

Features

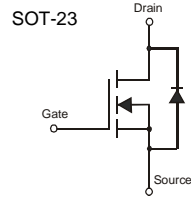
- Low On-Resistance:
 - $R_{DS(ON)} < 77m\Omega$ @ $V_{GS} = -10V$
 - $R_{DS(ON)} < 95m\Omega$ @ $V_{GS} = -4.5V$
 - $R_{DS(ON)} < 150m\Omega$ @ $V_{GS} = -2.5V$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Lead Free By Design/RoHS Compliant (Note 2)**
- "Green" Device (Note 3)**



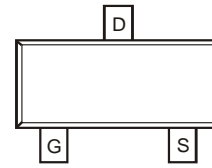
TOP VIEW

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-020D
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.008 grams (approximate)



Equivalent Circuit



TOP VIEW

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

Characteristic	Symbol	Value	Unit
Drain Source Voltage	V_{DSS}	-30	V
Gate-Source Voltage	V_{GSS}	± 12	V
Drain Current (Note 1)	I_D	$T_A = 25^\circ C$	-3.5
		$T_A = 70^\circ C$	-2.8
Drain Current (Note 1)	I_{DM}	-12	A
Body-Diode Continuous Current (Note 1)	I_S	-2.0	A

Thermal Characteristics

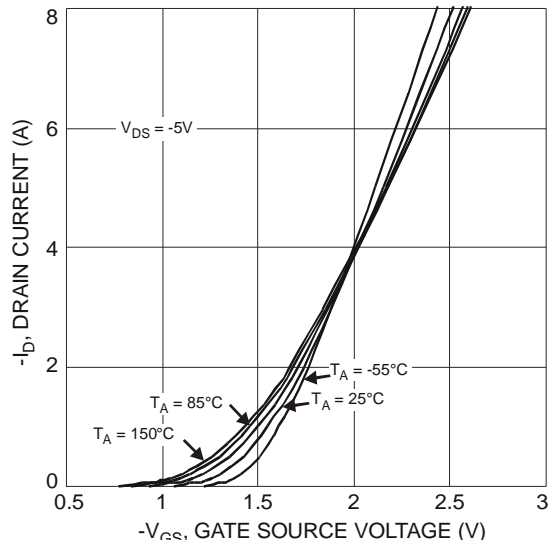
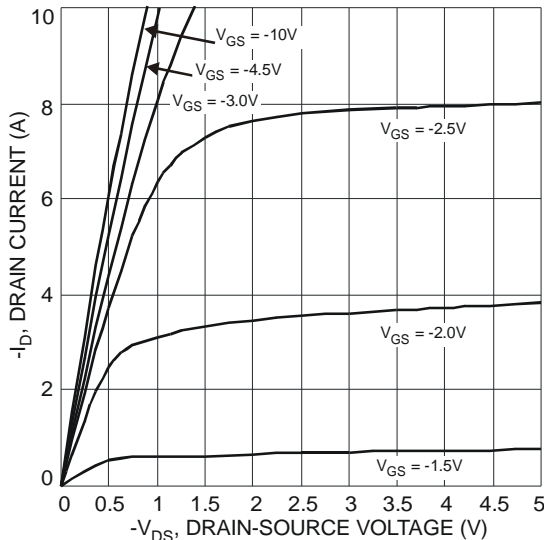
Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	P_D	1.4	W
Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ C$ (Note 1)	$R_{\theta JA}$	90	$^\circ C/W$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ C$

