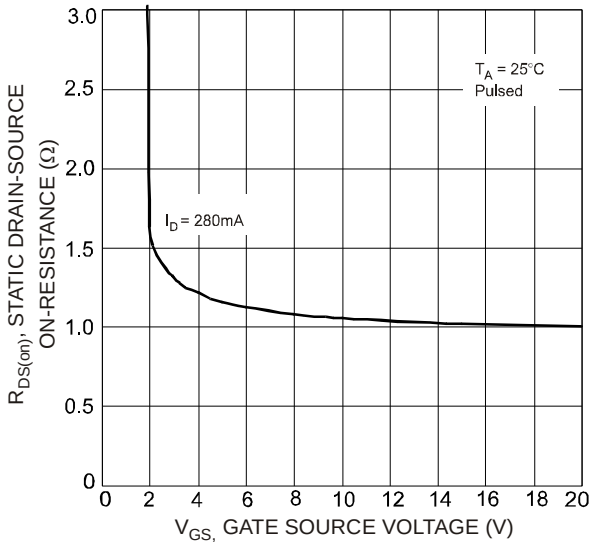


Fig. 6 Static Drain-Source On-Resistance vs. Gate-Source Voltage

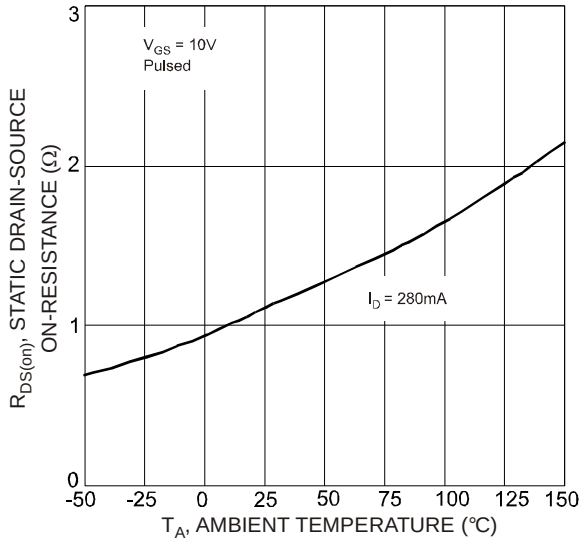


Fig. 7 Static Drain-Source On-State Resistance vs. Ambient Temperature

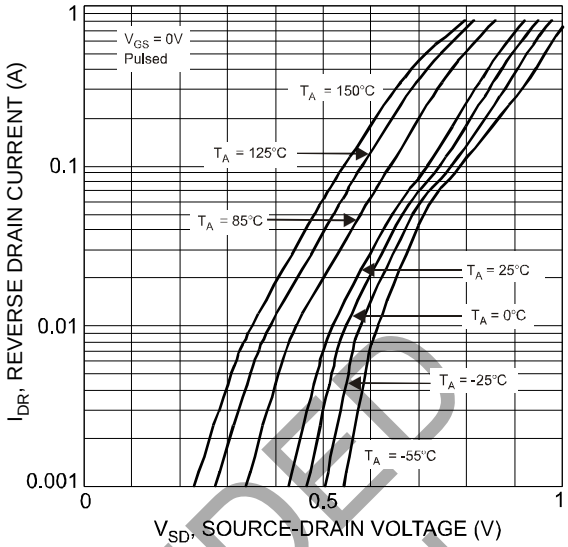


Fig. 8 Reverse Drain Current vs. Source-Drain Voltage

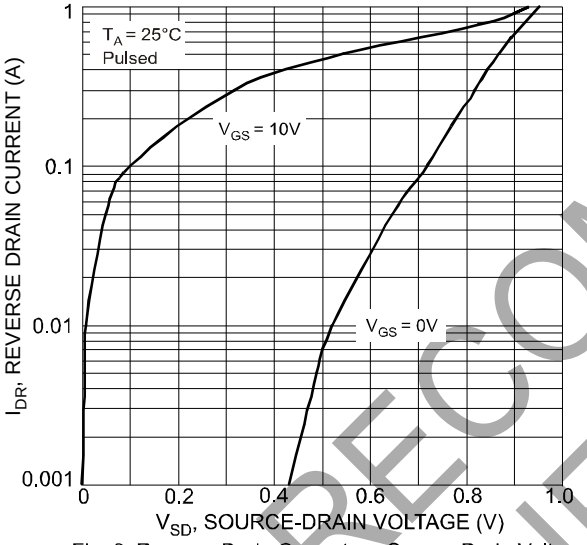


Fig. 9 Reverse Drain Current vs. Source-Drain Voltage

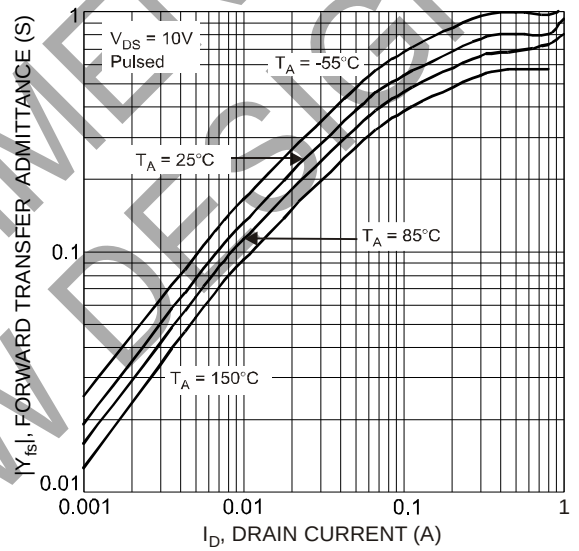


Fig.10 Forward Transfer Admittance vs. Drain Current

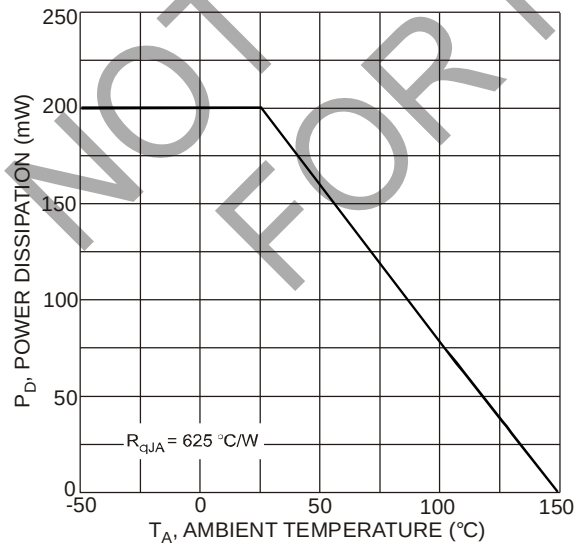
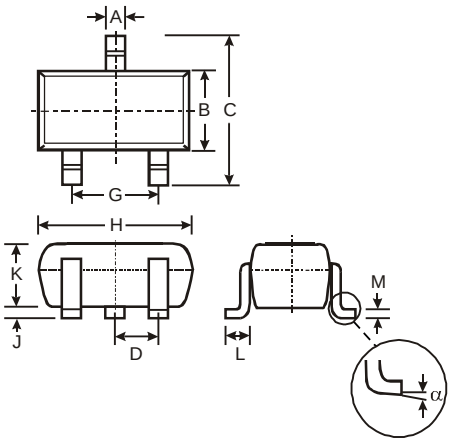


