

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)} \text{ max}$	$I_D \text{ max}$ $T_A = +25^\circ\text{C}$
50V	$2\text{m}\Omega @ V_{GS} = 5\text{V}$	280mA
	$2.5\text{m}\Omega @ V_{GS} = 2.5\text{V}$	258mA
	$3\text{m}\Omega @ V_{GS} = 1.8\text{V}$	235mA

Description

This MOSFET has been designed to minimize the on-state resistance ($R_{DS(ON)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

- General Purpose Interfacing Switch

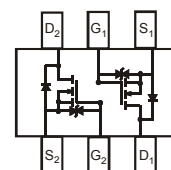
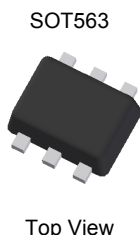
DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

Features

- Low On-Resistance
- Very Low Gate Threshold Voltage, 1.0V max
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- 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**
- PPAP Capable (Note 4)**

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)



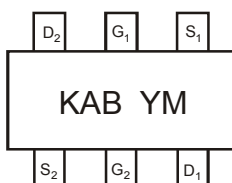
DMN5L06VK

Ordering Information (Note 5)

Part Number	Case	Packaging
DMN5L06VKQ-7	SOT563	3,000/Tape & Reel
DMN5L06VKQ-13	SOT563	10,000/Tape & Reel

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 - 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.
 - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 - Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
 - For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information (Note 6)



KAB = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: A = 2013)
M = Month (ex: 9 = September)

Date Code Key

Year	2013	2014	2015	2016	2017	2018	2019
Code	A	B	C	D	E	F	G

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

Note: 6. Package is non-polarized. Parts may be on reel in orientation illustrated, 180° rotated, or mixed (both ways).

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	V _{GSS}	±20	V
Continuous Pulsed		±40	
Drain Current (Note 7)	I _D	280	mA
	I _{DM}	1.5	A