- Notes:
- Device mounted on FR-4 PCB. $t \leq 5$ sec.
 - No purposefully added lead.
 - Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 4)						
Drain-Source Breakdown Voltage	BV_{DSS}	-30	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1	μA	$V_{DS} = -30V, V_{GS} = 0V$
Gate-Body Leakage	I_{GSS}	—	—	± 100	nA	$V_{GS} = \pm 12V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 4)						
Gate Threshold Voltage	$V_{GS(th)}$	-0.6	—	-1.3	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	59	77	m Ω	$V_{GS} = -10V, I_D = -4.2A$
		—	73	95		$V_{GS} = -4.5V, I_D = -4A$
		—	115	150		$V_{GS} = -2.5V, I_D = -3A$
Forward Transconductance	g_{fs}	—	8	—	S	$V_{DS} = -5V, I_D = -4A$
Source-Drain Diode Forward Voltage	V_{SD}	—	0.8	-1.25	V	$V_{GS} = 0V, I_S = -3.0A$
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	—	432	—	pF	$V_{DS} = -15V, V_{GS} = 0V$ $f = 1.0MHz$
Output Capacitance	C_{oss}	—	87	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	62	—	pF	
Gate Resistance	R_G	—	4.04	—	Ω	$V_{DS} = 0V, V_{GS} = 0V$ $f = 1.0MHz$
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q_G	—	5.9 12	—	nC	$V_{DS} = -15V, V_{GS} = -4.5V, I_D = -4.0A$ $V_{DS} = -15V, V_{GS} = -10V, I_D = -4.0A$
Gate-Source Charge	Q_{GS}	—	1.0	—		
Gate-Drain Charge	Q_{GD}	—	3.1	—		
Turn-On Delay Time	$t_{d(on)}$	—	4.6	—	ns	$V_{DS} = -15V, V_{GS} = -10V,$ $I_D = -1A, R_G = 6.0\Omega$
Rise Time	t_r	—	6.5	—		
Turn-Off Delay Time	$t_{d(off)}$	—	27.8	—		
Fall Time	t_f	—	15.0	—		

Notes: 4. Short duration pulse test used to minimize self-heating effect.



