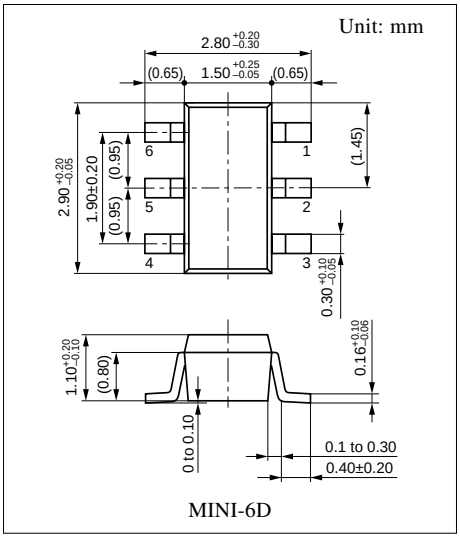
AN8000MS

Ripple filter IC for cellular phones

■ Overview

The AN8000MS is a ripple filter IC that rejects the ripple component superimposed on the regulator output. Use for the VCO bias of cellular phones improves C/N and S/N and makes the high-quality telephone communication possible. Furthermore, by decreasing the difference between I/O voltages, drop in the power supply voltage of VCO is reduced.



MINI-6D

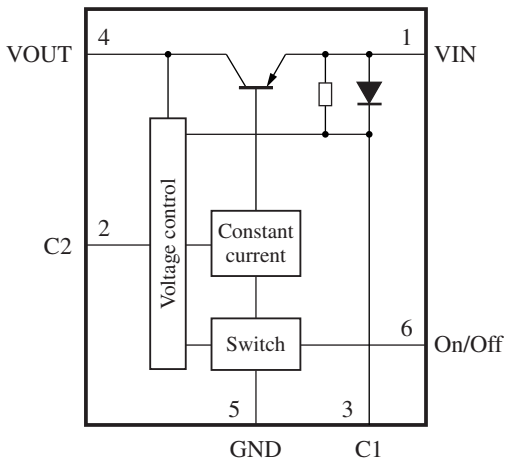
■ Features

- The I/O drop voltage is reduced to 0.3 V (A PNP transistor is used for the pass transistor)
- The mounting area is reduced by adopting the mini-type 6-pin package

■ Applications

- Cellular phones and others

■ Block Diagram



■ Pin Descriptions

Pin No.	Symbol	Description
1	VIN	Input pin
2	C2	Capacitor connection pin 2
3	C1	Capacitor connection pin 1
4	VOUT	Output pin
5	GND	Ground pin
6	On/Off	Control pin

■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	V_{IN}	7.0	V
Supply current	I_{IN}	20	mA
Output current	I_O	−15	mA
Allowable application voltage for on/off pin	$V_{ON/OFF}$	V_{IN}	V
Allowable maximum capacitance for C1 pin	C_1	100	µF
Allowable maximum capacitance for C2 pin	C_2	10	µF
Power dissipation *2	P_D	60	mW
Operating ambient temperature *1	T_{opr}	−25 to +75	°C
Storage temperature *1	T_{stg}	−40 to +125	°C

Note) ∗1: Except for the operating ambient temperature and storage temperature, all ratings are for T_a = 25°C.
∗2: The power dissipation shown is the value for T_a = 75°C.

■ Recommended Operating Range

Parameter	Symbol	Range	Unit
Supply voltage	V_{CC}	2.5 to 6.5	V

■ Electrical Characteristics at T_a = 25°C

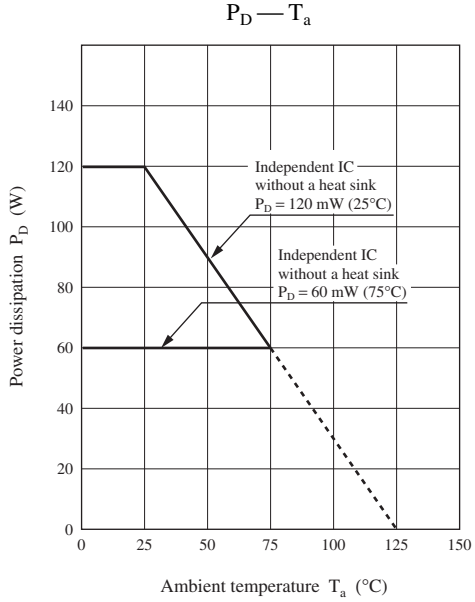
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output voltage 1	V_{O1}	V_{IN} = 2.5 V, I_{OUT} = −1 µA	2.10	2.27	—	V
Output voltage 2	V_{O2}	V_{IN} = 2.5 V, I_{OUT} = −15 mA	1.95	2.14	—	V
Output voltage 3	V_{O3}	V_{IN} = 3.0 V, I_{OUT} = −1 µA	2.60	2.79	—	V
Output voltage 4	V_{O4}	V_{IN} = 3.0 V, I_{OUT} = −15 mA	2.60	2.66	—	V
Output voltage 5	V_{O5}	V_{IN} = 7.0 V, I_{OUT} = −1 µA	6.70	6.87	—	V
Output voltage 6	V_{O6}	V_{IN} = 7.0 V, I_{OUT} = −15 mA	6.60	6.74	—	V

