DMN3112S-7 Datasheet

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DiGi Electronics Part Number	DMN3112S-7-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	DMN3112S-7
Description	MOSFET N-CH 30V 5.8A SOT23-3
Detailed Description	N-Channel 30 V 5.8A (Ta) 1.4W (Ta) Surface Mount SOT-23-3

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Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
DMN3112S-7	Diodes Incorporated
Series:	Product Status:
-	Obsolete
FET Type:	Technology:
N-Channel	MOSFET (Metal Oxide)
Drain to Source Voltage (Vdss):	Current - Continuous Drain (Id) @ 25°C:
30 V	5.8A (Ta)
Drive Voltage (Max Rds On, Min Rds On):	Rds On (Max) @ Id, Vgs:
4.5V, 10V	57mOhm @ 5.8A, 10V
Vgs(th) (Max) @ Id:	Vgs (Max):
2.2V @ 250µA	±20V
Input Capacitance (Ciss) (Max) @ Vds:	FET Feature:
268 pF @ 5 V	-
Power Dissipation (Max):	Operating Temperature:
1.4W (Ta)	-55°C ~ 150°C (TJ)
Mounting Type:	Supplier Device Package:
Surface Mount	SOT-23-3
Package / Case:	Base Product Number:
TO-236-3, SC-59, SOT-23-3	DMN3112

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.29.0095	

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USE DMN3110S

Lead-free Green

DMN3112S

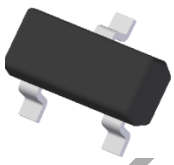
N-CHANNEL ENHANCEMENT MODE MOSFET

Features

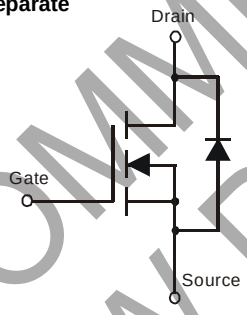
- Low On-Resistance:
  - 57mΩ @ V_{GS} = 10V
  - 112mΩ @ V_{GS} = 4.5V
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at https://www.diodes.com/products/automotive/automotive-products/.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. https://www.diodes.com/quality/product-definitions/**
- **An Automotive-Compliant Part is Available Under Separate Datasheet (DMN3112SQ)**

Mechanical Data

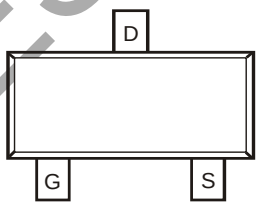
- Package: SOT23
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed Over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Terminal Connections: See Diagram
- Weight: 0.008 grams (Approximate)



Top View



Equivalent Circuit



Top View
Pin Configuration

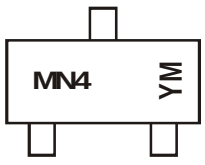
Ordering Information (Note 4)

Part Number	Qualification	Package	Packing	
			Qty.	Carrier
DMN3112S-7	Standard	SOT23	3000pcs	Tape & Reel

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ 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

Chengdu A/T Site



Shanghai A/T Site

MN4 = Product Type Marking Code
YM = Date Code Marking for SAT (Shanghai Assembly/ Test Site)
$\overline{Y}\overline{M}$ = Date Code Marking for CAT (Chengdu Assembly/ Test Site)
Y or $\overline{Y}$ = Year (ex: I = 2021)
M = Month (ex: 9 = September)

Date Code Key

Year	2007	…	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	U	…	I	J	K	L	M	N	O	P	R	S