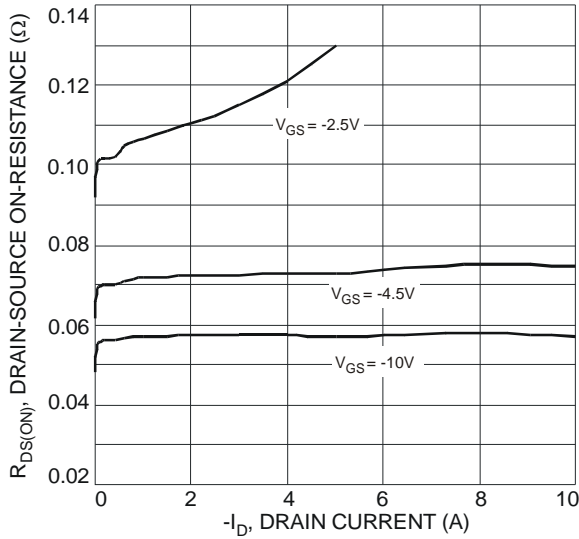


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

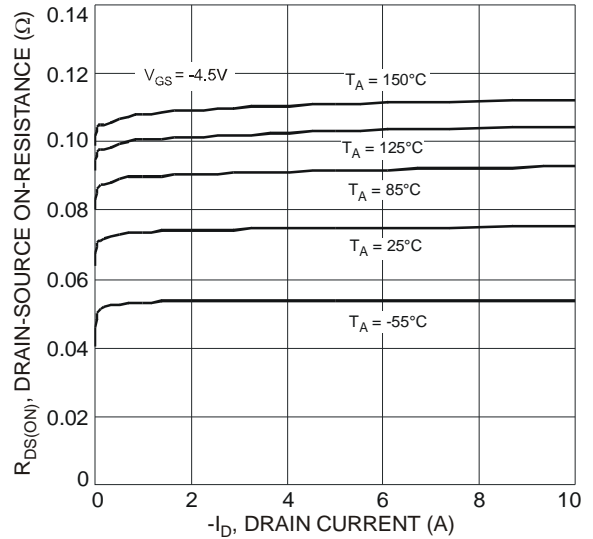


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

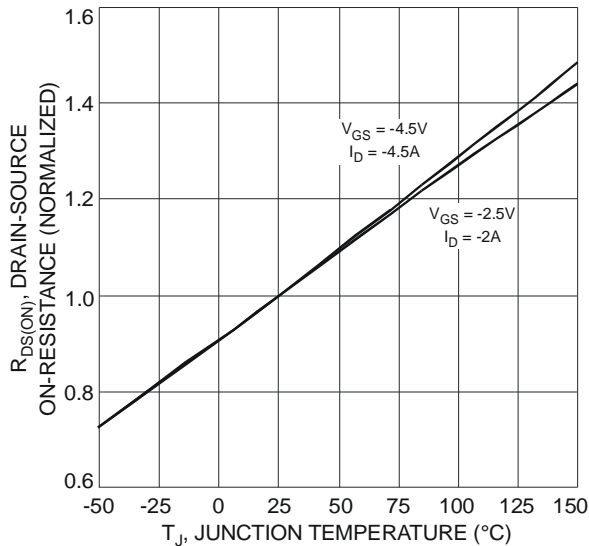


Fig. 5 On-Resistance Variation with Temperature

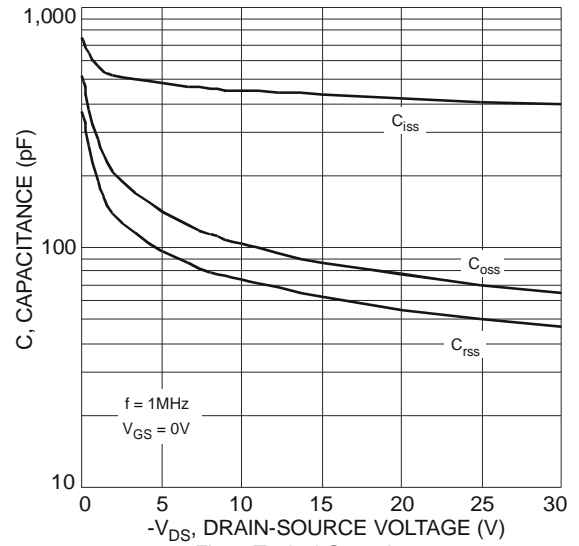


Fig. 6 Typical Capacitance

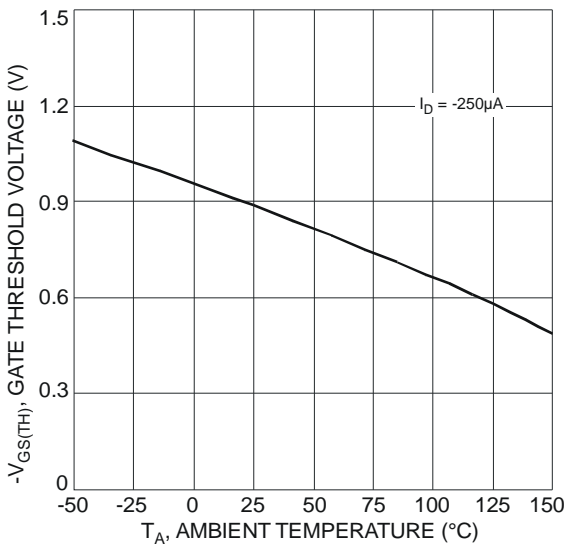


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

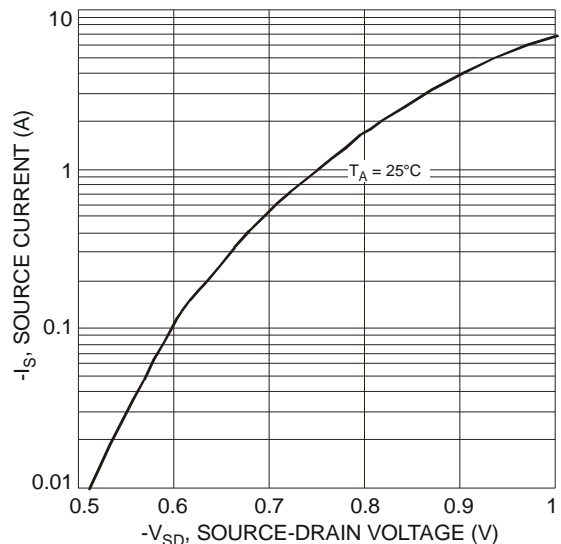


Fig. 8 Diode Forward Voltage vs. Current

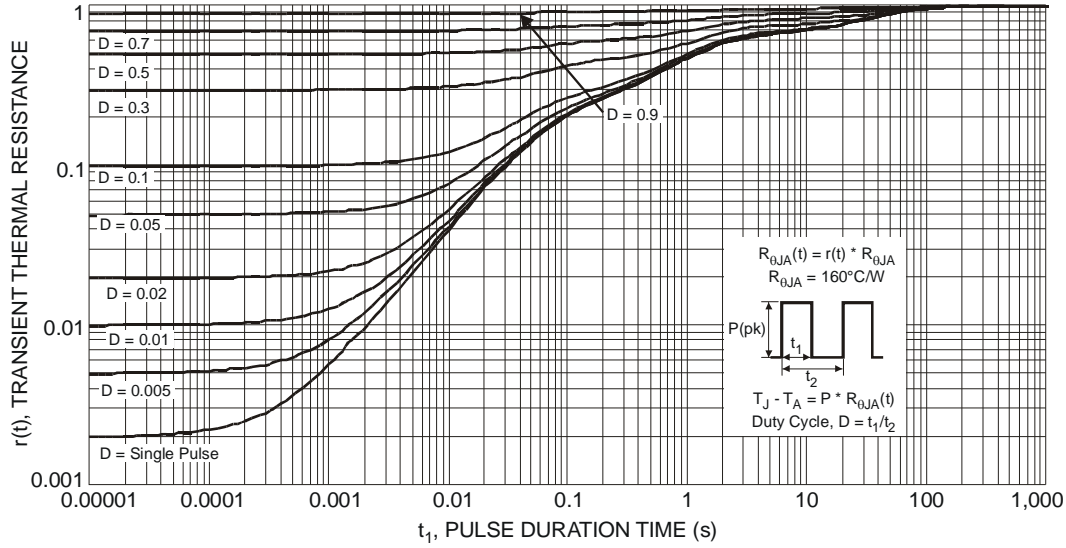


