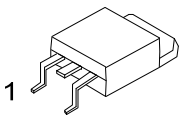
UTD484

Power MOSFET

N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR



TO-252

PDFN3×3

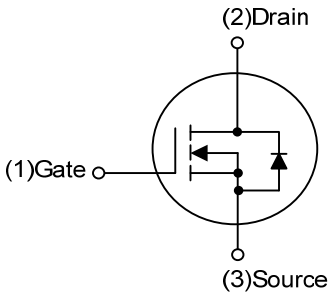
■ DESCRIPTION

The **UTD484** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

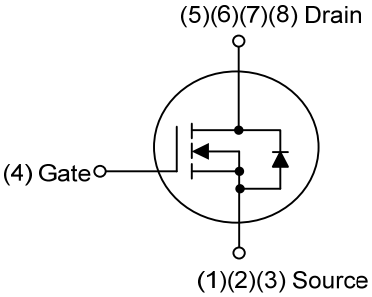
■ FEATURES

* $R_{DS(ON)}$ ≤ 15 mΩ @ V_{GS}=10V, I_D=20A
* Low capacitance
* Low gate charge
* Fast switching capability
* Avalanche energy specified

■ SYMBOL



TO-252



PDFN3×3

■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTD484L-TN3-R	UTD484G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UTD484L-P3030-R	UTD484G-P3030-R	PDFN3×3	S	S	S	G	D	D	D	D	Tape Reel

Note: Pin Assignment: G: Gate D: Drain S: Source

UTD484G-TN3-R

(1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) TN3: TO-252, P3030: PDFN3×3
(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

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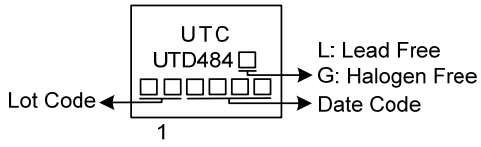
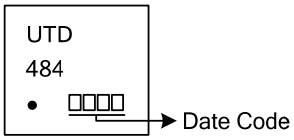
■ MARKING

TO-252	PDFN3×3
	

■ ABSOLUTE MAXIMUM RATINGS (T_A = 25°C, unless otherwise specified)

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	30	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Drain Current	T_C=25°C		I_D	25	A
Pulsed Drain Current(Note 1)			I_{DM}	80	A
Avalanche Current(Note 1)			I_{AR}	15	A
Repetitive avalanche energy L=0.3mH(Note 1)			E_{AR}	33	mJ
Power Dissipation	T_C=25°C	TO-252 PDFN3×3	P_D	41	W
	T_A=25°C	TO-252		2.1	W
		PDFN3×3 (Notes 3)		1.9	W
Junction Temperature			T_J	+150	°C
Storage Temperature			T_{STG}	-55 ~ +175	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Pulse width limited by $T_{J(MAX)}$
3. Exposed pad is ground and must be soldered to PCB

■ THERMAL DATA

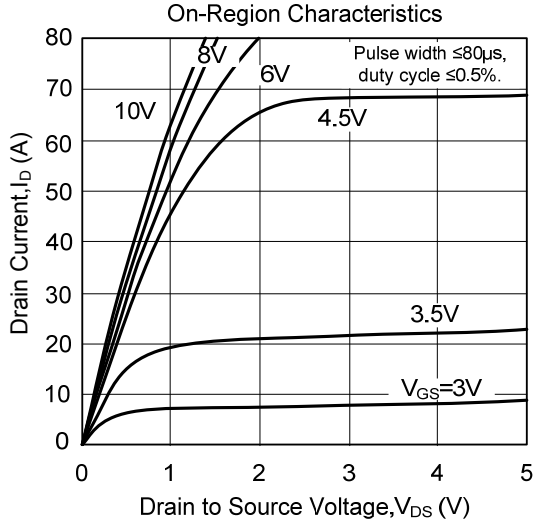
PARAMETER		SYMBOL	MIN	TYP	MAX	UNIT
Junction-to-Ambient	TO-252	θ_{JA}		55	60	°C/W
	PDFN3×3				65	°C/W
Junction-to-Case	TO-252/PDFN3×3	θ_{JC}		2.3	3	°C/W

