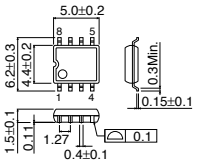
Low Quiescent Current System Regulator

BD3950F

● Description

BD3950F incorporates a 5.0V output low drop-out regulator, a reset circuit for micro-controller and a voltage sensing comparator function altogether. Very low quiescent current is 135μA. Due to the excellent output stability in this regulator, low ESR products such as small capacitance ceramic capacitors could be utilized. Built-in output current limit circuit and temperature protection circuit provide higher levels of reliability in this product.

● Dimension (Unit : mm)



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● Features

1) Pch-DMOS output of low drop-out voltage type
2) Maximum output current: 150mA
3) Output voltage accuracy: ±2%
4) Ceramic capacitor available for output capacitance
5) Built-in over current protection and temperature protection circuit
6) Circuit current:135uA(Typ.)
7) Vcc maximum applied voltage:36V
8) Vcc peak applied voltage:50V

● Applications

Power supply for car stereo, digital applications such as PCs, PDAs, STBs

● Absolute Maximum Ratings (Ta=25˚C)

Parameter	Symbol	Limits	Unit
Vcc applied voltage	Vcc	−0.3 ~ +36	V
Power dissipation 1	Pd	687 ※1	mW
OUT output pin voltage	Vout	−0.3 ~ +7	V
RES output pin voltage	Vres	−0.3 ~ +7	V
SOUT output pin voltage	Vsout	−0.3 ~ +7	V
SIN applied voltage	Vsin	−0.3 ~ +36 ※2	V
Operating temperature range	Topr	−40 ~ +125	˚C
Storage temperature range	Tstg	−55 ~ +150	˚C
Vcc peak applied voltage	Vccpeak	50 ※3	V

※1 Derating : 5.5mW/˚C for operation above Ta=25˚C PCB (70mmx70mm, t=1.6mm) glass epoxy mounting.
※2 Inflow current (SIN to Vcc) must be 5mA or less at Vcc<SIN.
※3 tr=1msec or more Applied time: 400msec or less

● Operating Conditions (Ta=−40~+125˚C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Recommended supply voltage ※1	Vcc	6.0	13.5	20	V
Operating supply voltage ※2	Vcc	5.5	13.5	36	V

※1 The value of electric characteristic is not guaranteed.
※2 The range that the basic function such as regulation can be operated.

● Electrical Characteristics (Unless otherwise noted; Ta=−40~+125˚C, Vcc=13.5V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Circuit current 1	ICC1	–	135	300	μA	Iout=0.3mA
[Reg. block]						
Output voltage	VOUT	4.90	5.00	5.10	V	Vcc=6~20V, Iout=1~100mA
Voltage fluctuation	Lin. Reg.	–	10	20	mV	Vcc=6~20V
Load fluctuation	Load. Reg.	–	15	30	mV	Iout=1~100mA
Minimum I/O voltage difference	ΔVd	–	0.31	0.50	V	Vcc≧4.75V, Io=100mA
Output current capacity	Iomax	150	–	–	mA	(Current limit)
[Reset block]						
Detection voltage	Vdet	Vout×0.92	Vout×0.94	Vout×0.96	V	
Hysteresis width	Vrhys	50	100	150	mV	
Reset delay time L→H	TdLH	17	30	–	ms	CT=0.1μF ∗3
Reset delay time H→L	TdHL	–	4	–	μs	CT=0.1μF
RADJ threshold voltage	VRADJ	1.18	1.26	1.34	V	
[Sense comparator]						
Detection voltage	Tsdet	1.19	1.26	1.33	V	
Hysteresis width	Tshys	50	100	200	mV	

∗ This product is not designed for protection against radioactive rays.
∗3 TdLH can be changed by capacitance of CT. TdLH≒300k×CT

● Application Circuit