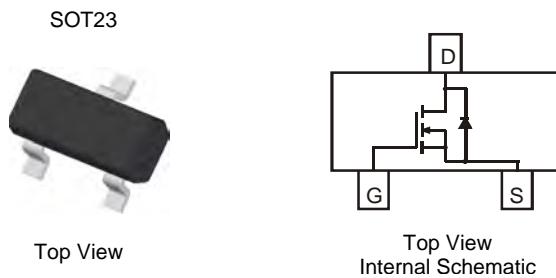


## Features

- Low On-Resistance
  - 110 mΩ @  $V_{GS} = 4.5V$
  - 145 mΩ @  $V_{GS} = 2.5V$
  - 230 mΩ @  $V_{GS} = 1.8V$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- **Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 1, 2 and 3)**
- Qualified to AEC-Q101 Standards for High Reliability

## Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.008 grams (approximate)



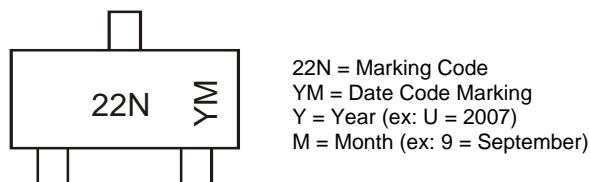
## Ordering Information (Note 4)

Part Number	Case	Packaging
DMN2230U-7	SOT23	3000/Tape & Reel

Notes:

1. No purposefully added lead. Halogen and Antimony Free.
2. 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).
3. Product manufactured with Green Molding Compound and does not contain Halogens or  $Sb_2O_3$  Fire Retardants.
4. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information



### 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	Units
Drain-Source Voltage	$V_{DSS}$	20	V
Gate-Source Voltage	$V_{GSS}$	$\pm 12$	V
Drain Current (Note 5)	$I_D$	2.0	A
Pulsed Drain Current (Note 6)	$I_{DM}$	7	A