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

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Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Drain Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current (Note 5)	T_A = +25°C T_A = +70°C	I_D	5.8 4.2	A
Drain Current (Note 5)	Pulsed	I_{DM}	20	A
Body-Diode Continuous Current (Note 5)		I_S	2.0	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P_D	1.4	W
Thermal Resistance, Junction to Ambient @T_A = +25°C (Note 5)	$R_{\theta JA}$	90	°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 6)						
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} = 30V, V_{GS} = 0V
Gate-Body Leakage	I_{GSS}	—	—	±80 ±800	nA	V_{GS} = ±20V, V_{DS} = 0V V_{GS} = ±25V, V_{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(TH)}$	1.3	1.9	2.2	V	V_{DS} = V_{GS}, I_D = 250μA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	— —	47 92	57 112	mΩ	V_{GS} = 10V, I_D = 5.8A V_{GS} = 4.5V, I_D = 4.2A
Forward Transconductance	$\|Y_{fs}\|$	—	4.7	—	S	V_{DS} = 5V, I_D = 4.2A
Source-Drain Diode Forward Voltage	V_{SD}	—	0.78	1.1	V	V_{GS} = 0V, I_S = 2.0A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	—	268	—	pF	V_{DS} = 5V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	73	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	50	—	pF	

Notes: 5. Device mounted on FR-4 PCB. t ≤ 5 sec.
6. Short duration pulse test used to minimize self-heating effect.
7. Guaranteed by design. Not subject to production testing.

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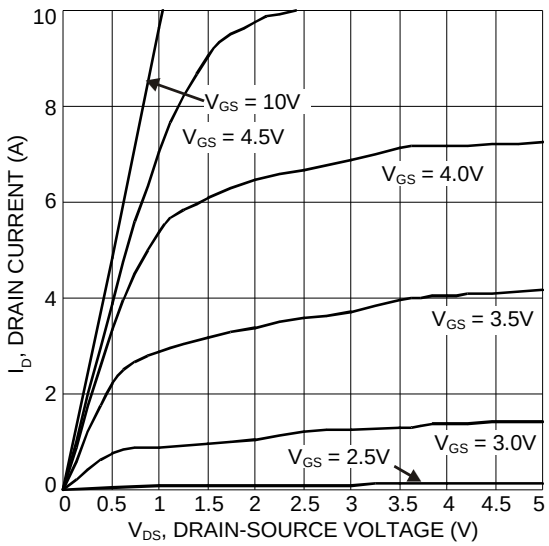

