
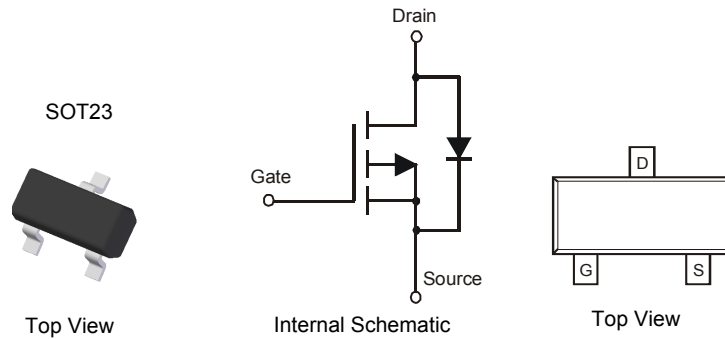


**Features**

- 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
- **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: SOT23
- Case Material - Molded Plastic, "Green" Molding Compound. UL Flammability 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 Below
- Weight: 0.008 grams (approximate)

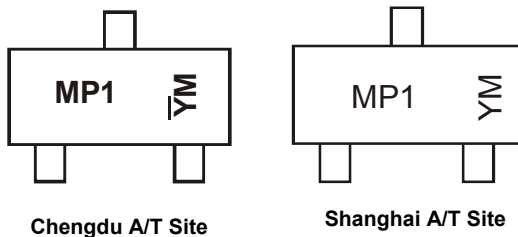


**Ordering Information** (Note 4)

Part Number	Case	Packaging
DMP2130L-7	SOT23	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](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**



MP1 = Product Type Marking Code  
 YM = Date Code Marking for SAT (Shanghai Assembly/ Test site)  
 YM = Date Code Marking for CAT (Chengdu Assembly/ Test site)  
 Y or Y = Year (ex: A = 2013)  
 M = Month (ex: 9 = September)

Date Code Key

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Code	U	V	W	X	Y	Z	A	B	C	D	E	
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	Unit	
Drain-Source Voltage	$V_{DS}$	-20	V	
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V	
Drain Current (Note 5) Continuous	$I_D$	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	-3.0 -2.4	A
Pulsed Drain Current (Note 6)		$I_{DM}$	-15	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 (Note 5); Steady-State	$R_{\theta JA}$	90	$^\circ\text{C/W}$
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
<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	$\mu\text{A}$	$T_J = 25^\circ\text{C}, V_{DS} = -20\text{V}, V_{GS} = 0\text{V}$
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 7)	$I_{D(ON)}$	-15	—	—	A	$V_{GS} = -4.5\text{V}, V_{DS} = -5\text{V}$
Static Drain-Source On-Resistance (Note 7)	$R_{DS(ON)}$	—	51 87 99	75 110 125	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 7)	$g_{FS}$	—	7.3	—	S	$V_{DS} = -10\text{V}, I_D = -3.0\text{A}$
Diode Forward Voltage (Note 7)	$V_{SD}$	—	0.79	-1.26	V	$I_S = -1.7\text{A}, V_{GS} = 0\text{V}$
Maximum Body-Diode Continuous Current (Note 5)	$I_S$	—	—	1.7	A	—
<b>DYNAMIC PARAMETERS (Note 8)</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:
- Device mounted on 1"x1", FR-4 PC board with 2 oz. Copper and test pulse width  $t \leq 10\text{s}$ .
  - Repetitive Rating, pulse width limited by junction temperature.
  - Test pulse width  $t = 300\mu\text{s}$ .
  - Guaranteed by design. Not subject to production testing.

