

## Product Summary

$V_{(BR)DSS}$	$R_{DS(ON) \max}$	$I_{D \max}$ $T_A = +25^\circ\text{C}$
-250V	14Ω @ $V_{GS} = -10\text{V}$	-0.26A
	18Ω @ $V_{GS} = -3.5\text{V}$	-0.23A

## 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

- General Purpose Interfacing Switch
- Load Switching
- Battery Management Application
- Power Management Functions

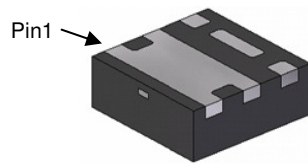
## Features

- 0.6mm Profile – Ideal for Low-Profile Applications
- PCB Footprint of 4mm<sup>2</sup>
- Low Gate Threshold Voltage
- Low On-Resistance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

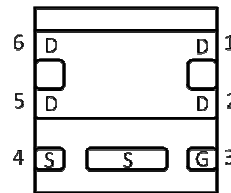
## Mechanical Data

- Case: U-DFN2020-6
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 <sup>(e4)</sup>
- Weight: 0.0065 grams (Approximate)

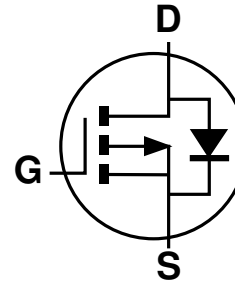
U-DFN2020-6



Bottom View



Pin Out  
Bottom View



Equivalent Circuit

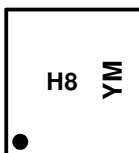
## Ordering Information (Note 4)

Part Number	Marking	Reel Size (inches)	Quantity per Reel
DMP25H18DLFDE-7	H8	7	3,000
DMP25H18DLFDE-13	H8	13	10,000

- 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

U-DFN2020-6



H8 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: B = 2014)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	2014	2015	2016	2017	2018	2019	2020	2021
Code	B	C	D	E	F	G	H	I

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>	-250	V	
Gate-Source Voltage	V <sub>GSS</sub>	±40	V	
Continuous Drain Current (Note 6) V <sub>GS</sub> = 10V	I <sub>D</sub>	T <sub>A</sub> = +25°C	-0.26	A
		T <sub>A</sub> = +70°C	-0.21	
Pulsed Drain Current (10µs pulse, duty cycle ≤ 1%)	I <sub>DM</sub>	-0.8	A	
Maximum Body Diode Continuous Current (Note 6)	I <sub>S</sub>	1.2	A	

