

Product Summary

BV _{DSS}	R _{DS(ON)}	I _D T _A = +25°C
100V	700mΩ @ V _{GS} = 10V	0.70A
	900mΩ @ V _{GS} = 6.0V	0.62A

Description

This new generation MOSFET is designed to minimize the on-state resistance (R_{DS(ON)}) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

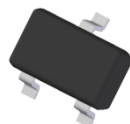
- DC-DC Converters
- Power Management Functions
- Battery Operated Systems and Solid-State Relays
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.

Features and Benefits

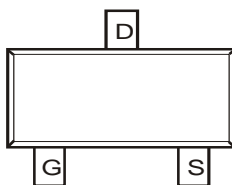
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Small Surface Mount Package
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

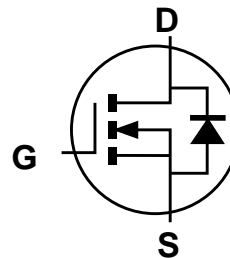
- Case: SOT23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish Annealed over Alloy 42 Leadframe). Ⓔ3
- Terminal Connections: See Diagram
- Weight: 0.006 grams (Approximate)



Top View



Top View
Pin Configuration



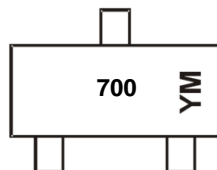
Equivalent Circuit

Ordering Information (Note 4)

Part Number	Case	Packaging
DMN10H700S-7	SOT23	3,000/Tape & Reel
DMN10H700S-13	SOT23	10,000/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 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



700 = Product Type Marking Code
 YM = Date Code Marking
 Y or Y = Year (ex: E = 2017)
 M = Month (ex: 9 = September)

Date Code Key

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Code	C	D	E	F	G	H	I	J	K	L	M

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	Unit
Drain-Source Voltage			V _{DSS}	100	V
Gate-Source Voltage			V _{GSS}	±20	V
Continuous Drain Current (Note 6) V _{GS} = 10V	Steady State	T _A = +25°C	I _D	0.70	A
		T _A = +70°C		0.56	
Pulsed Drain Current (10μs Pulse, Duty Cycle ≤1%)			I _{DM}	2.5	A
Maximum Body Diode Continuous Current (Note 6)			I _S	0.6	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation	(Note 5)	P _D	0.4	W
	(Note 6)		0.5	
Thermal Resistance, Junction to Ambient (Note 5)	Steady state	R _{θJA}	303	°C/W
Thermal Resistance, Junction to Ambient (Note 6)		R _{θJA}	239	
Thermal Resistance, Junction to Case	(Note 6)	R _{θJC}	88	
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}	100	—	—	V	V _{GS} = 0V, I _D = 250µA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	µA	V _{DS} = 100V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	2.0	2.7	4.0	V	V _{DS} = V _{GS} , I _D = 250µA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	540	700	mΩ	V _{GS} = 10V, I _D = 1.5A
		—	550	900		V _{GS} = 6.0V, I _D = 1.0A
Diode Forward Voltage	V _{SD}	—	0.9	1.1	V	V _{GS} = 0V, I _S = 1.5A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	—	235	—	pF	V _{DS} = 50V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	7	—		
Reverse Transfer Capacitance	C _{rss}	—	5	—		
Gate Resistance	R _G	—	1.9	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz
Total Gate Charge	Q _g	—	4.6	—	nC	V _{DS} = 50V, V _{GS} = 10V, I _D = 1.0A
Gate-Source Charge	Q _{gs}	—	1.1	—		
Gate-Drain Charge	Q _{gd}	—	1.6	—		
Turn-On Delay Time	t _{D(ON)}	—	2.5	—	ns	V _{DS} = 50V, I _D = 1.0A, V _{GS} = 10V, R _G = 6.0Ω
Turn-On Rise Time	t _R	—	1.1	—		
Turn-Off Delay Time	t _{D(OFF)}	—	5.4	—		
Turn-Off Fall Time	t _F	—	1.0	—		
Reverse Recovery Time	t _{RR}	—	22	—	ns	V _R = 100V, I _F = 1.8A, di/dt = 100A/µs
Reverse Recovery Charge	Q _{RR}	—	15	—	nC	

- Notes:
- Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
 - Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to production testing.