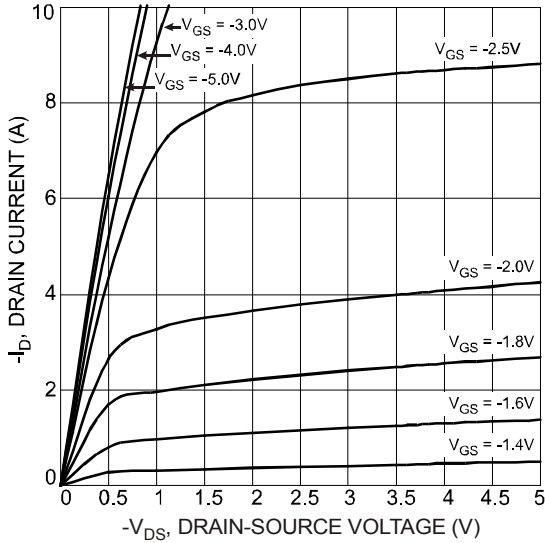


Fig. 1 Typical Output Characteristics

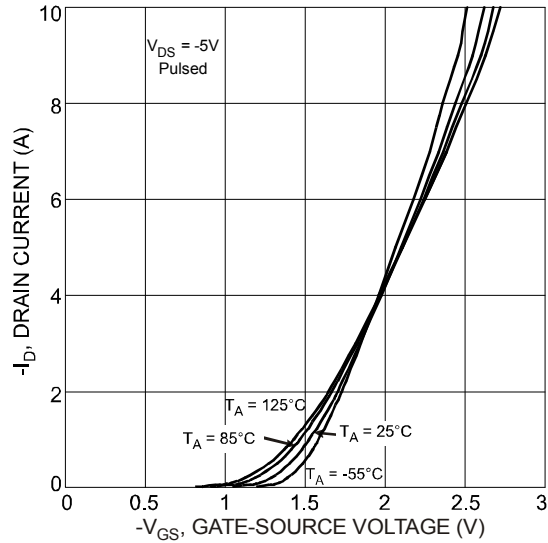


Fig. 2 Typical Transfer Characteristics

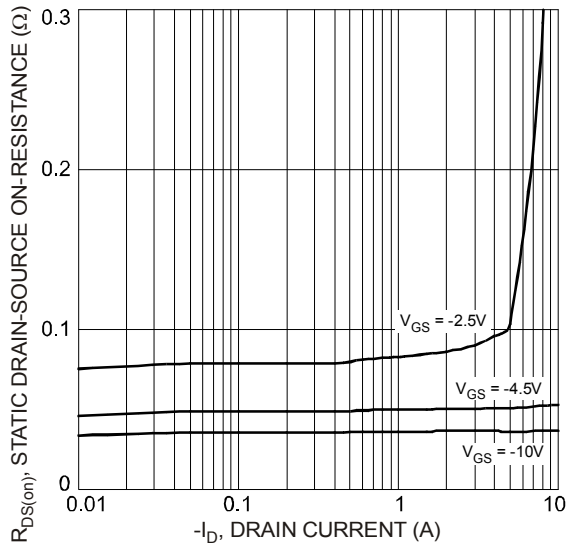


Fig. 3 On-Resistance vs. Drain Current and Gate Voltage

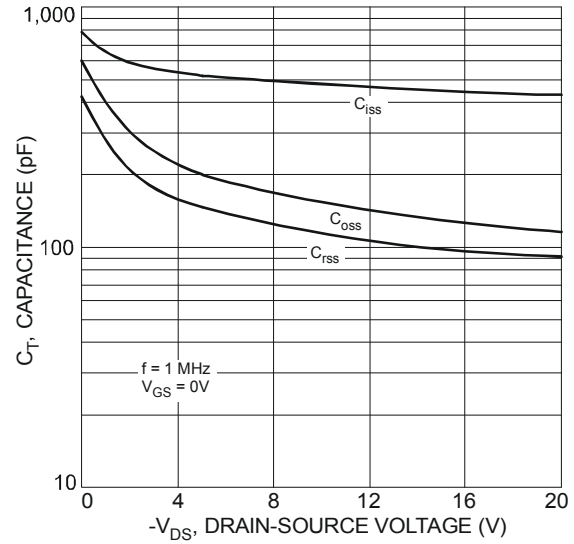


Fig. 4 Typical Total Capacitance

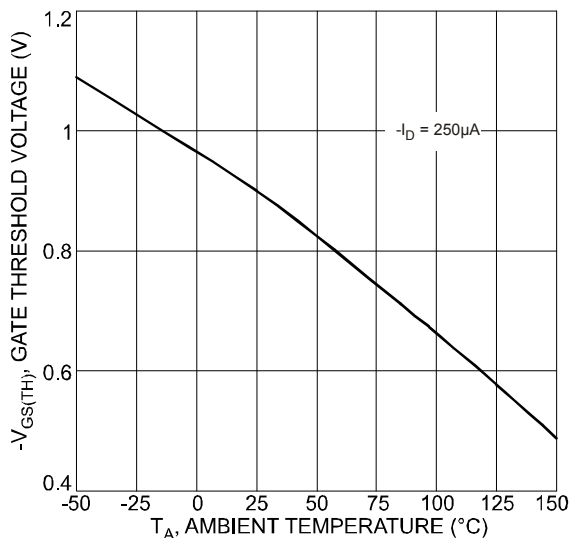


Fig. 5 Gate Threshold Voltage vs. Ambient Temperature

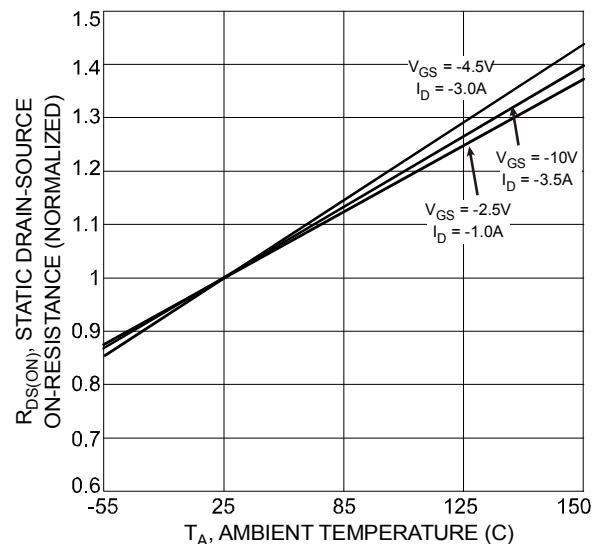


Fig. 6 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

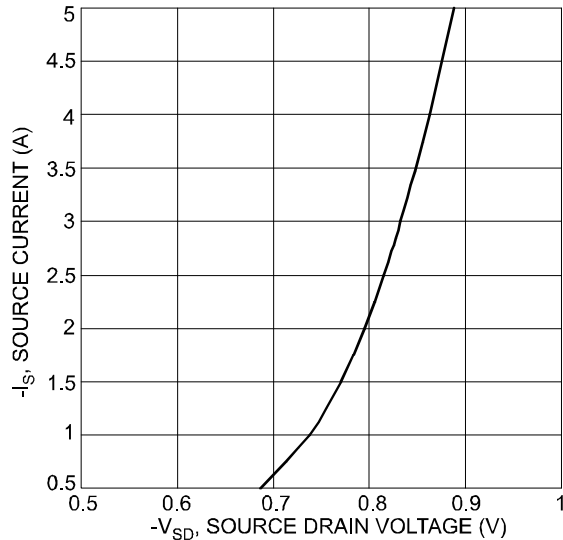


