

300mA Low Dropout Linear Regulator

FEATURES

- Low Dropout Voltage of 470mV at 300mA Output Current (3.0V Output Version).
- Guaranteed 300mA Output Current.
- Low Ground Current at 55 μ A.
- 2% Accuracy Output Voltage of 1.8V/ 2.0V /2.5V /2.7V/ 3.0V/ 3.3V/ 3.5V/ 3.7V/ 3.8V/ 5.0V/ 5.2V.
- Only needs 1 μ F Output Capacitor for Stability.
- Current and Thermal Limiting.

APPLICATIONS

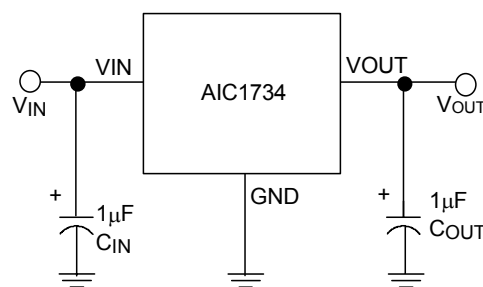
- CD-ROM Drivers.
- LAN Cards.
- Microprocessor.
- RAM Module.
- Wireless Communication Systems.
- Battery Powered Systems.

DESCRIPTION

The AIC1734 is a 3-pin low dropout linear regulator. The superior characteristics of the AIC1734 include zero base current loss, very low dropout voltage, and 2% accuracy output voltage. Typical ground current remains approximately 55 μ A, for loading ranging from zero to maximum. Dropout voltage at 300mA output current is exceptionally low. Built-in output current limiting and thermal limiting provide maximal protection to the AIC1734 against fault conditions.

The AIC1734 is available in popular SOT-23, SOT-89 and TO-92 packages.

TYPICAL APPLICATION CIRCUIT



Low Dropout Linear Regulator

ORDERING INFORMATION

AIC1734-XXXXX XX

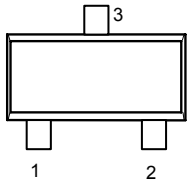
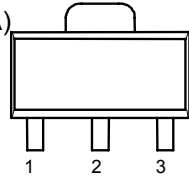
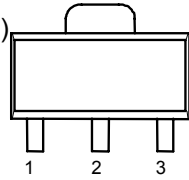
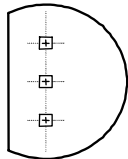
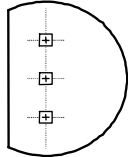
PACKING TYPE
TR: TAPE & REEL
BG: BAG

PACKAGE TYPE
U: SOT-23
XA: SOT-89
XT: SOT-89
ZT: TO-92
ZL: TO-92

C: Commercial
P: Lead Free Commercial

OUTPUT VOLTAGE
18: 1.8V
20: 2.0V
25: 2.5V
27: 2.7V
30: 3.0V
33: 3.3V
35: 3.5V
37: 3.7V
38: 3.8V
50: 5.0V
52: 5.2V

Example: AIC1734-18CXATR
→ 1.8V Version, in SOT-89 Package & Tape & Reel Packing Type
AIC1734-18PXATR
→ 1.8V Version, in SOT-89 Lead Free Package & Tape & Reel Packing Type

PIN CONFIGURATION	
SOT-23 (CU & PU) TOP VIEW 1: GND 2: VOUT 3: VIN	
SOT-89 (CXA & PXA) TOP VIEW 1: GND 2: VIN 3: VOUT	
SOT-89 (CXT & PXT) TOP VIEW 1: VOUT 2: GND 3: VIN	
TO-92 (CZT & PZT) TOP VIEW 1: GND 2: VIN 3: VOUT	
TO-92 (CZL & PZL) TOP VIEW 1: VIN 2: GND 3: VOUT	

SOT-23 MARKING

Part No.	CU	PU	Part No.	CU	PU
AIC1734-18XU	CD18	CD18P	AIC1734-35XU	CD35	CD35P
AIC1734-20XU	CD20	CD20P	AIC1734-37XU	CD37	CD37P
AIC1734-25XU	CD25	CD25P	AIC1734-38XU	CD38	CD38P
AIC1734-27XU	CD27	CD27P	AIC1734-50XU	CD50	CD50P
AIC1734-30XU	CD30	CD30P	AIC1734-52XU	CD52	CD52P
AIC1734-33XU	CD33	CD33P			

