



**THE DATASHEET OF
DMN2230U-7**



Features

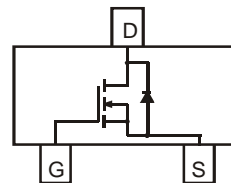
- Low On-Resistance
 - 110 mΩ @ $V_{GS} = 4.5V$
 - 145 mΩ @ $V_{GS} = 2.5V$
 - 230 mΩ @ $V_{GS} = 1.8V$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- **Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 1, 2 and 3)**
- **Qualified to AEC-Q101 Standards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



Top View

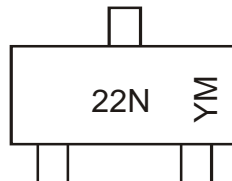

 Top View
Internal Schematic

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.
 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



22N = Marking Code
 YM = Date Code Marking
 Y = Year (ex: U = 2007)
 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°C unless otherwise specified

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V _{DSS}	20	V
Gate-Source Voltage	V _{GSS}	±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°C unless otherwise specified

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 5)	P _D	600	mW
Thermal Resistance, Junction to Ambient	R _{θJA}	208	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	20	—	—	V	V _{GS} = 0V, I _D = 10μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	μA	V _{DS} = 20V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±10	μA	V _{GS} = ±12V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(th)}	0.5	—	1.0	V	V _{DS} = V _{CS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	81	110	mΩ	V _{GS} = 4.5V, I _D = 2.5A
			113	145		V _{GS} = 2.5V, I _D = 1.5A
			170	230		V _{GS} = 1.8V, I _D = 1.0A
Forward Transfer Admittance	Y _{fs}	—	5	—	S	V _{DS} = 5V, I _D = 2.4A
Diode Forward Voltage (Note 7)	V _{SD}	—	0.8	1.1	V	V _{GS} = 0V, I _S = 1.05A
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{iss}	—	188	—	pF	V _{DS} = 10V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	44	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	30	—	pF	
Total Gate Charge	Q _g	—	2.3	—	nC	V _{DS} = 10V, I _D = 11.6A
Gate-Source Charge	Q _{gs}	—	0.3	—	nC	
Gate-Drain Charge	Q _{gd}	—	0.5	—	nC	
Turn-On Delay Time	t _{d(on)}	—	8	—	ns	V _{DD} = 10V, R _L = 10Ω I _D = 1A, V _{GEN} = 4.5V, R _G = 6Ω
Rise Time	t _r	—	3.8	—		
Turn-Off Delay Time	t _{d(off)}	—	19.6	—		
Fall Time	t _f	—	8.3	—		