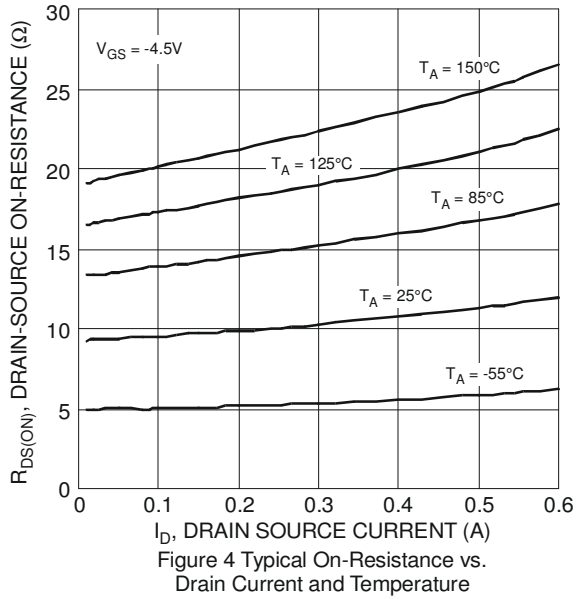
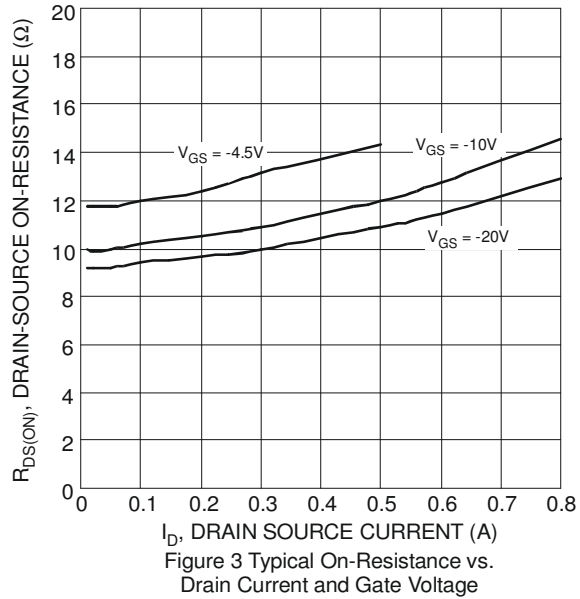
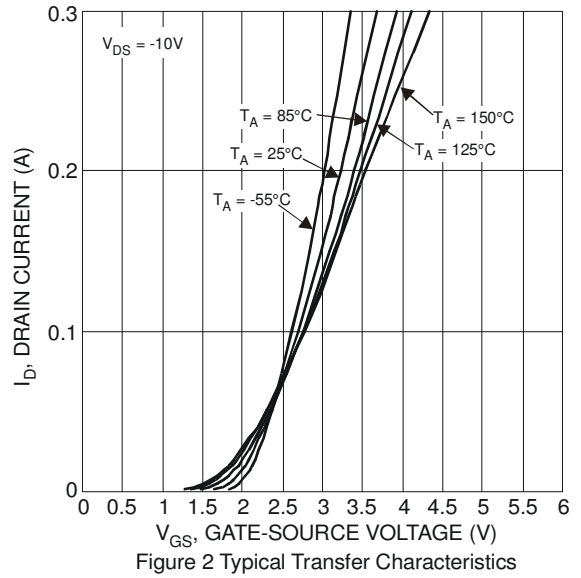
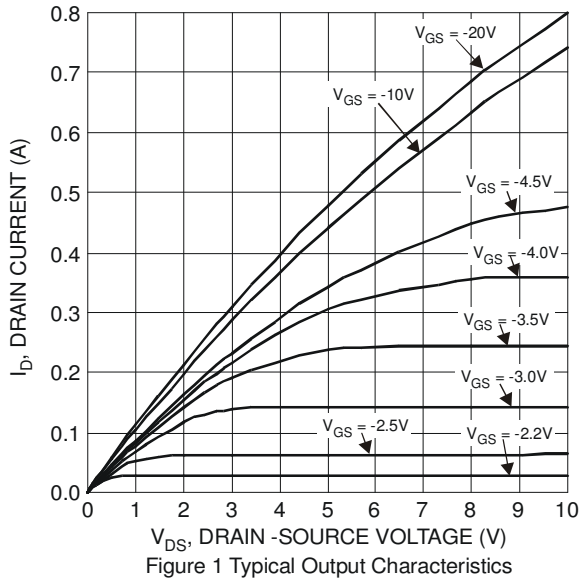
**Thermal Characteristics**