Figure 1. Typical Output Characteristic

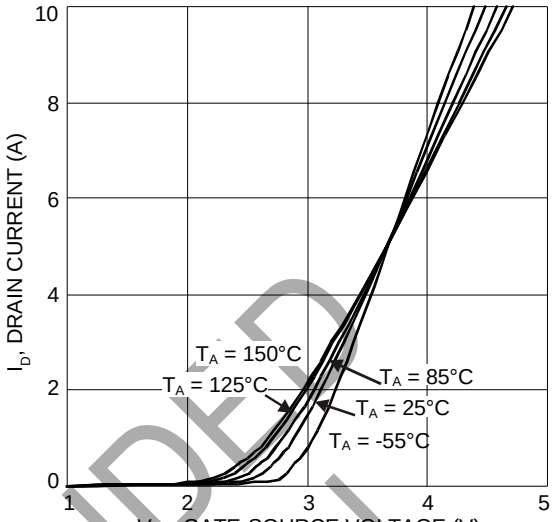

Figure 2. Typical Transfer Characteristic

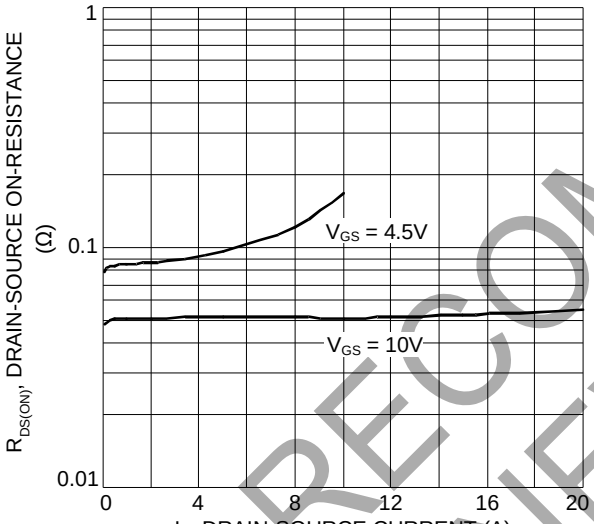

Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

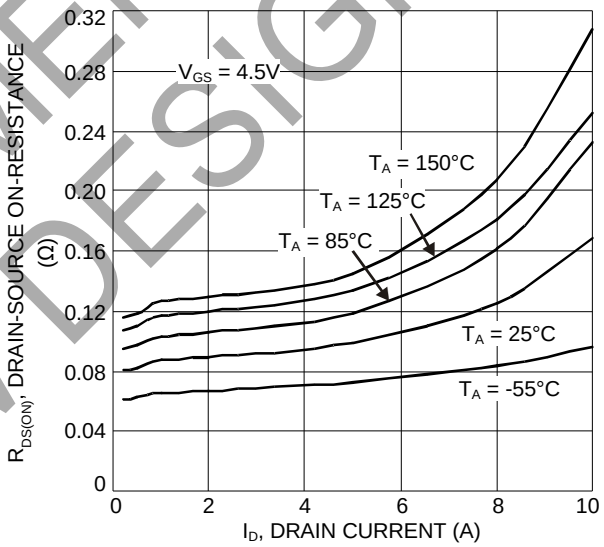

Figure 4. Typical On-Resistance vs. Drain Current and Temperature

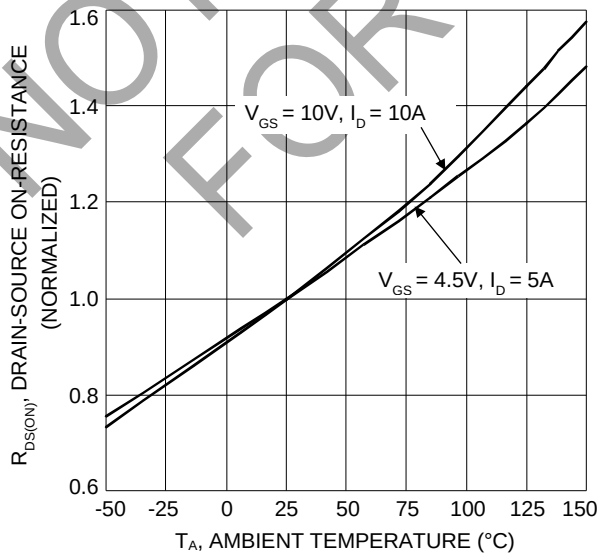

Figure 5. On-Resistance Variation with Temperature

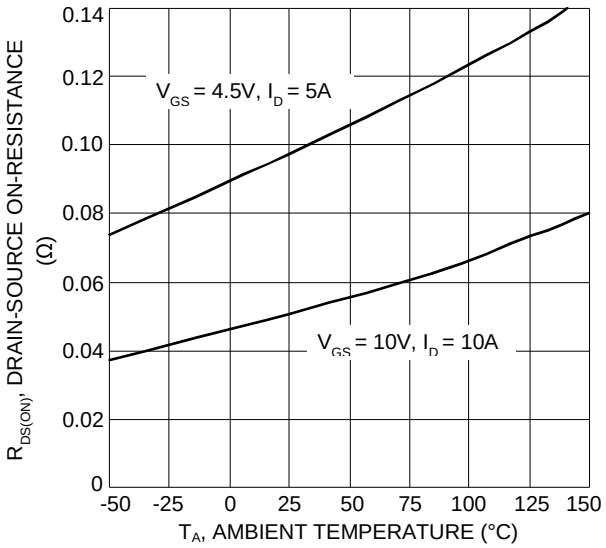

Figure 6. On-Resistance Variation with Temperature

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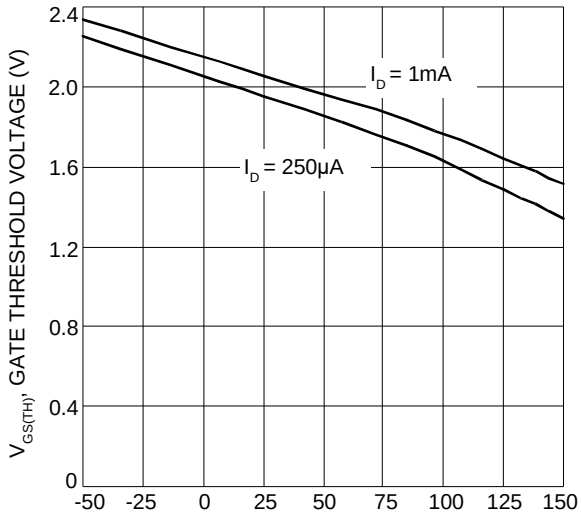

