



**THE DATASHEET OF  
DMN3200U-7**

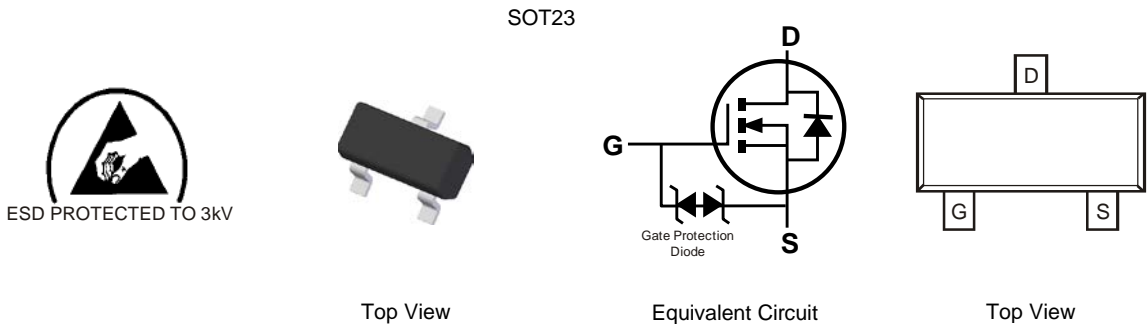


**N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR**
**Features**

- Low On-Resistance
  - 90mΩ @  $V_{GS} = 4.5V$
  - 110mΩ @  $V_{GS} = 2.5V$
  - 200mΩ @  $V_{GS} = 1.5V$
- Low Gate Threshold Voltage
- Low Input Capacitance
- ESD Protected Gate
- Fast Switching Speed
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

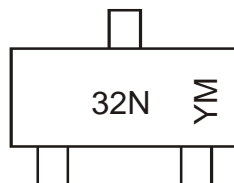
**Mechanical Data**

- 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 (E3)
- Weight: 0.008 grams (Approximate)


**Ordering Information** (Note 4)

Part Number	Case	Packaging
DMN3200U-7	SOT23	3,000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

**Marking Information**


32N = Marking Code  
 YM = Date Code Marking  
 Y or Y̅ = Year (ex: D = 2016)  
 M = Month (ex: 9 = September)

## Date Code Key

Year	2007	~	2016	2017	2018	2019	2020	2021	2022
Code	U	~	D	E	F	G	H	I	J

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<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V <sub>DSS</sub>	30	V
Gate-Source Voltage	V <sub>GSS</sub>	±8	V
Drain Current (Note 5)	I <sub>D</sub>	2.2	A
Pulsed Drain Current (Note 5)	I <sub>DM</sub>	9	A

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 5)	P <sub>D</sub>	650	mW
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	192	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 6)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	1	μA	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	±5	μA	V <sub>GS</sub> = ±8V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 6)</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	0.45	—	1.0	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	62	90	mΩ	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 2.2A
			70	110		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 2A
			150	200		V <sub>GS</sub> = 1.5V, I <sub>D</sub> = 0.67A
Forward Transfer Admittance	Y <sub>fs</sub>	—	5	—	S	V <sub>DS</sub> = 5V, I <sub>D</sub> = 2.2A
Diode Forward Voltage (Note 6)	V <sub>SD</sub>	—	—	0.9	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1A
<b>DYNAMIC CHARACTERISTICS (Note 7)</b>						
Input Capacitance	C <sub>iss</sub>	—	290	—	pF	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	66	—	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	35	—	pF	
Turn-On Delay Time	t <sub>D(ON)</sub>	—	40.2	—	ns	V <sub>DD</sub> = 10V, I <sub>D</sub> = 2A, V <sub>GEN</sub> = 4.5V, R <sub>L</sub> = 5Ω, R <sub>GEN</sub> = 6Ω
Turn-On Rise Time	t <sub>R</sub>	—	43.1	—	ns	
Turn-Off Delay Time	t <sub>D(OFF)</sub>	—	471	—	ns	
Turn-Off Fall Time	t <sub>F</sub>	—	104	—	ns	

- Notes:
- Device mounted on FR-4 PCB, on minimum recommended pad layout on 2oz. Copper pads.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to product testing.

