



**THE DATASHEET OF
DMN5L06VK-13A**

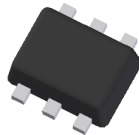


Features

- Dual N-Channel MOSFET
- Low On-Resistance
- Very Low Gate Threshold Voltage, 1.0V Max
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **ESD Protected up to 2kV**
- **Qualified to AEC-Q101 Standards for High Reliability**



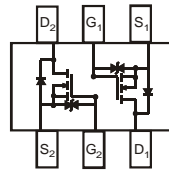
ESD protected up to 2kV



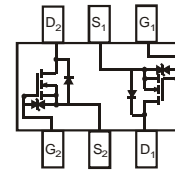
SOT563
Top View

Mechanical Data

- Case: SOT563
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.006 grams (Approximate)



DMN5L06VK



DMN5L06VAK
DMN5010VAK

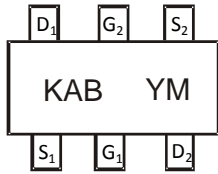
Ordering Information (Note 4)

Part Number	Case	Packaging
DMN5L06VK-7	SOT563	3,000/Tape & Reel
DMN5L06VK-7A	SOT563	3,000/Tape & Reel
DMN5L06VK-13	SOT563	10,000/Tape & Reel
DMN5L06VK-13A	SOT563	10,000/Tape & Reel
DMN5L06VAK-7	SOT563	3,000/Tape & Reel
DMN5L06VAK-7A	SOT563	3,000/Tape & Reel
DMN5L06VAK-13	SOT563	10,000/Tape & Reel
DMN5L06VAK-13A	SOT563	10,000/Tape & Reel
DMN5010VAK-7	SOT563	3,000/Tape & Reel
DMN5010VAK-7A	SOT563	3,000/Tape & Reel
DMN5010VAK-13	SOT563	10,000/Tape & Reel
DMN5010VAK-13A	SOT563	10,000/Tape & Reel

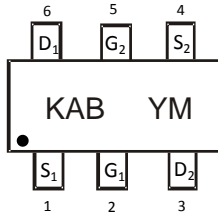
- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "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 <http://www.diodes.com/products/packages.html>.

Marking Information (Note 5 & 6)

DMN5L06VK-7/-13 (Note 5)

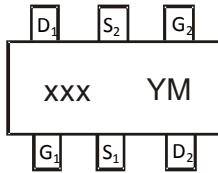


DMN5L06VK-7A/-13A (Note 6)

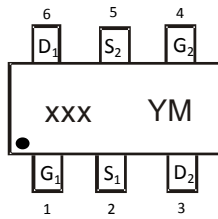


KAB= DMN5L06VK Product Type
Marking Code
YM= Date Code Marking
Y = Year (ex: E = 2017)
M = Month (ex: 9 = September)

DMN5L06VAK-7/-13 (Note 5)
DMN5010VAK-7/-13 (Note 5)



DMN5L06VAK-7A/-13A (Note 6)
DMN5010VAK-7A/-13A (Note 6)



xxx = Product Type Marking Code:
KAE or KAE or KAC
YM= Date Code Marking
Y = Year (ex: E = 2017)
M = Month (ex: 9 = September)

Date Code Key

Year	2006	~	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Code	T	~	D	E	F	G	H	I	J	K	L	M
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

Notes: 5. Package is non-polarized. Parts may be on reel in orientation illustrated, 180° rotated, or mixed (both ways).
6. Part number with suffix 7A and 13A designates devices marked with a Pin 1 indicator. There is no other difference between both devices.