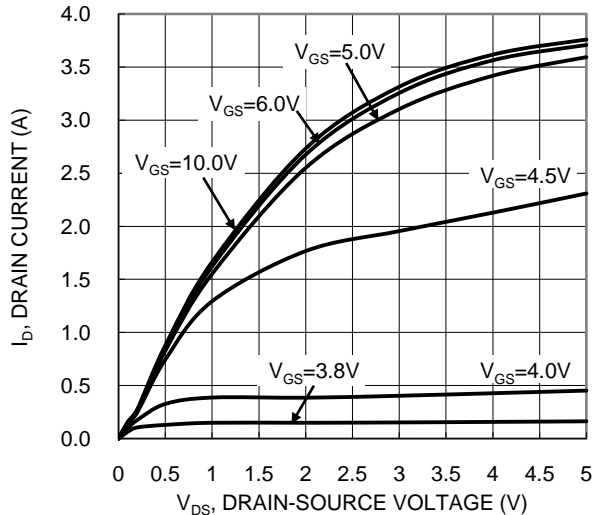


Figure 1. Typical Output Characteristic

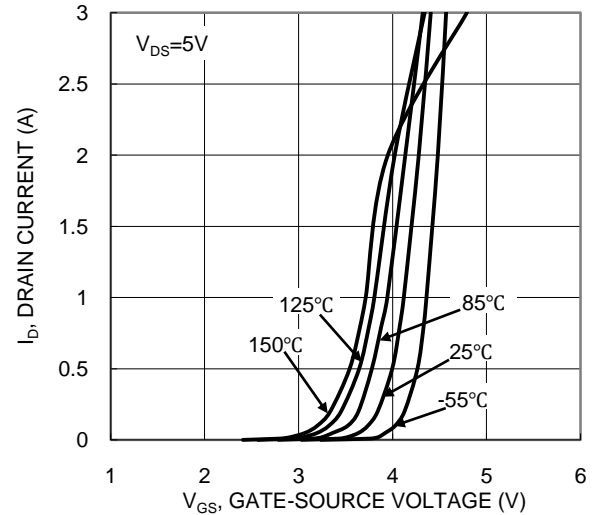


Figure 2. Typical Transfer Characteristic

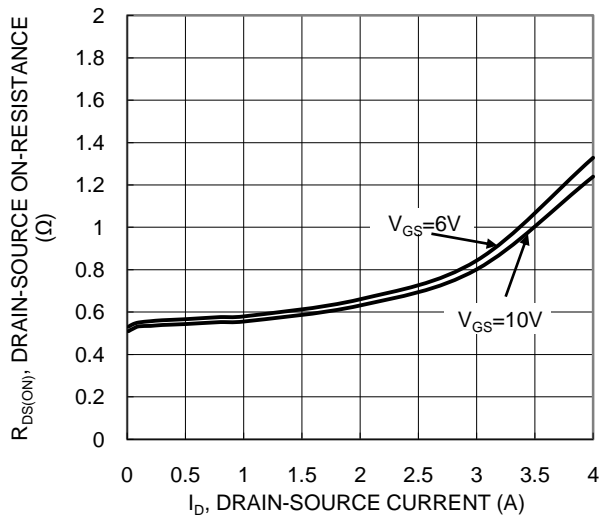


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

