



**Advanced Power
Electronics Corp.**

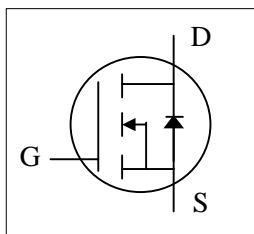
AP72T02GH/J

RoHS-compliant Product

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

- ▼ Simple Drive Requirement
- ▼ Low On-resistance
- ▼ Fast Switching Characteristic

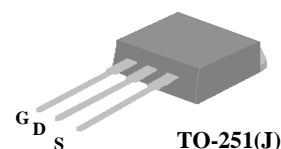
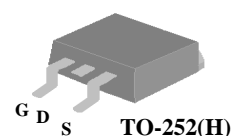


BV_{DSS}	25V
$R_{DS(ON)}$	9m Ω
I_D	62A

Description

Advanced Power MOSFETs from APEC provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The TO-252 package is widely preferred for commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters. The through-hole version (AP72T02GJ) are available for low-profile applications.



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	25	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V	62	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V	44	A
I_{DM}	Pulsed Drain Current ¹	190	A
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	60	W
	Linear Derating Factor	0.4	W/ $^\circ\text{C}$
E_{AS}	Single Pulse Avalanche Energy ³	29	mJ
I_{AR}	Avalanche Current	24	A
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Value	Units
Rthj-c	Maximum Thermal Resistance, Junction-case	2.5	$^\circ\text{C}/\text{W}$
Rthj-a	Maximum Thermal Resistance, Junction-ambient (PCB mount) ⁴	62.5	$^\circ\text{C}/\text{W}$
Rthj-a	Maximum Thermal Resistance, Junction-ambient	110	$^\circ\text{C}/\text{W}$



AP72T02GH/J

Electrical Characteristics @ $T_j=25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	25	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to $25^\circ\text{C}, I_D=1\text{mA}$	-	0.02	-	$V/^\circ\text{C}$
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=10V, I_D=30A$	-	8	9	$m\Omega$
		$V_{GS}=4.5V, I_D=15A$	-	11	15	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1	-	3	V
g_{fs}	Forward Transconductance	$V_{DS}=10V, I_D=30A$	-	42	-	S
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=25V, V_{GS}=0V$	-	-	1	μA
	Drain-Source Leakage Current ($T_j=175^\circ\text{C}$)	$V_{DS}=20V, V_{GS}=0V$	-	-	25	μA
I_{GSS}	Gate-Source Leakage	$V_{GS}=\pm 20V$	-	-	± 100	nA
Q_g	Total Gate Charge ²	$I_D=30A$	-	13	21	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=20V$	-	2.7	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	$V_{GS}=4.5V$	-	9	-	nC
$t_{d(on)}$	Turn-on Delay Time ²	$V_{DS}=15V$	-	8	-	ns
t_r	Rise Time	$I_D=30A$	-	80	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=3.3\Omega, V_{GS}=10V$	-	22	-	ns
t_f	Fall Time	$R_D=0.5\Omega$	-	6	-	ns
C_{iss}	Input Capacitance	$V_{GS}=0V$	-	930	1490	pF
C_{oss}	Output Capacitance	$V_{DS}=25V$	-	250	-	pF
C_{rss}	Reverse Transfer Capacitance	$f=1.0\text{MHz}$	-	180	-	pF
R_g	Gate Resistance	$f=1.0\text{MHz}$	-	1.1	1.7	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage ²	$I_S=30A, V_{GS}=0V$	-	-	1.3	V
t_{rr}	Reverse Recovery Time ²	$I_S=15A, V_{GS}=0V,$	-	26	-	ns
Q_{rr}	Reverse Recovery Charge	$di/dt=100A/\mu s$	-	15	-	nC

Notes:

1. Pulse width limited by max. junction temperature.
2. Pulse test
3. Starting $T_j=25^\circ\text{C}$, $V_{DD}=25V$, $L=0.1\text{mH}$, $R_G=25\Omega$, $I_{AS}=24A$.
4. Surface mounted on 1 in² copper pad of FR4 board

