

Features

- P-Channel MOSFET
- Very Low On-Resistance
- Very Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

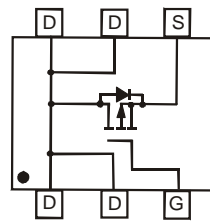
Mechanical Data

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

SOT-563



Top View

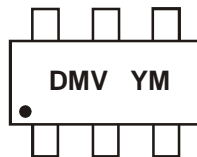

 Top View
Internal Schematic

Ordering Information (Note 3)

Part Number	Case	Packaging
DMP2104V-7	SOT-563	3000/Tape & Reel

- Notes:
1. No purposefully added lead.
 2. Diodes Inc.'s "Green" policy can be found on our website at <http://www.diodes.com>.
 3. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information



DMV = Marking Code
 YM = Date Code Marking
 Y = Year (ex: T = 2006)
 M = Month (ex: 9 = September)

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

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	-20	V
Gate-Source Voltage			V_{GSS}	± 12	V
Continuous Drain Current (Note 4) $V_{GS} = -4.5\text{V}$	Steady State	$T_A = 25^\circ\text{C}$	I_D	-1.9	A
		$T_A = 70^\circ\text{C}$		-1.5	
Continuous Drain Current (Note 4) $V_{GS} = -4.5\text{V}$	$t \leq 5\text{s}$	$T_A = 25^\circ\text{C}$	I_D	-2.1	A
		$T_A = 70^\circ\text{C}$		-1.65	
Continuous Drain Current (Note 4) $V_{GS} = -2.5\text{V}$	Steady State	$T_A = 25^\circ\text{C}$	I_D	-1.7	A
		$T_A = 70^\circ\text{C}$		-1.3	
Pulsed Drain Current		$t_p = 10\mu\text{s}$	I_{DM}	-4.0	A

Thermal Characteristics

Characteristic	Symbol	Value	Units
Power Dissipation (Note 4)	P_D	0.85	W
Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ\text{C}$ (Note 4)	$R_{\theta JA}$	146	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV_{DSS}	-20	—	—	V	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1.0	μA	$V_{DS} = -20\text{V}, V_{GS} = 0\text{V}$
				$T_J = 125^\circ\text{C}$		
Gate-Source Leakage	I_{GSS}	—	—	± 100	nA	$V_{GS} = \pm 12\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$V_{GS(th)}$	-0.45	—	-1.0	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	92	150	m Ω	$V_{GS} = -4.5\text{V}, I_D = -950\text{mA}$
			134	200		$V_{GS} = -2.5\text{V}, I_D = -670\text{mA}$
			180	240		$V_{GS} = -1.8\text{V}, I_D = -200\text{mA}$
Forward Transconductance	g_{FS}	—	3.1	—	S	$V_{DS} = -10\text{V}, I_D = -810\text{mA}$
Diode Forward Voltage (Note 5)	V_{SD}	—	—	-0.9	V	$V_{GS} = 0\text{V}, I_S = -360\text{mA}$
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	—	320	—	pF	$V_{DS} = -16\text{V}, V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{OSS}	—	80	—	pF	
Reverse Transfer Capacitance	C_{RSS}	—	60	—	pF	

- Notes:
- Device mounted on FR-4 PCB with 1 inch square pads.
 - Short duration pulse test used to minimize self-heating effect.