● **SOT-89 MARKING**

Part No.	CXA	PXA	Part No.	CXT	PXT
AIC1734-18XXA	CA18	CA18P	AIC1734-18XXT	CB18	CB18P
AIC1734-20XXA	CA20	CA20P	AIC1734-20XXT	CB20	CB20P
AIC1734-25XXA	CA25	CA25P	AIC1734-25XXT	CB25	CB25P
AIC1734-27XXA	CA27	CA27P	AIC1734-27XXT	CB27	CB27P
AIC1734-30XXA	CA30	CA30P	AIC1734-30XXT	CB30	CB30P
AIC1734-33XXA	CA33	CA33P	AIC1734-33XXT	CB33	CB33P
AIC1734-35XXA	CA35	CA35P	AIC1734-35XXT	CB35	CB35P
AIC1734-37XXA	CA37	CA37P	AIC1734-37XXT	CB37	CB37P
AIC1734-38XXA	CA38	CA38P	AIC1734-38XXT	CB38	CB38P
AIC1734-50XXA	CA50	CA50P	AIC1734-50XXT	CB50	CB50P
AIC1734-52XXA	CA52	CA52P	AIC1734-52XXT	CB52	CB52P

■ **ABSOLUTE MAXIMUM RATINGS**

Input Supply Voltage.....-0.3 ~12V
 Operating Temperature Range.....-40°C~ 85°C
 Storage Temperature Range-65°C~150°C
 Maximum Junction Temperature.....125°C
 Lead Temperature (Soldering) 10 sec.....260°C

Thermal Resistance Junction to Ambient SOT-89 Package.....160°C/W
 (Assume no Ambient Airflow, no Heatsink) TO-92 Package.....150°C/W
 SOT-23 Package.....180°C/W

Absolute Maximum Ratings are those values beyond which the life of a device may be impaired.

■ **TEST CIRCUIT**

Refer to the TYPICAL APPLICATION CIRCUIT

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$, $C_{IN}=1\mu\text{F}$, $C_{OUT}=1\mu\text{F}$, unless otherwise specified.)

PARAMETER	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT	
Output Voltage	No Load					
	AIC1734-52	$V_{IN}=5.5\sim 12\text{V}$	5.100	5.200	5.300	V
	AIC1734-50	$V_{IN}=5.5\sim 12\text{V}$	4.900	5.000	5.100	
	AIC1734-38	$V_{IN}=4.1\sim 12\text{V}$	3.725	3.800	3.875	
	AIC1734-37	$V_{IN}=4.0\sim 12\text{V}$	3.625	3.700	3.775	
	AIC1734-35	$V_{IN}=4.0\sim 12\text{V}$	3.430	3.500	3.570	
	AIC1734-33	$V_{IN}=4.0\sim 12\text{V}$	3.235	3.300	3.365	
	AIC1734-30	$V_{IN}=4.0\sim 12\text{V}$	2.940	3.000	3.060	
	AIC1734-27	$V_{IN}=4.0\sim 12\text{V}$	2.646	2.700	2.754	
	AIC1734-25	$V_{IN}=4.0\sim 12\text{V}$	2.450	2.500	2.550	
	AIC1734-20	$V_{IN}=4.0\sim 12\text{V}$	1.960	2.000	2.040	
AIC1734-18	$V_{IN}=4.0\sim 12\text{V}$	1.764	1.800	1.836		
Output Voltage Temperature Coefficiency	(Note 1)		50		PPM/ $^{\circ}\text{C}$	
Line Regulation	$I_L=1\text{mA}$, $1.4\text{V}\leq V_{OUT}\leq 3.2\text{V}$	$V_{IN}=4\text{V}\sim 12\text{V}$		3	10	mV
	$3.3\text{V}\leq V_{OUT}\leq 5.2\text{V}$	$V_{IN}=5.5\text{V}\sim 12\text{V}$		3	10	
Load Regulation (Note 2)	$I_L=0.1\sim 300\text{mA}$, $1.4\text{V}\leq V_{OUT}\leq 3.9\text{V}$	$V_{IN}=5\text{V}$		7	20	mV
	$4.0\text{V}\leq V_{OUT}\leq 5.2\text{V}$	$V_{IN}=7\text{V}$		15	40	
Current Limit (Note 3)	$V_{IN}=7\text{V}$, $V_{OUT}=0\text{V}$		300		mA	
Dropout Voltage (Note 4)	$I_L=300\text{mA}$	$4.0\text{V}\leq V_{OUT}\leq 5.2\text{V}$		400		mV
		$3.0\text{V}\leq V_{OUT}\leq 3.9\text{V}$		470		
		$2.5\text{V}\leq V_{OUT}\leq 2.9\text{V}$		570		
		$2.0\text{V}\leq V_{OUT}\leq 2.4\text{V}$		800		
		$1.4\text{V}\leq V_{OUT}\leq 1.9\text{V}$		1260		
Ground Current	$I_O=0.1\text{mA}\sim I_{MAX}$, $1.4\text{V}\leq V_{OUT}\leq 3.9\text{V}$	$V_{IN}=5\sim 12\text{V}$		55	80	μA
	$4.0\text{V}\leq V_{OUT}\leq 5.2\text{V}$	$V_{IN}=7\sim 12\text{V}$		55	80	

