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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$	I_D $T_A = +25^\circ\text{C}$
-40V	45m Ω @ $V_{GS} = -10\text{V}$	-6.5A
	55m Ω @ $V_{GS} = -4.5\text{V}$	-5.9A

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

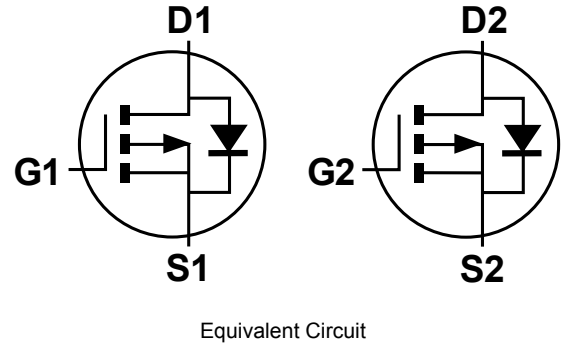
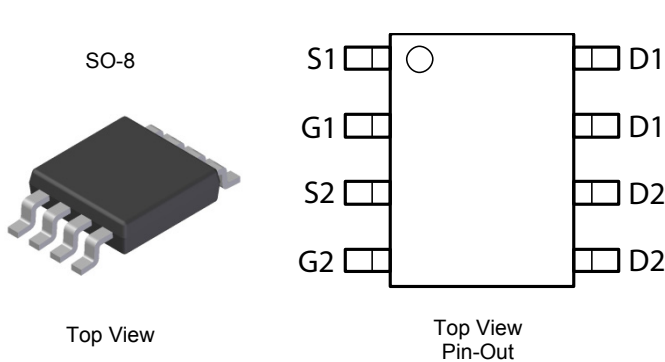
- Backlighting
- DC-DC Converters
- Power Management Functions

Features

- 100% Unclamped Inductive Switch (UIS) test in production
- Low on-resistance
- Fast switching speed
- **Totally Lead-Free & Fully RoHS compliant (Note 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SO-8
- 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 – Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 ⁽⁶³⁾
- Weight: 0.074 grams (approximate)

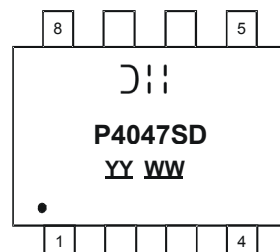


Ordering Information (Note 4 & 5)

Part Number	Compliance	Case	Packaging
DMP4047SSD-13	Standard	SO-8	2,500/Tape & Reel
DMP4047SSDQ-13	Automotive	SO-8	2,500/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. 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_grade_definitions/.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



DII = Manufacturer's Marking
 P4047SD = Product Type Marking Code
 YYWW = Date Code Marking
 YY = Year (ex: 09 = 2009)
 WW = Week (01 - 53)

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

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V _{DSS}	-40	V
Gate-Source Voltage			V _{GSS}	±20	V
Continuous Drain Current (Note 7) V _{GS} = -10V	Steady State	T _A = +25°C T _A = +70°C	I _D	-5.1 -4.1	A
	t < 10s	T _A = +25°C T _A = +70°C	I _D	-6.5 -5.2	A
Continuous Drain Current (Note 7) V _{GS} = -4.5V	Steady State	T _A = +25°C T _A = +70°C	I _D	-4.6 -3.7	A
	t < 10s	T _A = +25°C T _A = +70°C	I _D	-5.9 -4.7	A
Maximum Body Diode Continuous Current			I _S	-2.5	A
Pulsed Drain Current (10μs pulse, duty cycle = 1%)			I _{DM}	-40	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 6)	T _A = +25°C	P _D	1.3	W
	T _A = +70°C		0.8	
Thermal Resistance, Junction to Ambient (Note 6)	Steady state	R _{θJA}	98	°C/W
	t < 10s		59	
Total Power Dissipation (Note 7)	T _A = +25°C	P _D	1.8	W
	T _A = +70°C		1.1	
Thermal Resistance, Junction to Ambient (Note 7)	Steady state	R _{θJA}	71	°C/W
	t < 10s		43	
Thermal Resistance, Junction to Case (Note 7)		R _{θJC}	11.8	
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}	-40	—	—	V	V _{GS} = 0V, I _D = -250μA
Zero Gate Voltage Drain Current T _J = +25°C	I _{DSS}	—	—	-1	μA	V _{DS} = -40V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	V _{GS(th)}	-1.0	—	-3.0	V	V _{DS} = V _{GS} , I _D = -250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	33	45	mΩ	V _{GS} = -10V, I _D = -4.4A
			40	55		V _{GS} = -4.5V, I _D = -3.7A
Diode Forward Voltage	V _{SD}	—	-0.75	-1.2	V	V _{GS} = 0V, I _S = -3.9A
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C _{iss}	—	1154	—	pF	V _{DS} = -20V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	84	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	66	—	pF	
Gate Resistance	R _G	—	12.6	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge (V _{GS} = -4.5V)	Q _g	—	10.6	—	nC	V _{DS} = -20V, I _D = -4.9A
Total Gate Charge (V _{GS} = -10V)	Q _g	—	21.5	—	nC	
Gate-Source Charge	Q _{gs}	—	2.2	—	nC	
Gate-Drain Charge	Q _{gd}	—	3.3	—	nC	
Turn-On Delay Time	t _{D(on)}	—	8.7	—	ns	V _{DS} = -20V, I _D = -3.9A V _{GS} = 4.5V, R _G = 1Ω
Turn-On Rise Time	t _r	—	19.6	—	ns	
Turn-Off Delay Time	t _{D(off)}	—	34.9	—	ns	
Turn-Off Fall Time	t _f	—	25.5	—	ns	I _F = -3.9A, di/dt = 100A/μs
Body Diode Reverse Recovery Time	t _{rr}	—	9.61	—	ns	
Body Diode Reverse Recovery Charge	Q _{rr}	—	3.3	—	nC	

