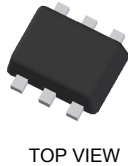


### Features

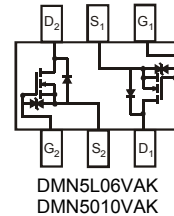
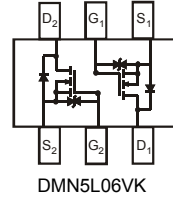
- Dual N-Channel MOSFET
- Low On-Resistance
- Very Low Gate Threshold Voltage, 1.0V max
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **"Green" Device (Note 3)**
- **ESD Protected up to 2kV**



SOT-563

### Mechanical Data

- Case: SOT-563
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.006 grams (approximate)



### Maximum Ratings @<sub>TA</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Drain Source Voltage	$V_{DSS}$	50	V
Drain-Gate Voltage $R_{GS} \leq 1.0M\Omega$	$V_{DGR}$	50	V
Gate-Source Voltage	$V_{GSS}$	Continuous	$\pm 20$
		Pulsed	$\pm 40$
Drain Current (Note 1)	$I_D$	Continuous	280
		Pulsed	1.5
	$I_{DM}$	1.5	A

### Thermal Characteristics @<sub>TA</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	$P_D$	250	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	500	°C/W
Operating and Storage Temperature Range	$T_j, T_{STG}$	-55 to +150	°C

### Electrical Characteristics @<sub>TA</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 4)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	50	—	—	V	$V_{GS} = 0V, I_D = 10\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	60	nA	$V_{DS} = 50V, V_{GS} = 0V$
Gate-Body Leakage	$I_{GSS}$	—	—	1	$\mu A$	$V_{GS} = \pm 12V, V_{DS} = 0V$
				500	nA	$V_{GS} = \pm 10V, V_{DS} = 0V$
				50	nA	$V_{GS} = \pm 5V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 4)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	0.49	—	1.0	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	—	3.0	$\Omega$	$V_{GS} = 1.8V, I_D = 50mA$
				2.5	$\Omega$	$V_{GS} = 2.5V, I_D = 50mA$
				2.0	$\Omega$	$V_{GS} = 5.0V, I_D = 50mA$
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	$V_{GS} = 0V, I_S = 115mA$
<b>DYNAMIC CHARACTERISTICS</b>						
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:
1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  2. No purposefully added lead.
  3. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).
  4. Short duration pulse test used to minimize self-heating effect.