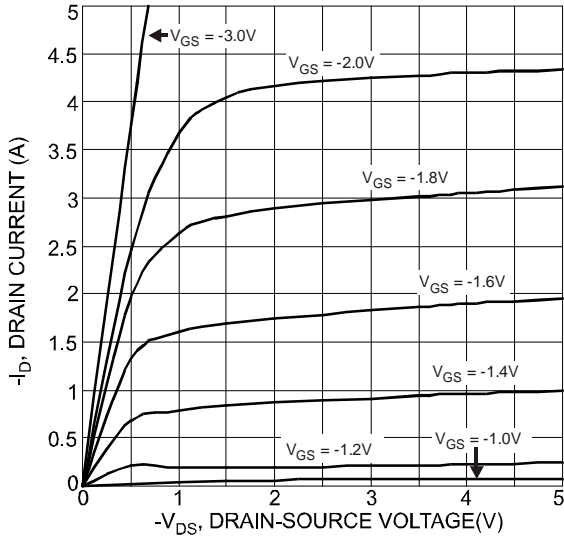


Fig. 1 Typical Output Characteristics

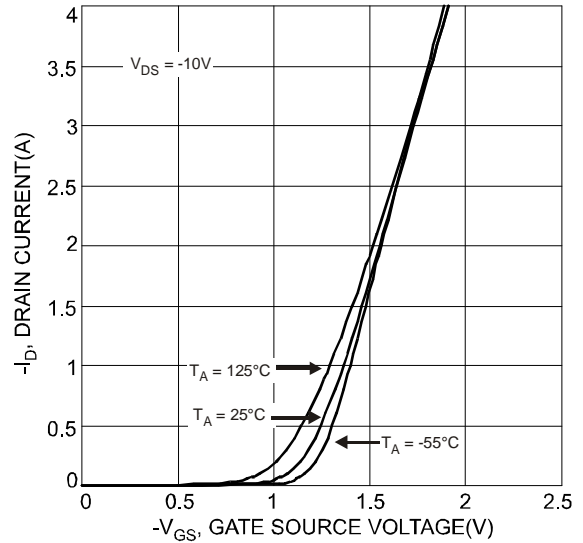


Fig. 2 Typical Transfer Characteristics

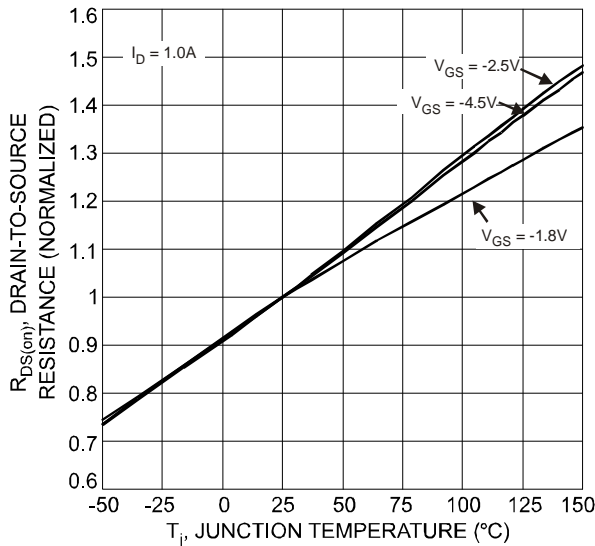


Fig. 3 On-Resistance Variation with Temperature

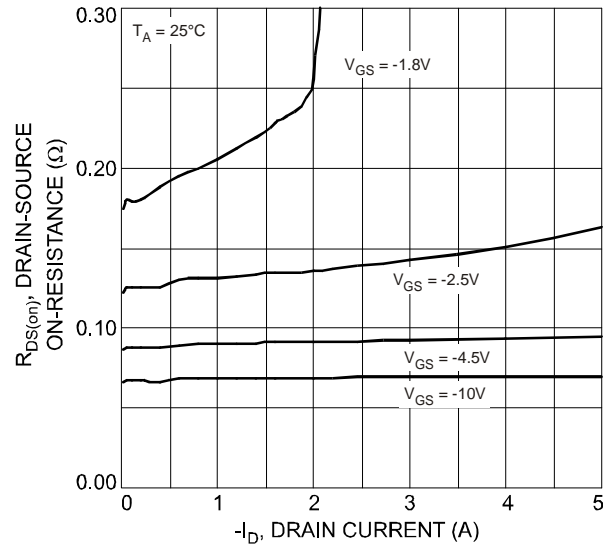


Fig. 4 On-Resistance vs. Drain Current and Gate Voltage

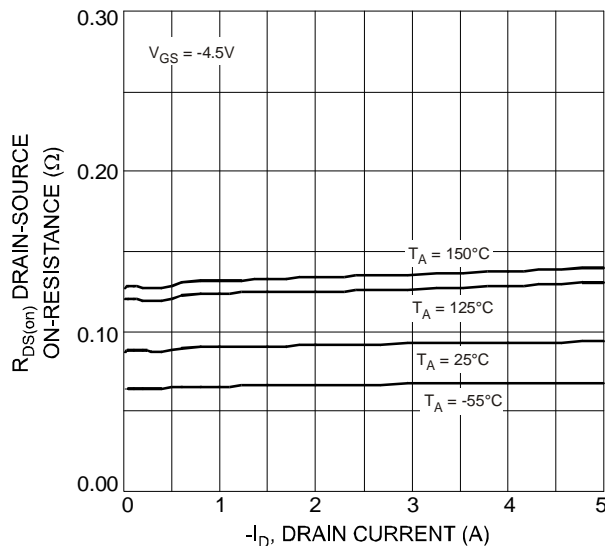