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

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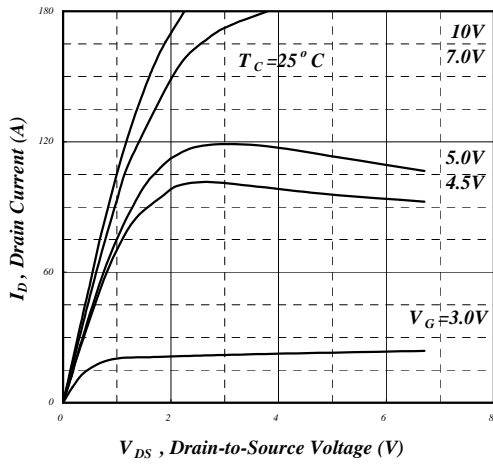


Fig 1. Typical Output Characteristics

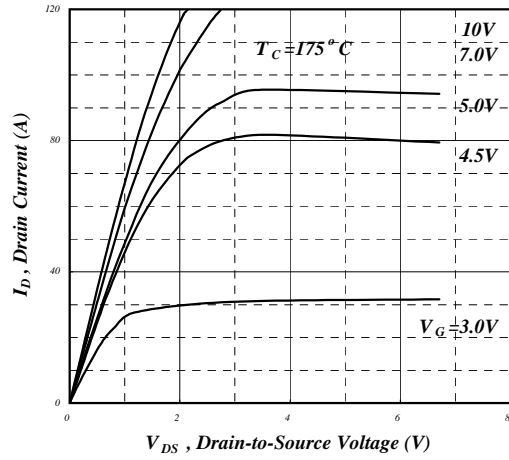


Fig 2. Typical Output Characteristics

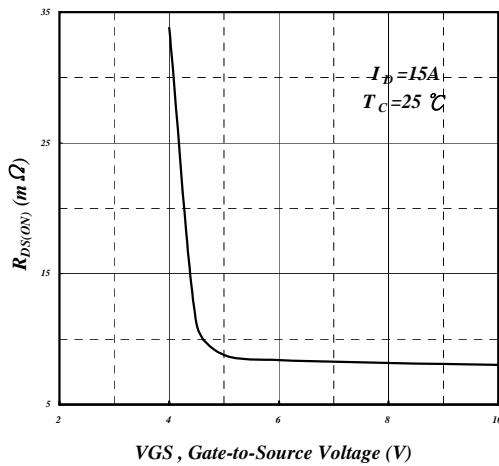


Fig 3. On-Resistance v.s. Gate Voltage

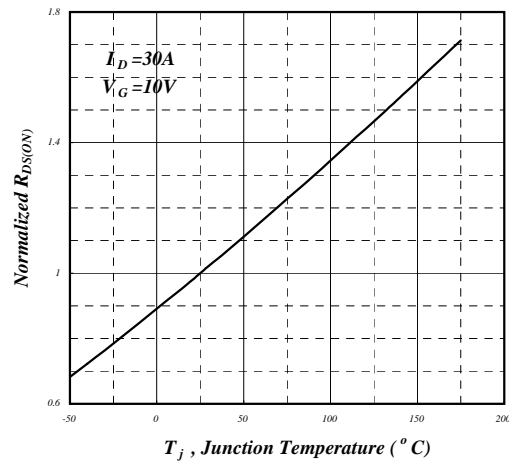


Fig 4. Normalized On-Resistance v.s. Junction Temperature

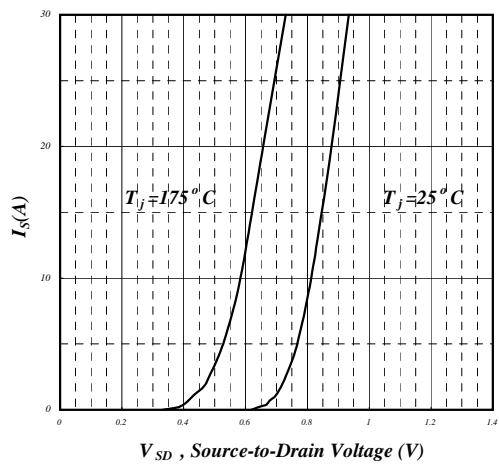


Fig 5. Forward Characteristic of Reverse Diode

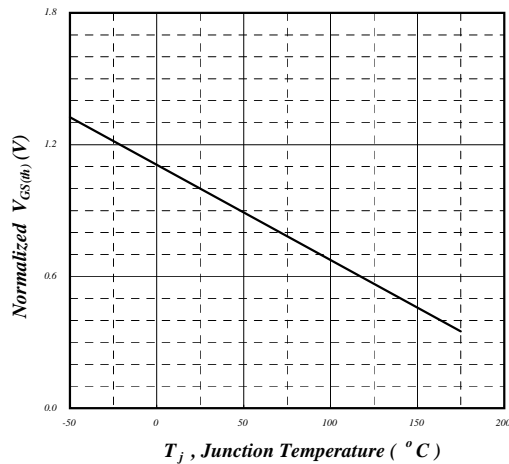


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



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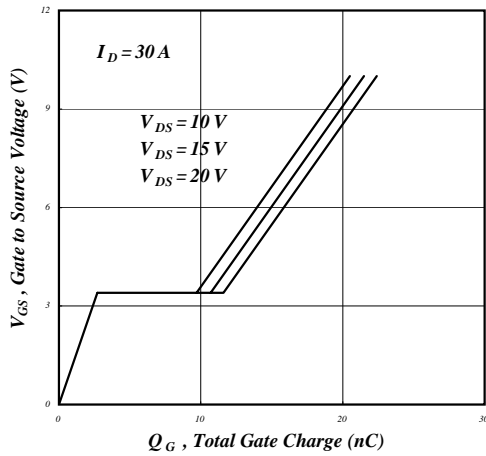


