



**THE DATASHEET OF
DMP3120L-7**

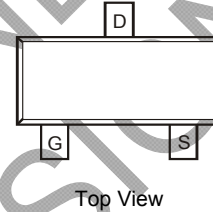
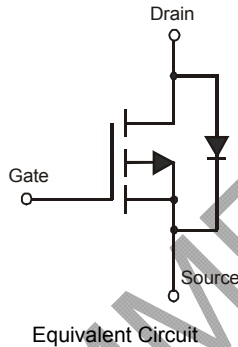


Features

- Low On-Resistance:
 - $R_{DS(ON)} < 120m\Omega @ V_{GS} = -4.5V$
 - $R_{DS(ON)} < 240m\Omega @ V_{GS} = -2.5V$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.008 grams (approximate)

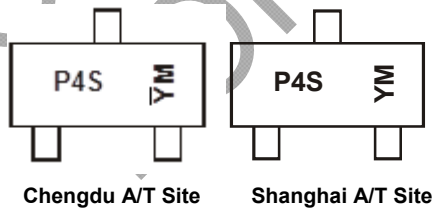


Ordering Information (Note 4)

Part Number	Case	Packaging
DMP3120L-7	SOT-23	3000/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



P4S = Product Type Marking Code
 YM = Date Code Marking for SAT (Shanghai Assembly/ Test site)
 ȲM = Date Code Marking for CAT (Chengdu Assembly/ Test site)
 Y or Ȳ = Year (ex: A = 2013)
 M = Month (ex: 9 = September)

Date Code Key

Year	2008	2009	2010	2011	2012	2013	2014	2015				
Code	V	W	X	Y	Z	A	B	C				
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°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain Source Voltage	V _{DSS}	-30	V
Gate-Source Voltage	V _{GSS}	±12	V
Drain Current (Note 5)	I _D	T _A = +25°C	-2.8
		T _A = +70°C	-2.2
Drain Current (Note 5)	I _{DM}	-9	A
Body-Diode Continuous Current (Note 5)	I _S	-2.0	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P _D	1.4	W
Thermal Resistance, Junction to Ambient @T _A = 25°C (Note 5)	R _{θJA}	90	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Notes: 5. Device mounted on FR-4 PCB. t ≤ 5 sec.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)						
Drain-Source Breakdown Voltage	BV _{DSS}	-30	—	—	V	V _{GS} = 0V, I _D = -250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-1	μA	V _{DS} = -30V, V _{GS} = 0V
Gate-Body Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±12V, V _{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	V _{GS(th)}	-0.6	—	-1.4	V	V _{DS} = V _{GS} , I _D = -250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	—	120	mΩ	V _{GS} = -4.5V, I _D = -2.8A
		—	—	240		V _{GS} = -2.5V, I _D = -1.8A
Forward Transconductance	g _{fs}	—	5	—	S	V _{DS} = -5V, I _D = -2.8A
Source-Drain Diode Forward Voltage	V _{SD}	—	—	-1.1	V	V _{GS} = 0V, I _S = -2.0A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C _{iss}	—	285	—	pF	V _{DS} = -15V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	56	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	40	—	pF	
Gate Resistance	R _G	—	13	—	Ω	V _{DS} = 0V, V _{GS} = 0V f = 1.0MHz
SWITCHING CHARACTERISTICS (Note 7)						
Turn-On Delay Time	t _{d(on)}	—	5.6	—	ns	V _{DS} = -15V, V _{GS} = -4.5V, I _D = -1A, R _G = 6.0Ω
Rise Time	t _r	—	6.8	—		
Turn-Off Delay Time	t _{d(off)}	—	35.3	—		
Fall Time	t _f	—	19.2	—		
Total Gate Charge	Q _G	—	6.7	—	nC	V _{DS} = -15V, V _{GS} = -10V, I _D = -1.0A
Gate-Source Charge	Q _{GS}	—	3.0	—		V _{DS} = -15V, V _{GS} = -4.5V, I _D = -1.0A
Gate-Drain Charge	Q _{GD}	—	0.8	—		

Notes: 6. Short duration pulse test used to minimize self-heating effect.
7. Guaranteed by design. Not subject to production testing.

