STRUCTURE	Silicon Monolithic Integrated Circuit
TYPE	Dual Low-Dropout Voltage Regulator
PRODUCT SERIES	BA30E00WHFP
FEATURES	· Dual Output：3.3V/0.6A,Variable/0.6A
	· Output Voltage Accuracy:±2%

○ ABSOLUTE MAXIMUM RATINGS(Ta=25℃)

Parameter	Symbol	Limits	Unit
Supply Voltage *1	Vcc1,Vcc2,VEN	18	V
Power Dissipation *2	Pd	2300	mW
Operating Temperature Range	Topr	-25～+105	℃
Storage Temperature Range	Tstg	-55～+150	℃

*1 Do not however exceed Pd.
*2 Pd derated at 18.4mW/℃ for temperature above Ta=25℃,Mounted on 70mm×70mm×1.6mm Glass Epoxy PCB.
The PCB has Thermal Via and 2Layers. The front side Cupper Area : 10.5×10.5mm2,
The back side Cupper Area : 15×15mm2

○ OPERATING CONDITIONS (Ta=25℃)

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage1 *3	Vcc1	4.1	16.0	V
Supply Voltage2	Vcc2	2.8	Vcc1	V
EN Input Voltage	VEN	0	16.0	V
3.3V Peak Output Current	Io1	0	0.6	A
ADJ Output Current	Io2	0	0.6	A
ADJ Output Voltage range	Vo2	0.8	3.3	V

*3 3.7V≦Vcc≦16.0V when Io≦400mA

*This product is not designed for protection against radioactive rays.

*The product described in this specification is a strategic product(and/or Service) subject to COCOM regulations.
It should not be exported without Authorization fromthe appropriate government.

*Status of this document
The Japanese version of this document is the formal specification.
A customer may use this translation version only for a reference to help reading the formal version.
If there are any differences in translation version of this document, formal version takes priority.

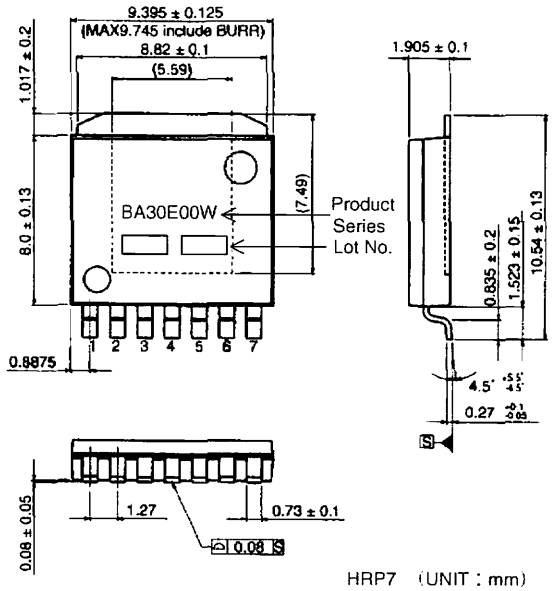
○ ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, Ta=25℃, Vcc1=Vcc2=VEN=5V, R1=50kΩ, R2=62.5kΩ)

Parameter	Symbol	Limits			Unit	Condition
		Min.	Typ.	Max.		
Bias Current	Ib	—	0.7	1.6	mA	Io1=0mA, Io2=0mA
Standby Current	IST	-	0	10	uA	VEN=GND
EN ON Mode Voltage	VON	2.0	-	-	V	Active mode
EN OFF Mode Voltage	VOFF	-	-	0.8	V	Standby mode
EN Input Current	IEN	-	50	100	uA	VEN=3.3V
[3.3V Output]						
Output Voltage 1	Vo1	3.234	3.300	3.366	V	Io1=50mA
Dropout Voltage 1	ΔVd1	—	0.30	0.60	V	Io1=300mA, Vcc1=3.135V
Peak Output Current 1	Io1	0.6	—	—	A	
Ripple Rejection 1	R.R.1	—	68	—	dB	f=120Hz,ein=1Vp-p Io1=100mA
Line Regulation 1	Reg.I1	—	5	30	mV	Vcc=4.1V→16V, Io1=50mA
Load Regulation 1-1	Reg.L1-1	—	30	90	mV	Io1=0mA→0.6A
Load Regulation 1-2	Reg.L1-2	—	30	90	mV	Vcc1=3.7V,Io1=0→0.4A
Temperature Coefficient	Tcvo1	—	±0.01	—	%/℃	Io1=5mA,Tj=0～125℃
[Variable Output] (1.8V Output)						
Reference Voltage	VADJ	0.784	0.800	0.816	V	Io2=50mA
Dropout Voltage2	ΔVd2	-	0.30	0.60	V	Vo2=3.3V set-up
Peak Output Current 2	Io2	0.6	—	—	A	
Ripple Rejection 2	R.R.2	—	66	—	dB	f=120Hz,ein=1Vp-p Io2=100mA
Line Regulation 2	Reg.I2	—	5	30	mV	Vcc1=Vcc2=4.1V→16V,Io2=50mA
Load Regulation 2	Reg.L2	—	30	90	mV	Io2=0mA→0.6A
Temperature Coefficient	Tcvo2	—	±0.01	—	%/℃	Io2=5mA, Tj=0～125℃