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

Characteristic		Symbol	Value	Unit
Drain Source Voltage		V _{DSS}	50	V
Drain-Gate Voltage R _{GS} ≤ 1.0MΩ		V _{DGR}	50	V
Gate-Source Voltage	Continuous	V _{GSS}	±20	V
	Pulsed		±40	
Drain Current (Note 7)	Continuous	I _D	280	mA
	Pulsed	I _{DM}	1.5	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 7)	P _D	250	mW
Thermal Resistance, Junction to Ambient (Note 7)	R _{θJA}	500	°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}	50	—	—	V	V _{GS} = 0V, I _D = 10μA	
Zero Gate Voltage Drain Current	I _{DSS}	—	—	60	nA	@ T _C = +25°C V _{DS} = 50V, V _{GS} = 0V	
Gate-Body Leakage	I _{GSS}	—	—	1	μA	V _{GS} = ±12V, V _{DS} = 0V	
				500	nA	V _{GS} = ±10V, V _{DS} = 0V	
				50	nA	V _{GS} = ±5V, V _{DS} = 0V	
ON CHARACTERISTICS (Note 8)							
Gate Threshold Voltage	V _{GS(TH)}	@T _J = +25°C	0.49	—	1.0	V	V _{DS} = V _{GS} , I _D = 250μA
		@T _J = +0°C to +85°C (Note 9)	0.30	—	1.2		
Static Drain-Source On-Resistance	R _{DS(ON)}	—	—	3.0	Ω	V _{GS} = 1.8V, I _D = 50mA	
		—	—	2.5		V _{GS} = 2.5V, I _D = 50mA	
		—	—	2.0		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} = 0V, I _S = 115mA	
DYNAMIC CHARACTERISTICS (Note 9)							
Input Capacitance	C _{iss}	—	—	50	pF	V _{DS} = 25V, V _{GS} = 0V f = 1.0MHz	
Output Capacitance	C _{oss}	—	—	25	pF		
Reverse Transfer Capacitance	C _{rss}	—	—	5.0	pF		

- Notes: 7. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
8. Short duration pulse test used to minimize self-heating effect.
9. Guaranteed by design. Not subject to product testing.