■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

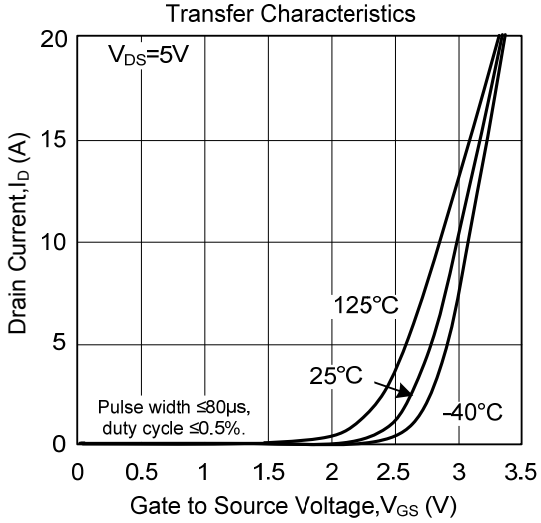
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=24V, V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	1	1.5	2.5	V
On State Drain Current	$I_{D(ON)}$	V_{DS}=5V, V_{GS}=10V	80			A
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=20A		12.1	15	mΩ
		V_{GS}=4.5V, I_D=15A		18.5	23	
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=15V, V_{GS}=0V, f=1MHz		938	1220	pF
Output Capacitance	C_{OSS}			142		
Reverse Transfer Capacitance	C_{RSS}			99		
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	V_{DS}=15V, V_{GS}=10V, I_D=20A		17.5	21	nC
Gate Source Charge	Q_{GS}			3		
Gate Drain Charge	Q_{GD}			4.1		
Turn-ON Delay Time	$t_{D(ON)}$	V_{GS}=10V, V_{DS}=15V, R_L=0.75Ω, R_G=3Ω		5		ns
Turn-ON Rise Time	t_R			12		
Turn-OFF Delay Time	$t_{D(OFF)}$			19		
Turn-OFF Fall-Time	t_F			6		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				21	A
Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS}=0V		0.71	1	V
Body Diode Reverse Recovery Time	t_{rr}	I_F=20A, dI/dt=100A/μs		19	21	ns
Body Diode Reverse Recovery Charge	Q_{rr}			10	12	nC