Fig. 5 Drain-Source On-Resistance vs. Drain Current and Temperature

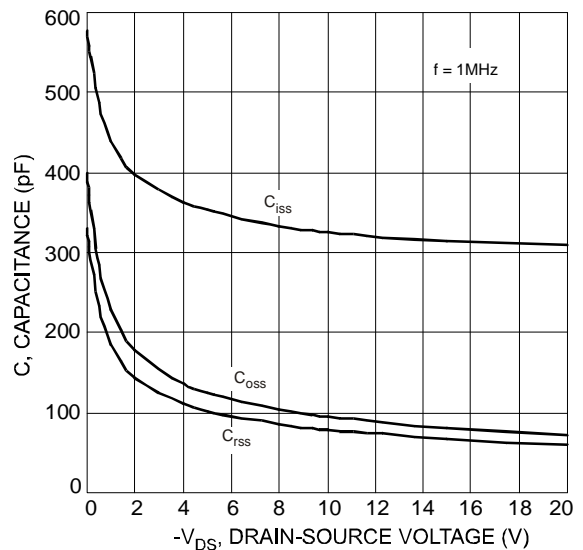


Fig. 6 Typical Capacitance

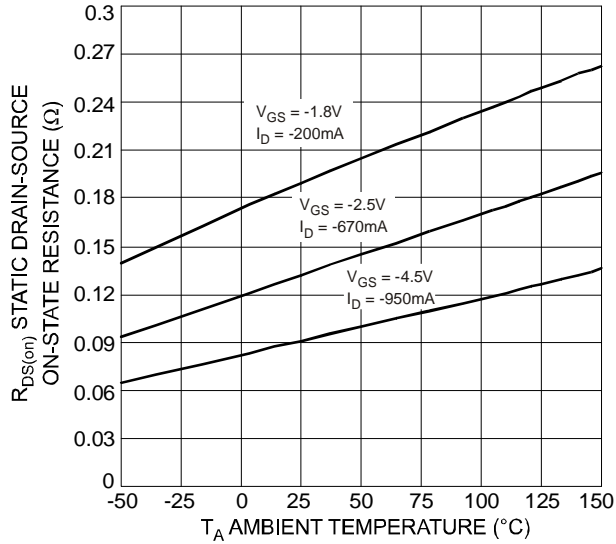


Fig. 7 Static Drain-Source On-State Resistance vs. Ambient Temperature

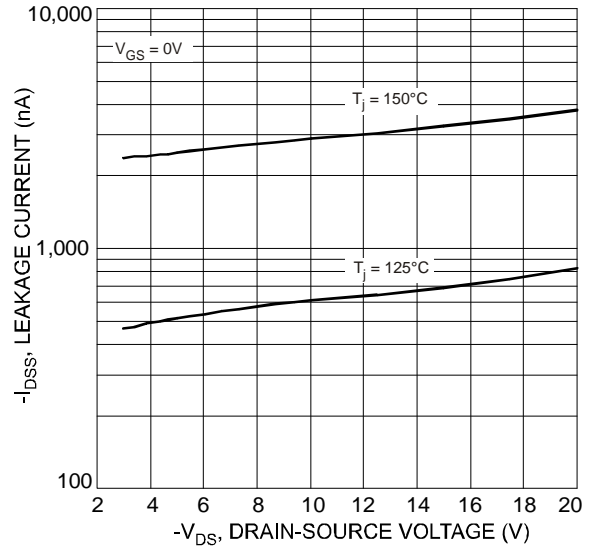


Fig. 8 Drain-Source Leakage Current vs. Voltage

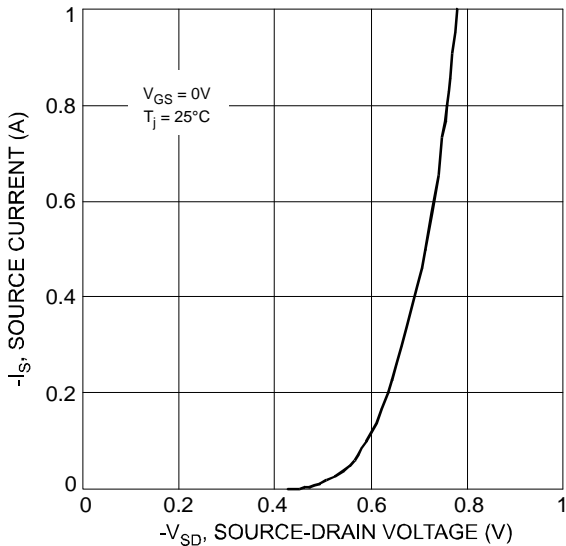