■ Electrical Characteristics at T_a = 25°C (continued)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Consumption current 1	I_{O1}	V_{IN} = 2.5 V, I_{OUT} = −1 µA	−420	−322	—	µA
Consumption current 2	I_{O2}	V_{IN} = 2.5 V, I_{OUT} = −15 mA	−400	−304	—	µA
Consumption current 3	I_{O3}	V_{IN} = 3.0 V, I_{OUT} = −1 µA	−600	−490	—	µA
Consumption current 4	I_{O4}	V_{IN} = 3.0 V, I_{OUT} = −15 mA	−550	−450	—	µA
Consumption current 5	I_{O5}	V_{IN} = 7.0 V, I_{OUT} = −1 µA	−2.0	−1.5	—	mA
Consumption current 6	I_{O6}	V_{IN} = 7.0 V, I_{OUT} = −15 mA	−2.0	−1.7	—	mA
Load regulation 1	REG_{L1}	V_{IN} = 2.5 V, I_{OUT} = −1 µA to −15 mA	0	134	200	mV
Load regulation 2	REG_{L2}	V_{IN} = 3.0 V, I_{OUT} = −1 µA to −15 mA	0	122	200	mV
Load regulation 3	REG_{L3}	V_{IN} = 7.0 V, I_{OUT} = −1 µA to −15 mA	0	126	200	mV
Consumption current against load change 1	I_{REG1}	V_{IN} = 2.5 V, I_{OUT} = −1 µA to −15 mA	−100	−18	100	µA
Consumption current against load change 2	I_{REG2}	V_{IN} = 3.0 V, I_{OUT} = −1 µA to −15 mA	−100	−18	100	µA
Consumption current against load change 3	I_{REG3}	V_{IN} = 7.0 V, I_{OUT} = −1 µA to −15 mA	−150	−5	150	µA
Ripple rejection ratio 1	RR_1	V_{IN} = 3 V ± 0.15 V, I_{OUT} = −15 mA, f = 1 kHz	20	23	—	dB
Ripple rejection ratio 2	RR_2	V_{IN} = 3 V ± 0.15 V, I_{OUT} = −15 mA, f = 25 kHz	35	40	—	dB
Ripple rejection ratio 3	RR_3	V_{IN} = 3 V ± 0.15 V, I_{OUT} = −15 mA, f = 100 kHz	30	36	—	dB

■ Application Notes

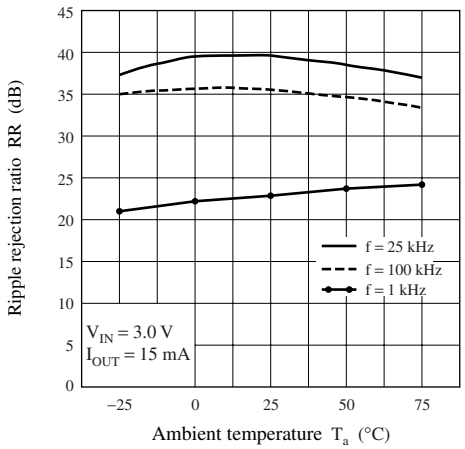
1. P_D — T_a curves of MINI-6D package



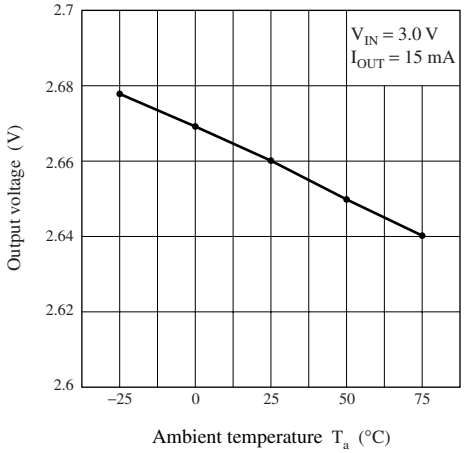
■ Application Notes (continued)