■ TYPICAL CHARACTERISTICS

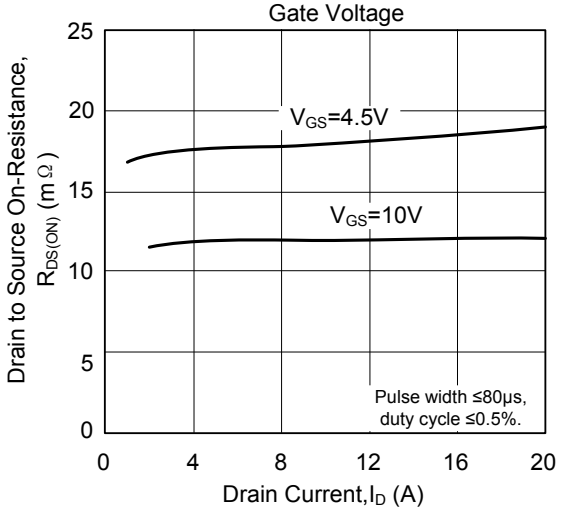
On-Region Characteristics



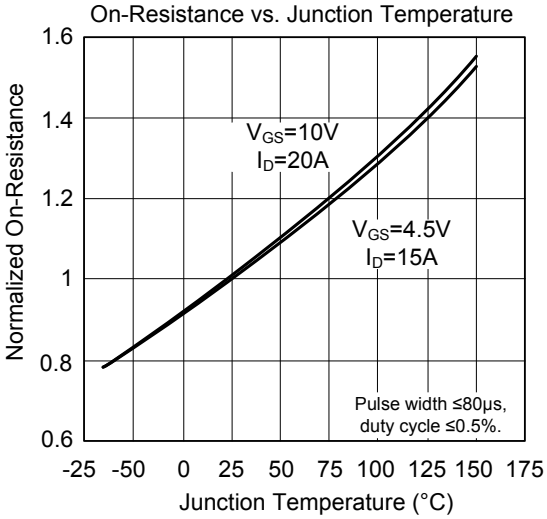
Transfer Characteristics



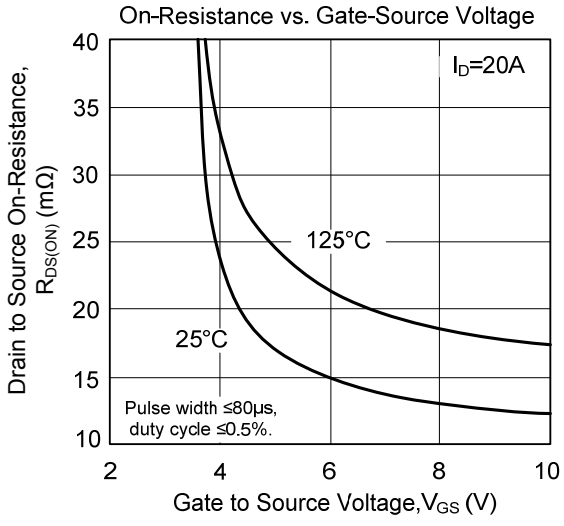
On-Resistance vs. Drain Current and Gate Voltage