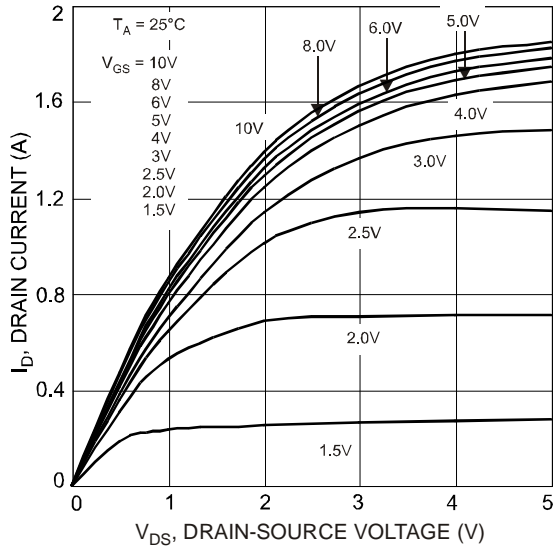


Fig. 1 Typical Output Characteristics

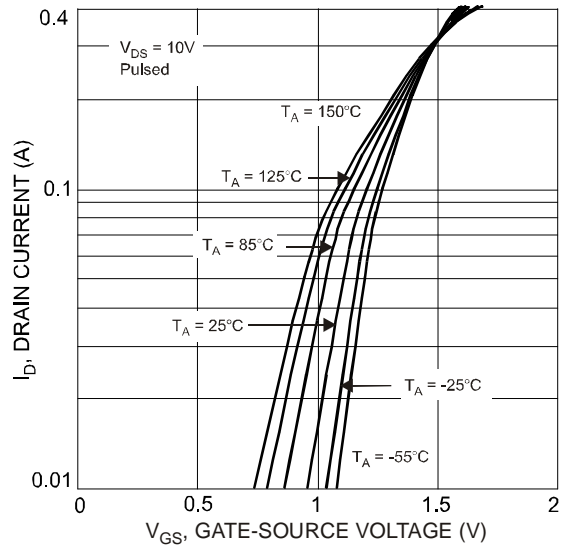


Fig. 2 Typical Transfer Characteristics

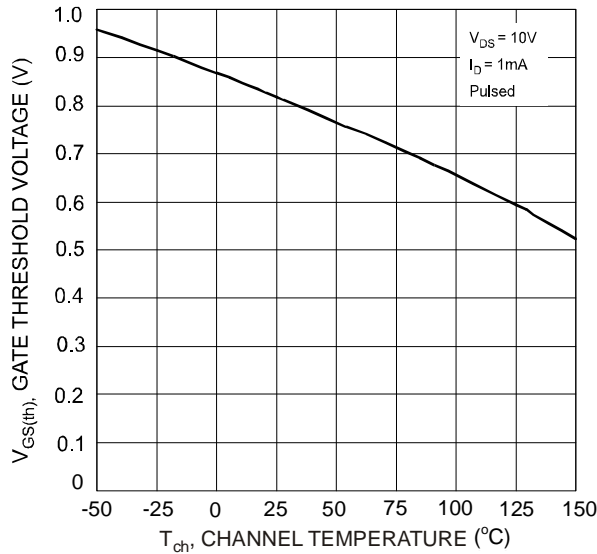


Fig. 3 Gate Threshold Voltage vs. Channel Temperature

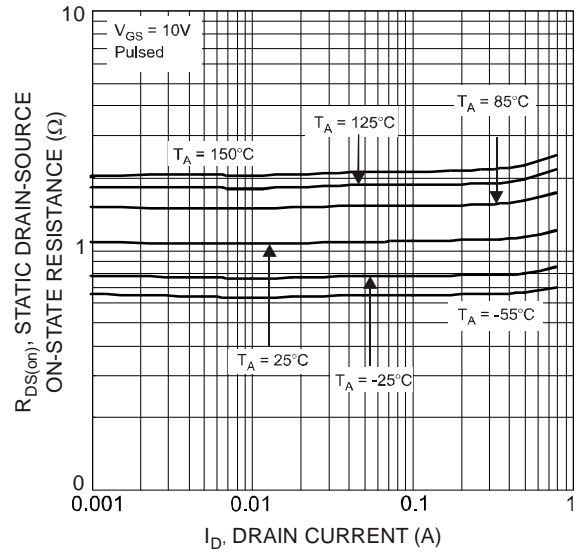


Fig. 4 Static Drain-Source On-Resistance vs. Drain Current

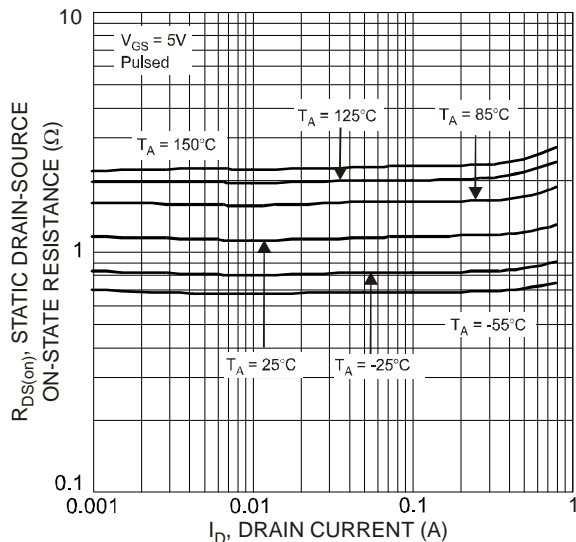


Fig. 5 Static Drain-Source On-Resistance vs. Drain Current

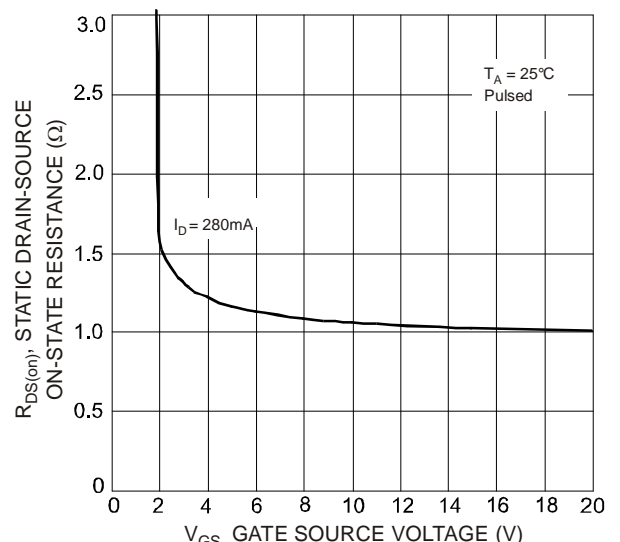


Fig. 6 Static Drain-Source On-Resistance vs. Gate-Source Voltage

