CM8561

1.5A SINK & SOURCE ADJUSTABLE LINEAR BUS TERMINATOR

GENERAL DESCRIPTION

The CM8561 is a low cost linear regulator designed to provide a desired output voltage or termination voltage for various applications by converting voltage supplies ranging from 1.6V to 6.0V. The desired output voltage could be programmable by two external voltage divider resistors.

The CM8561 is capable of sourcing or sinking up to 1.5A of current while regulating an output VOUT voltage to within 2% (DDR-I), 3% (DDR-II) or less.

The CM8561 provides low profile 8-pin SOIC package to save system space.

FEATURES

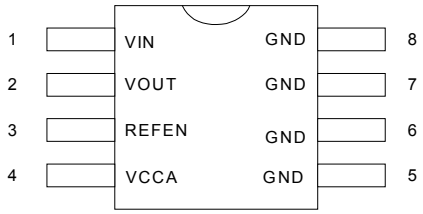
- Ideal for DDR-I and DDR-II
- 8-pin SOIC package
- Source and sink up to 1.5A, no heat sink required
- Integrated power MOSFETs
- Programmable output voltage by external resistors
- Output voltage could go down to 0.6V
- Iccq at VCCA ~ 230uA
- Current limit protection and Short Circuit protection
- Thermal shutdown protection
- Shutdown for standby or suspend mode operation
- Minimum external components

APPLICATIONS

- Mother Board
- PCI/AGP Graphics
- Game/ Play Station
- Set Top Box
- IPC
- SCSI-III Bus terminator

PIN CONFIGURATION

SOP-8 (S08)
Top View



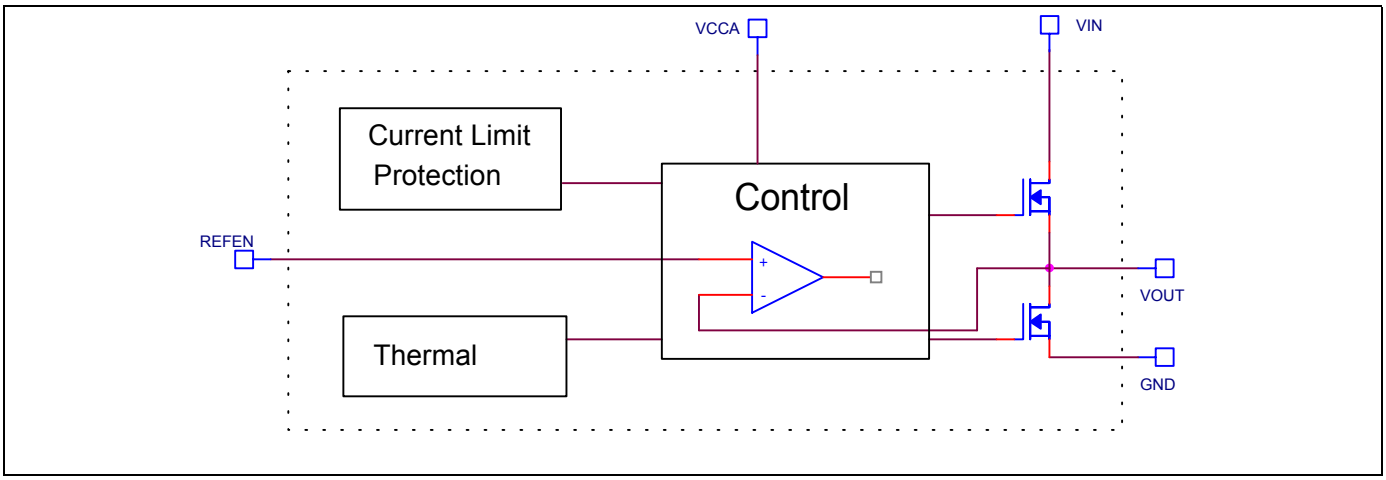
PIN DESCRIPTION

Pin No.	Symbol	Description	Operating Rating			
			Min.	Typ.	Max.	Unit
1	VIN	Input Power		2.5/1.8	6	V
2	VOUT	Output Voltage			6	V
5,6,7,8	GND	Ground				
3	REFEN	Reference Voltage Input and Chip Enable			VCCA-1.9	V
4	VCCA	Voltage supply for internal circuits			6	V