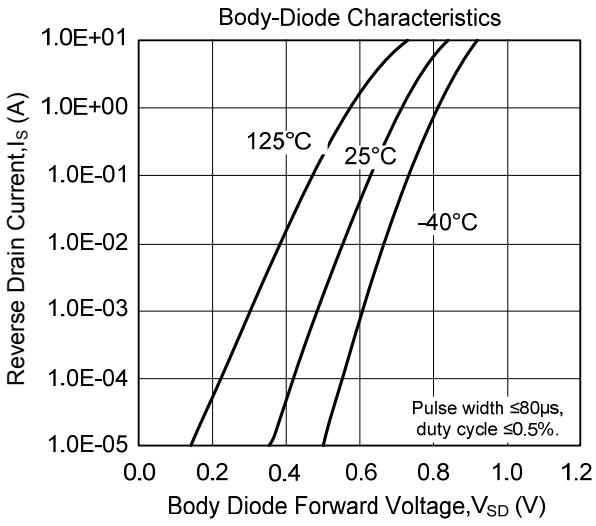
On-Resistance vs. Junction Temperature



On-Resistance vs. Gate-Source Voltage

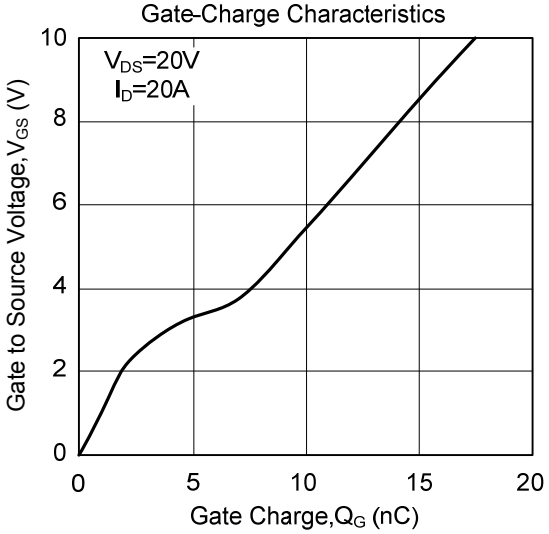


Body-Diode Characteristics

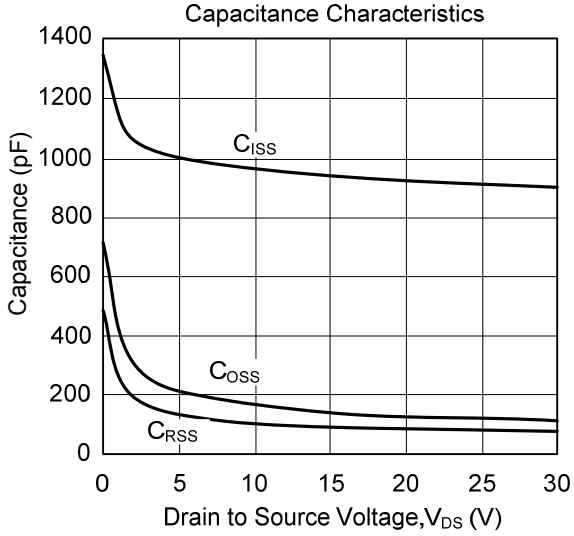


■ TYPICAL CHARACTERISTICS (Cont.)

