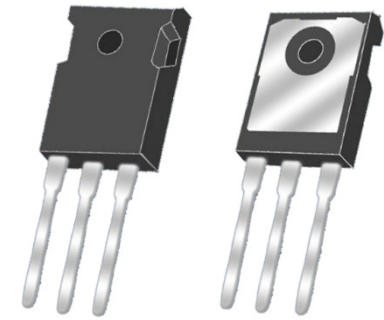


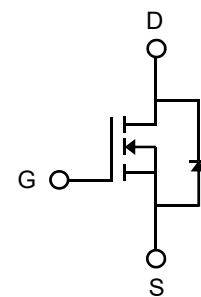
Description

The PSJMTAF60R90 is a high voltage MOSFET and is designed to have better characteristics, such as fast switching time, low gate charge, low on-state resistance and have a high rugged avalanche characteristics. This power MOSFET is usually used at high speed switching applications in power supplies, PWM motor controls, high efficient DC to DC converters and bridge circuits.

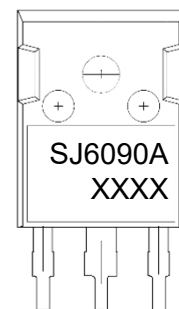


G D S

TO-247-3L



Circuit Diagram



Marking (Top View)

MOSFET Product Summary

$V_{DS}(V)$	$R_{DS(on)}(m\Omega)(Typ)$	$I_D(A)$
600	75@ $V_{GS} = 10V$	38

Feature

- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

Applications

- PWM applications
- Load switch
- Power management
- DC-DC Converters
- Wireless Chargers

Absolute maximum rating@25°C

Rating	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	± 30	V
Drain Current-Continuous ¹⁾	I_D	$T_C=25^\circ C$	38
		$T_C=100^\circ C$	24
Pulsed Drain Current ²⁾	I_{DM}	114	A
Total Power Dissipation ³⁾	P_D	284	W
Avalanche Current ⁴⁾	I_{AS}	7.0	A
Avalanche Energy ⁴⁾	E_{AS}	1225	mJ
Thermal Resistance , Junction-case ⁵⁾	$R_{\theta JC}$	0.44	$^\circ C/W$
Thermal Resistance Junction-to-Ambient ⁶⁾	$R_{\theta JA}$	35	$^\circ C/W$
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ C$

Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	600	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 600V, V_{GS} = 0V$	-	-	10	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 30V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	3.0	3.7	5.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 20A$	-	75	90	m Ω
Dynamic Characteristics⁷⁾						
Input Capacitance	C_{iss}	$V_{DS} = 200V, V_{GS} = 0V,$ $f = 100KHz$	-	2754	-	pF
Output Capacitance	C_{oss}		-	70	-	
Reverse Transfer Capacitance	C_{rss}		-	2.3	-	
Switching Characteristics⁷⁾						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS} = 300V, V_{GS} = 10V,$ $R_G = 10\Omega, I_D = 40A$	-	29	-	ns
Turn-on Rise Time	t_r		-	35	-	
Turn-Off Delay Time	$t_{d(off)}$		-	80	-	
Turn-Off Fall Time	t_f		-	12	-	
Total Gate Charge	Q_g	$V_{DS} = 480V, V_{GS} = 10V,$ $I_D = 40A$	-	50	-	nC
Gate-Source Charge	Q_{gs}		-	12	-	
Gate-Drain Charge	Q_{gd}		-	24	-	
Gate Resistance	R_g	f=1MHz, Open Drain	-	2.0	-	Ω
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = 20A$	-	0.7	1.2	V
Reverse Recovery Time	t_{rr}	$I_S = 40A, d_i/d_f = 100A/\mu s,$ $V_{GS} = 0V, V_R = 300V$	-	190	-	ns
Reverse Recovery Charge	Q_{rr}		-	1.6	-	nC

Notes:

1. Computed continuous current assumes the condition of $T_{J,Max}$ while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. Repetitive Rating: Pulse width limited by maximum junction temperature($T_{J,Max}=150^\circ C$).
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. This single-pulse measurement was taken under the following condition [$L=50mH, V_{GS}=10V, V_{DS}=50V$]while it's value is limited by $T_{J,Max}=150^\circ C$
5. Device mounted on infinite heatsink
6. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
7. Guaranteed by design, not subject to production

Typical Characteristics

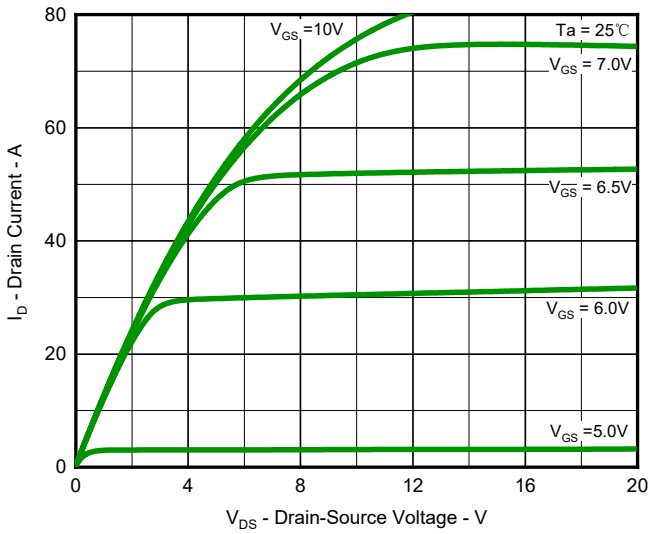


Fig.1 Output Characteristics

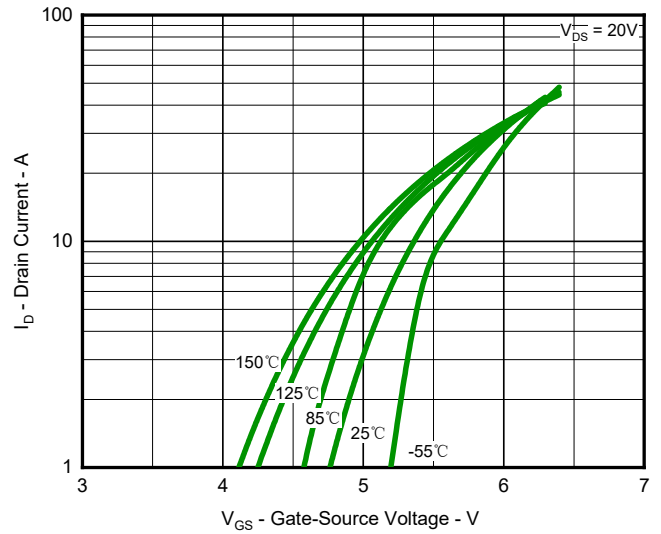


Fig.2 Typical Transfer Characteristic

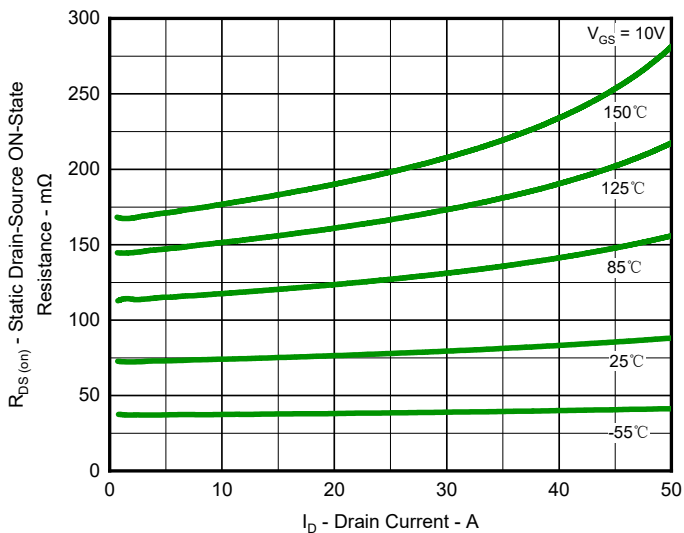


Fig.3 Typical On-Resistance vs Drain Current and Temperature