2. Main characteristics

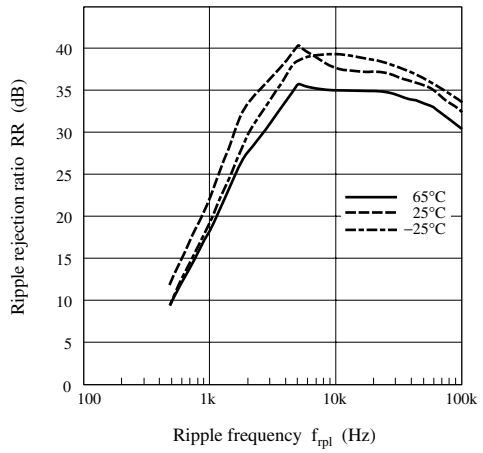
RR — T_a



Output voltage — T_a

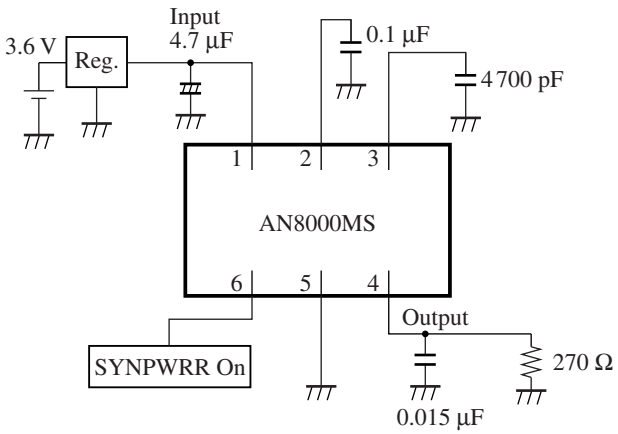


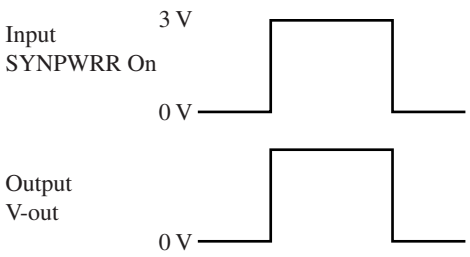
RR — f_{rpl}



3. Transient response

1) Test circuit and conditions

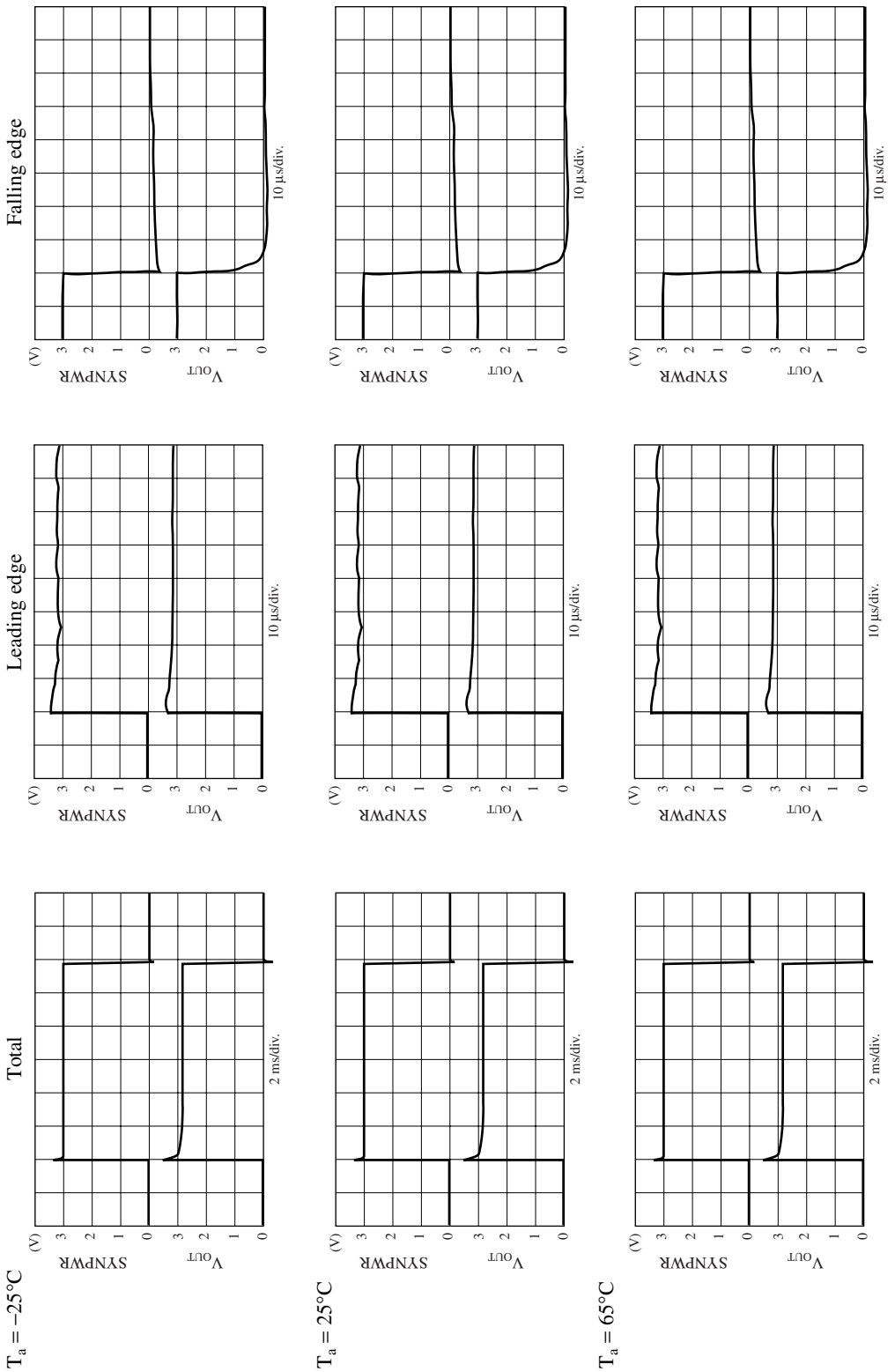




■ Application Notes (continued)