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

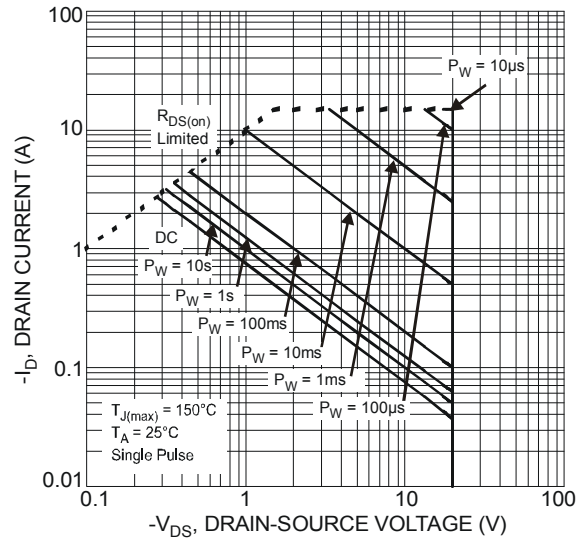
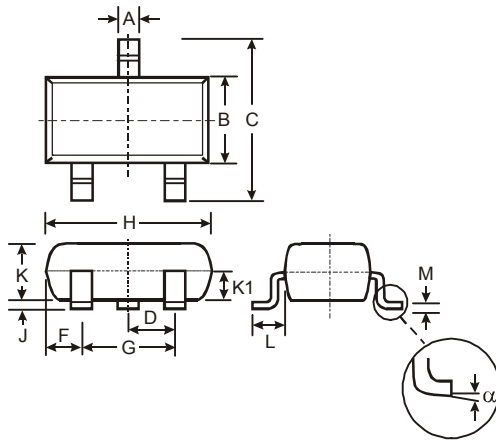


Fig. 8 SOA, Safe Operation Area

**Package Outline Dimensions**

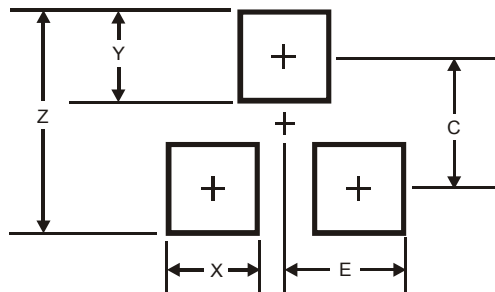
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SOT23			
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**

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for latest version.



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

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