

**Features**

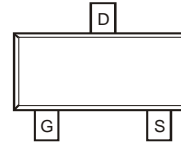
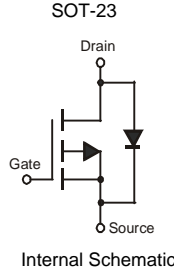
- Low  $R_{DS(ON)}$ :
  - 75 m $\Omega$  @  $V_{GS} = -4.5V$
  - 110 m $\Omega$  @  $V_{GS} = -2.7V$
  - 125 m $\Omega$  @  $V_{GS} = -2.5V$
- Low Input/Output Leakage
- **Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 3, 4 and 5)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**Mechanical Data**

- Case: SOT-23
- Case Material - Molded Plastic, "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish - Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram Below
- Marking Information: See Page 4
- Ordering Information: See page 4
- Weight: 0.008 grams (approximate)



TOP VIEW



TOP VIEW

**Maximum Ratings** @  $T_A = 25^\circ C$  unless otherwise specified

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	-20	V
Gate-Source Voltage	$V_{GSS}$	$\pm 12$	V
Drain Current (Note 1) Continuous	$I_D$	-3.0 -2.4	A
		$T_A = 25^\circ C$ $T_A = 70^\circ C$	
Pulsed Drain Current (Note 2)	$I_{DM}$	-15	A
Body-Diode Continuous Current (Note 1)	$I_S$	2.0	A

**Thermal Characteristics**

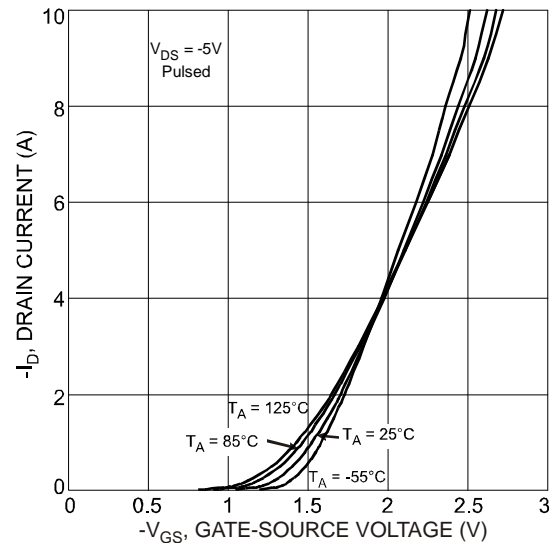
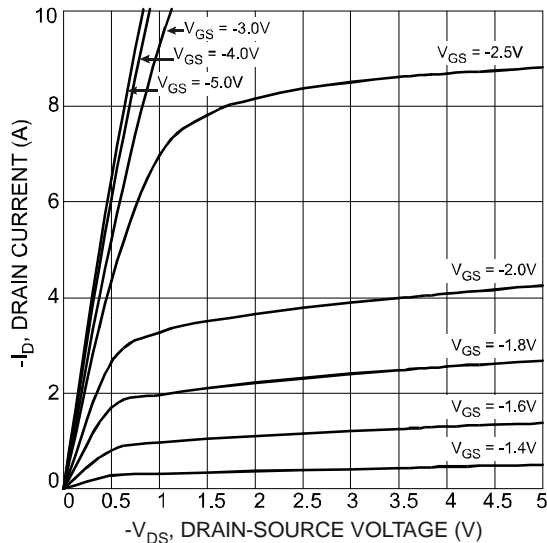
Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	$P_D$	1.4	W
Thermal Resistance, Junction to Ambient (Note 1); Steady-State	$R_{\theta JA}$	90	$^\circ C/W$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ C$