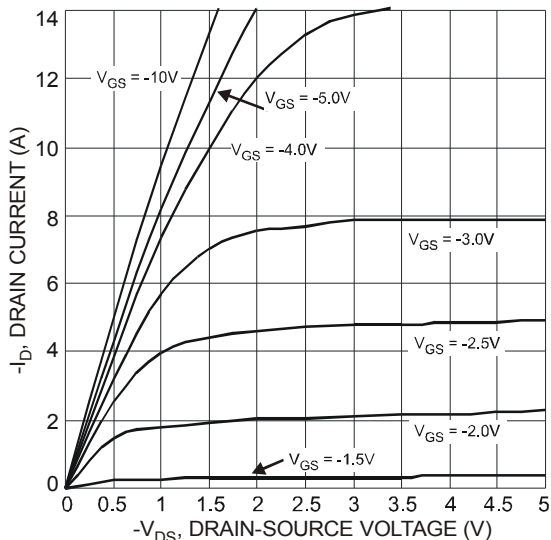


Fig. 1 Typical Output Characteristics

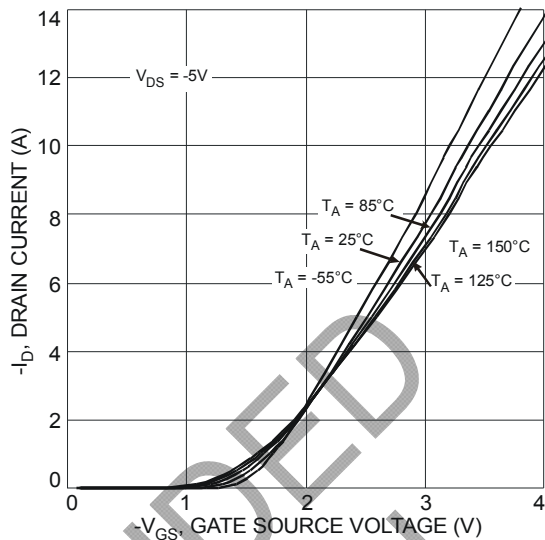


Fig. 2 Typical Transfer Characteristics

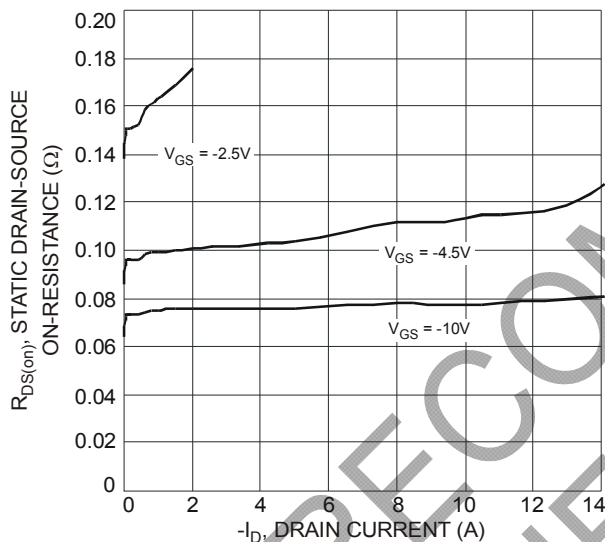


Fig. 3 On-Resistance vs. Drain Current and Gate Voltage

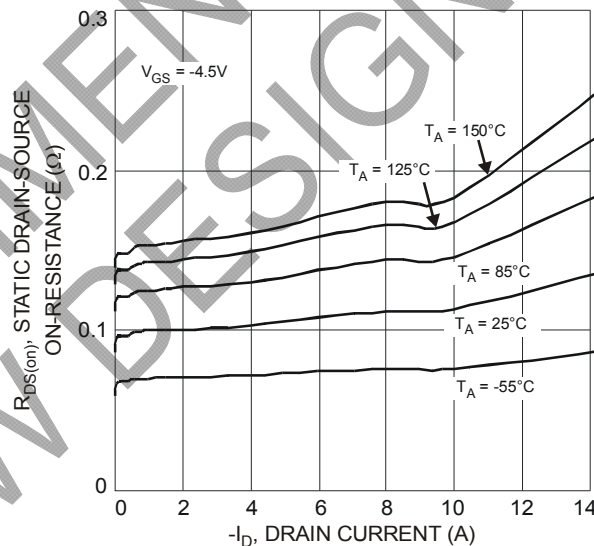


Fig. 4 On-Resistance vs. Drain Current and Temperature

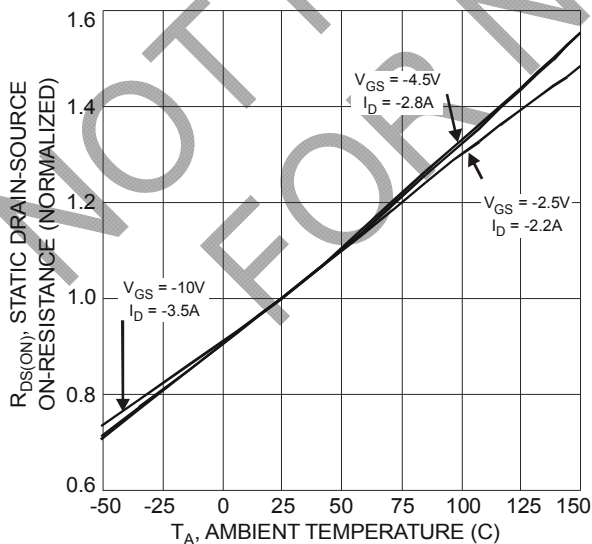


Fig. 5 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

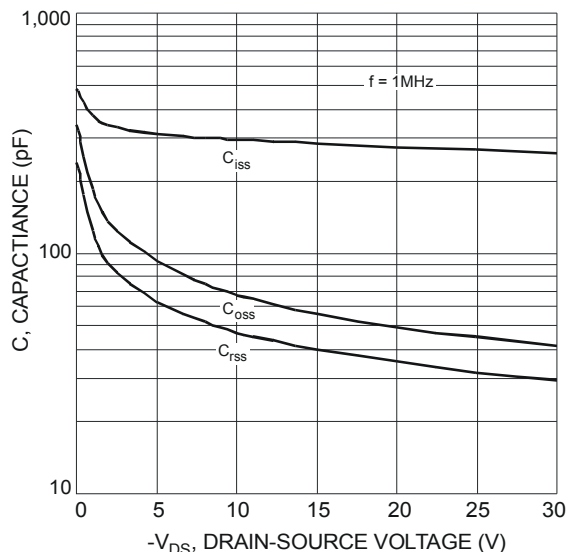