Fig. 11 Derating Curve - Total

Package Outline Dimensions

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

SOT-323

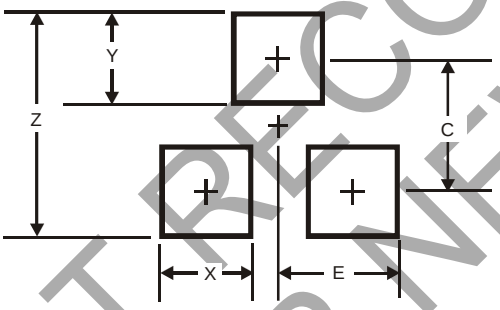


SOT-323			
Dim	**Min**	**Max**	**Typ**
A	0.25	0.40	0.30
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	-	-	0.65
G	1.20	1.40	1.30
H	1.80	2.20	2.15
J	0.0	0.10	0.05
K	0.90	1.00	0.95
L	0.25	0.40	0.30
M	0.10	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

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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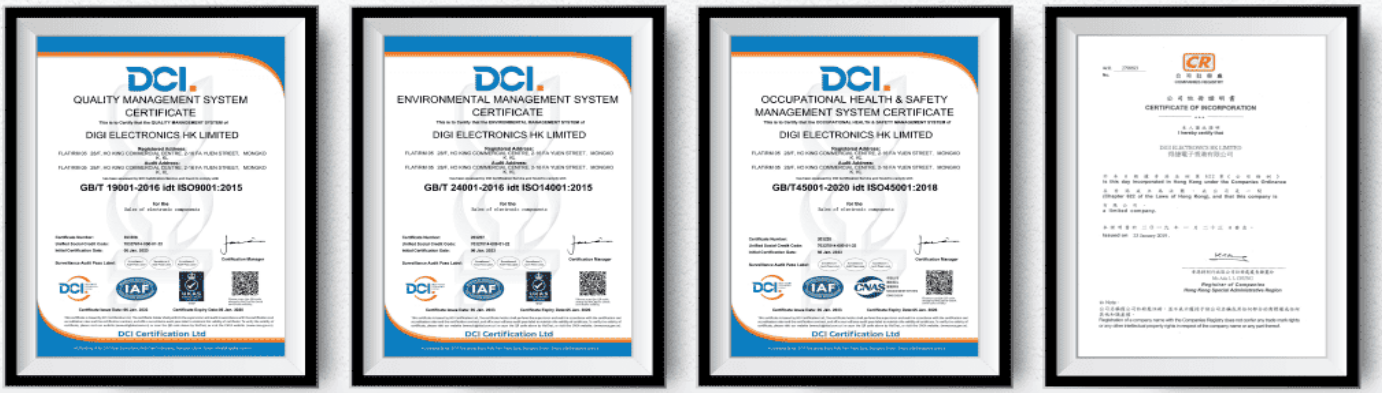

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