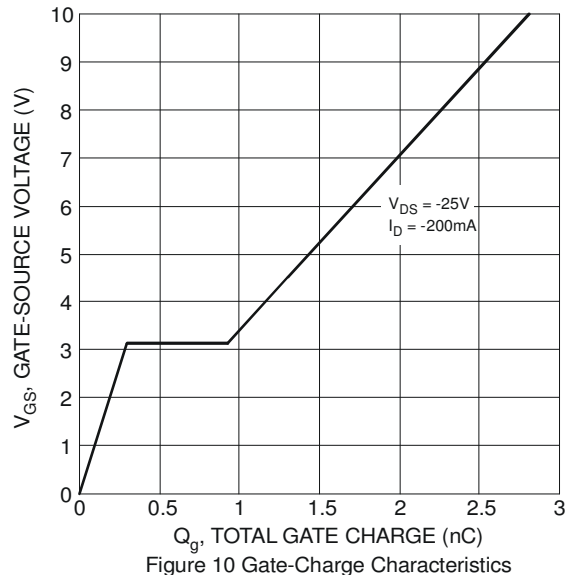
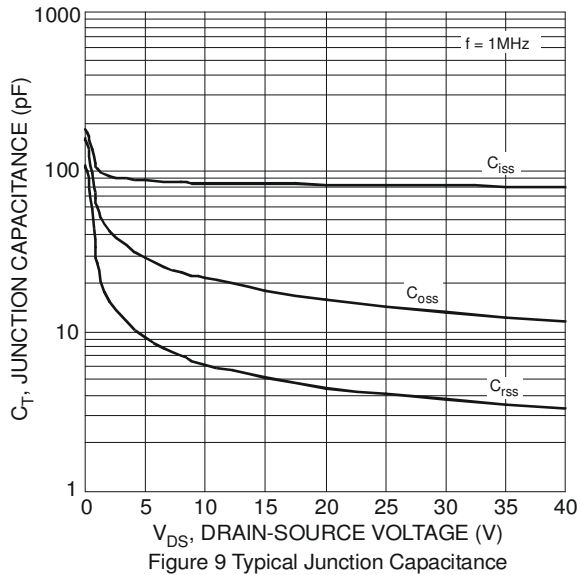
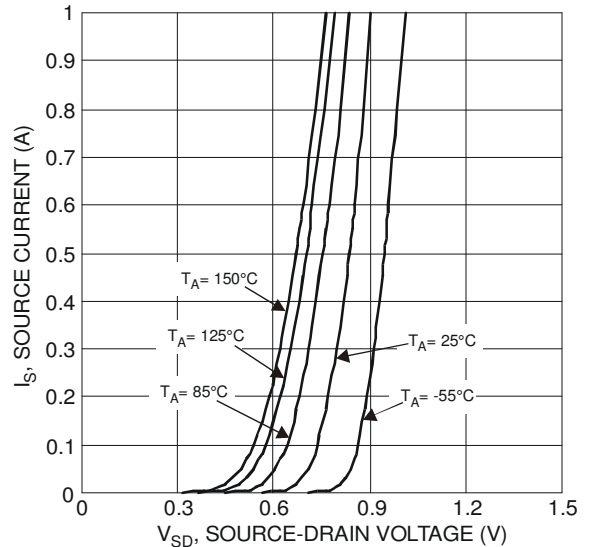
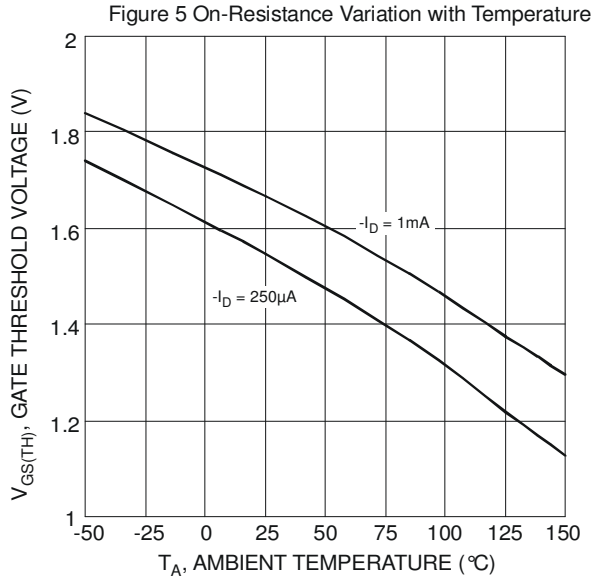
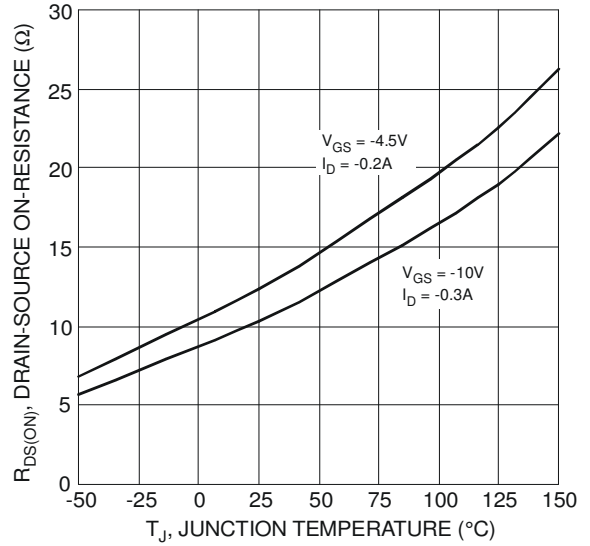
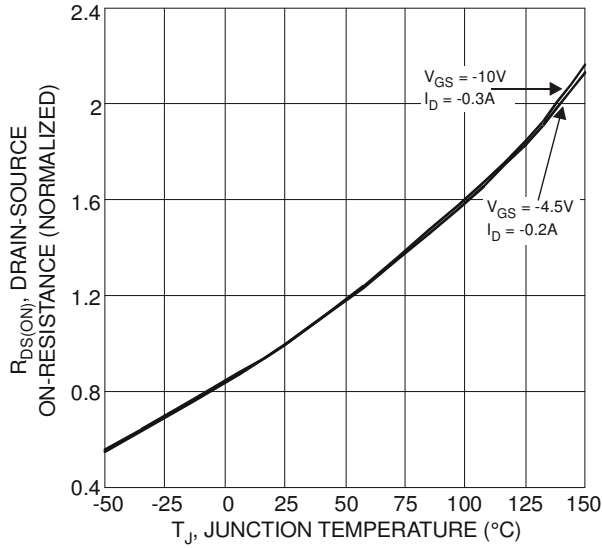
Characteristic	Symbol	Value	Units	
Total Power Dissipation	P <sub>D</sub>	(Note 5)	0.6	W
		(Note 6)	1.4	
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	(Note 5)	191	°C/W
		(Note 6)	86	
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	17		
Operating and Storage Temperature Range	T <sub>J</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 7)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-250	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -1mA
Zero Gate Voltage Drain Current T <sub>J</sub> = +25°C	I <sub>DSS</sub>	—	—	-1	µA	V <sub>DS</sub> = -250V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	±100	nA	V <sub>GS</sub> = ±40V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	-0.5	-1.7	-2.5	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -1mA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	10	14	Ω	V <sub>GS</sub> = -10V, I <sub>D</sub> = -200mA