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
 - Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to product testing.

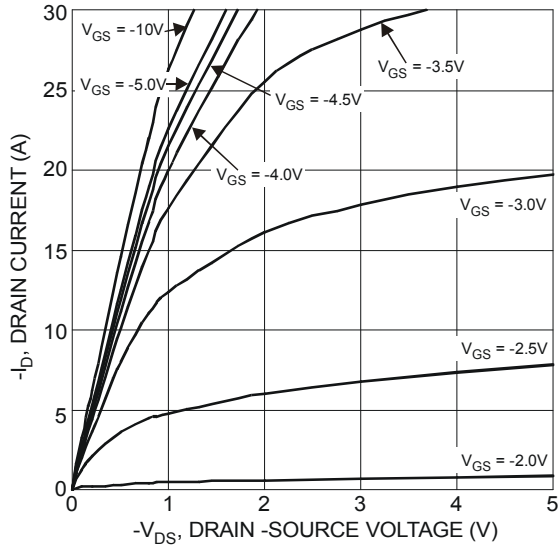


Figure 1 Typical Output Characteristics

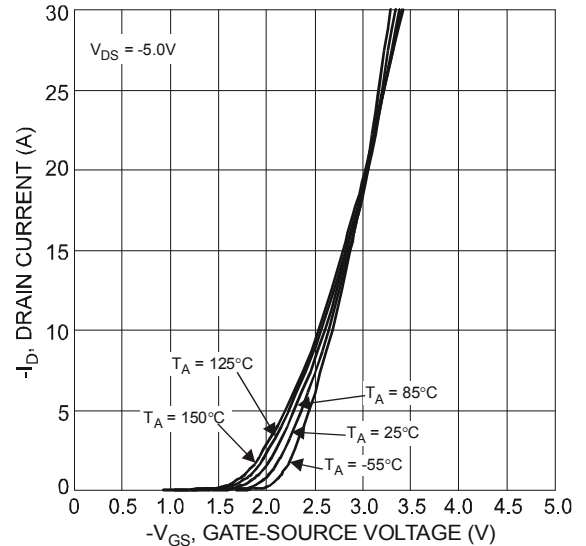


Figure 2 Typical Transfer Characteristics

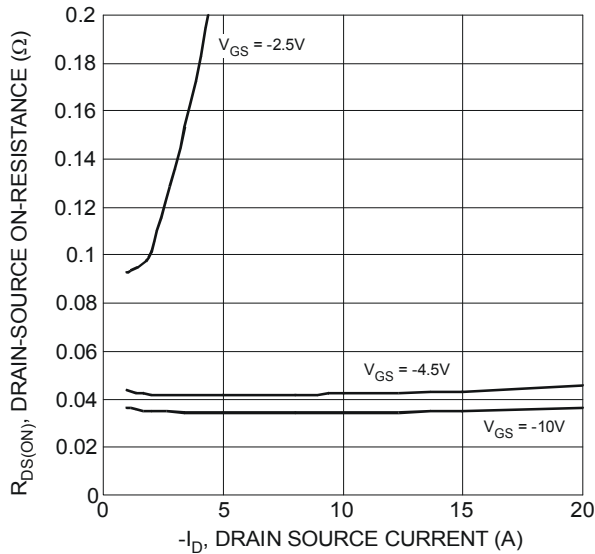


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

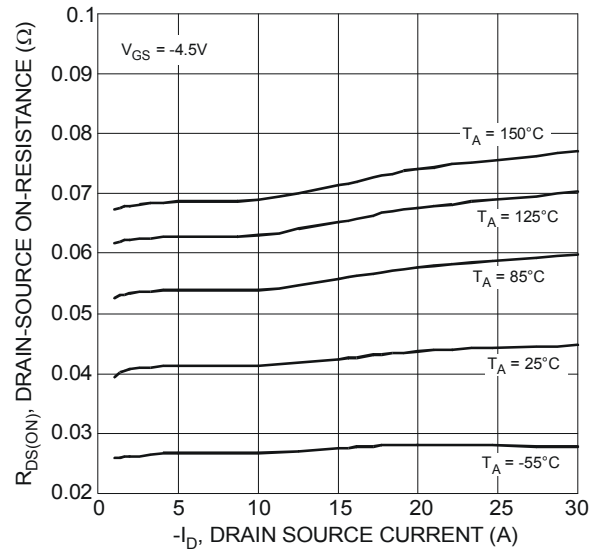


Figure 4 Typical On-Resistance vs. Drain Current and Temperature