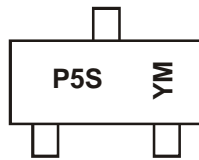
Fig. 9 Transient Thermal Response

Ordering Information (Note 5)

Part Number	Case	Packaging
DMP3130L-7	SOT-23	3000/Tape & Reel

Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



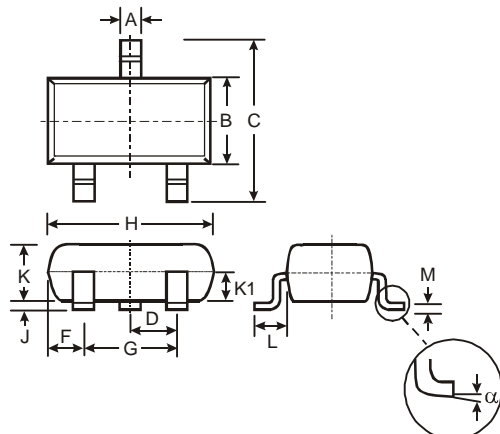
P5S = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: V = 2008)
 M = Month (ex: 9 = September)

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

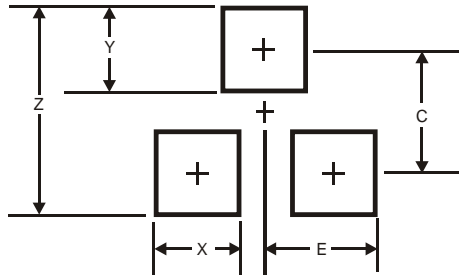
Package Outline Dimensions



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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