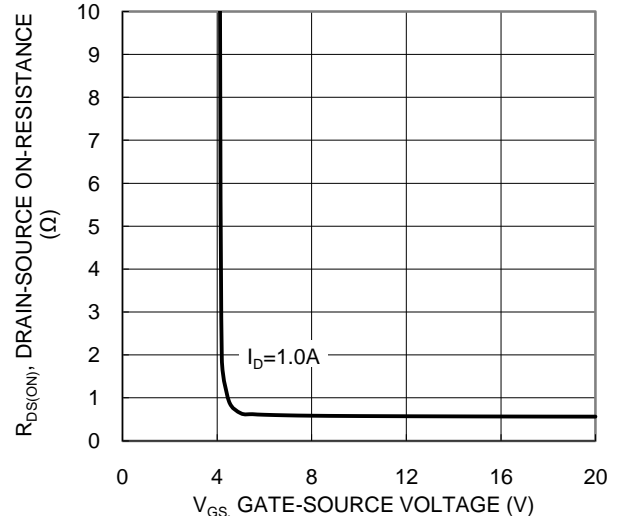


Figure 4. Typical Transfer Characteristic

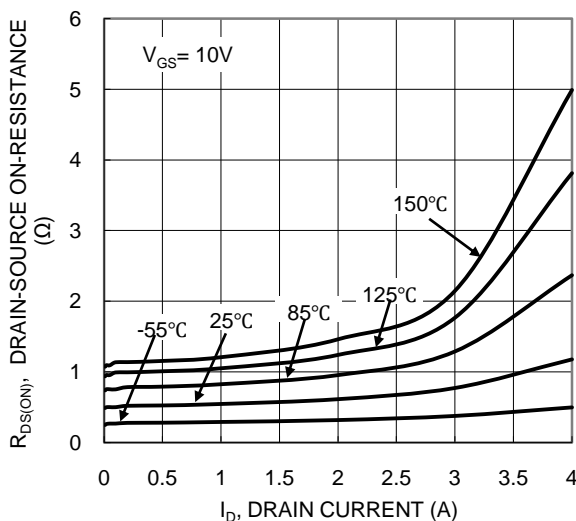


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

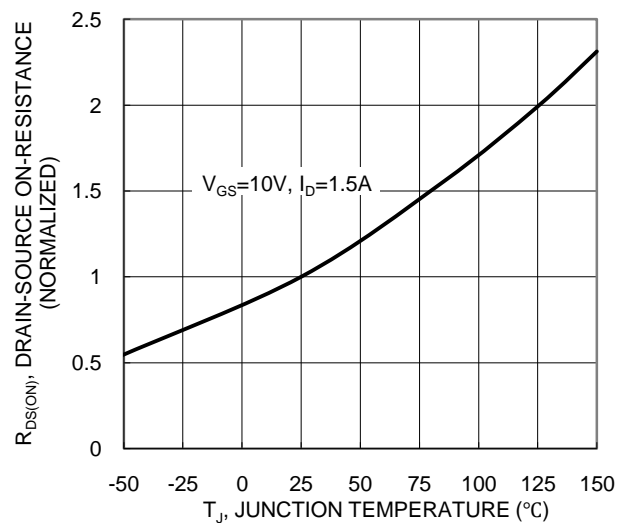