Note 1: Guaranteed by design.

Note 2: Regulation is measured at constant junction temperature, using pulse testing with a low ON time.

Note 3: Current limit is measured by pulsing a short time.

Note 4: Dropout voltage is defined as the input to output differential at which the output voltage drops 100mV.

Note5: Specifications are guaranteed by Statistical Quality Controls (SQC), with no production test proved, when operating temperature ranges from -40°C to 85°C .

TYPICAL PERFORMANCE CHARACTERISTICS

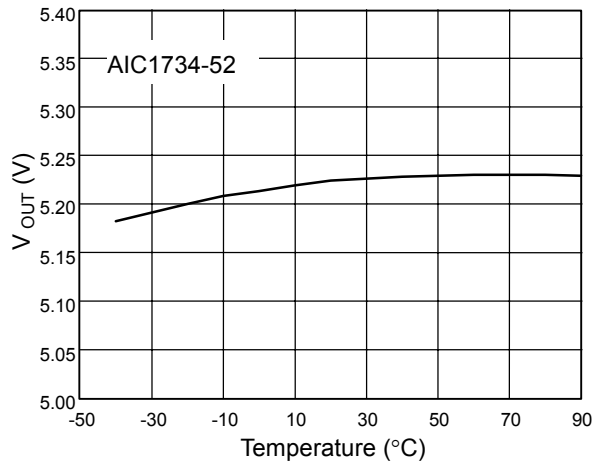


Fig. 1 V_{OUT} vs. Temperature

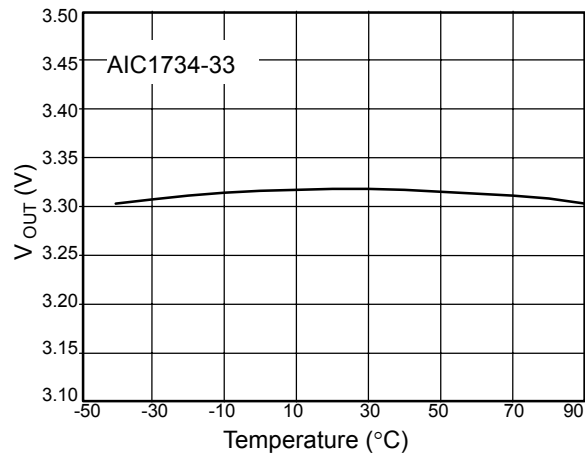


Fig. 2 V_{OUT} vs. Temperature

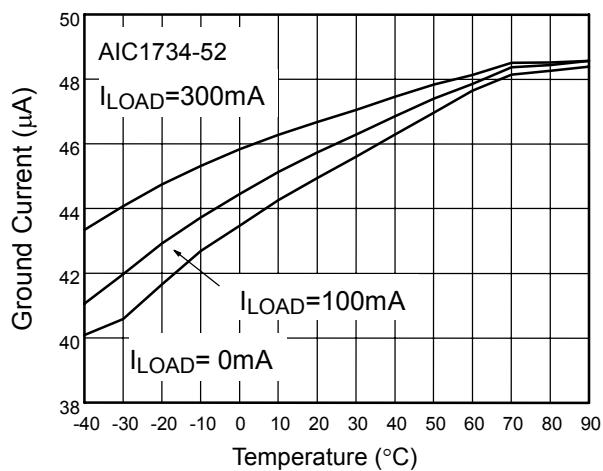


Fig. 3 Ground Current vs. Temperature

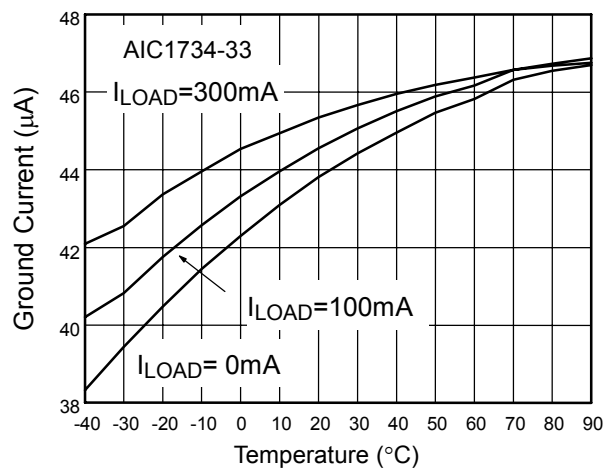


Fig. 4 Ground Current vs. Temperature

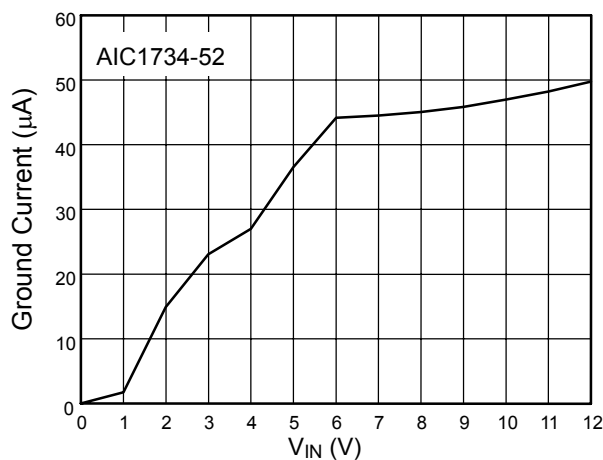


Fig. 5 Ground Current vs. V_{IN}

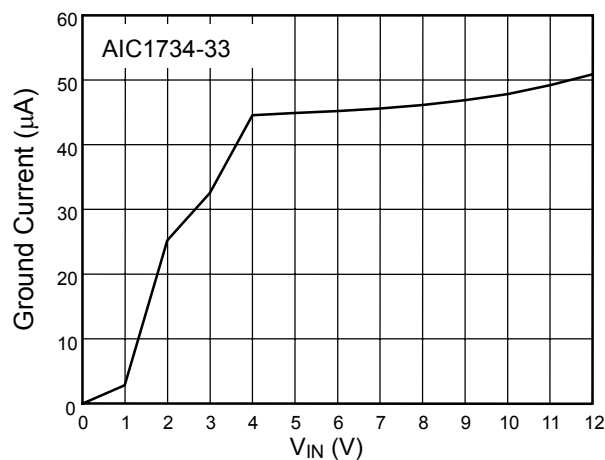


Fig. 6 Ground Current vs. V_{IN}

■ TYPICAL PERFORMANCE CHARACTERISTIC (Continued)

