

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$ max	I_D $T_A = 25^\circ\text{C}$
-30V	70m Ω @ $V_{GS} = -10\text{V}$	-3.8A
	120m Ω @ $V_{GS} = -4.5\text{V}$	-3.0A

Features and Benefits

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

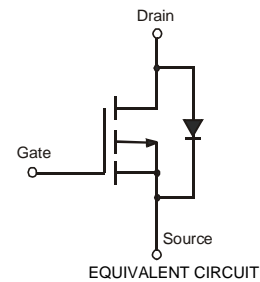
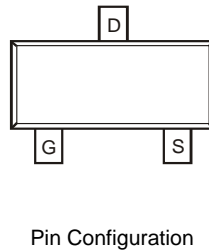
Description and Applications

This new generation 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.

- Power management functions
- Analog Switch
- Load Switch
- Boost Switch

Mechanical Data

- Case: SOT23
- 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)

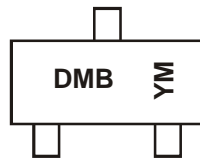


Ordering Information (Note 3)

Part Number	Case	Packaging
DMP3098L-7	SOT23	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



DMB = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: V = 2008)
 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	Units
Drain-Source Voltage			V _{DSS}	-30	V
Gate-Source Voltage			V _{GSS}	±20	V
Drain Current (Note 4) V _{GS} = -10V	Steady State	T _A = 25°C	I _D	-3.8	A
		T _A = 70°C		-2.9	
Pulsed Drain Current (Note 5)			I _{DM}	-11	A

Thermal Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 4)	P _D	1.08	W
Thermal Resistance, Junction to Ambient @T _A = 25°C (Note 4)	R _{θJA}	115	°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 6)						
Drain-Source Breakdown Voltage	BV _{DSS}	-30	—	—	V	V _{GS} = 0V, I _D = -250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-800	nA	V _{DS} = -30V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	V _{GS(th)}	-1.0	-1.8	-2.1	V	V _{DS} = V _{GS} , I _D = -250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	56	70	mΩ	V _{GS} = -10V, I _D = -3.8A
			98	120		V _{GS} = -4.5V, I _D = -3.0A
Forward Transfer Admittance	Y _{fs}	—	3.6	—	S	V _{DS} = -5V, I _D = -2.7A
Diode Forward Voltage (Note 6)	V _{SD}	—	—	-1.26	V	V _{GS} = 0V, I _S = -2.7A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C _{iss}	—	336	1008	pF	V _{DS} = -25V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	70	210	pF	
Reverse Transfer Capacitance	C _{rss}	—	49	147	pF	
Gate Resistance	R _G	—	4.6	—	Ω	V _{GS} = 0V V _{DS} = 0V, f = 1MHz
SWITCHING CHARACTERISTICS (Note 7)						
Total Gate Charge	Q _g	—	4.0	8.0	nC	V _{DS} = -15V, V _{GS} = -4.5V, I _D = -3.8A
			7.8	—		V _{DS} = -15V, V _{GS} = -10V, I _D = -3.8A
Gate-Source Charge	Q _{gs}	—	1.0	—		
Gate-Drain Charge	Q _{gd}	—	2.5	—	ns	V _{DS} = -15V, V _{GS} = -10V, I _D = -1A, R _G = 6.0Ω
Turn-On Delay Time	t _{d(on)}	—	6.0	12.0		
Rise Time	t _r	—	5.0	10.0		
Turn-Off Delay Time	t _{d(off)}	—	17.6	35.2		
Fall Time	t _f	—	9.5	19.0		

- Notes:
4. Device mounted on FR-4 PCB on 2 oz., 0.5 in.² copper pads and t ≤ 5 sec.
 5. Pulse width ≤ 10μs, Duty Cycle ≤ 1%.
 6. Short duration pulse test used to minimize self-heating effect.
 7. Guaranteed by design. Not subject to production testing.