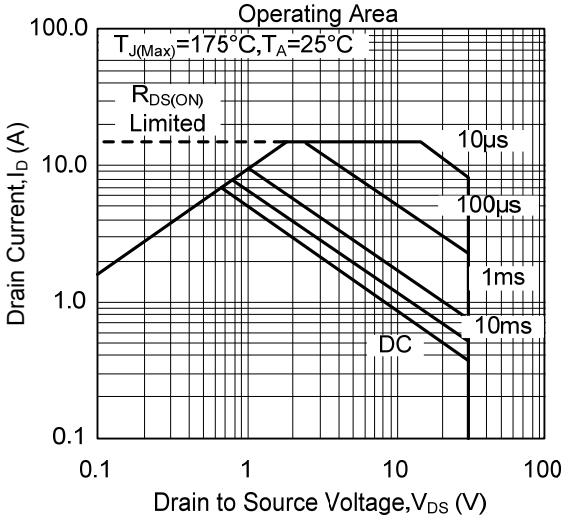
Gate-Charge Characteristics



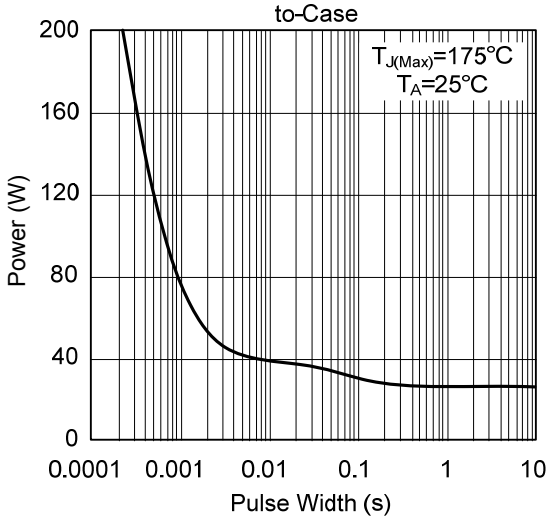
Capacitance Characteristics



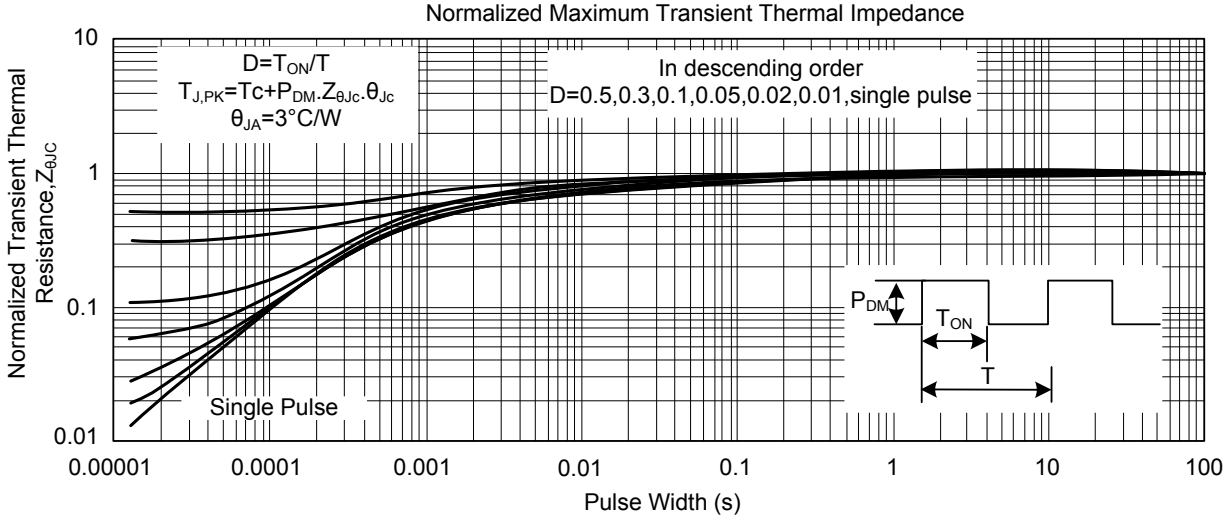
Maximum Forward Biased Safe Operating Area



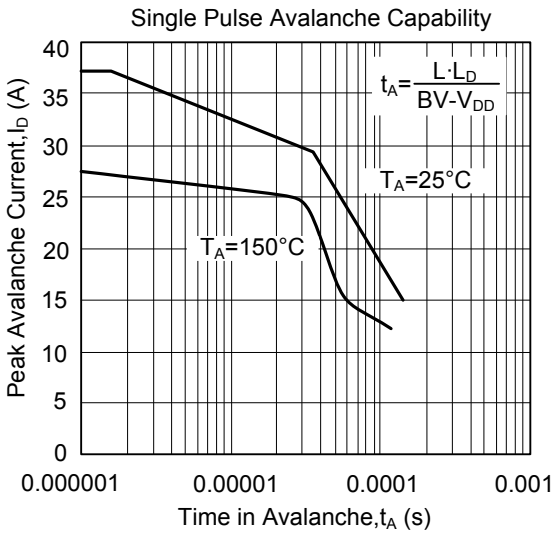
Single Pulse Power Rating Junction-to-Case