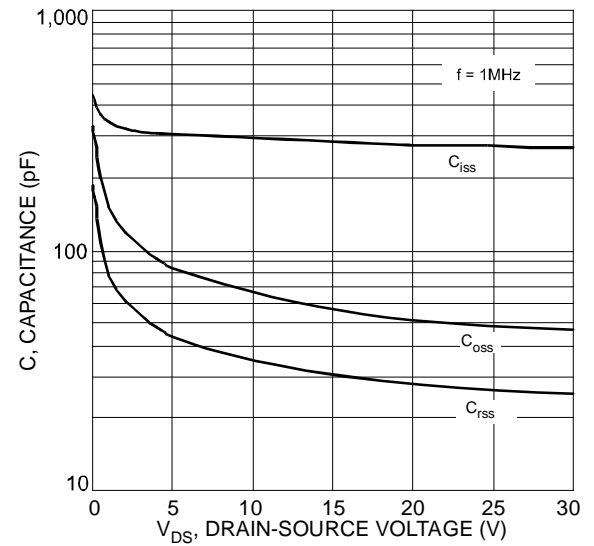
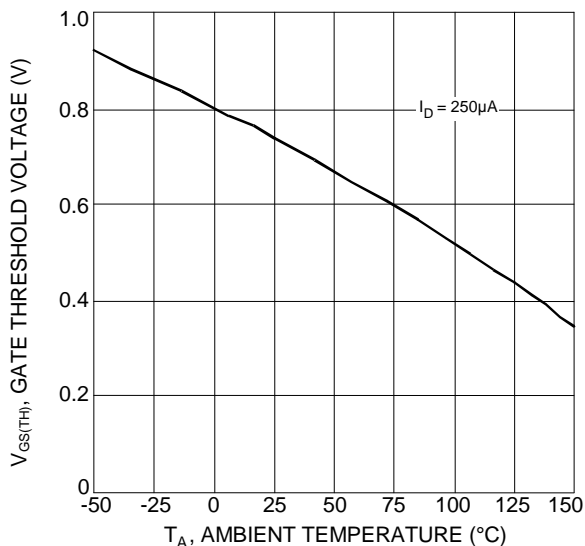
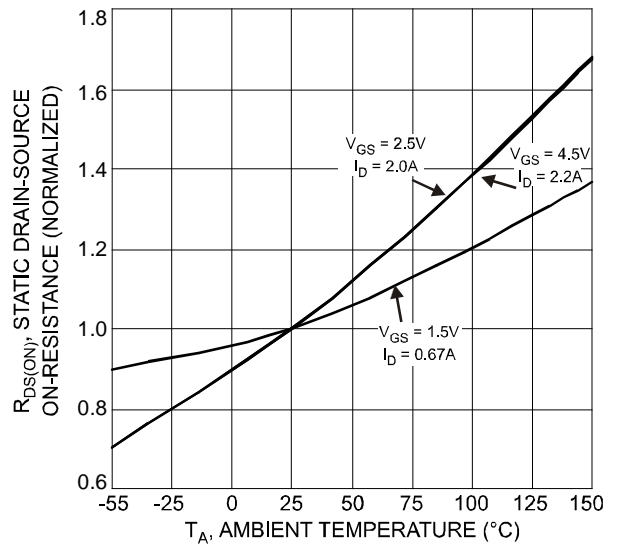
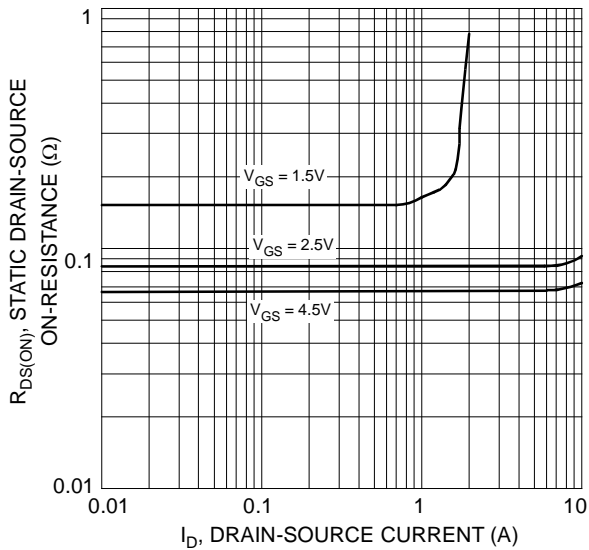
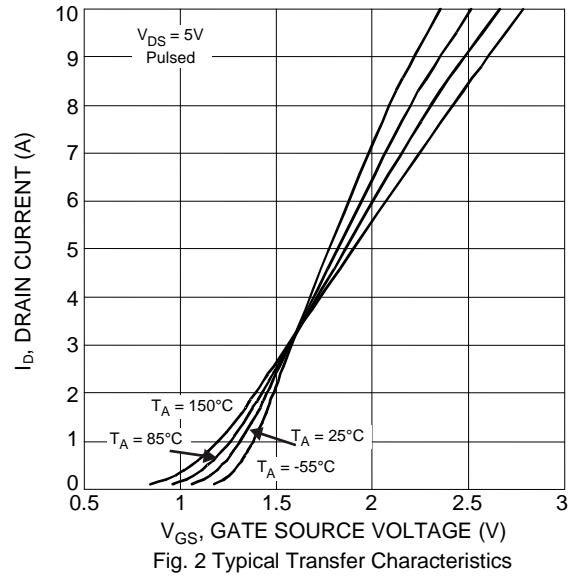
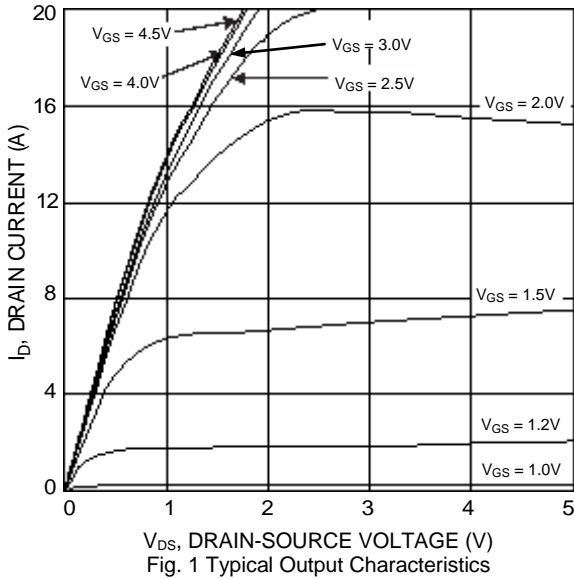