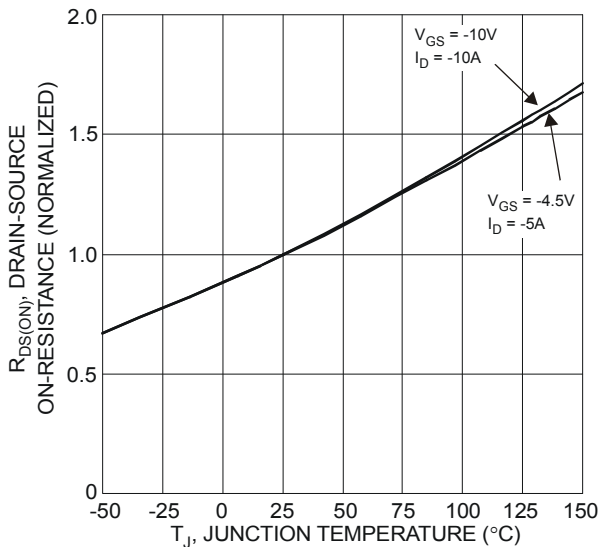


Figure 5 On-Resistance Variation with Temperature

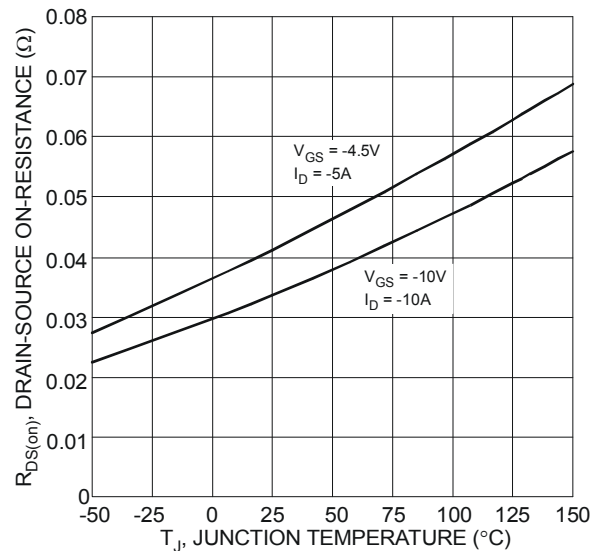


Figure 6 On-Resistance Variation with Temperature

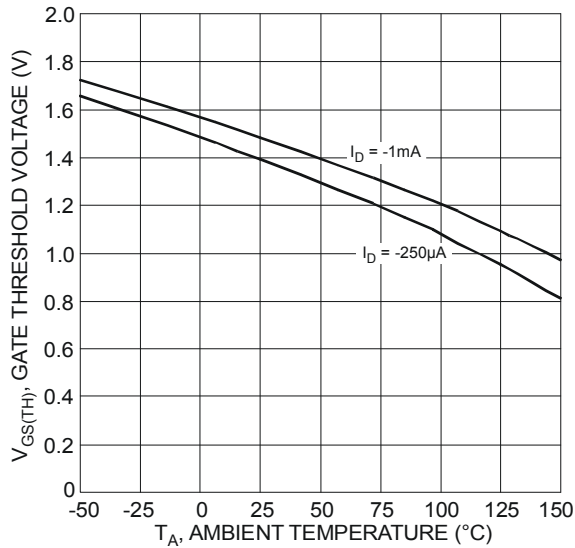


Figure 7 Gate Threshold Variation vs. Ambient Temperature

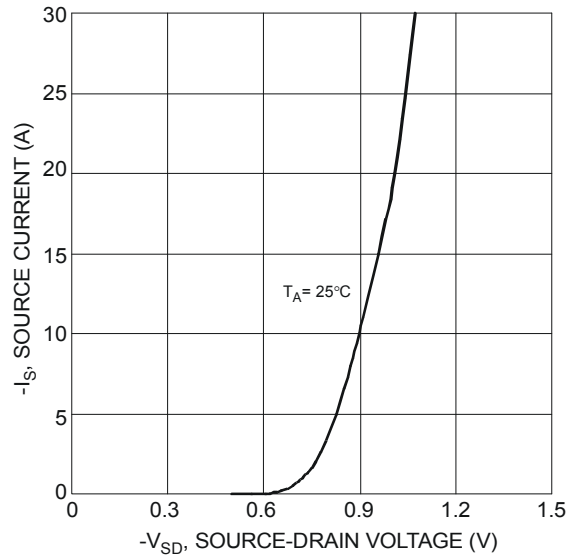


Figure 8 Diode Forward Voltage vs. Current

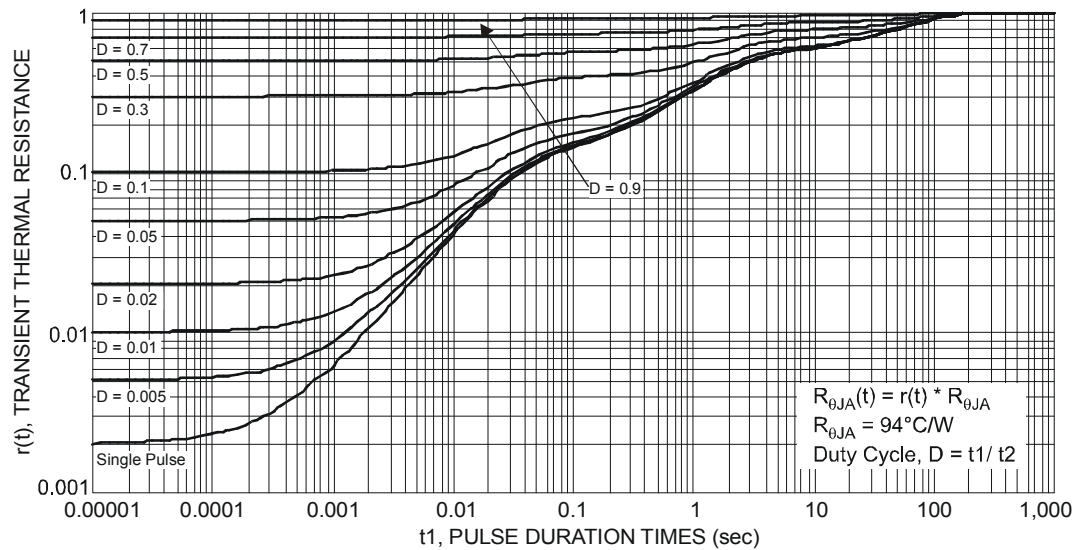
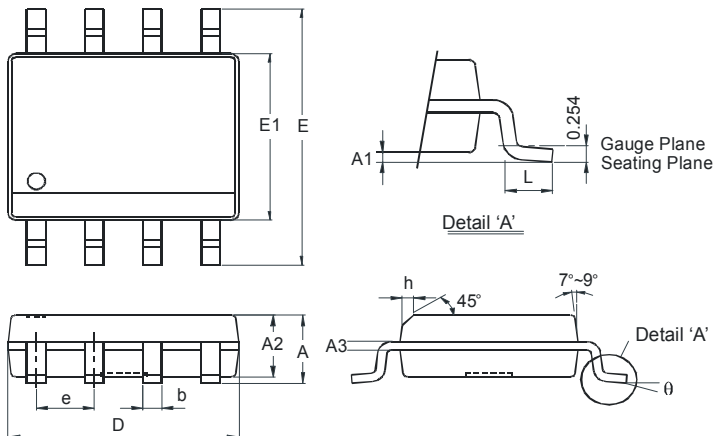


Figure 9 Transient Thermal Resistance

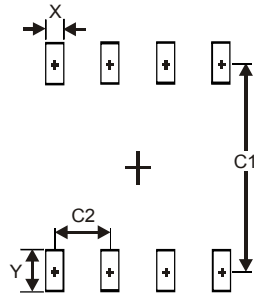
Package Outline Dimensions

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


SO-8		
Dim	Min	Max
A	-	1.75
A1	0.10	0.20
A2	1.30	1.50
A3	0.15	0.25
b	0.3	0.5
D	4.85	4.95
E	5.90	6.10
E1	3.85	3.95
e	1.27 Typ	
h	-	0.35
L	0.62	0.82
θ	0°	8°
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)
X	0.60
Y	1.55
C1	5.4
C2	1.27

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