

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**

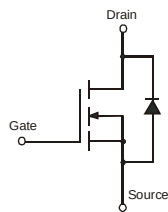
Mechanical Data

- 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)

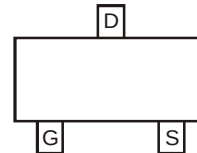
SOT-23



TOP VIEW



EQUIVALENT CIRCUIT



Pin Configuration

Maximum Ratings @ $T_A = 25^\circ C$ 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	$T_A = 25^\circ C$ 3.8	A
		$T_A = 70^\circ C$ 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 @ $T_A = 25^\circ C$ (Note 1)	$R_{\theta JA}$	90	$^\circ C/W$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ C$

Electrical Characteristics @T_A = 25°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 = 250μA
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} = ±12V, V _{DS} = 0V V _{GS} = ±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 = 250μA
Static Drain-Source On-Resistance	R _{DS(on)}	— —	39 52 90	54 72 115	mΩ	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 = 1MHz
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	
Turn-On Delay Time	t _{D(on)}	-	1.14	-	ns	V _{DD} = 15V, V _{GEN} = 10V, R _{GEN} = 6Ω, R _L = 3.9Ω
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	
Input Capacitance	C _{iss}	—	305	—	pF	V _{DS} = 5V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	74	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	48	—	pF	

- Notes:
1. Device mounted on FR-4 PCB. t ≤ 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.