Fig7. Gate Charge Characteristics

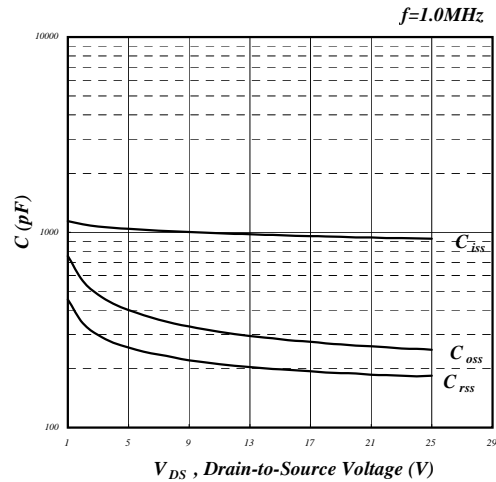


Fig 8. Typical Capacitance Characteristics

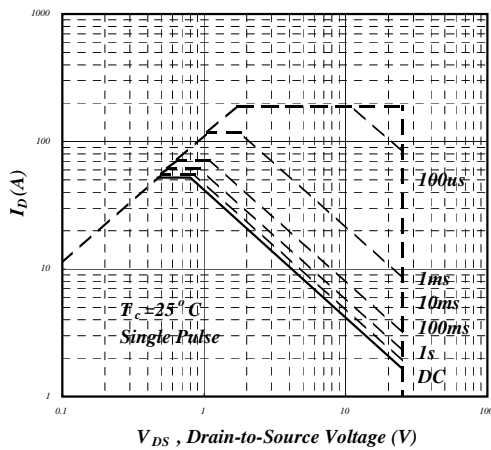


Fig 9. Maximum Safe Operating Area

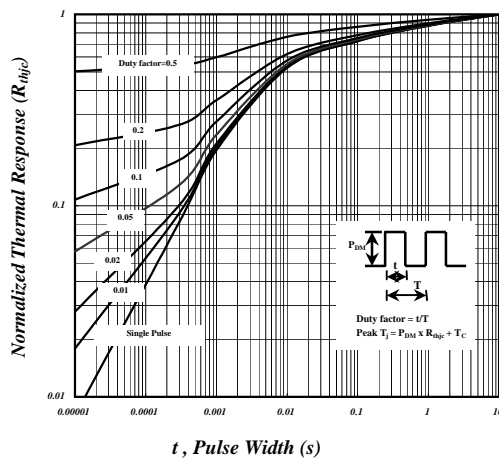


Fig10. Effective Transient Thermal Impedance

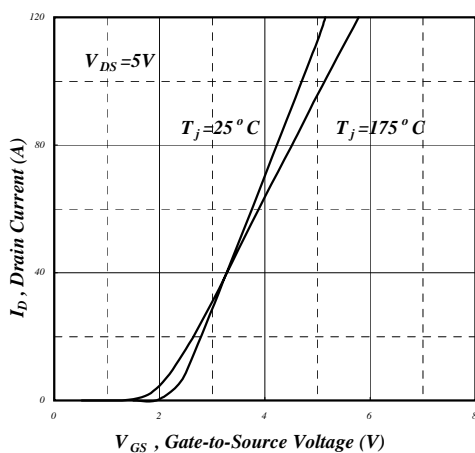


Fig 11. Transfer Characteristics

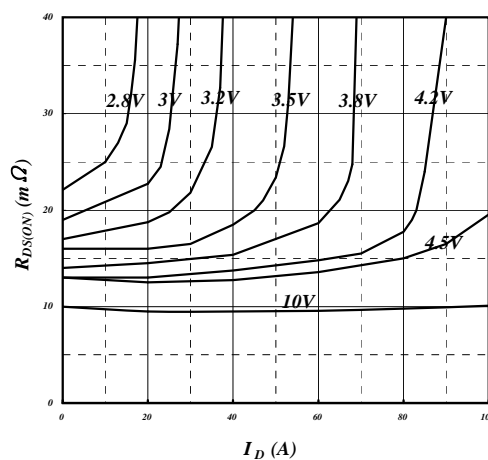
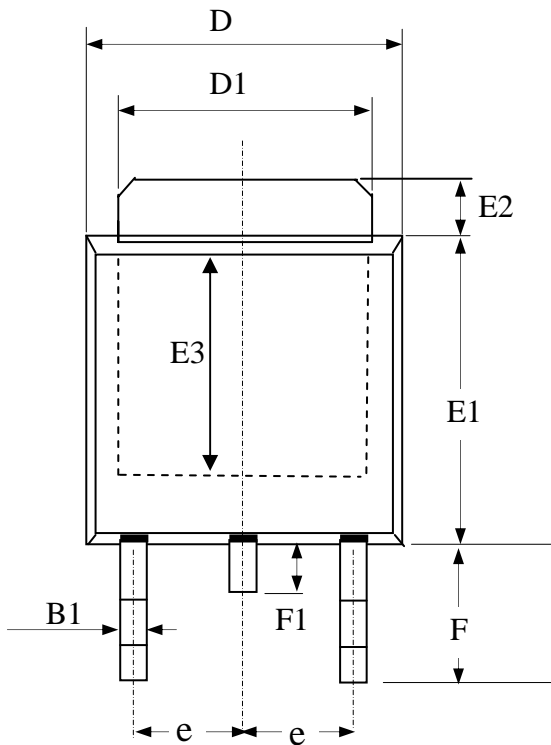