Figure 7. Gate Threshold Variation vs. Ambient Temperature

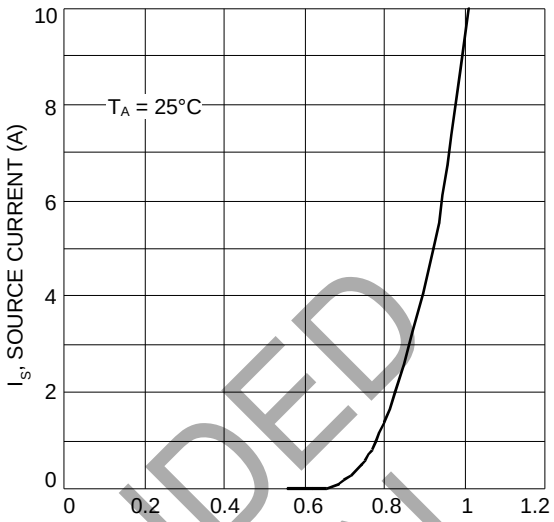

Figure 8. Diode Forward Voltage vs. Current

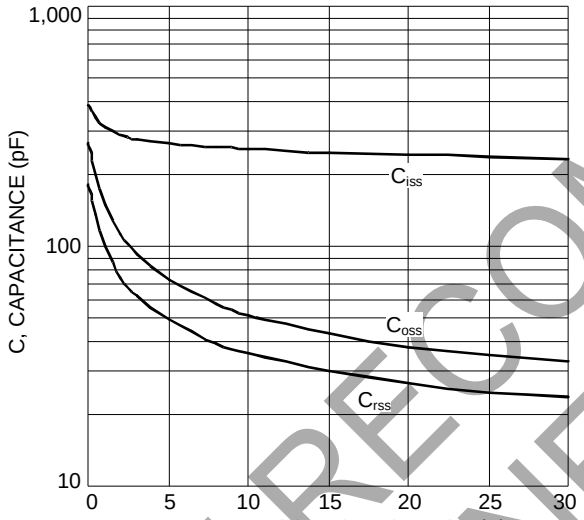

Figure 9. Typical Total Capacitance

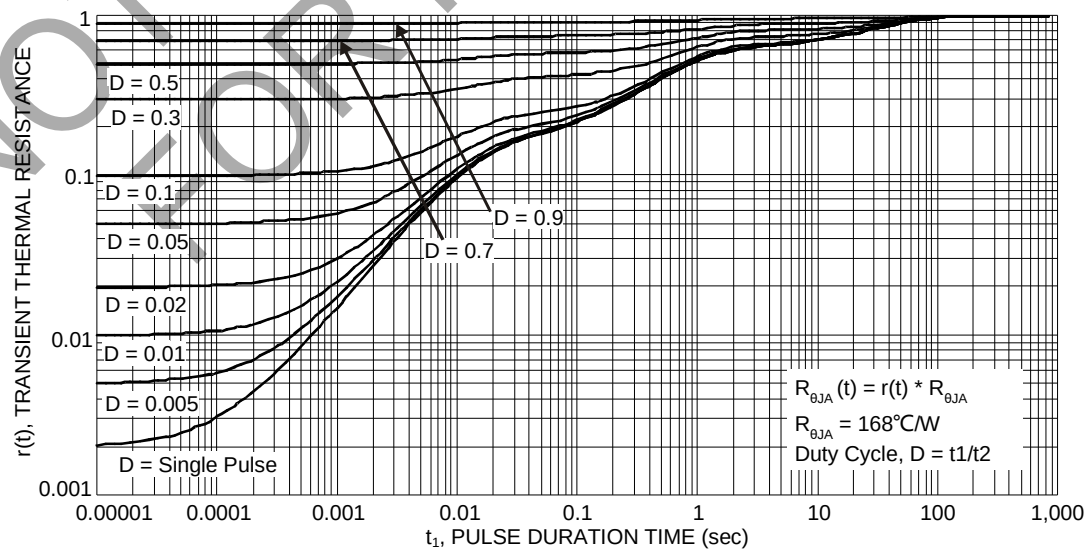

Figure 10. Transient Thermal Resistance

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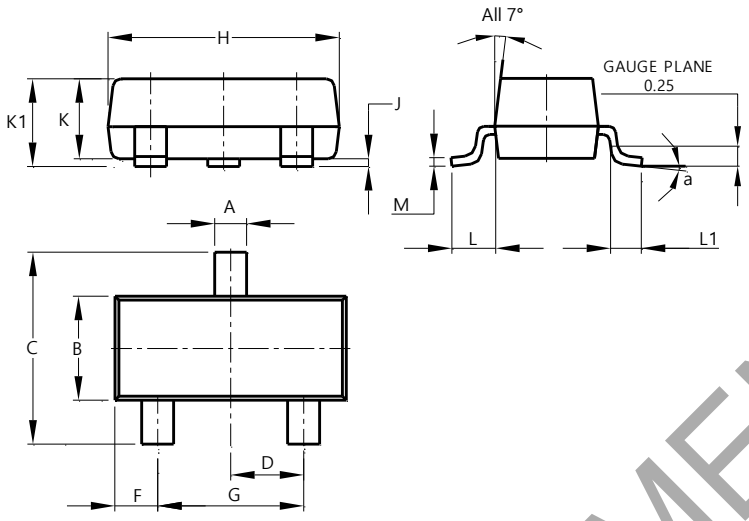