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

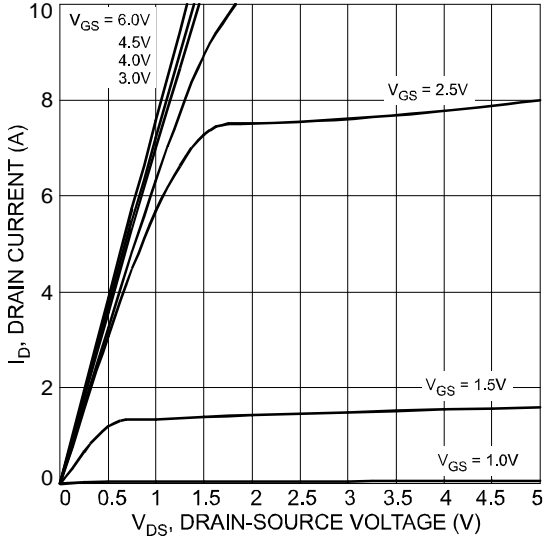


Fig. 1 Typical Output Characteristic

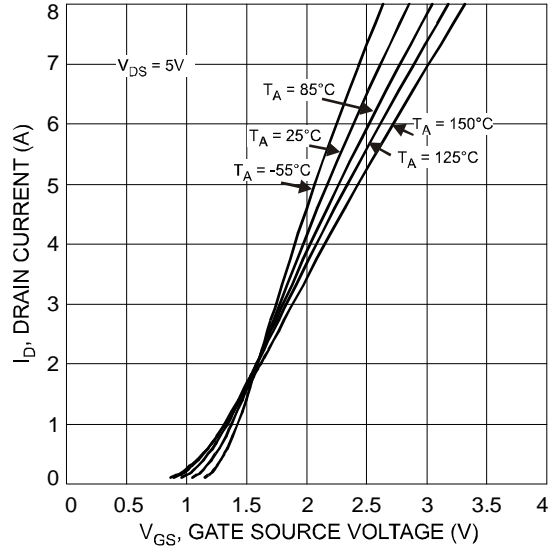


Fig. 2 Typical Transfer Characteristics

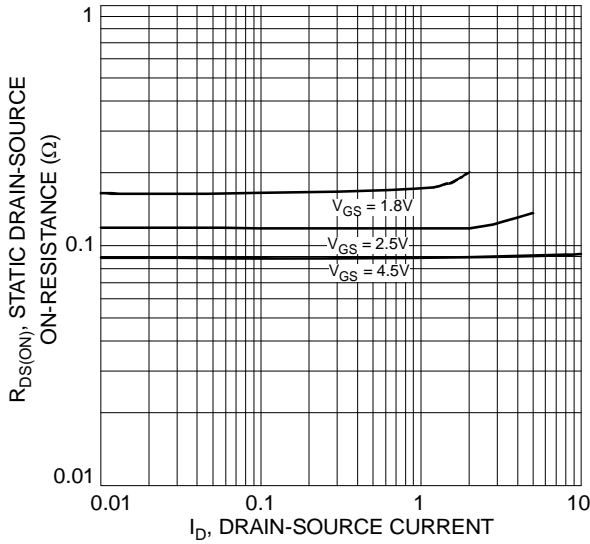


Fig. 3 On-Resistance vs. Drain-Source Current & Gate Voltage

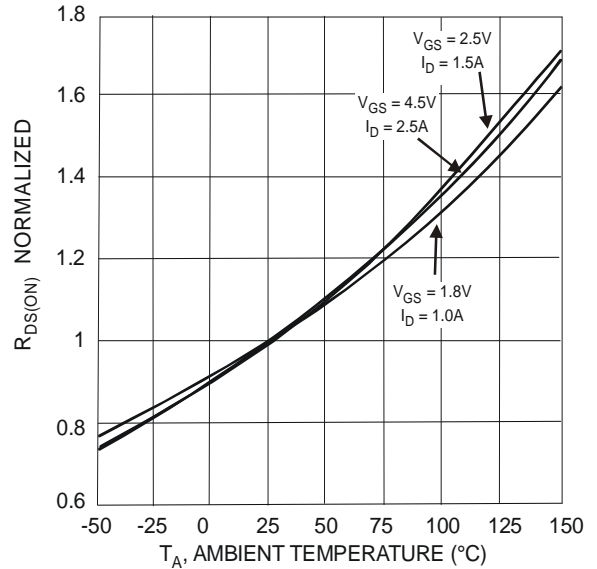


Fig. 4 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

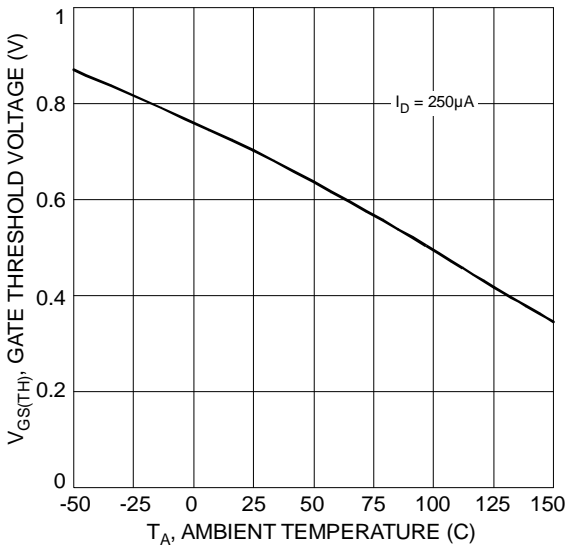


Fig. 5 Gate Threshold Variation with Temperature

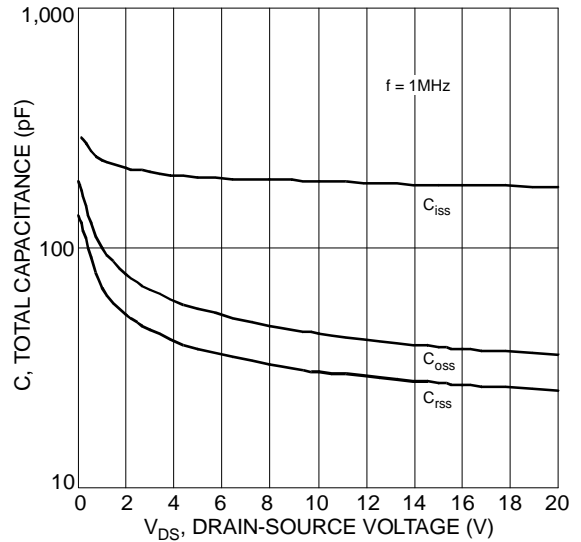


