

Features

- Low On-Resistance:
 - $R_{DS(ON)} < 54m\Omega @ V_{GS} = 10V$
 - $R_{DS(ON)} < 72m\Omega @ V_{GS} = 4.5V$
 - $R_{DS(ON)} < 115m\Omega @ V_{GS} = 2.5V$
- 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)**
- **Qualified to AEC-Q101 Standards for High Reliability**

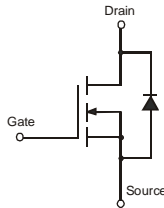
Mechanical Data

- 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
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.008 grams (approximate)

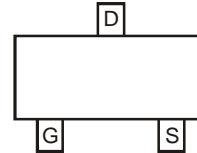
SOT-23



TOP VIEW



EQUIVALENT CIRCUIT



Pin Configuration

Maximum Ratings @ $T_A = 25^\circ\text{C}$ 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	$T_A = 25^\circ\text{C}$	3.8
		$T_A = 70^\circ\text{C}$	3.1
Drain Current (Note 1)	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 @ $T_A = 25^\circ\text{C}$ (Note 1)	$R_{\theta JA}$	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
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}	—	—	800	nA	$V_{DS} = 28V, V_{GS} = 0V$
Gate-Body Leakage	I_{GSS}	—	—	± 80 ± 800	nA	$V_{GS} = \pm 12V, V_{DS} = 0V$ $V_{GS} = \pm 19V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 4)						
Gate Threshold Voltage	$V_{GS(th)}$	0.62	0.92	1.4	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	39 52 90	54 72 115	m Ω	$V_{GS} = 10V, I_D = 3.8A$ $V_{GS} = 4.5V, I_D = 3.6A$ $V_{GS} = 2.5V, I_D = 3.1A$
Forward Transconductance	$ Y_{fs} $	—	3	—	S	$V_{DS} = 5V, I_D = 3.1A$
Source-Drain Diode Forward Voltage	V_{SD}	—	—	1.16	V	$V_{GS} = 0V, I_S = 2.0A$
DYNAMIC CHARACTERISTICS						
Gate Resistance	R_g	-	4.17	-	Ω	$V_{DS} = 0V, V_{GS} = 0V,$ $f = 1\text{MHz}$
Total Gate Charge (10V)	Q_g	-	8.2	-	nC	$V_{GS} = 10V, V_{DS} = 10V,$ $I_D = 3.8A$
Total Gate Charge (4.5V)	Q_g	-	3.7	-	nC	$V_{GS} = 4.5V, V_{DS} = 10V,$ $I_D = 3.8A$
Gate-Source Charge	Q_{gs}	-	0.7	-	nC	
Gate-Drain Charge	Q_{gd}	-	1.1	-	nC	$V_{DD} = 15V, V_{GEN} = 10V,$ $R_{GEN} = 6\Omega, R_L = 3.9\Omega$
Turn-On Delay Time	$t_{D(on)}$	-	1.14	-	ns	
Turn-On Rise Time	t_r	-	3.49	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	15.02	-	ns	
Turn-Off Fall Time	t_f	-	3.26	-	ns	$V_{DS} = 5V, V_{GS} = 0V$ $f = 1.0\text{MHz}$
Input Capacitance	C_{iss}	—	305	—	pF	
Output Capacitance	C_{oss}	—	74	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	48	—	pF	

- Notes:
1. Device mounted on FR-4 PCB. $t \leq 5$ sec.
 2. No purposefully added lead.
 3. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 4. Short duration pulse test used to minimize self-heating effect.