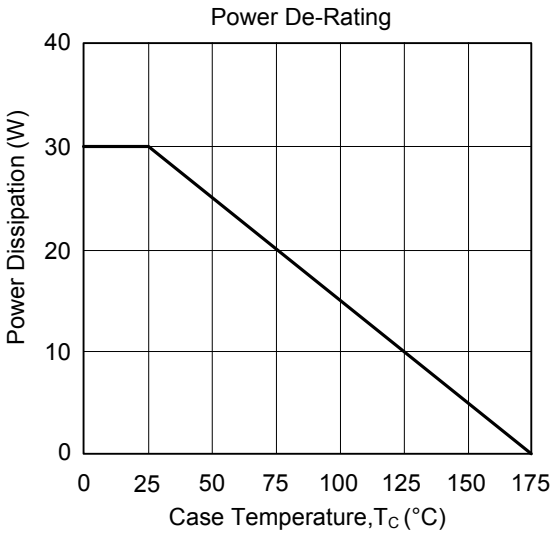


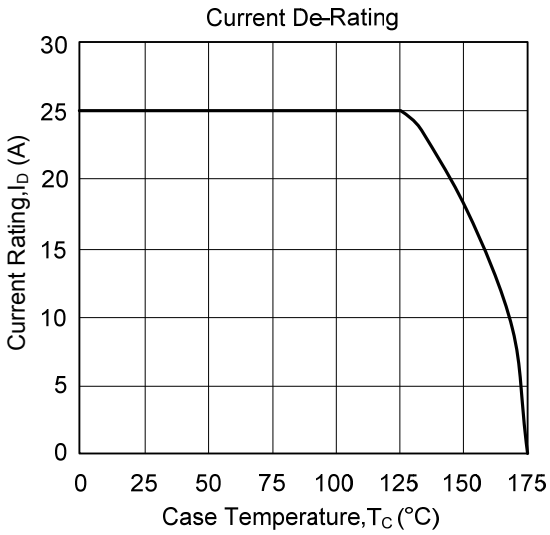
Normalized Maximum Transient Thermal Impedance

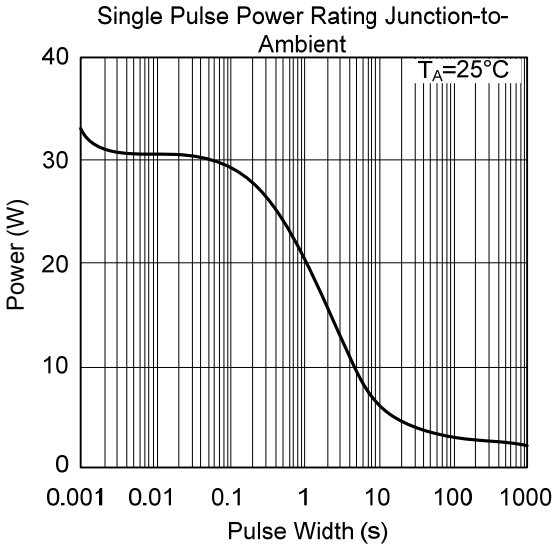


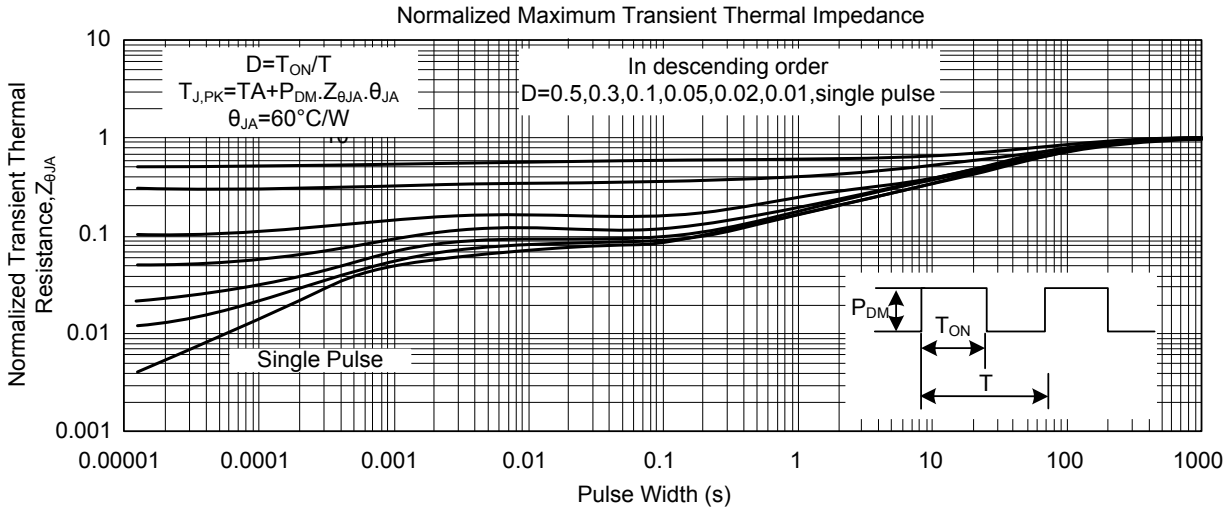
■ TYPICAL CHARACTERISTICS (Cont.)











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