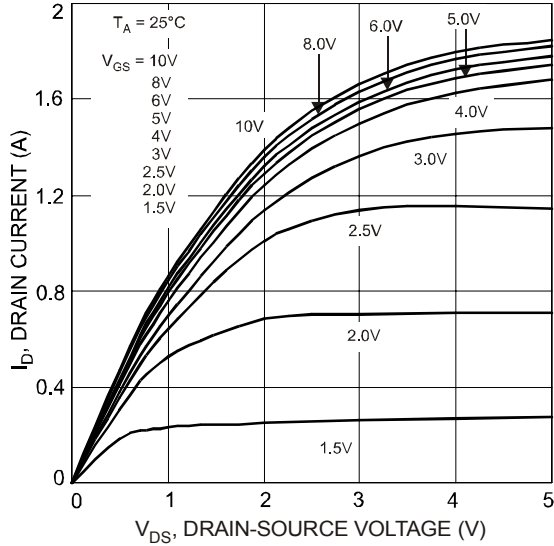


Fig. 1 Typical Output Characteristics

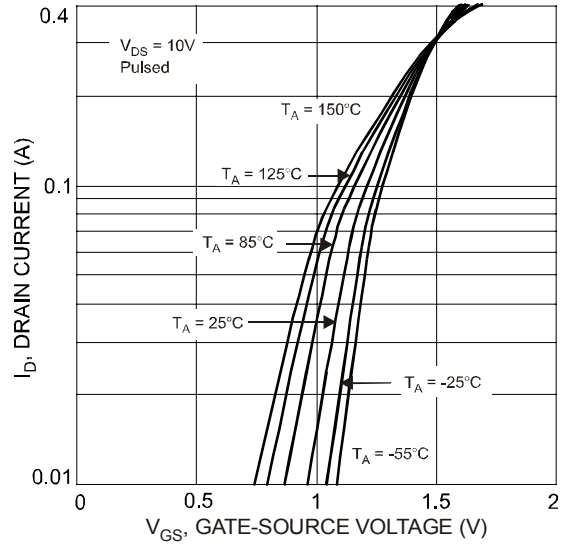


Fig. 2 Typical Transfer Characteristics

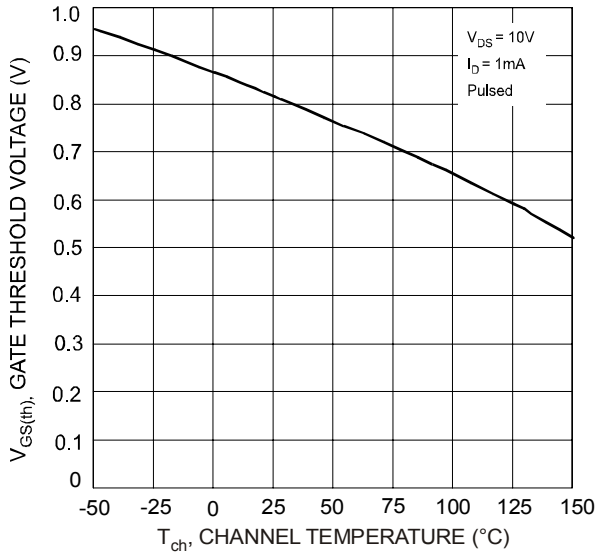


Fig. 3 Gate Threshold Voltage vs. Channel Temperature

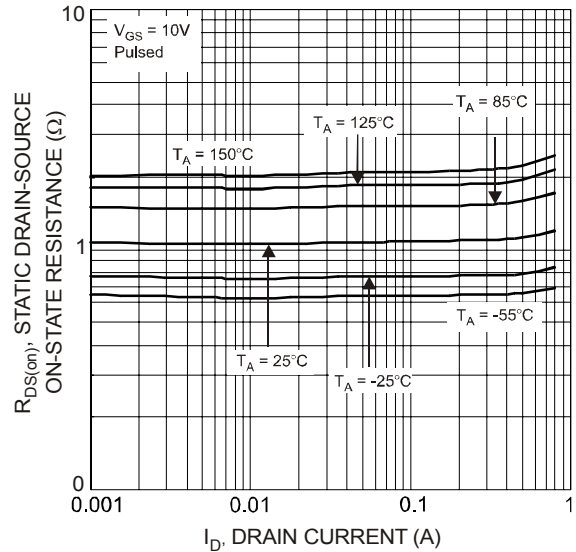


Fig. 4 Static Drain-Source On-Resistance vs. Drain Current

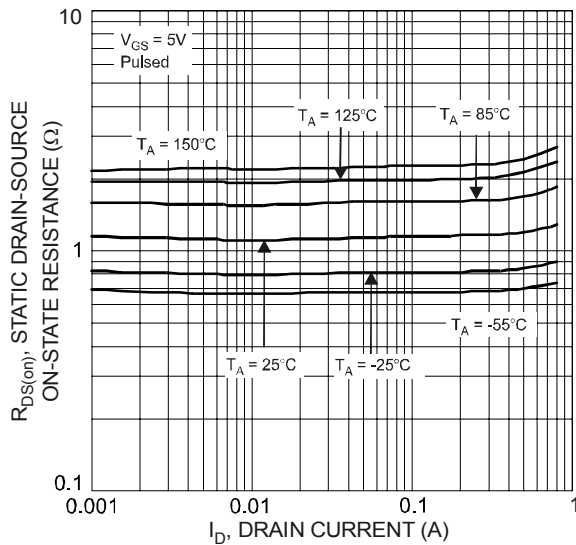


Fig. 5 Static Drain-Source On-Resistance vs. Drain Current

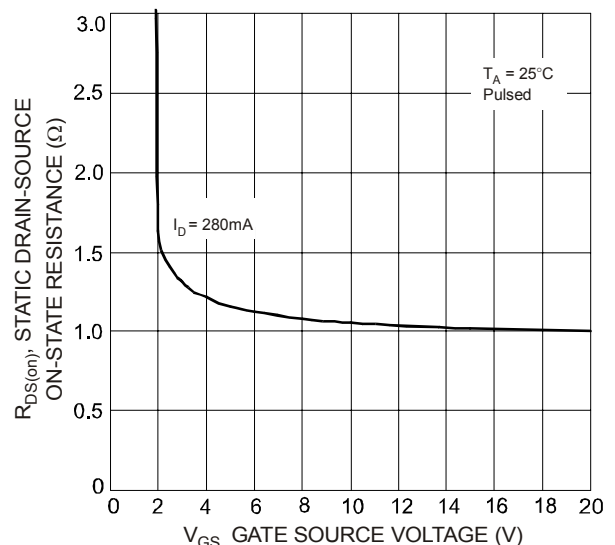


Fig. 6 Static Drain-Source On-Resistance vs. Gate-Source Voltage

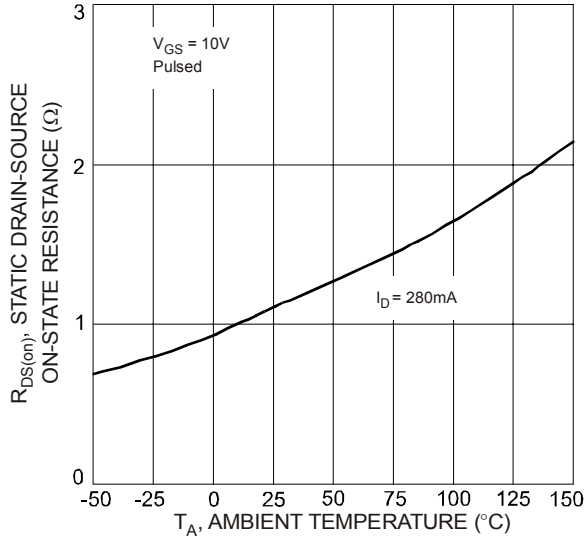


Fig. 7 Static Drain-Source On-State Resistance vs. Ambient Temperature

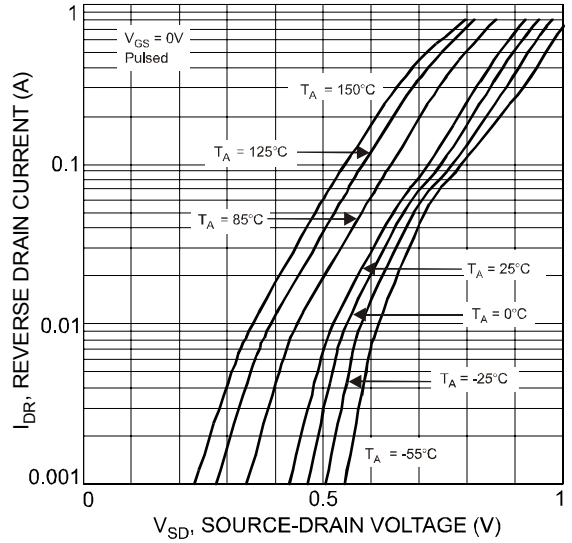


Fig. 8 Reverse Drain Current vs. Source-Drain Voltage