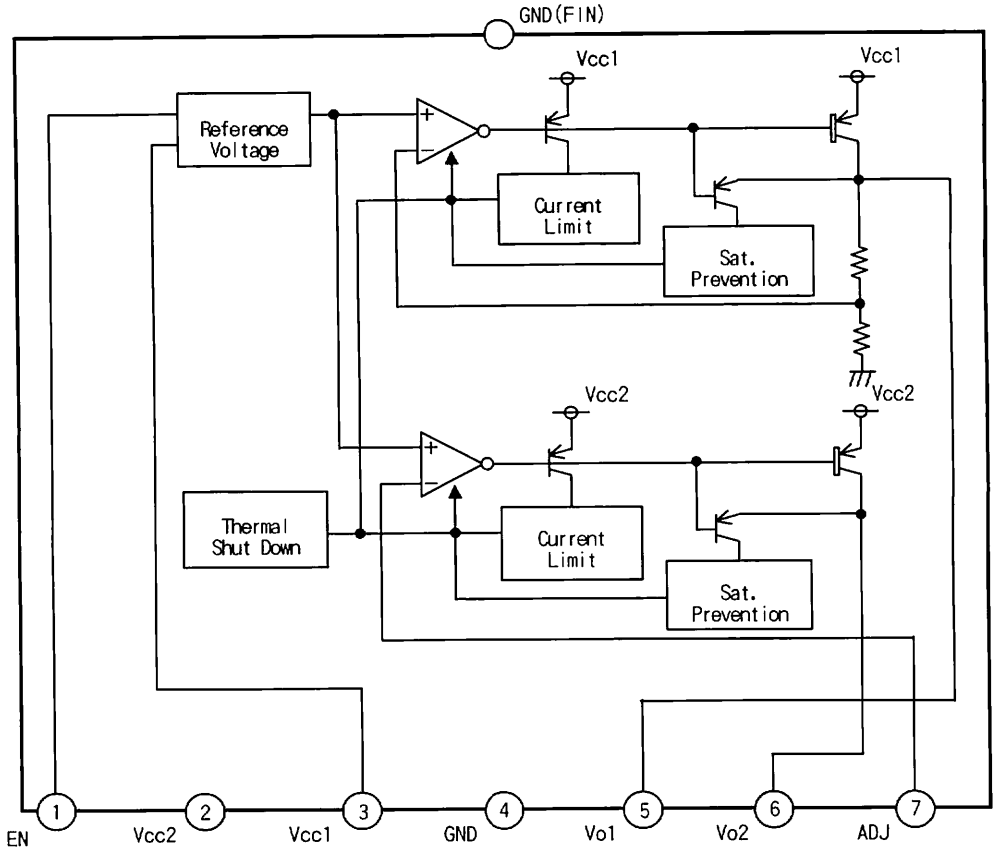
*4 Design Guarantee (Outgoing inspection is not done on all products.))

○ PHYSICAL DIMENSIONS · MARKING



HRP7 (UNIT : mm)

○ BLOCK DIAGRAM



※Refer to the Technical Note about the details of the application

○ Pin No. · Pin Name

Pin No.	Pin Name
1	EN
2	Vcc2
3	Vcc1
4	GND
5	V_{01}
6	V_{02}
7	ADJ
FIN	GND

NOTES FOR USE

1. Absolute maximum range
   This product are produced with strict quality control, but might be destroyed in using beyond absolute maximum ratings. The IC destroyed a failure mode cannot be defined (like Short mode, or Open mode).
   Therefore physical security countermeasure, like fuse, is to be given when a specified mode to be beyond absolute maximum ratings is considered.

2. Ground potential
   GND terminal should be a lowest voltage potential every state.
   Please make sure all pins which is over ground even if include transient feature.

3. About oscillation stopper of output and bypass capacitor
   Please put into capacitor to stop oscillation between output pin and GND. It has a possibility of oscillation if capacitance is changed due to temperature change, etc and it recommends using small tantalum electrolytic capacitor of internal serial resistor (ESR). It recommends degree of 47μF capacitance capacitor. If extremely big capacitor (over 1000μF) is used, it may have a case to occur oscillation of low frequency. Please confirm for the point. And it recommend to put into bypass capacitor with 1μF degree into the nearest position between Vcc pin and GND.

4. Over current protection circuit
   The over-current protection circuits are built in at output, according to their respective current outputs and prevent the IC from being damaged when the load is short-circuited or over-current. But, these protection circuits are effective for preventing destruction by unexpected accident. When it's in continuous protection circuit moving period don't use please. And for ability, because this chip has minus characteristic, be careful for heat plan.

5. Built-in thermal circuit
   A temperature control circuit is built in the IC to prevent the damage due to overheat.
   Therefore, all the outputs are turned off when the thermal circuit works and are turned on when the temperature goes down to the specified level.
   But, built-in the IC a temperature control circuit to protect itself. Except this IC, the other components be designed under 150℃.

6. Mounting Failures
   Mounting failure, such as misdirection or mismount, may cause a malfunction in the device.

7. Application
   Internal circuit could be damaged if there are modes in which the electric potential of the application's input (Vcc1,Vcc2) and GND are the opposite of the electric potential of the various outputs. Use of a diode or other such bypass is recommended.
   And also, internal circuit could be damaged if there are modes in which the supply voltage of Vcc2 is more than Vcc1.

8. Mal-function may happen when the device is used in the strong electromagnetic field.

9. Recommended to put DIODE for protection purpose in case of output pin connected with large load of impedance or reserve current occurred at initial and output off.

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