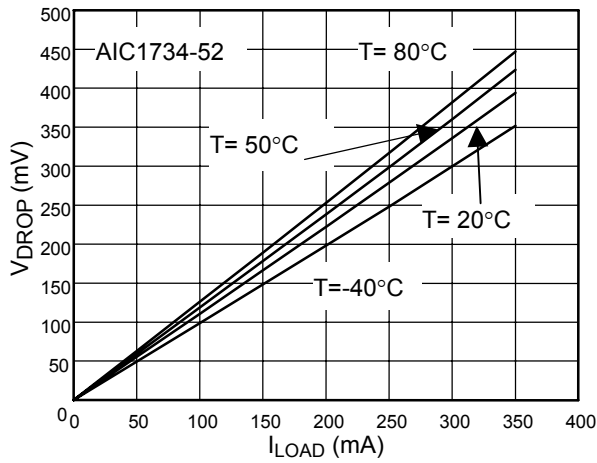


Fig. 7 V_{DROP} vs. I_{LOAD}

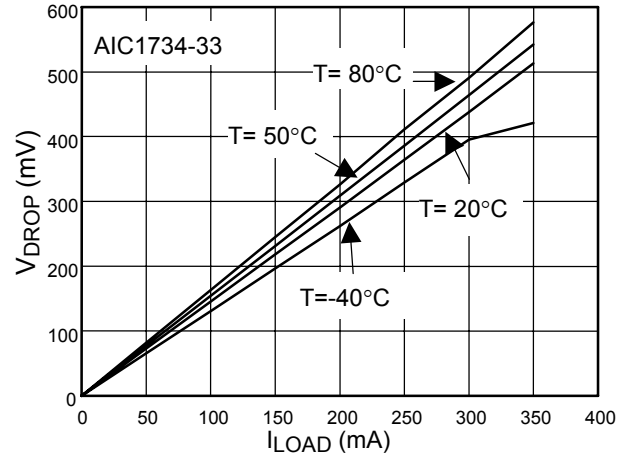


Fig. 8 V_{DROP} vs. I_{LOAD}

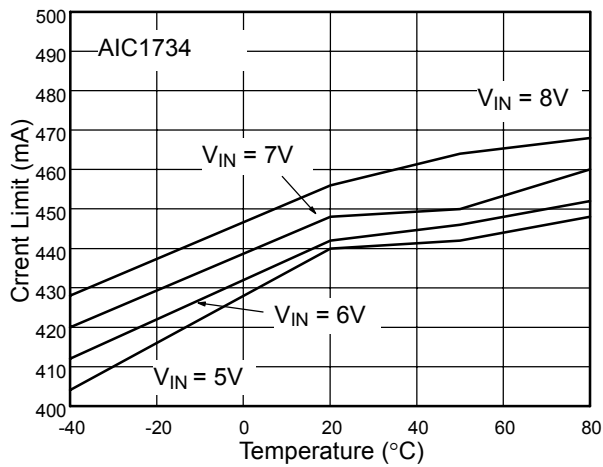
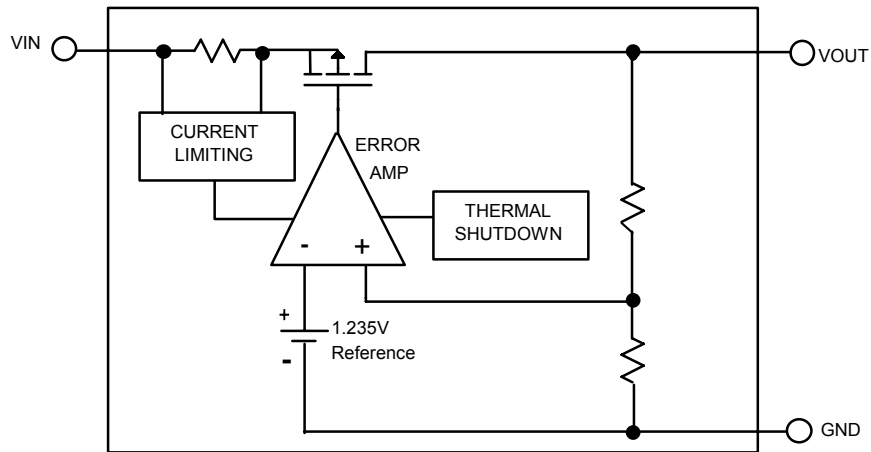