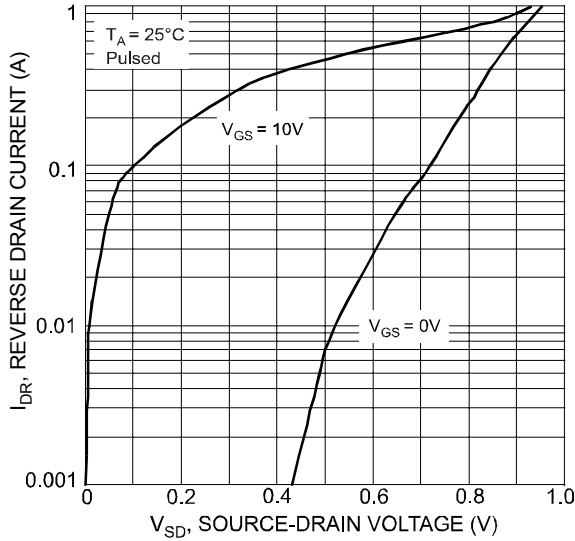


Fig. 9 Reverse Drain Current vs. Source-Drain Voltage

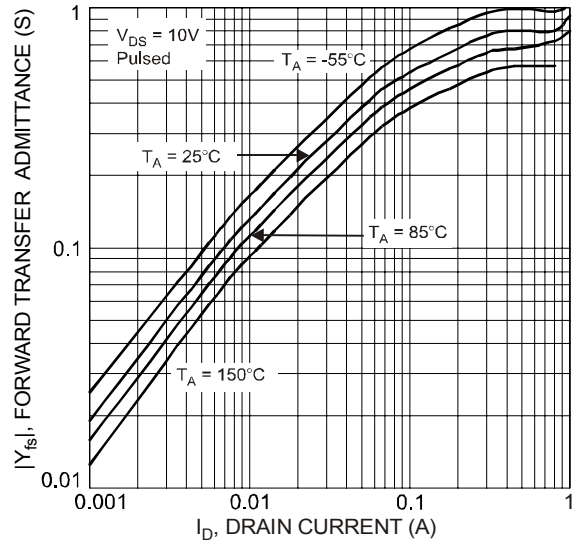


Fig. 10 Forward Transfer Admittance vs. Drain Current

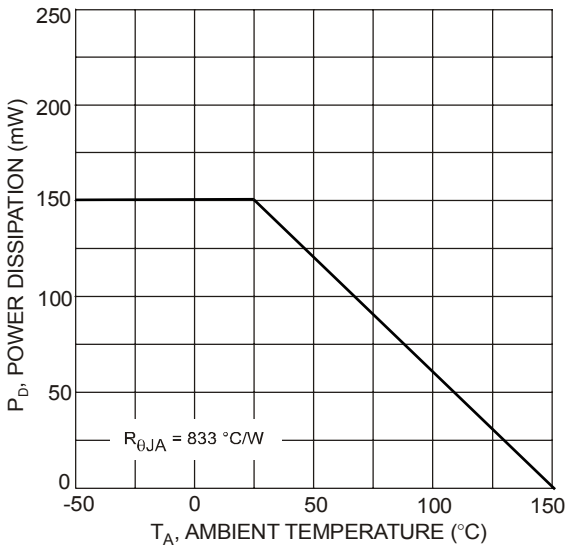


Fig. 11 Derating Curve - Total

**Ordering Information** (Note 5)

Part Number	Case	Packaging
DMN5L06VK-7	SOT-563	3000/Tape & Reel
DMN5L06VAK-7	SOT-563	3000/Tape & Reel
DMN5010VAK-7	SOT-563	3000/Tape & Reel

Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information** (Note 6)

DMN5L06VK	DMN5010VAK DMN5L06VAK
<p>KAB= DMN5L06VK Product Type Marking Code (See Note 6)            YM= Date Code Marking            Y = Year ex: T = 2006            M = Month ex: 9 = September</p>	<p>xxx = Product Type Marking Code: KAE or KAC (See Note 6)            YM= Date Code Marking            Y = Year ex: T = 2006            M = Month ex: 9 = September</p>