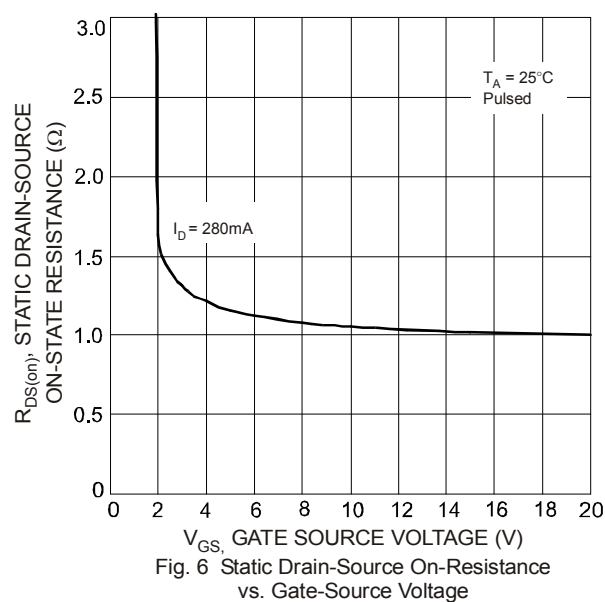
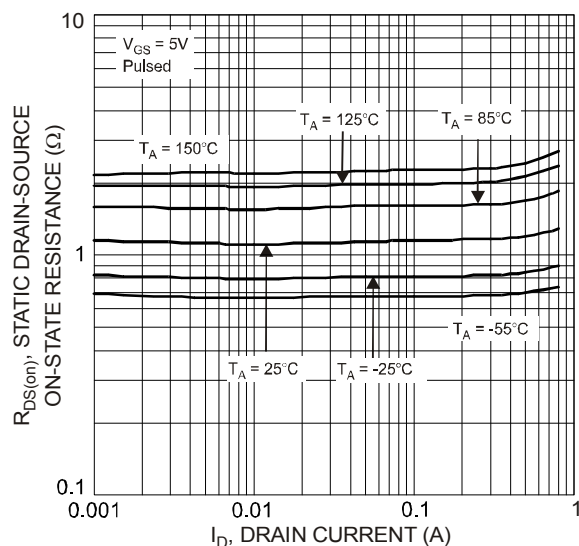
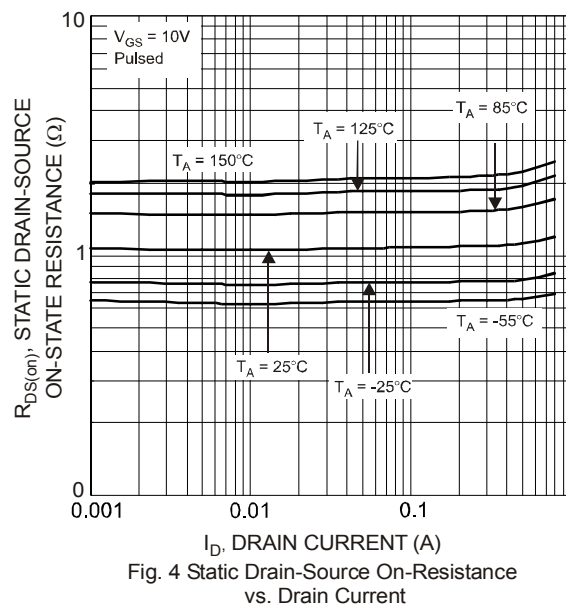
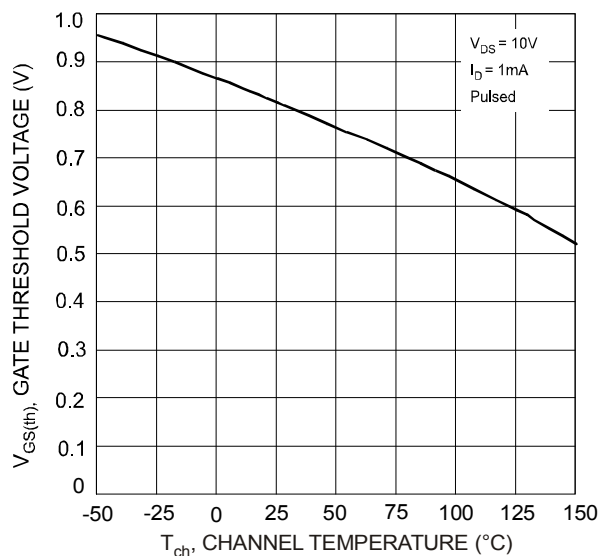
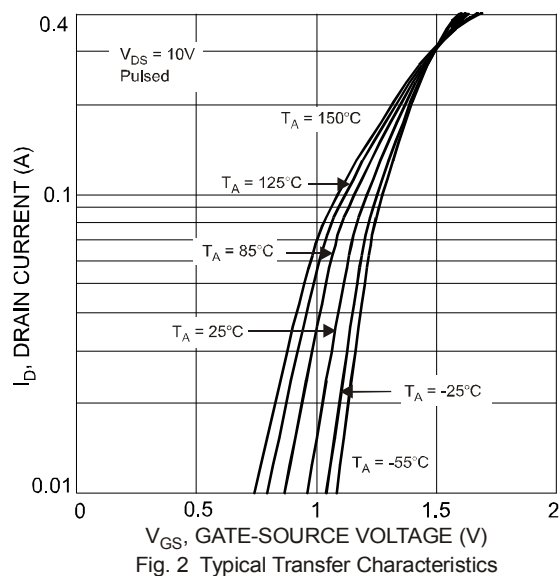
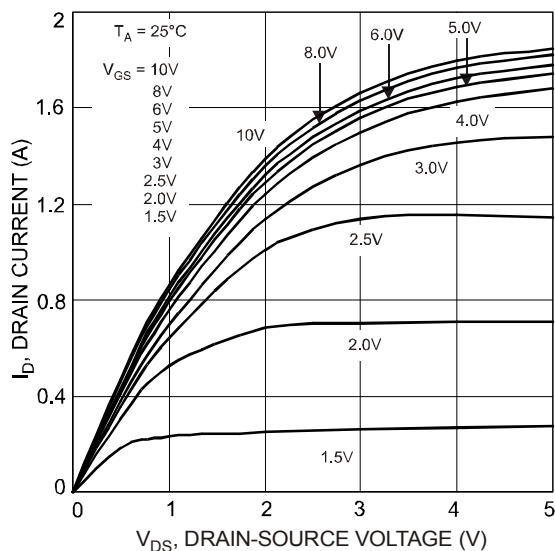
Thermal Characteristics