- Notes:
1. Device mounted on 1"x1", FR-4 PC board with 2 oz. Copper and test pulse width  $t \leq 10s$ .
  2. Repetitive Rating, pulse width limited by junction temperature.
  3. No purposefully added lead. Halogen and Antimony Free.
  4. 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).
  5. Product manufactured with Green Molding Compound and does not contain Halogens or  $Sb_2O_3$  Fire Retardants.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>STATIC PARAMETERS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	-20	—	—	V	$I_D = -250\mu\text{A}, V_{GS} = 0\text{V}$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	-1	$\mu\text{A}$	$V_{DS} = -20\text{V}, V_{GS} = 0\text{V}$
Gate-Body Leakage Current	$I_{GSS}$	—	—	$\pm 100$	nA	$V_{DS} = 0\text{V}, V_{GS} = \pm 12\text{V}$
Gate Threshold Voltage	$V_{GS(th)}$	-0.6	—	-1.25	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
On State Drain Current (Note 6)	$I_D(ON)$	-15	—	—	A	$V_{GS} = -4.5\text{V}, V_{DS} = -5\text{V}$
Static Drain-Source On-Resistance (Note 6)	$R_{DS(ON)}$	—	51 87 99	75 110 125	$\text{m}\Omega$	$V_{GS} = -4.5\text{V}, I_D = -3.5\text{A}$ $V_{GS} = -2.7\text{V}, I_D = -3.0\text{A}$ $V_{GS} = -2.5\text{V}, I_D = -2.6\text{A}$
Forward Transconductance (Note 6)	$g_{FS}$	—	7.3	—	S	$V_{DS} = -10\text{V}, I_D = -3.0\text{A}$
Diode Forward Voltage (Note 6)	$V_{SD}$	—	0.79	-1.26	V	$I_S = -1.7\text{A}, V_{GS} = 0\text{V}$
Maximum Body-Diode Continuous Current (Note 1)	$I_S$	—	—	1.7	A	—
<b>DYNAMIC PARAMETERS (Note 7)</b>						
Total Gate Charge	$Q_g$	—	7.3	—	nC	$V_{GS} = -4.5\text{V}, V_{DS} = -10\text{V}, I_D = -3.0\text{A}$
Gate-Source Charge	$Q_{gs}$	—	2.0	—	nC	$V_{GS} = -4.5\text{V}, V_{DS} = -10\text{V}, I_D = -3.0\text{A}$
Gate-Drain Charge	$Q_{gd}$	—	1.9	—	nC	$V_{GS} = -4.5\text{V}, V_{DS} = -10\text{V}, I_D = -3.0\text{A}$
Turn-On Delay Time	$t_{D(on)}$	—	12	—	ns	$V_{DS} = -10\text{V}, V_{GS} = -4.5\text{V},$ $R_L = 10\Omega, R_G = 6\Omega$
Turn-On Rise Time	$t_r$	—	20	—	ns	
Turn-Off Delay Time	$t_{D(off)}$	—	38	—	ns	
Turn-Off Fall Time	$t_f$	—	41	—	ns	
Input Capacitance	$C_{iss}$	—	443	—	pF	$V_{DS} = -16\text{V}, V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	$C_{oss}$	—	128	—	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	101	—	pF	

Notes: 6. Test pulse width  $t = 300\mu\text{s}$ .  
7. Guaranteed by design. Not subject to production testing.