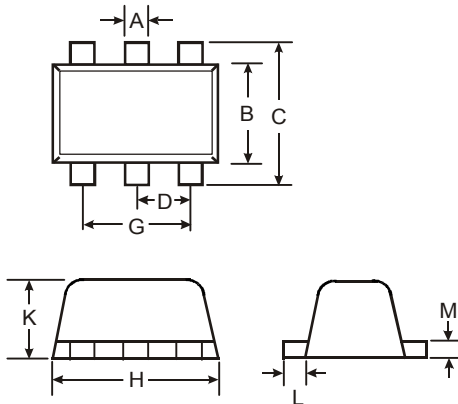
Notes: 6. Package is non-polarized. Parts may be on reel in orientation illustrated, 180° rotated, or mixed (both ways).

**Date Code Key**

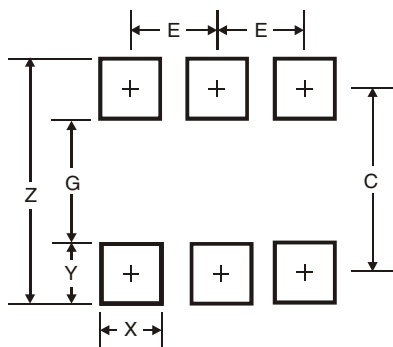
Year	2006	2007	2008	2009	2010	2011	2012
Code	T	U	V	W	X	Y	Z

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

**Package Outline Dimensions**


SOT-563			
Dim	Min	Max	Typ
A	0.15	0.30	0.25
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	0.56	0.60	0.60
L	0.15	0.25	0.20
M	0.10	0.18	0.11
<b>All Dimensions in mm</b>			

**Suggested Pad Layout**


Dimensions	Value (in mm)
Z	2.2
G	1.2
X	0.375
Y	0.5
C	1.7
E	0.5

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