Fig 12. Drain-Source On Resistance

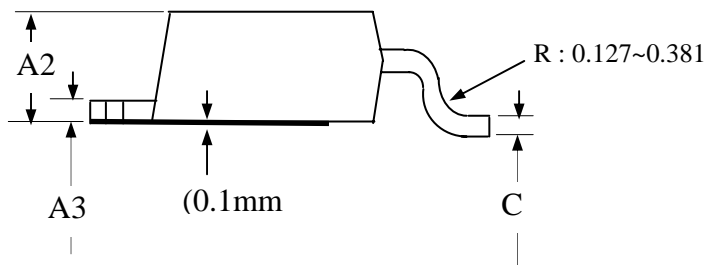


Package Outline : TO-252

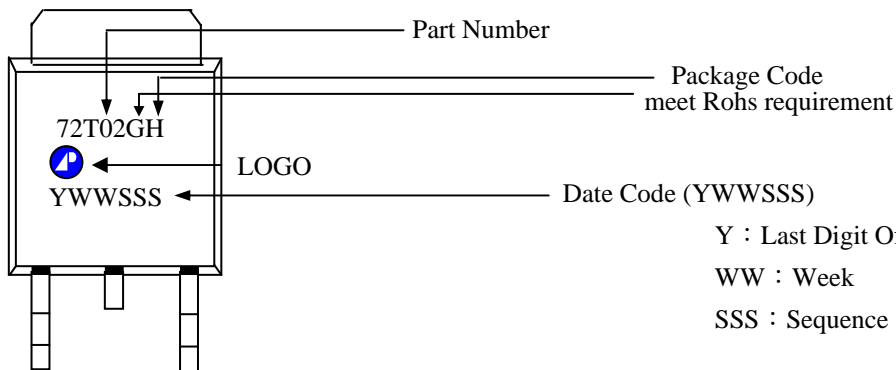


SYMBOLS	Millimeters		
	MIN	NOM	MAX
A2	1.80	2.30	2.80
A3	0.40	0.50	0.60
B1	0.40	0.70	1.00
D	6.00	6.50	7.00
D1	4.80	5.35	5.90
E3	3.50	4.00	4.50
F	2.20	2.63	3.05
F1	0.5	0.85	1.20
E1	5.10	5.70	6.30
E2	0.50	1.10	1.80
e	--	2.30	--
C	0.35	0.50	0.65

- 1.All Dimensions Are in Millimeters.
- 2.Dimension Does Not Include Mold Protrusions.