Package Outline Dimensions

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

SOT23

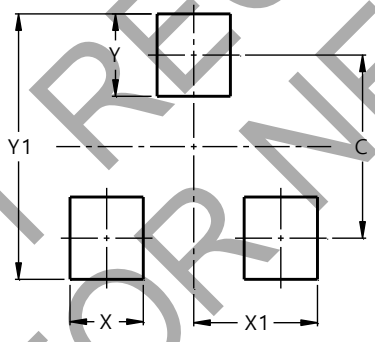


SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

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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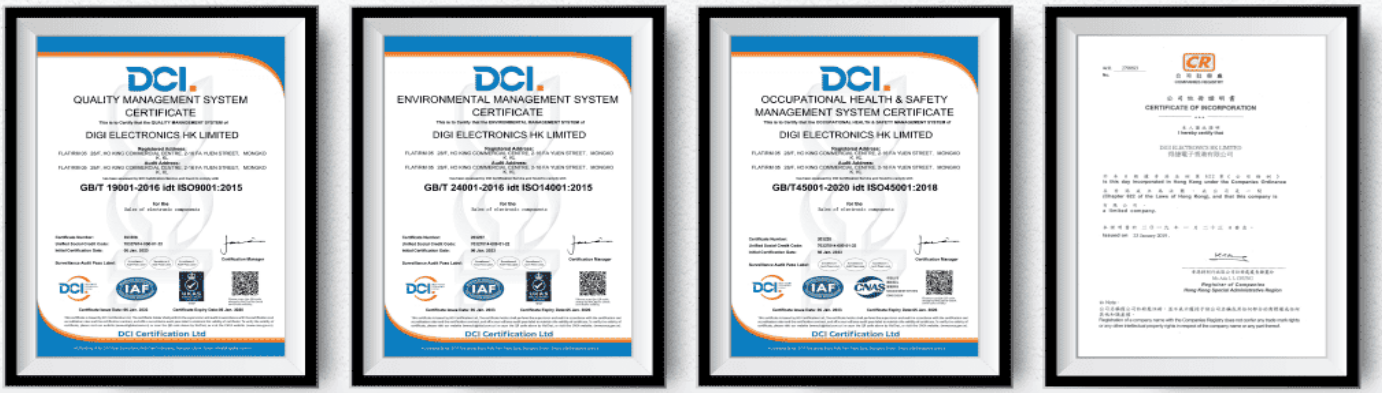

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