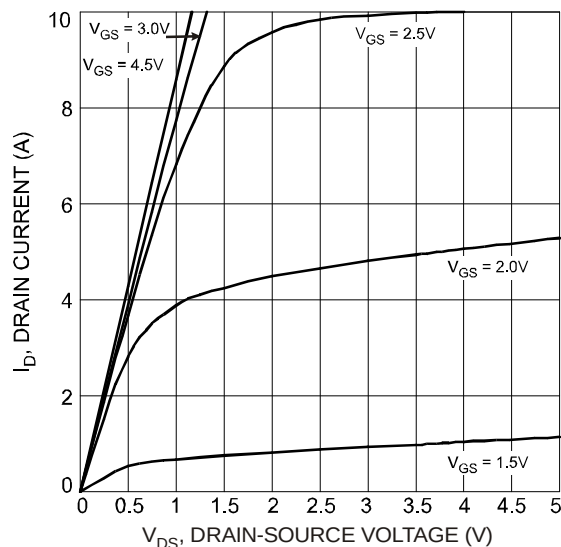


Fig. 1 Typical Output Characteristics

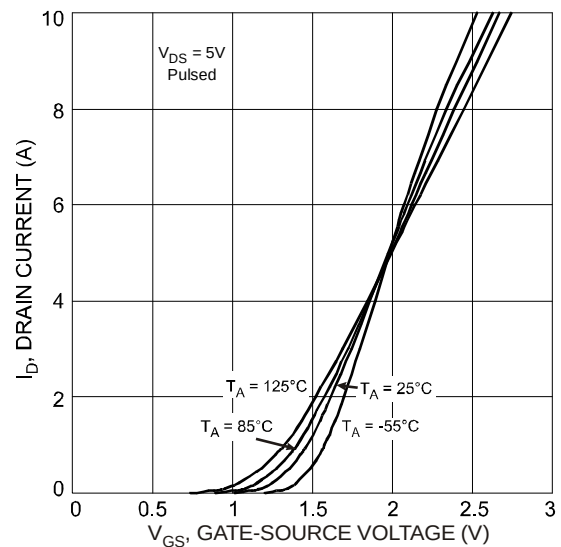


Fig. 2 Typical Transfer Characteristics

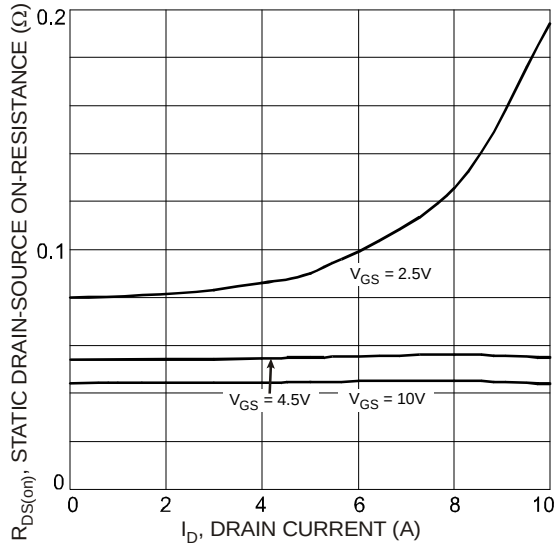


Fig. 3 On-Resistance vs. Drain Current and Gate Voltage

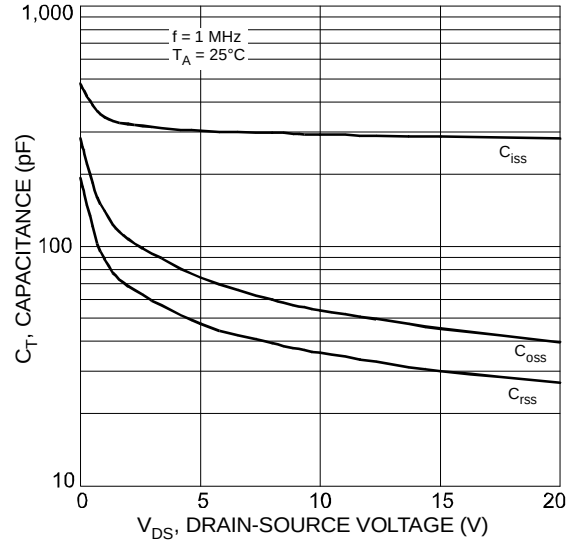


Fig. 4 Typical Total Capacitance

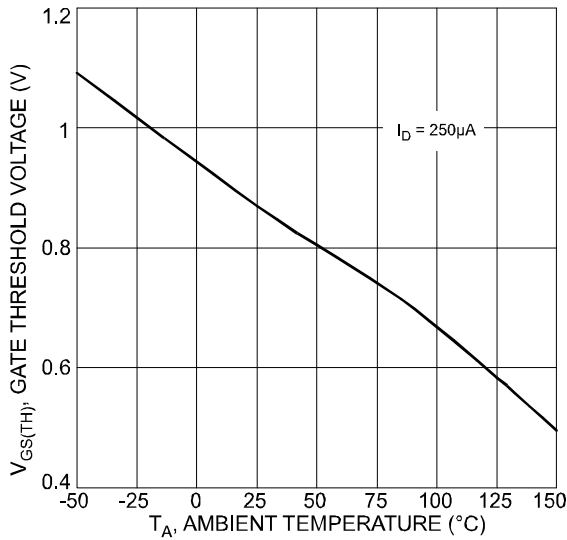


Fig. 5 Gate Threshold Voltage vs. Ambient Temperature

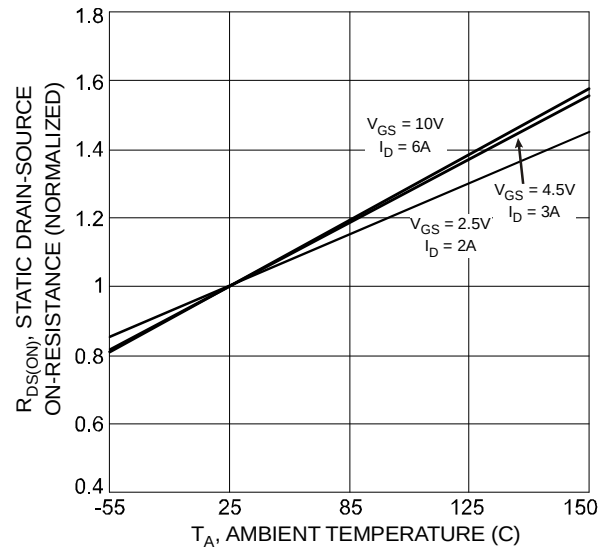


Fig. 6 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

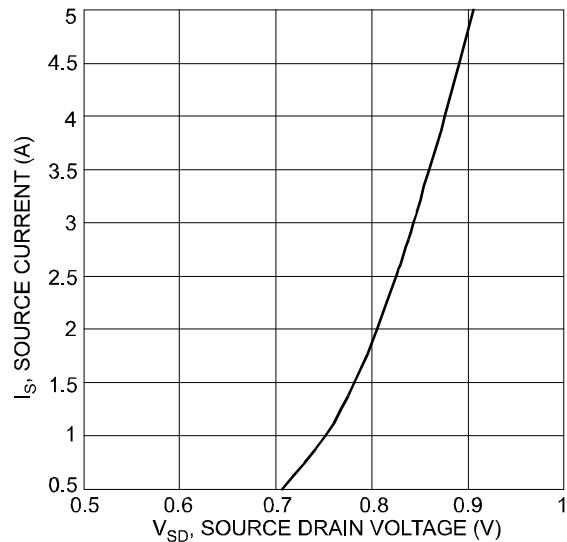


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