Fig. 3 On-Resistance vs. Drain Current & Gate Voltage

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

Fig. 5 Gate Threshold Variation vs. Ambient Temperature

Fig. 6 Typical Total Capacitance

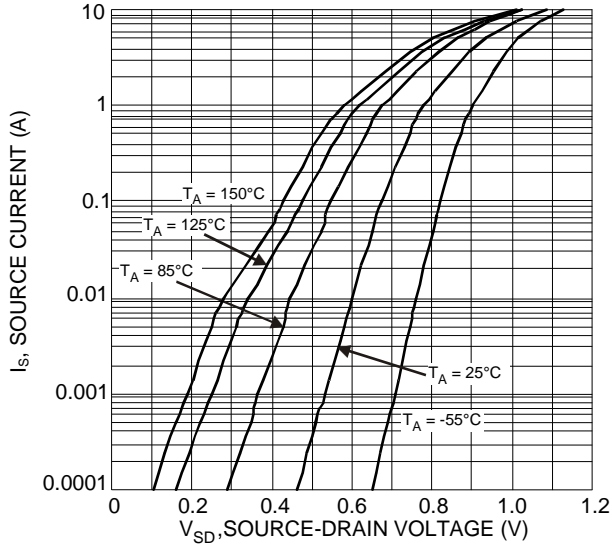


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

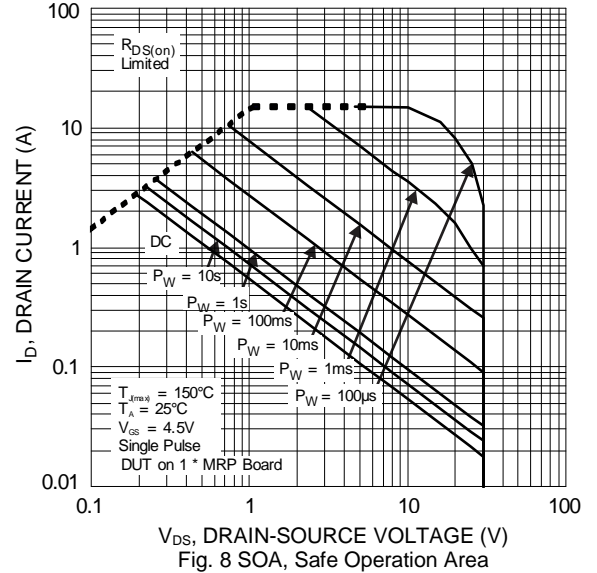


Fig. 8 SOA, Safe Operation Area