Fig. 9 Current Limit vs. Temperature

■ BLOCK DIAGRAM



■ PIN DESCRIPTIONS

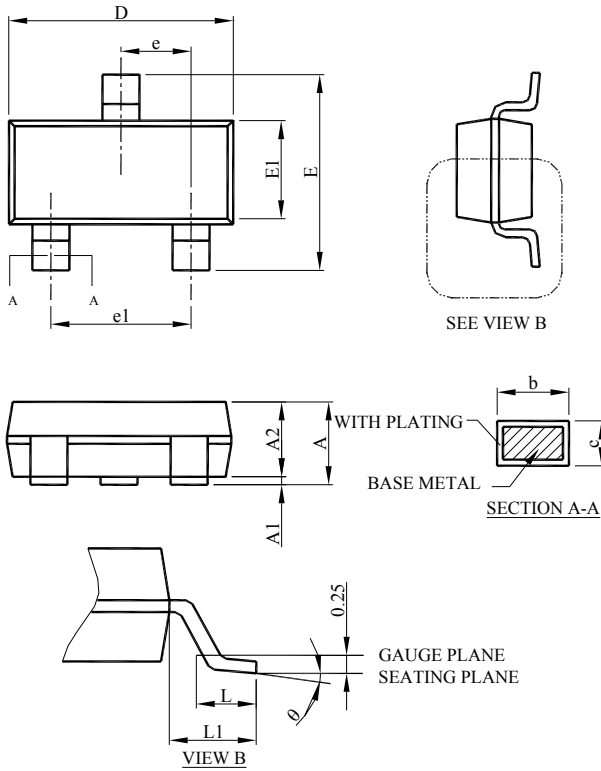
VOUT PIN - Output pin.

GND PIN - Power GND.

VIN PIN - Power Supply Input.

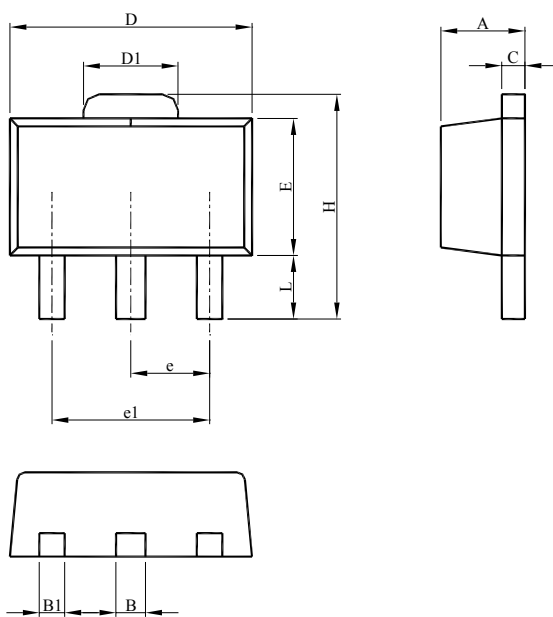
■ PHYSICAL DIMENSIONS (unit: mm)

● SOT-23



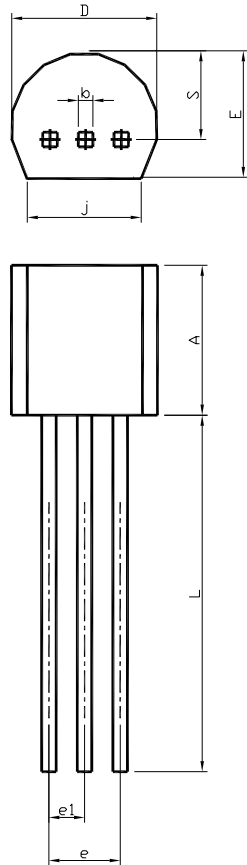
SYMBOL	SOT-23	
	MILLIMETERS	
	MIN.	MAX.
A	0.95	1.45
A1	0.05	0.15
A2	0.90	1.30
b	0.30	0.50
c	0.08	0.22
D	2.80	3.00
E	2.60	3.00
E1	1.50	1.70
e	0.95 BSC	
e1	1.90 BSC	
L	0.30	0.60
L1	0.60 REF	
θ	0°	8°

● SOT-89



SYMBOL	SOT-89	
	MILLIMETERS	
	MIN.	MAX.
A	1.40	1.60
B	0.44	0.56
B1	0.36	0.48
C	0.35	0.44
D	4.40	4.60
D1	1.50	1.83
E	2.29	2.60
e	1.50 BSC	
e1	3.00 BSC	
H	3.94	4.25
L	0.89	1.20

● TO-92



SYMBOL	TO-92	
	MILLIMETERS	
	MIN.	MAX.
A	4.32	5.33
b	0.36	0.47
D	4.45	5.20
E	3.18	4.19
e	2.42	2.66
e1	1.15	1.39
j	3.43	
L	12.70	
S	2.03	2.66

Note:

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