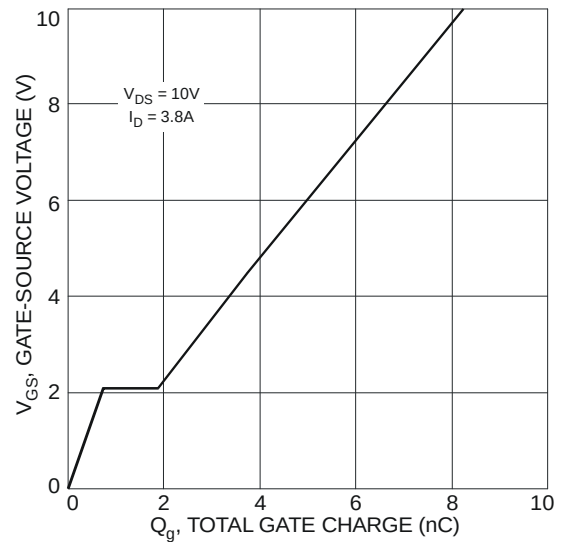


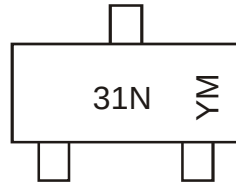
Fig. 8 Gate-Source Voltage vs. Total Gate Charge

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



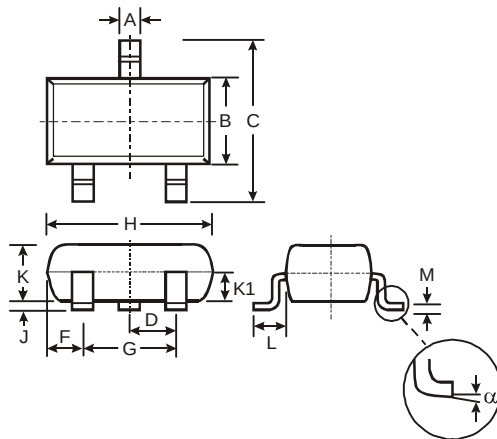
31N = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: T = 2006)
 M = Month (ex: 9 = September)

Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012
Code	T	U	V	W	X	Y	Z

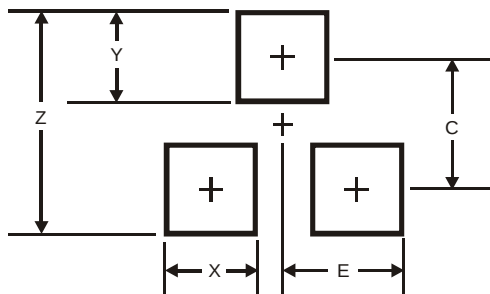
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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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