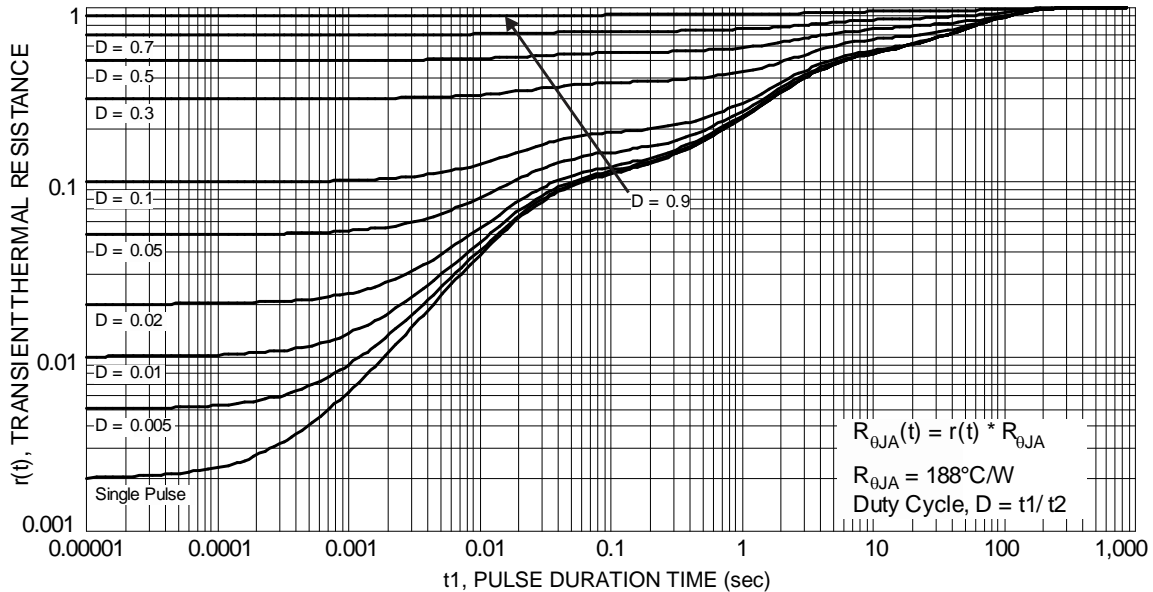
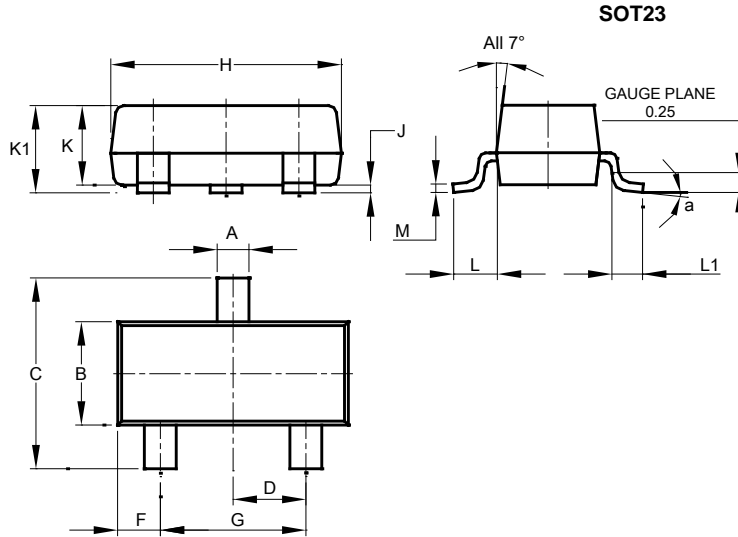


Fig. 9 Transient Thermal Resistance

## Package Outline Dimensions

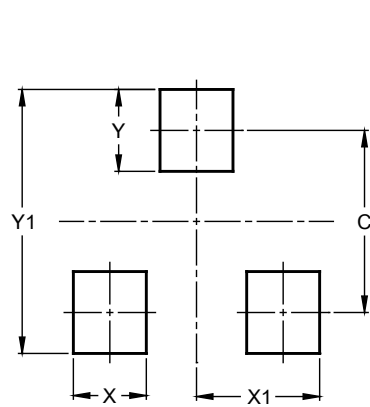
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



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	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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