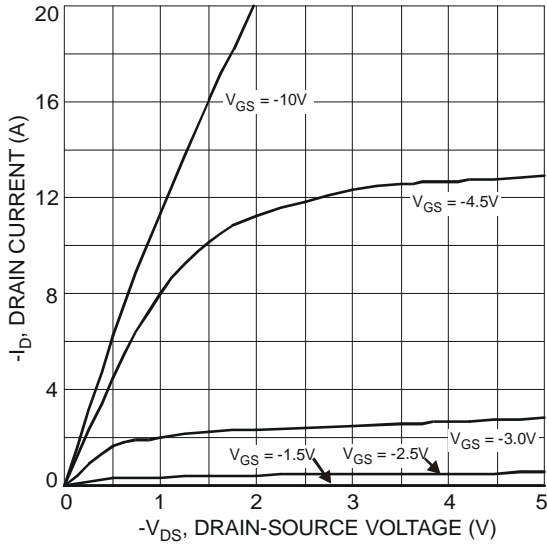


Fig. 1 Typical Output Characteristics

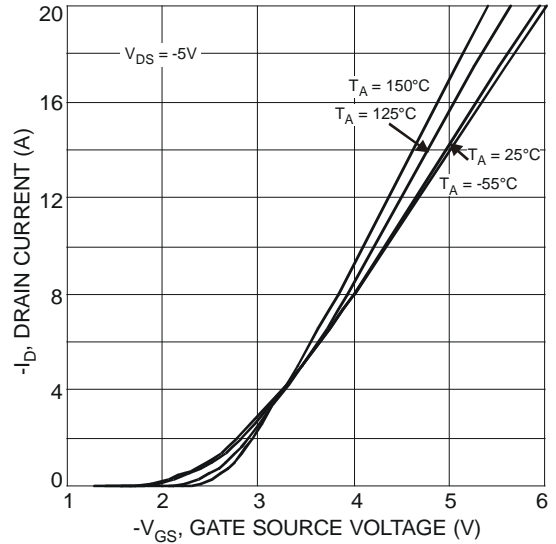


Fig. 2 Typical Transfer Characteristics

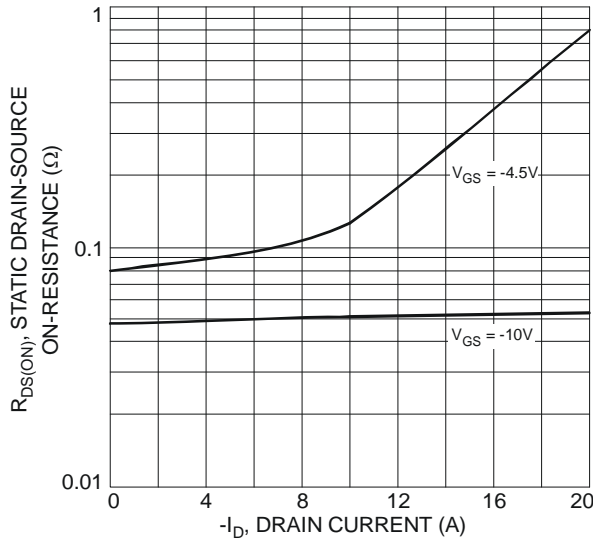


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

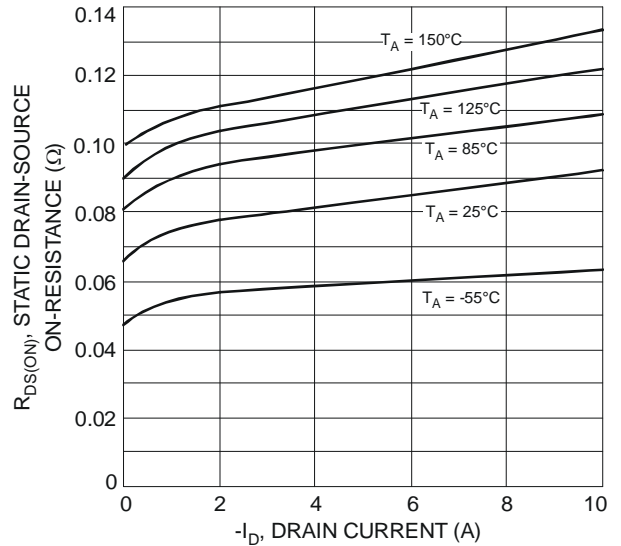


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

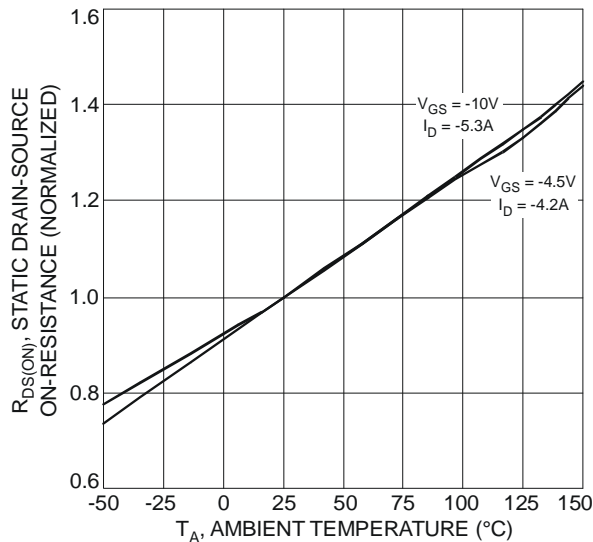


Fig. 5 On-Resistance Variation with Temperature

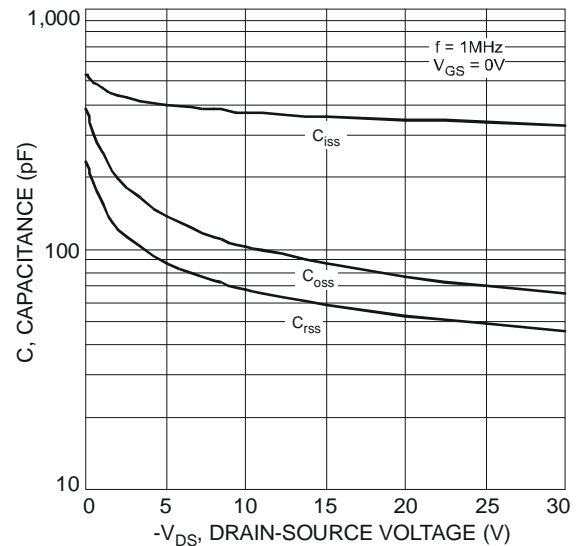


Fig. 6 Typical Capacitance

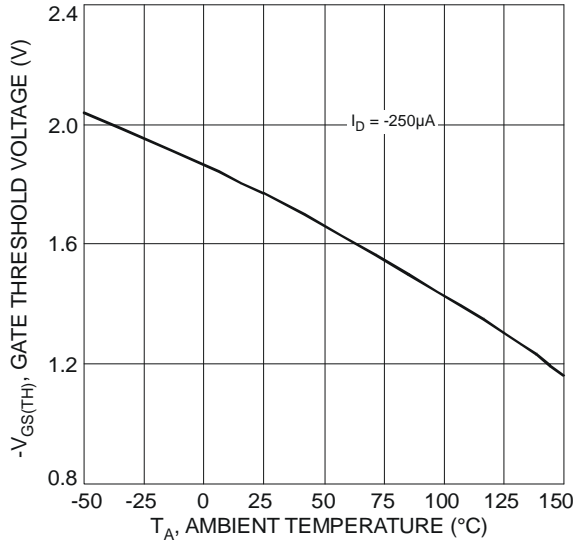