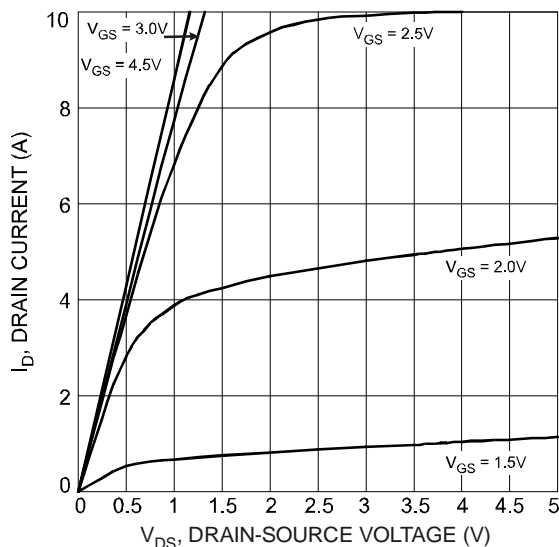


Fig. 1 Typical Output Characteristics

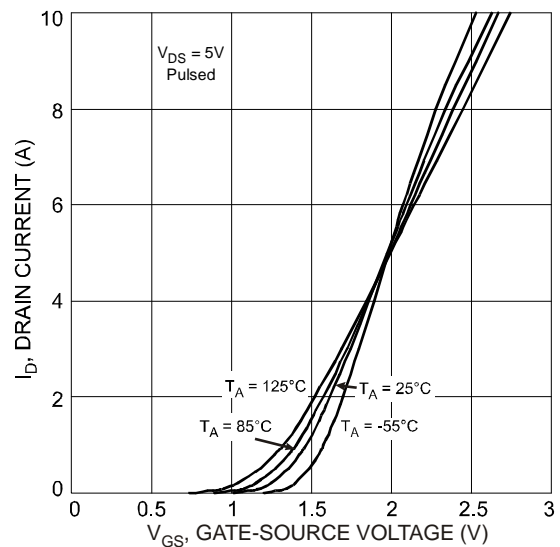


Fig. 2 Typical Transfer Characteristics

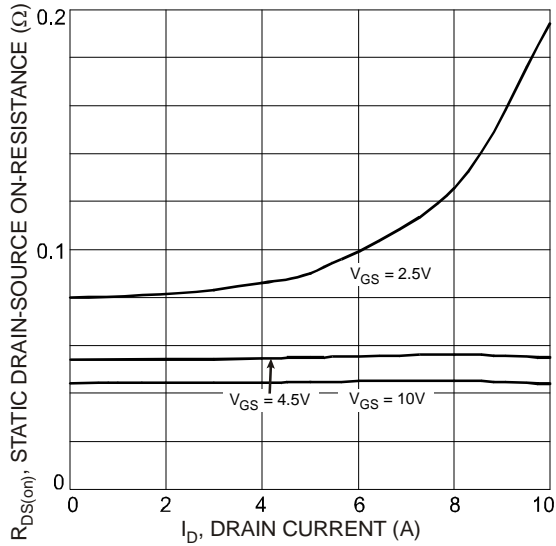


Fig. 3 On-Resistance vs. Drain Current and Gate Voltage

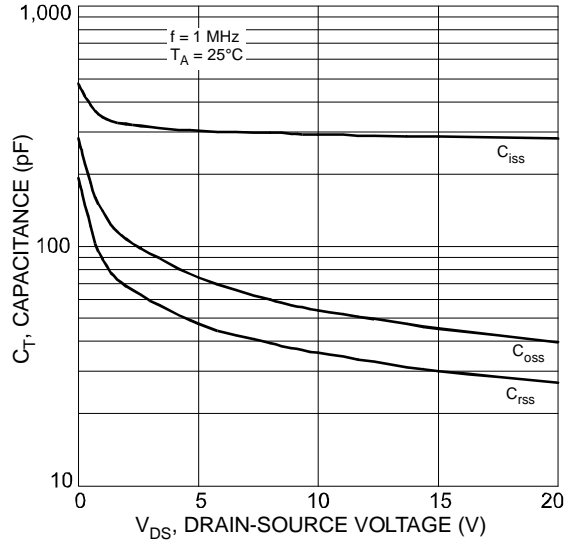


Fig. 4 Typical Total Capacitance

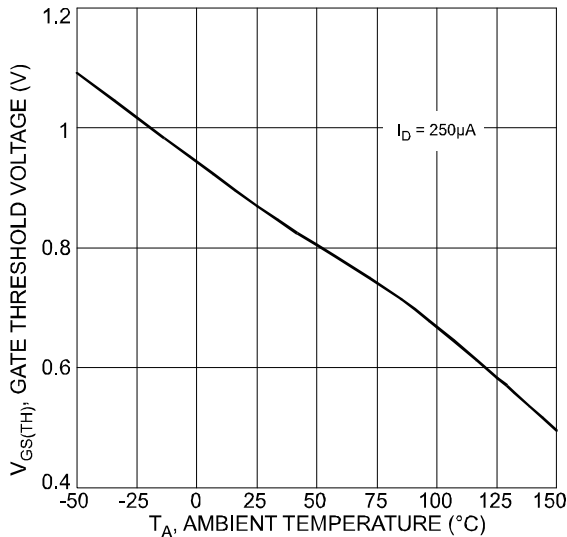


Fig. 5 Gate Threshold Voltage vs. Ambient Temperature

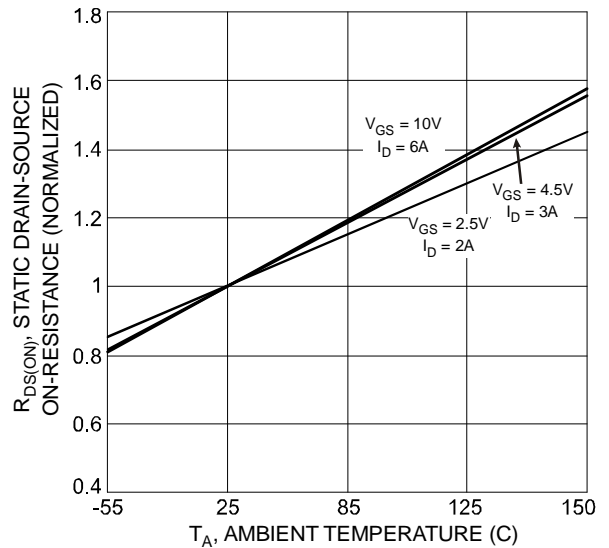


Fig. 6 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

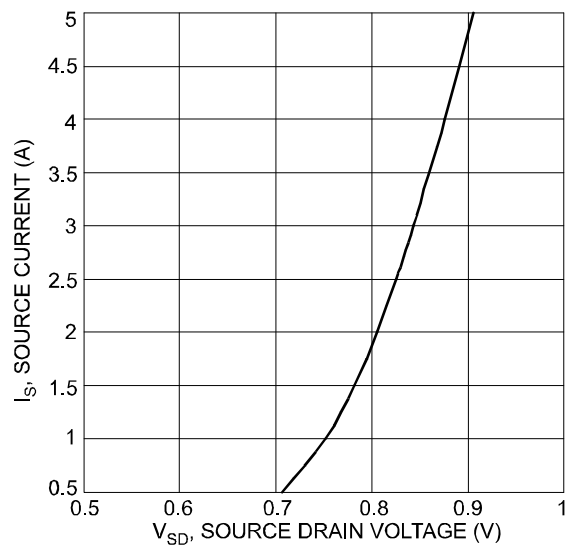


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

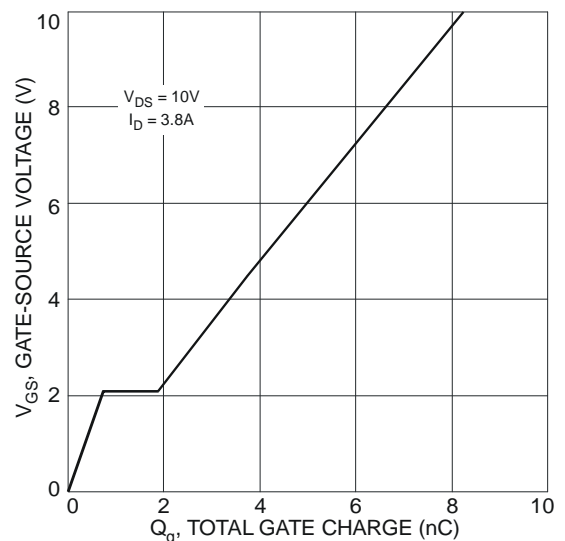