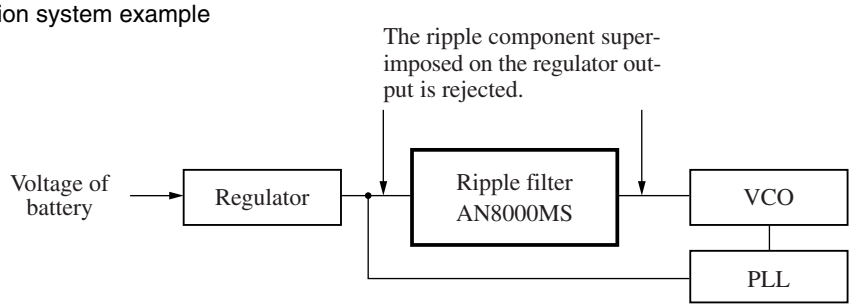
3. Transient response (continued)

2) Transient characteristics (SYNPWR, V_{OUT})

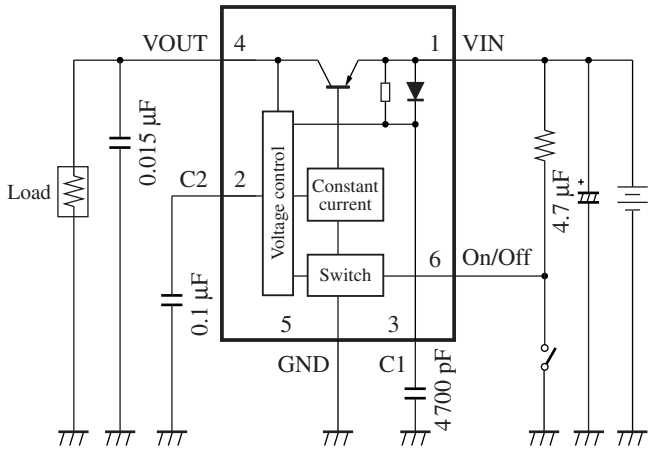


■ Application Circuit Examples

1. Application system example



2. Application circuit example



3. PCB pattern

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