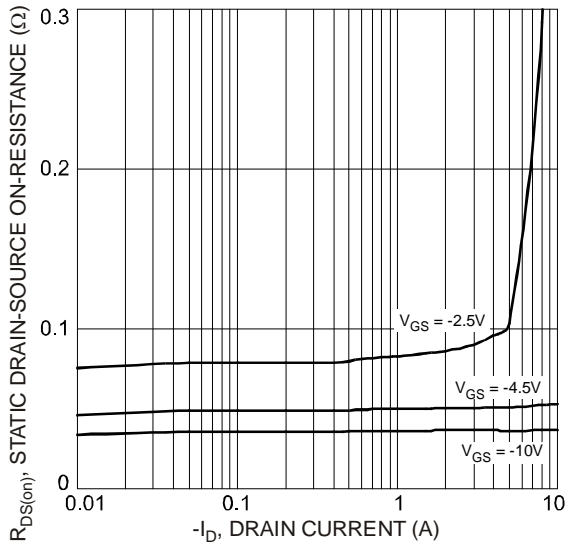


Fig. 3 On-Resistance vs. Drain Current and Gate Voltage

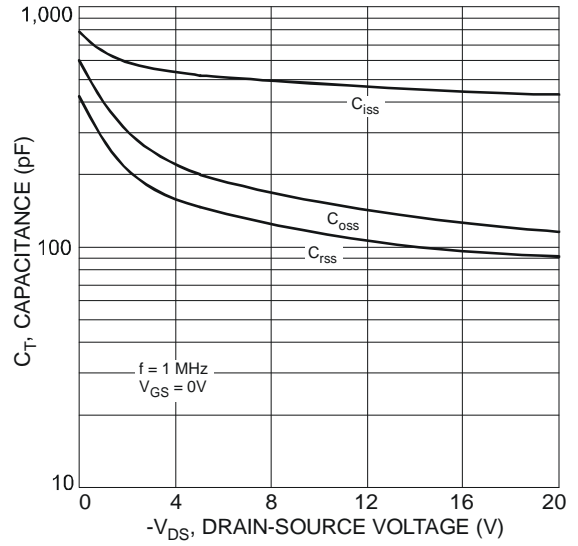


Fig. 4 Typical Total Capacitance

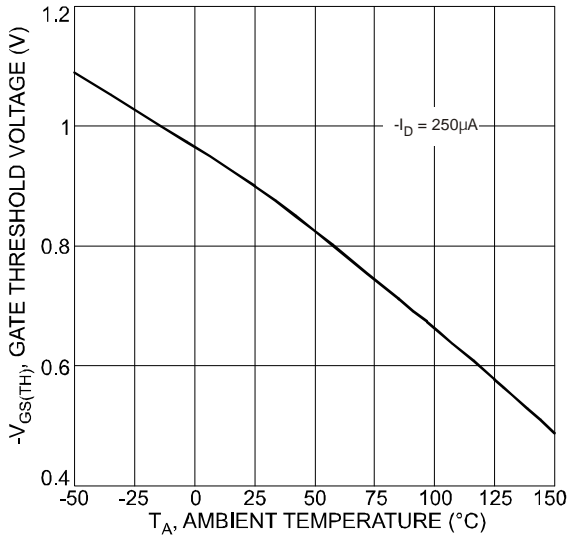


Fig. 5 Gate Threshold Voltage vs. Ambient Temperature

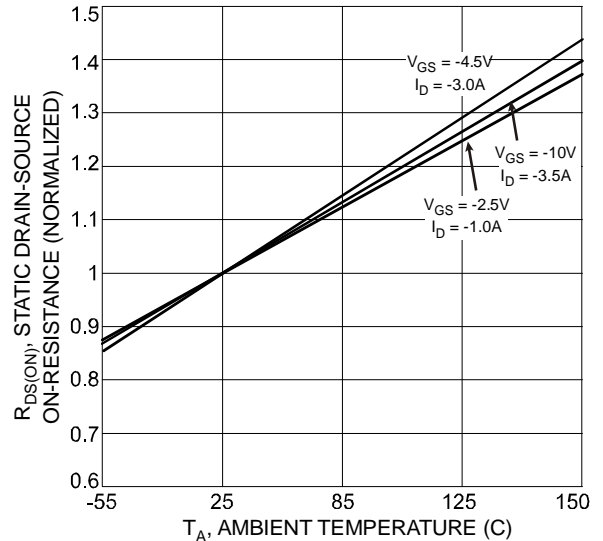


Fig. 6 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

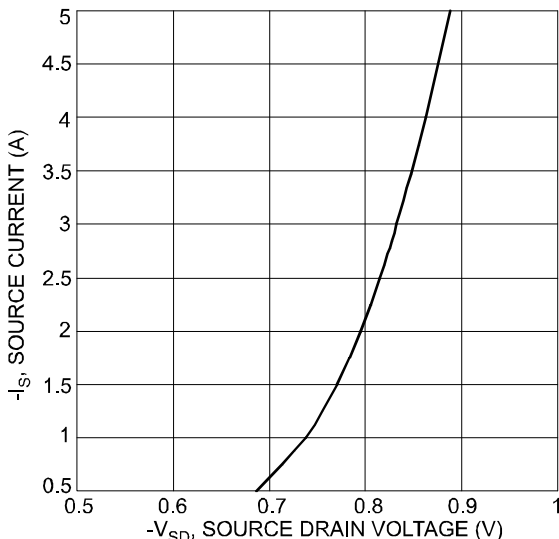


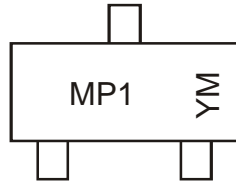
Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

**Ordering Information** (Note 8)

Part Number	Case	Packaging
DMP2130L-7	SOT-23	3000/Tape & Reel

Notes: 8. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



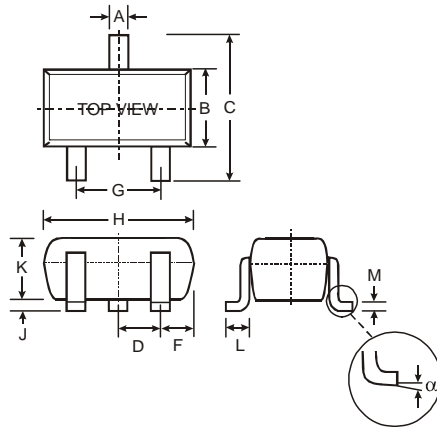
MP1 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year ex: U = 2007  
 M = Month ex: 9 = September

Date Code Key

Year	2007	2008	2009	2010	2011	2012
Code	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

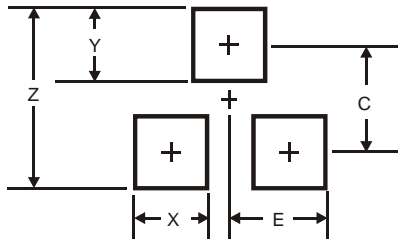
**Package Outline Dimensions**



SOT-23		
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
$\alpha$	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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