Fig. 6 Typical Capacitance

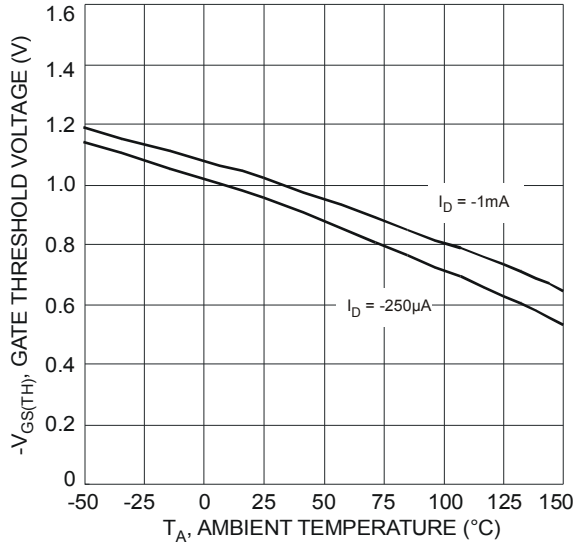


Fig. 7 Gate Threshold Voltage vs. Ambient Temperature

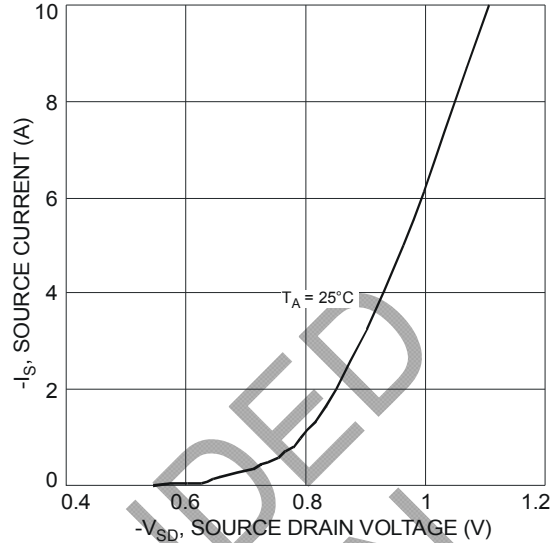
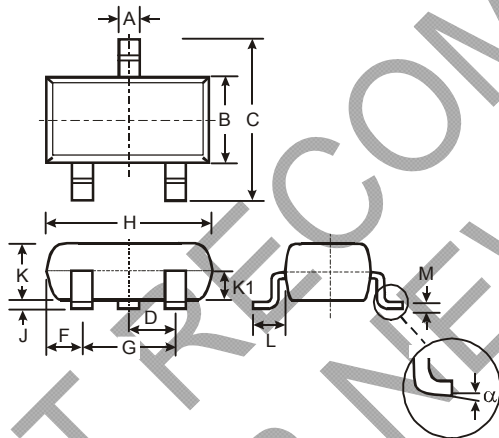


Fig. 8 Reverse Drain Current vs. Source-Drain Voltage

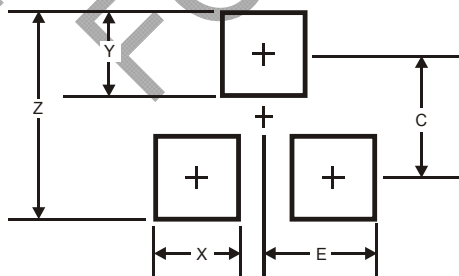
Package Outline Dimensions



SOT-23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
α	0°	8°	-

All Dimensions in mm

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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