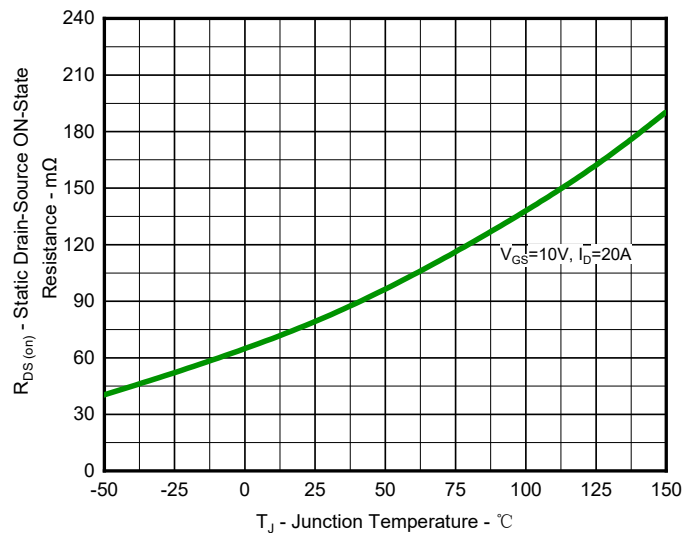


Fig.4 On-Resistance Variation with Temperature

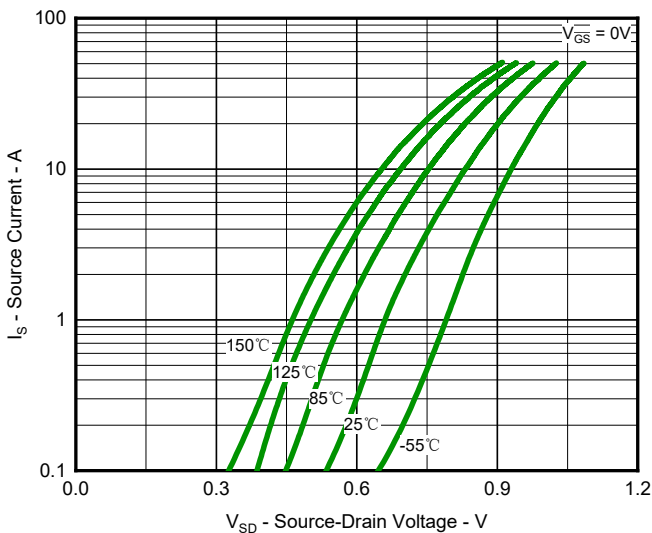


Fig.5 Diode Forward Voltage vs. Current

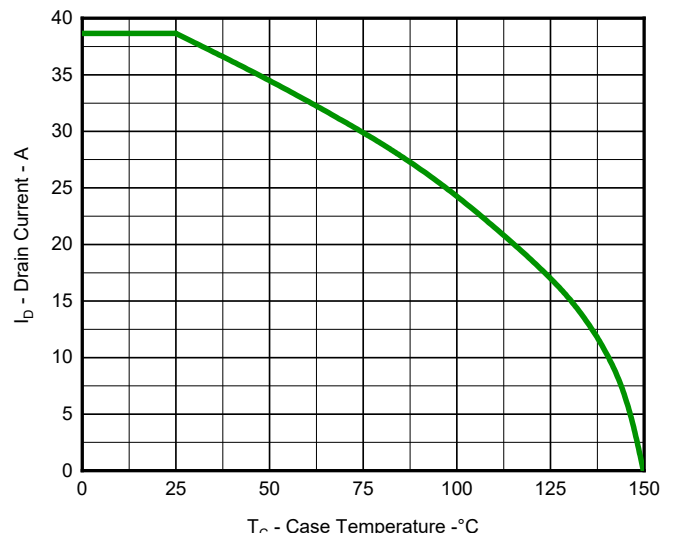


Fig.6 Maximum Drain Current vs. Case Temperature

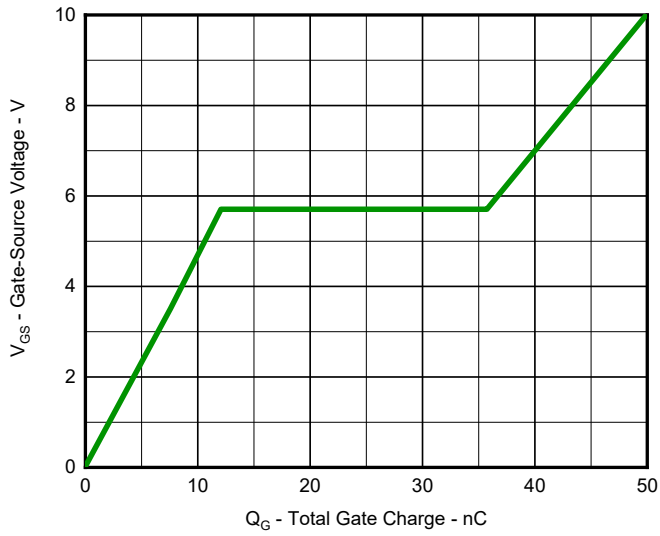


Fig.7 Gate Charge Characteristics

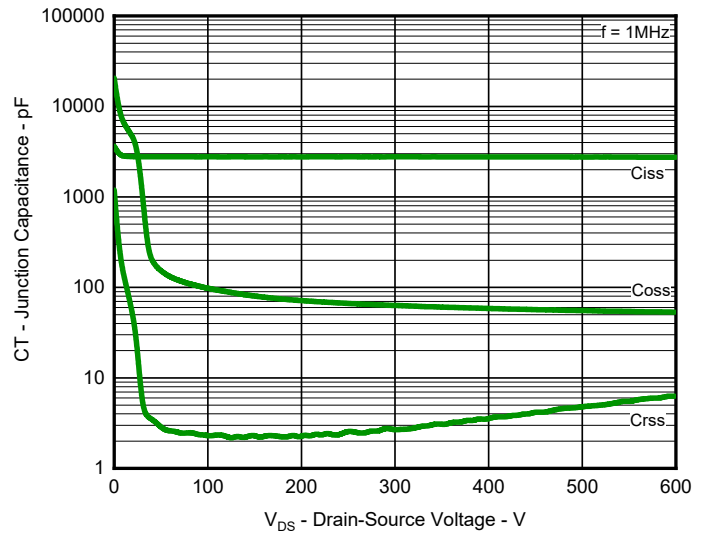