Fig. 9 Diode Forward Voltage vs. Current

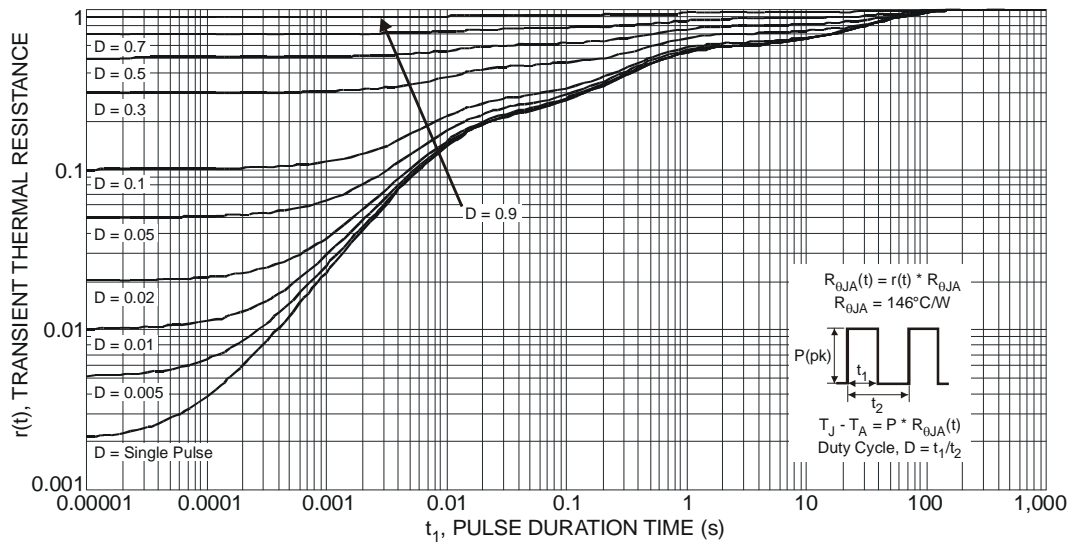
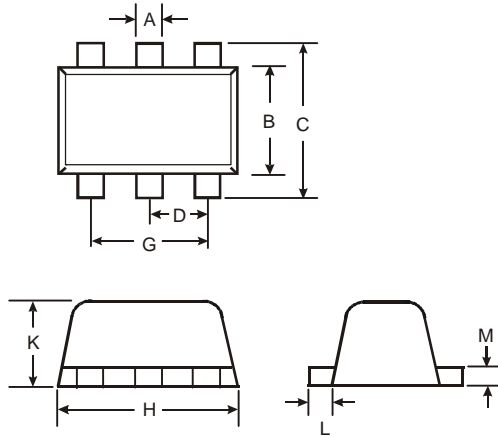


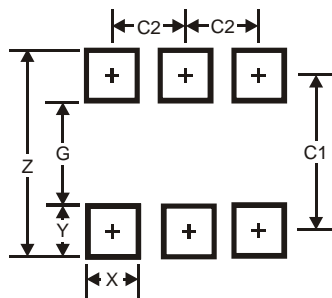
Fig. 10 Transient Thermal Response

Package Outline Dimensions



SOT-563			
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



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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