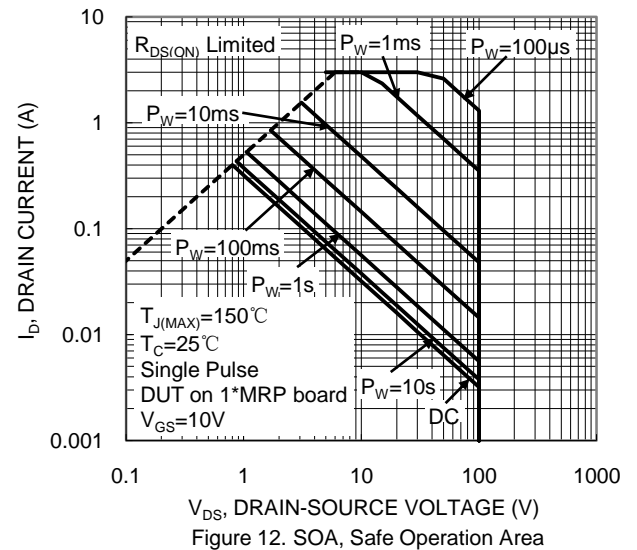
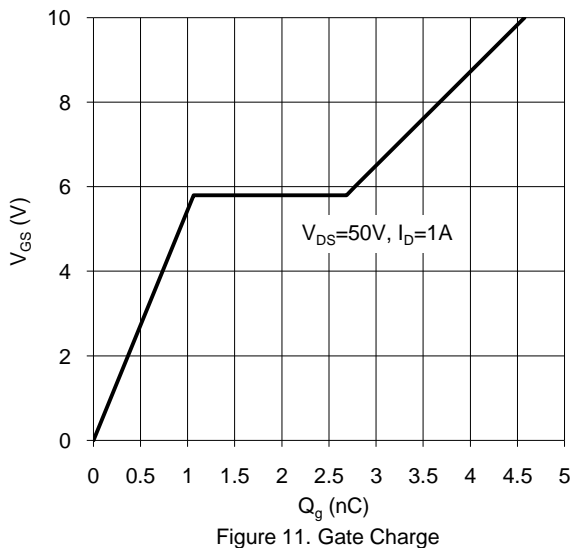
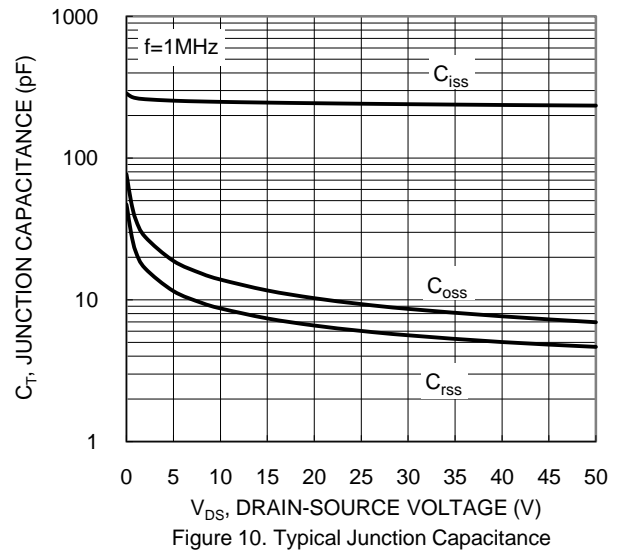
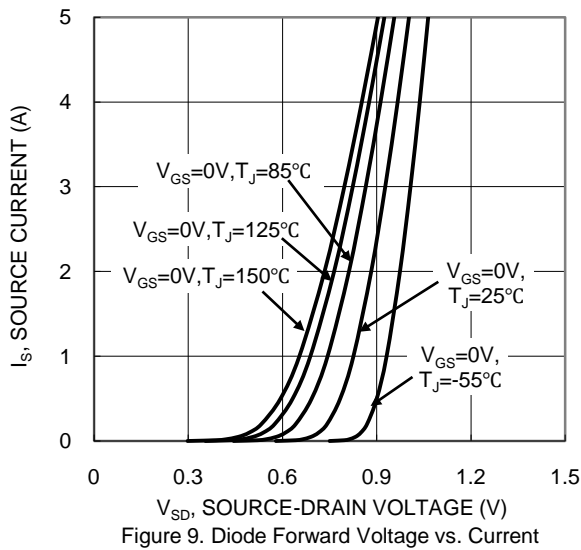
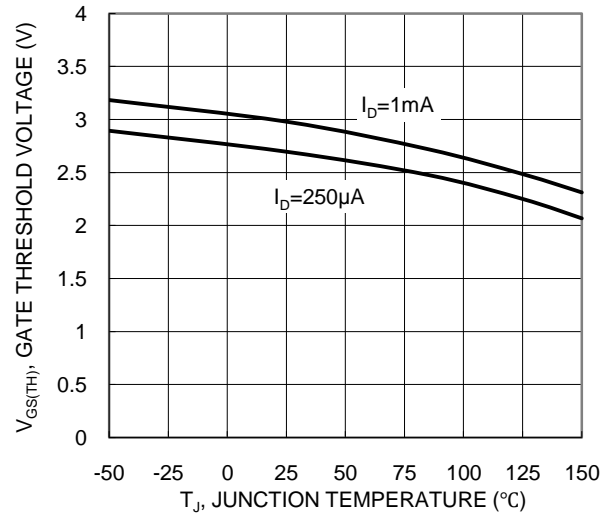
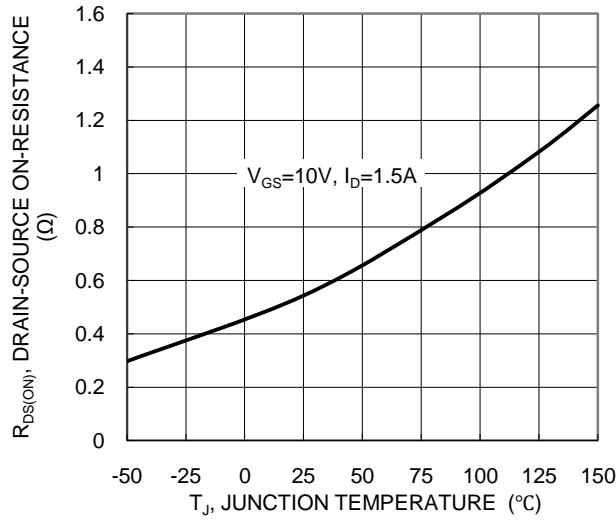