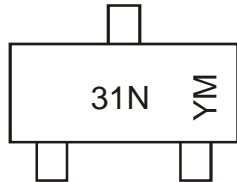
Fig. 8 Gate-Source Voltage vs. Total Gate Charge

Ordering Information (Note 5)

Part Number	Case	Packaging
DMN3150L-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



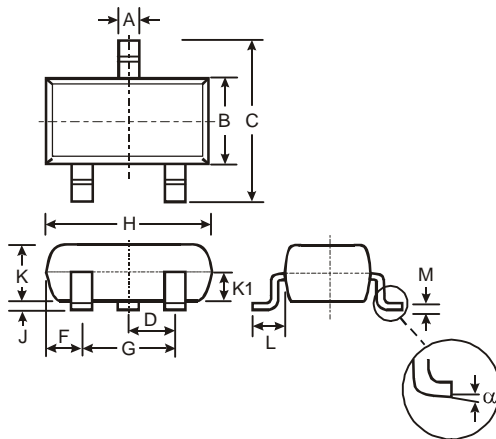
31N = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: T = 2006)
 M = Month (ex: 9 = September)

Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012
Code	T	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

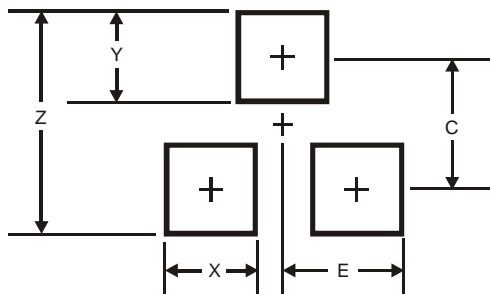
Package Outline Dimensions



SOT-23			
Dim	Min	Max	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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