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

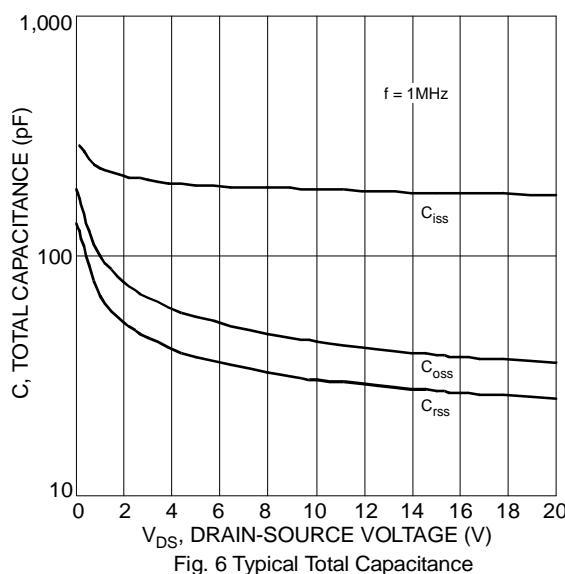
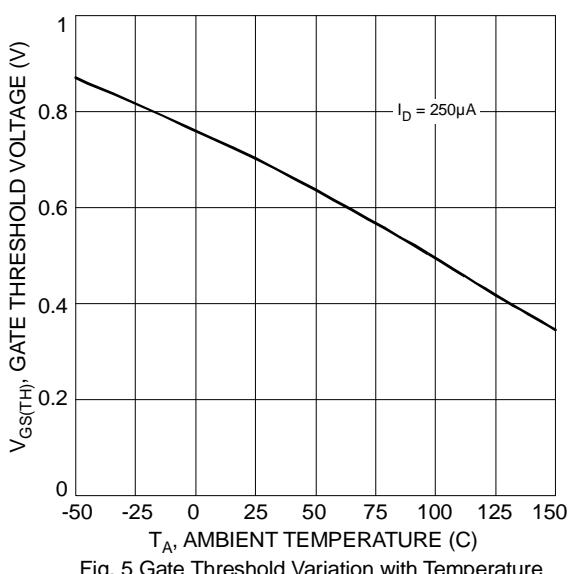
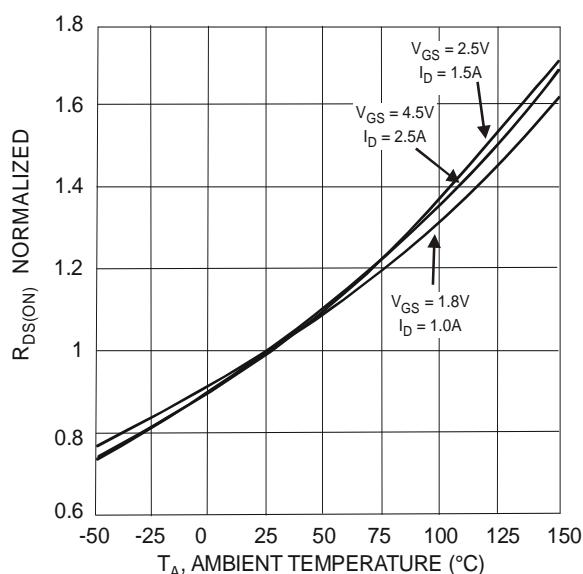
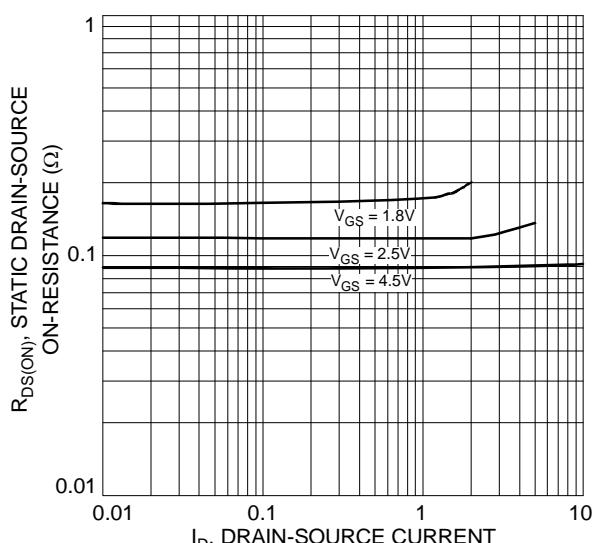
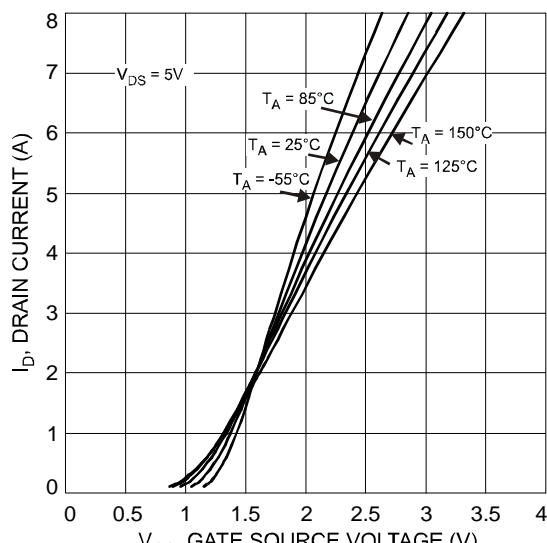
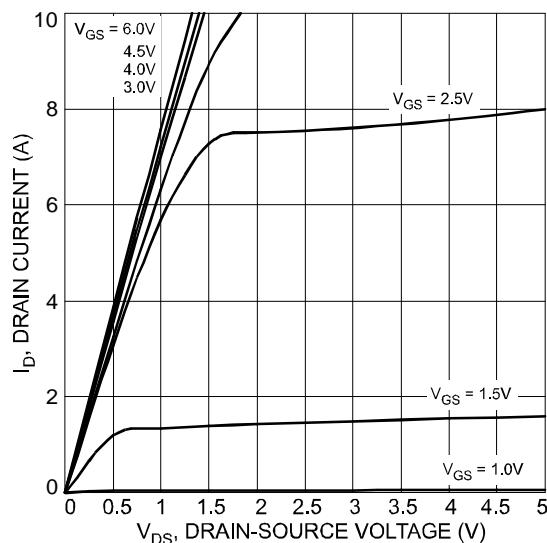
Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 5)	$P_D$	600	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	208	°C/W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
<b>OFF CHARACTERISTICS (Note 7)</b>							
Drain-Source Breakdown Voltage	$BV_{DSS}$	20	—	—	V	$V_{GS} = 0\text{V}, I_D = 10\mu\text{A}$	
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 20\text{V}, V_{GS} = 0\text{V}$	
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 12\text{V}, V_{DS} = 0\text{V}$	
<b>ON CHARACTERISTICS (Note 7)</b>							
Gate Threshold Voltage	$V_{GS(th)}$	0.5	—	1.0	V	$V_{DS} = V_{CS}, I_D = 250\mu\text{A}$	
Static Drain-Source On-Resistance	$R_{DS(\text{ON})}$	—	81 113 170	110 145 230	$\text{m}\Omega$	$V_{GS} = 4.5\text{V}, I_D = 2.5\text{A}$ $V_{GS} = 2.5\text{V}, I_D = 1.5\text{A}$ $V_{GS} = 1.8\text{V}, I_D = 1.0\text{A}$	
Forward Transfer Admittance	$ Y_{fs} $	—	5	—	S	$V_{DS} = 5\text{V}, I_D = 2.4\text{A}$	
Diode Forward Voltage (Note 7)	$V_{SD}$	—	0.8	1.1	V	$V_{GS} = 0\text{V}, I_S = 1.05\text{A}$	
<b>DYNAMIC CHARACTERISTICS</b>							
Input Capacitance	$C_{iss}$	—	188	—	pF	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$	
Output Capacitance	$C_{oss}$	—	44	—	pF		
Reverse Transfer Capacitance	$C_{rss}$	—	30	—	pF		
Total Gate Charge	$Q_g$	—	2.3	—	nC		
Gate-Source Charge	$Q_{gs}$	—	0.3	—	nC	$V_{DS} = 10\text{V}, I_D = 11.6\text{A}$	
Gate-Drain Charge	$Q_{gd}$	—	0.5	—	nC		
Turn-On Delay Time	$t_{d(on)}$	—	8	—	ns		
Rise Time	$t_r$	—	3.8	—			
Turn-Off Delay Time	$t_{d(off)}$	—	19.6	—			
Fall Time	$t_f$	—	8.3	—			

Notes:

5. Device mounted on FR-4 PCB, or minimum recommended pad layout
6. Repetitive rating, pulse width limited by junction temperature.
7. Short duration pulse test used to minimize self-heating effect.