			13	18		V <sub>GS</sub> = -3.5V, I <sub>D</sub> = -100mA
Diode Forward Voltage	V <sub>SD</sub>	—	-0.8	-1.2	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = -200mA
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	C <sub>iss</sub>	—	81	—	pF	V <sub>DS</sub> = -25V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	14	—	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	4	—	pF	
Gate Resistance	R <sub>g</sub>	—	13	—	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge (V <sub>GS</sub> = -10V)	Q <sub>g</sub>	—	2.8	—	nC	V <sub>DS</sub> = -25V, I <sub>D</sub> = -200mA
Gate-Source Charge	Q <sub>gs</sub>	—	0.3	—	nC	
Gate-Drain Charge	Q <sub>gd</sub>	—	0.6	—	nC	
Turn-On Delay Time	t <sub>D(on)</sub>	—	7.5	—	ns	V <sub>DS</sub> = -30V, I <sub>D</sub> = -200mA V <sub>GS</sub> = -10V, R <sub>G</sub> = 50Ω
Turn-On Rise Time	t <sub>r</sub>	—	25	—	ns	
Turn-Off Delay Time	t <sub>D(off)</sub>	—	124	—	ns	
Turn-Off Fall Time	t <sub>f</sub>	—	95	—	ns	
Reverse Recovery Time	t <sub>rr</sub>	—	85	—	ns	I <sub>F</sub> = -1.0A, di/dt = 100A/µs
Reverse Recovery Charge	Q <sub>rr</sub>	—	294	—	uC	