Figure 6. On-Resistance Variation with Junction Temperature



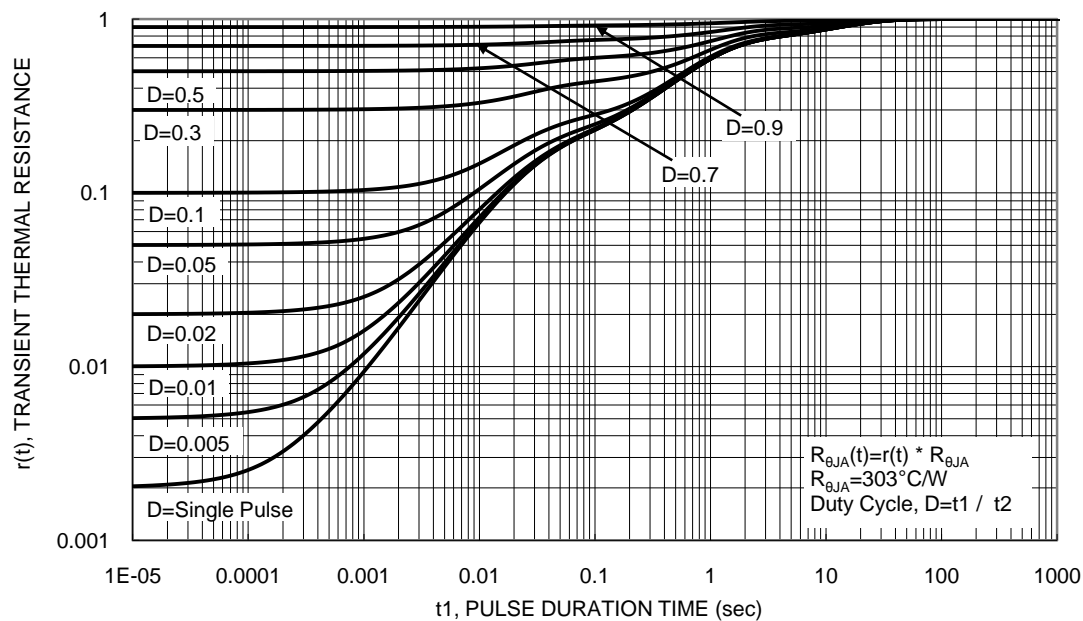
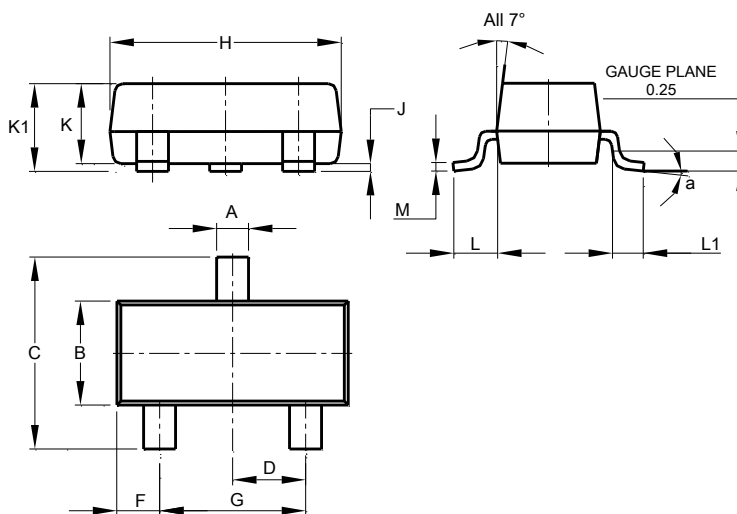


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

SOT23

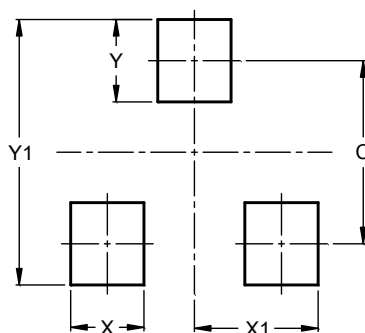


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT23



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

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