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 @ T _C = +25°C	I _{DSS}	—	—	60	nA	V _{DS} = 50V, V _{GS} = 0V
Gate-Body Leakage	I _{GSS}	—	—	1 500 50	μA nA nA	V _{GS} = ±12V, V _{DS} = 0V V _{GS} = ±10V, V _{DS} = 0V V _{GS} = ±5V, V _{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage @T _J = +25°C @T _J = +0°C~ +85°C (Note 8)	V _{GS(th)}	0.49 0.30	—	1.0 1.2	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} = 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 production testing.



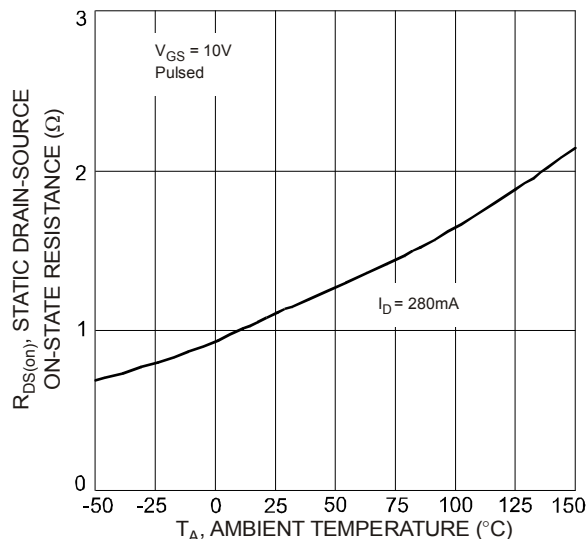


Fig. 7 Static Drain-Source On-State Resistance vs. Ambient Temperature

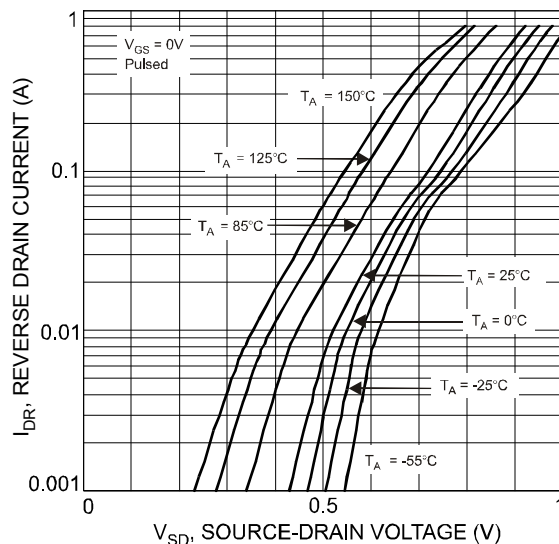