- 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 thermal vias to bottom layer 1inch square copper plate.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to production testing.





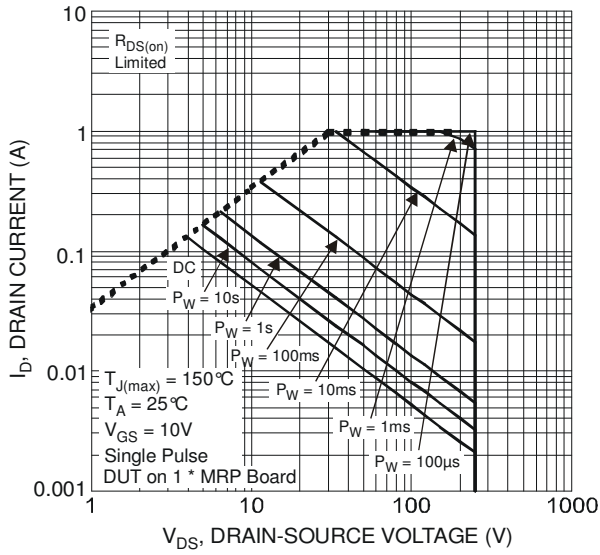


Figure 11 SOA, Safe Operation Area

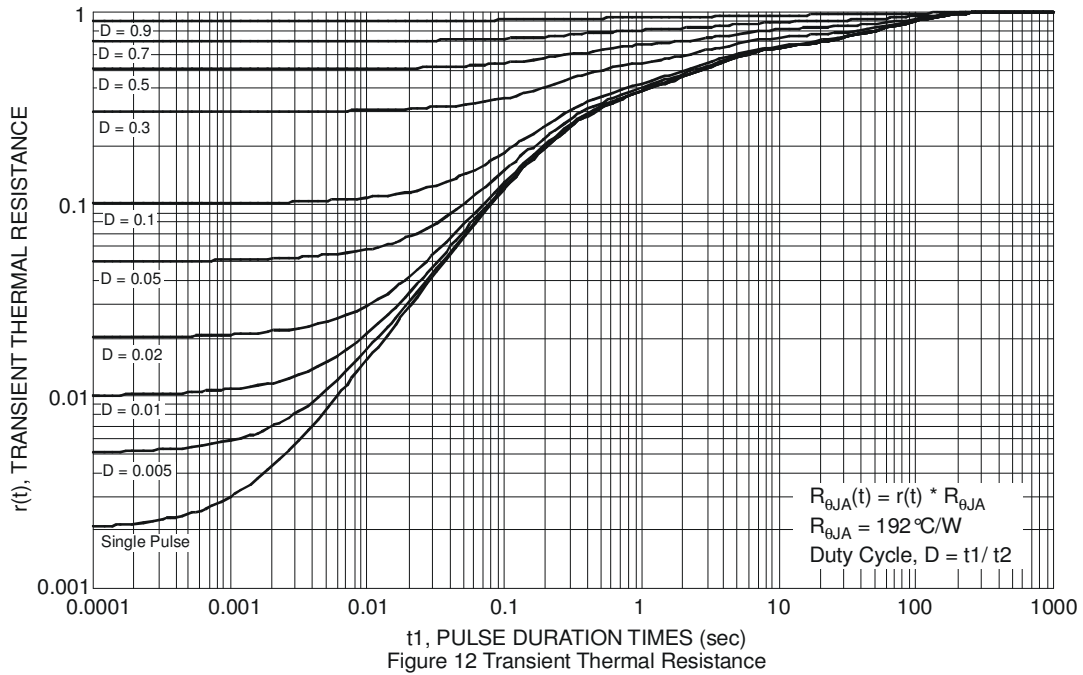
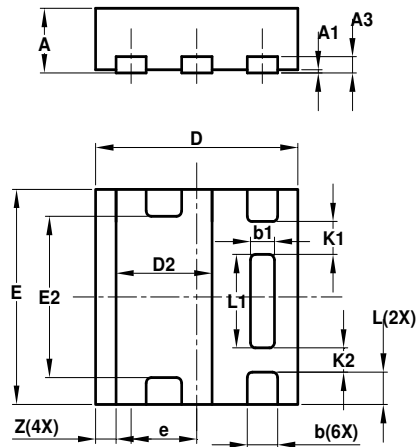


Figure 12 Transient Thermal Resistance

**Package Outline Dimensions**

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

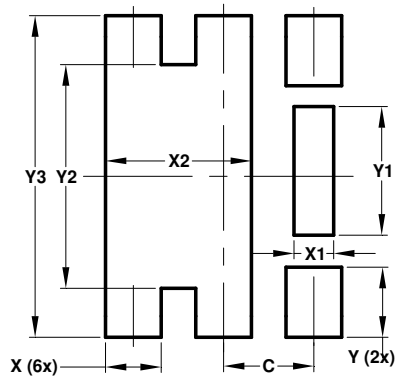


U-DFN2020-6 Type E			
Dim	Min	Max	Typ
A	0.57	0.63	0.60
A1	0	0.05	0.03
A3	—	—	0.15
b	0.25	0.35	0.30
b1	0.185	0.285	0.235
D	1.95	2.05	2.00
D2	0.85	1.05	0.95
E	1.95	2.05	2.00
E2	1.40	1.60	1.50
e	—	—	0.65
L	0.25	0.35	0.30
L1	0.82	0.92	0.87
K1	—	—	0.305
K2	—	—	0.225
Z	—	—	0.20
All Dimensions in mm			

**Suggested Pad Layout**

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

U-DFN2020-6 Type E



Dimensions	Value (in mm)
C	0.650
X	0.400
X1	0.285
X2	1.050
Y	0.500
Y1	0.920
Y2	1.600
Y3	2.300

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