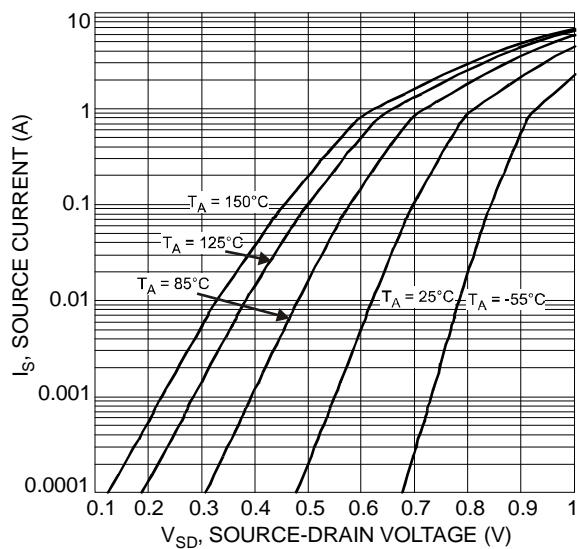


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

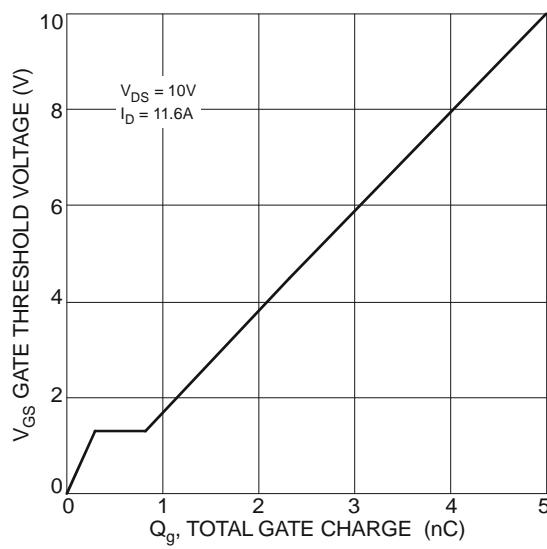


Fig. 8 Gate Charge

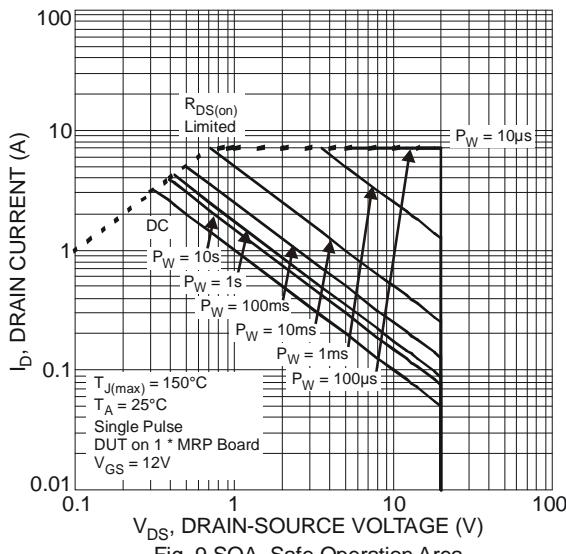
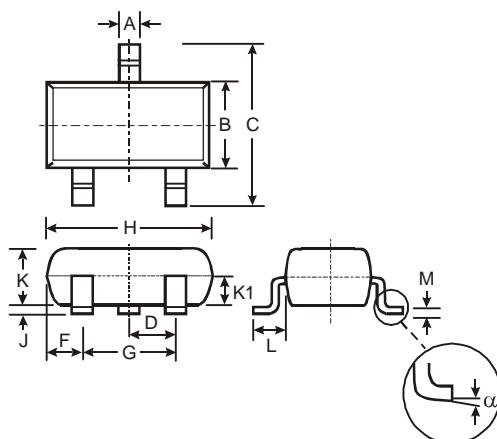


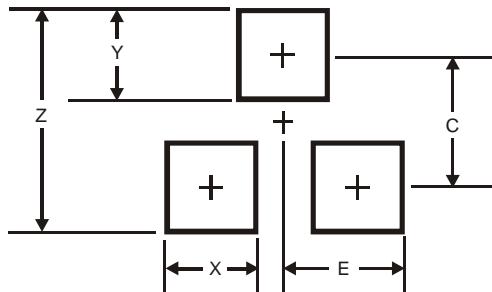
Fig. 9 SOA, Safe Operation Area

## Package Outline Dimensions



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
$\alpha$	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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