Fig. 6 Typical Total Capacitance

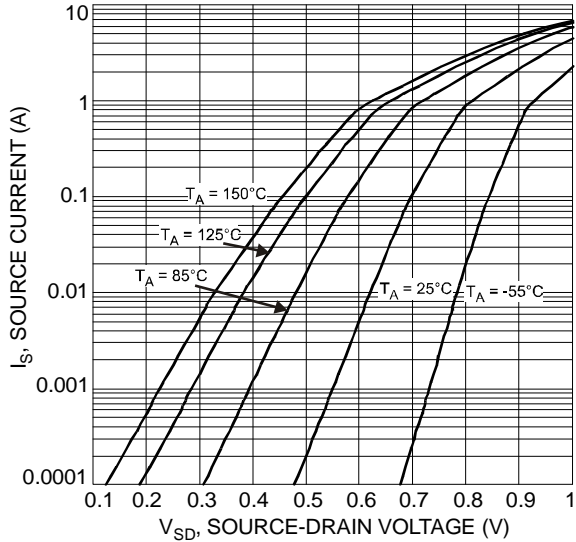


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

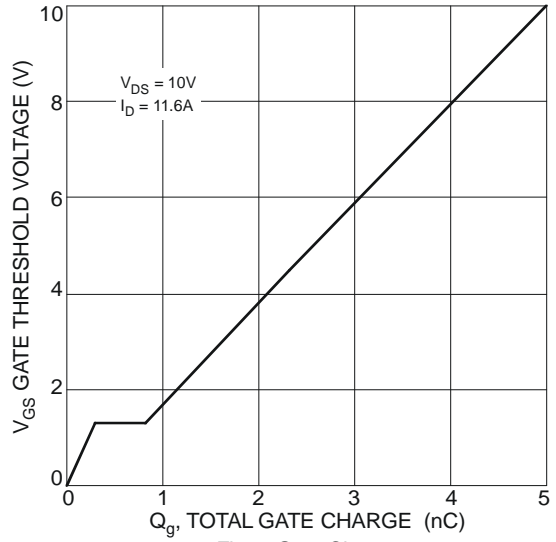


Fig. 8 Gate Charge

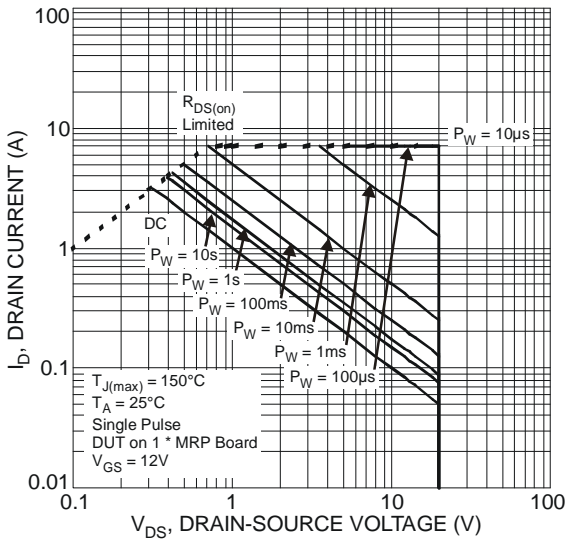
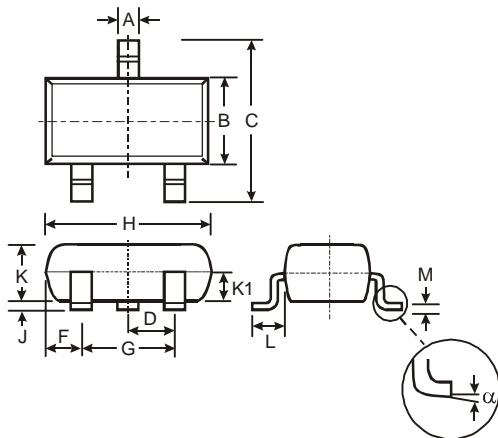


Fig. 9 SOA, Safe Operation Area

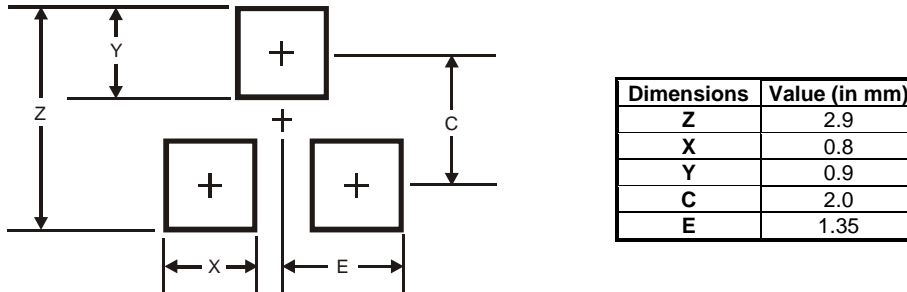
Package Outline Dimensions



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
α	0°	8°	-

All Dimensions in mm

Suggested Pad Layout



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