Fig. 8 Reverse Drain Current vs. Source-Drain Voltage

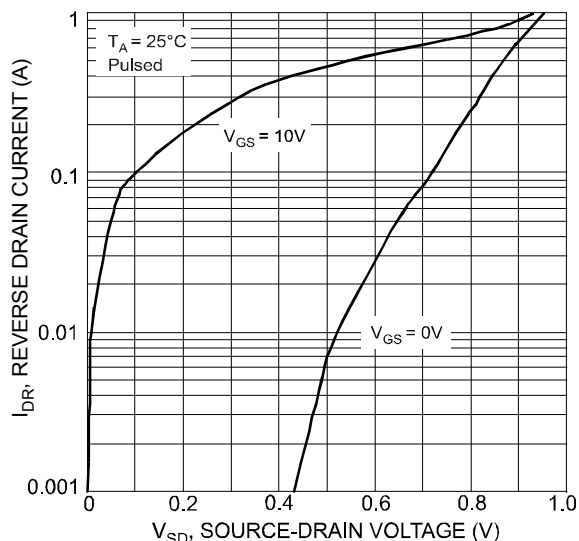


Fig. 9 Reverse Drain Current vs. Source-Drain Voltage

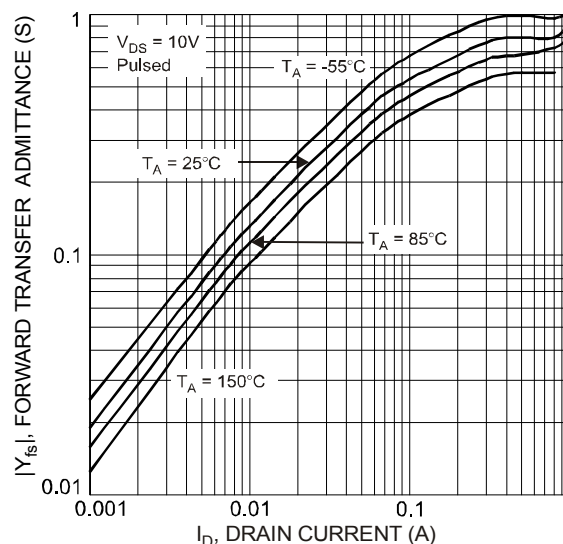


Fig. 10 Forward Transfer Admittance vs. Drain Current

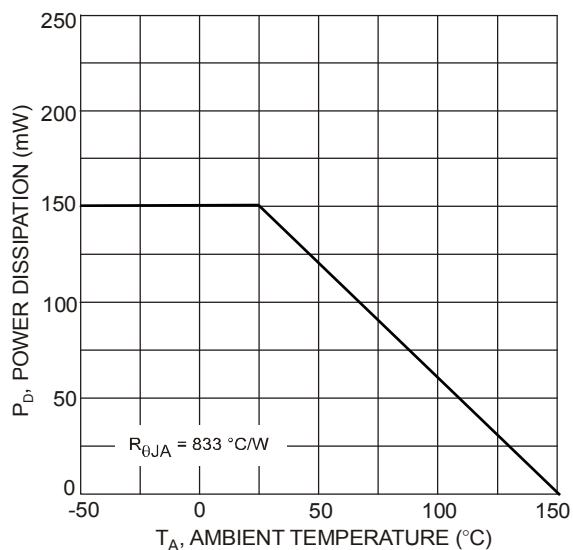
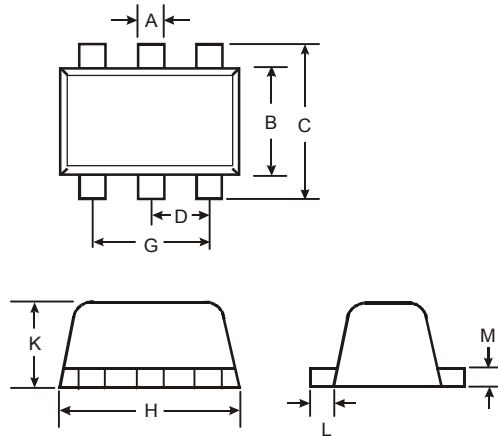


Fig. 11 Derating Curve - Total

Package Outline Dimensions

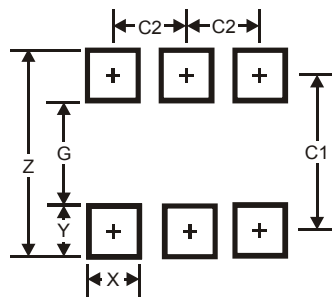
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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 AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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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