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

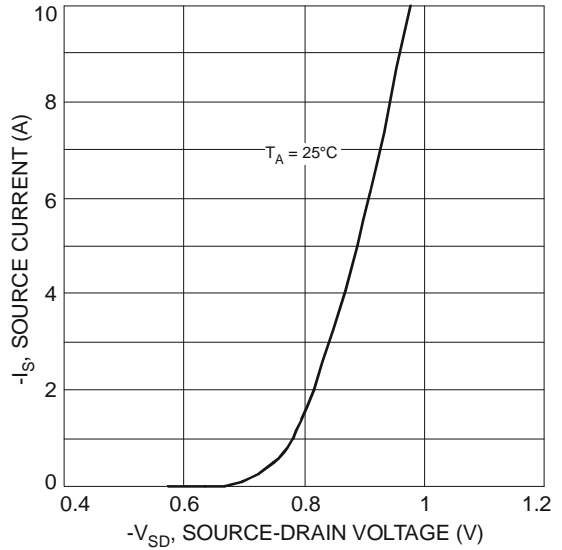


Fig. 8 Diode Forward Voltage vs. Current

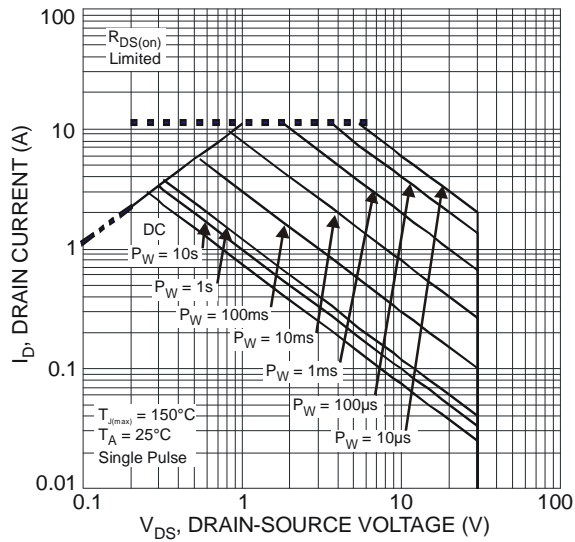
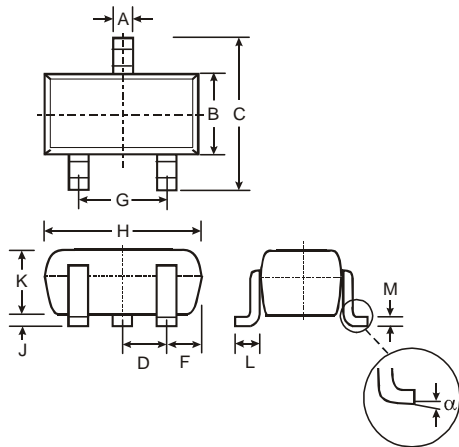


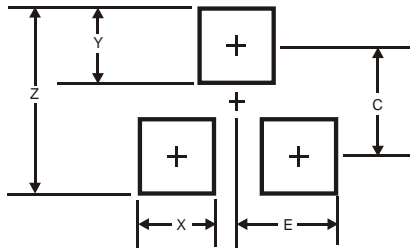
Fig. 9 Safe Operation Area

Package Outline Dimensions



SOT23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
F	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
α	0°	8°

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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