Fig.8 Typical Junction Capacitance

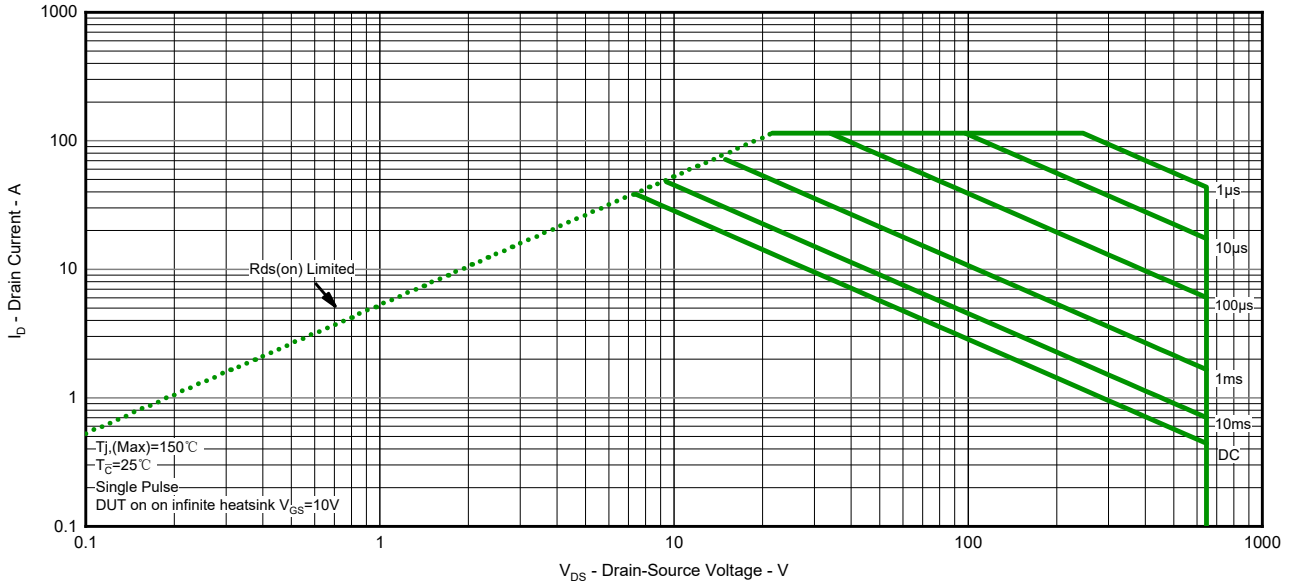


Fig.9 Safe Operation Area

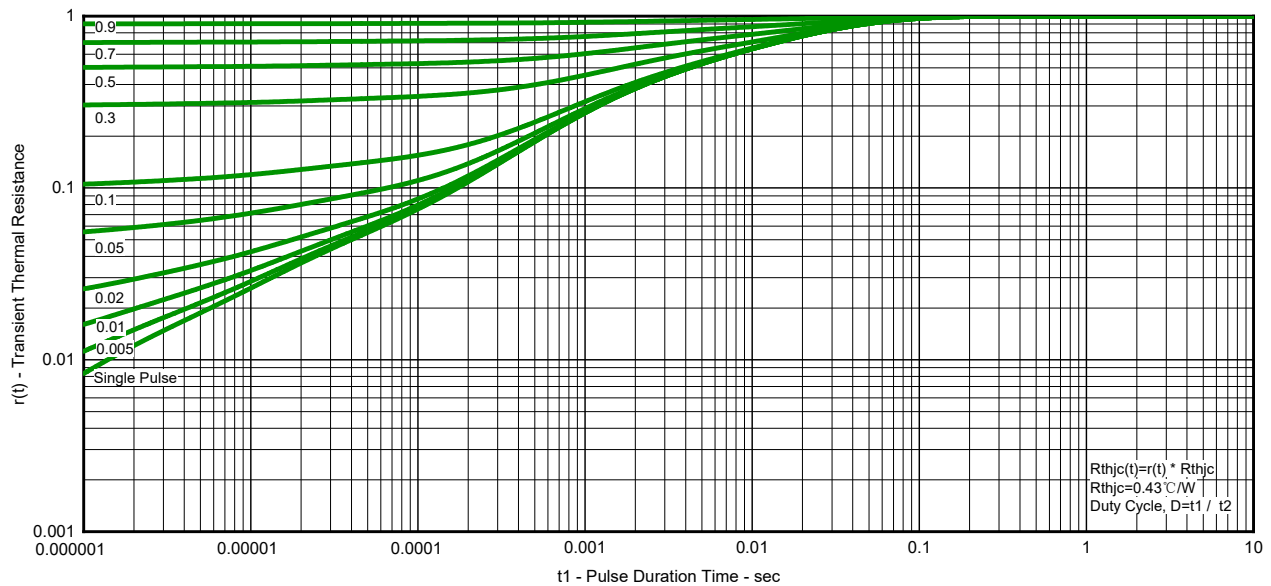
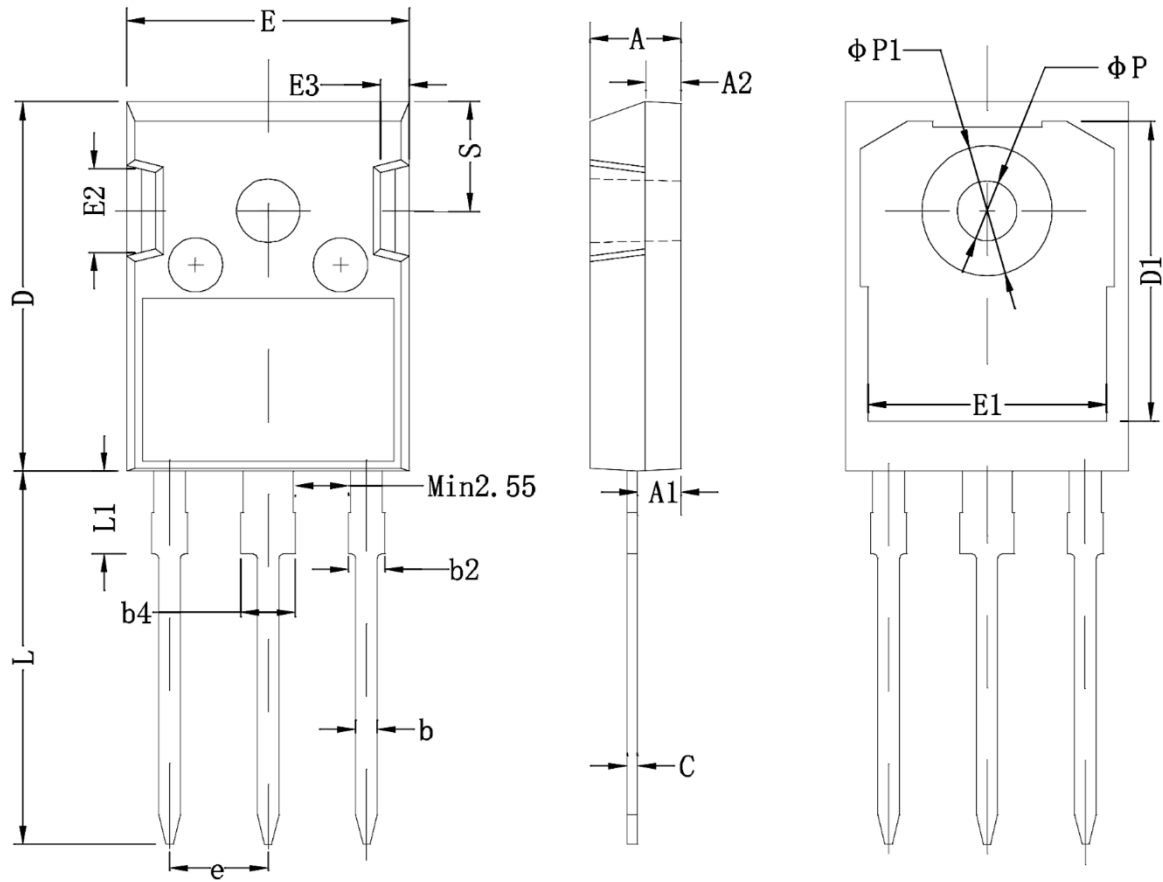



Fig.10 Transient Thermal Resistance

Product Dimension (TO-247-3L)



Dim	Millimeters		Inches		Dim	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	4.80	5.20	0.189	0.205	E1	13.00	13.60	0.512	0.535
A1	2.21	2.59	0.087	0.102	E2	4.80	5.20	0.189	0.205
A2	1.85	2.15	0.073	0.085	E3	2.30	2.70	0.091	0.106
b	1.11	1.36	0.044	0.054	e	5.44 BSC.		0.214 BSC.	
b2	1.91	2.21	0.075	0.087	L	19.82	20.22	0.780	0.796
b4	2.91	3.21	0.115	0.126	L1	-	4.30	-	0.169
c	0.51	0.75	0.020	0.030	φP	3.40	3.80	0.134	0.150
D	20.80	21.30	0.819	0.839	φP1	-	7.30	-	0.287
D1	16.25	16.85	0.640	0.663	S	6.15 BSC.		0.242 BSC.	
E	15.50	16.10	0.610	0.634					


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