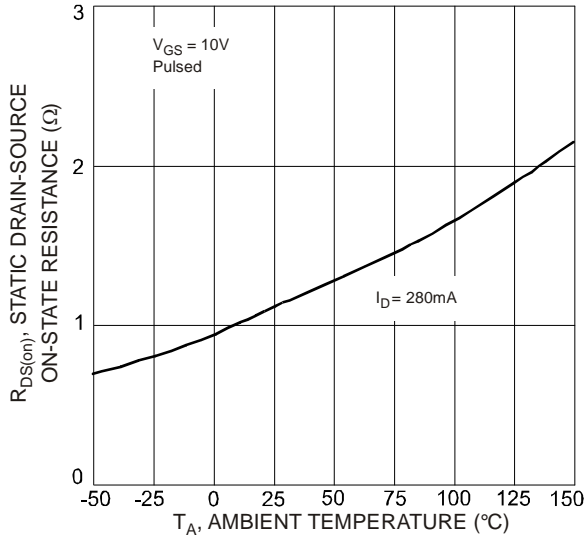


Fig. 7 Static Drain-Source On-State Resistance vs. Ambient Temperature

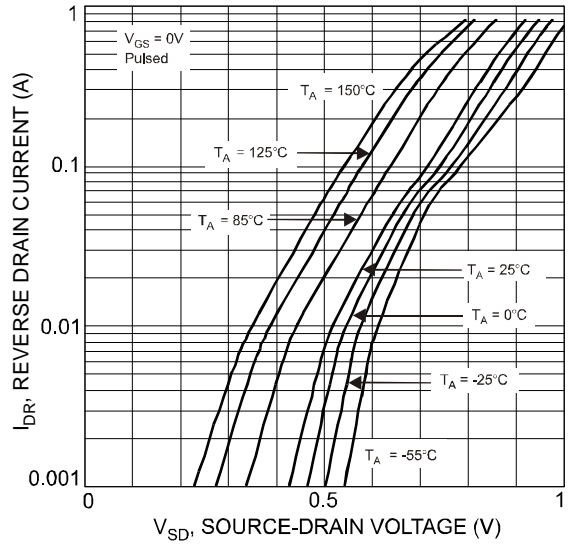


Fig. 8 Reverse Drain Current vs. Source-Drain Voltage

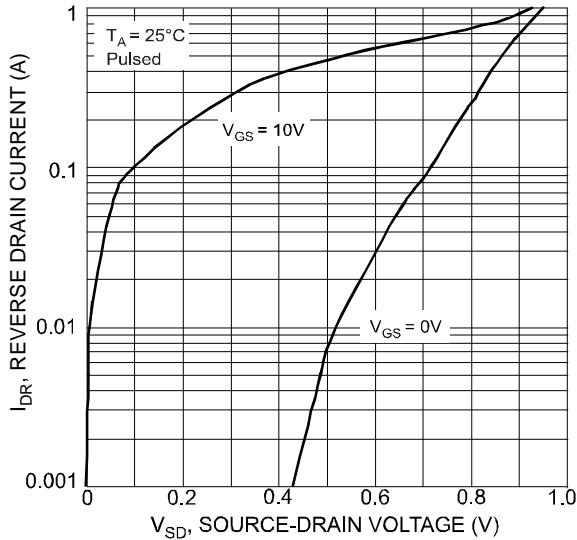


Fig. 9 Reverse Drain Current vs. Source-Drain Voltage

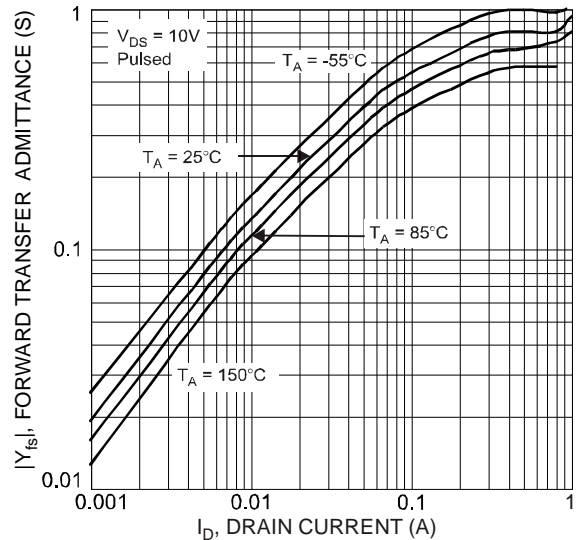


Fig. 10 Forward Transfer Admittance vs. Drain Current

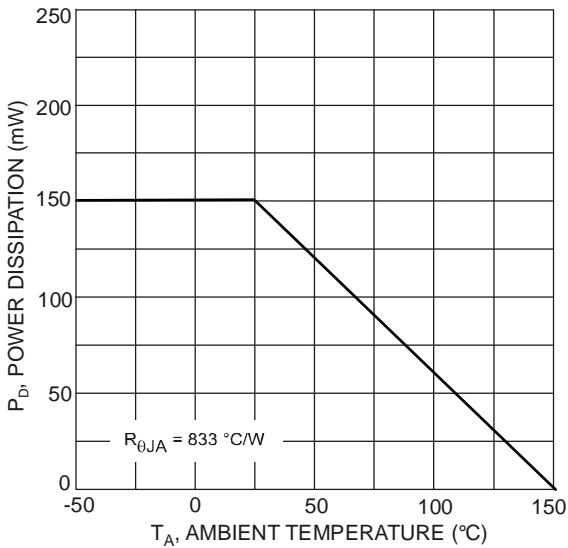
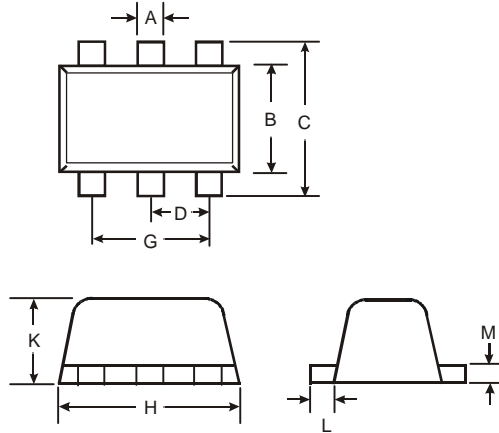


Fig. 11 Derating Curve - Total

Package Outline Dimensions

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

SOT563

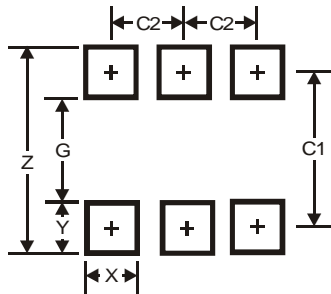


SOT563			
Dim	Min	Max	Typ
A	0.15	0.30	0.20
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	-	-	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.55	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

Suggested Pad Layout

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

SOT563



Dimensions	Value (in mm)
Z	2.2
G	1.2
X	0.375
Y	0.5
C1	1.7
C2	0.5

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