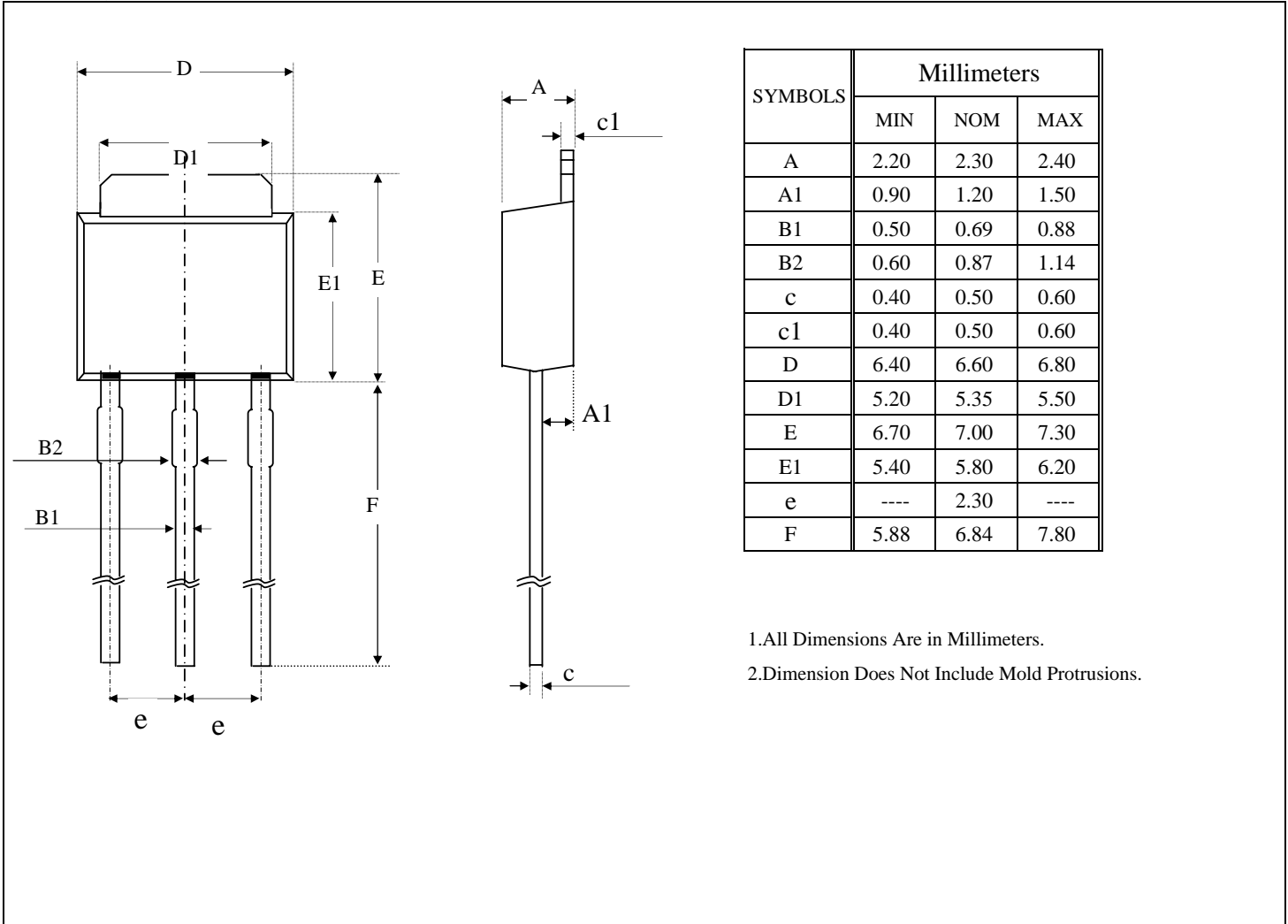


Part Marking Information & Packing : TO-252



Y : Last Digit Of The Year
 WW : Week
 SSS : Sequence

Package Outline : TO-251



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