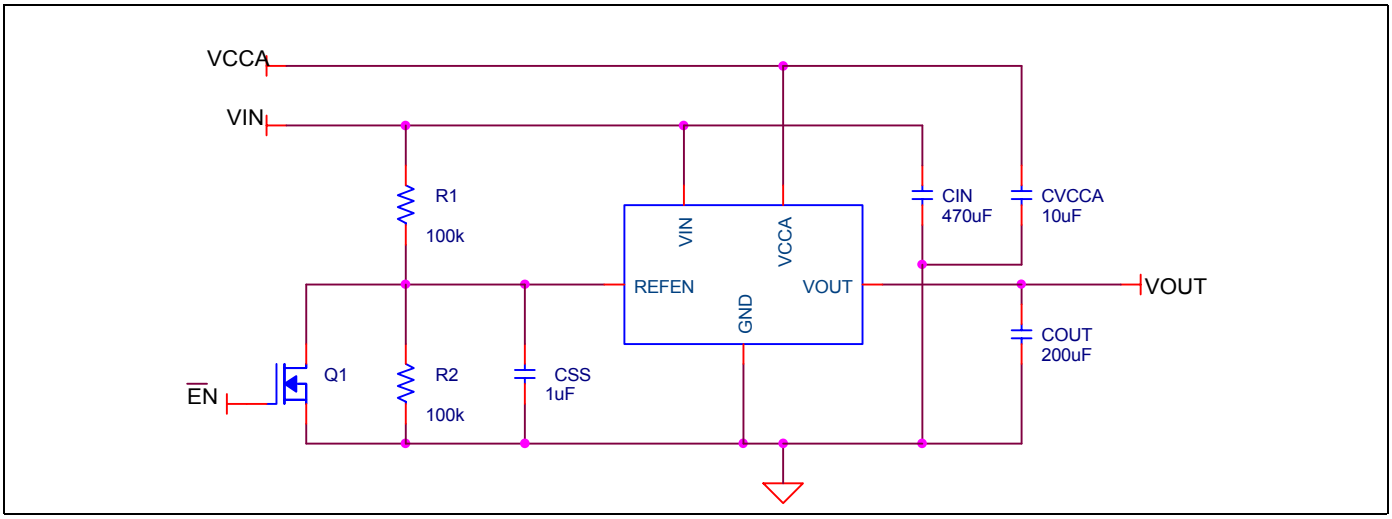
ORDERING INFORMATION

Part Number	Temperature Range	Package
CM8561IS	-40℃ to 85℃	8-Pin SOP (S08)

BLOCK DIAGRAM



APPLICATION CIRCUITS



ABSOLUTE MAXIMUM RATINGS

Absolute maximum ratings are those values beyond which the device could be permanently damaged.

VIN, VCCA …….....……..……7V

Output RMS Current, Source or Sink .....……..…….....…..1.5A

Storage Temperature …….....……. -65°C to 125°C

Lead Temperature (Soldering, 5 sec)…….. 260°C

Thermal Resistance (θ_{JC})….. ……..…….. .15.7°C/W

ELECTRICAL CHARACTERISTICS **(Unless otherwise stated, these specifications apply T_A=25°C; VIN=+2.5V and VCCA=+3.3V, VREFEN=1.25V)** maximum ratings are stress ratings only and functional device operation is not implied. (Note 1)

Symbol	Parameter	Test Conditions	CM8561			Unit
			Min.	Typ.	Max.	
V_{OS}	Output Offset Voltage	I_{OUT}=0A (Note 2)	-20		20	mV
I_{OP}	Operating Current at VIN	No load, Cout=200uF			1	mA
$\lvert \Delta V_{LOAD} \rvert$	Load Regulation (DDR I/II)	I_L: 0A -> 1.5A		0.8/1.2	2/3	%
		I_L: 0A -> -1.5A		0.8/1.2	2/3	%
I_{CCQ}	Quiescent Current at V_{CCA}	At Room Temp.		190	230	µA
I_{SHDN}	Current in Shutdown Mode	REFEN<0.2V, R_L = 10 Ohm		90	110	µA
V_{IN}	Input Voltage Range (Note 3)	No Load		2.5/1.8	6	V
V_{CCA}	Input Voltage Range (Note 3)	R_L = 10 Ohm	3.15	3.3	6	V
SHORT CIRCUIT PROTECTION						
I_{LIMIT}	Current Limit			5		A
$I_{SC,VIN}$	Short Current	Sinking	1.5			A
$I_{SC,GND}$	Short Current	Sourcing	1.5			A
OVER THERMAL PROTECTION						
THSD	Thermal Shutdown Temperature	3.15V<=VCCA<=6V	125	150	155	℃
	Thermal Shutdown Hysteresis		25	30	35	℃
REFEN FUNCTION						
	REFEN Threshold	VREFEN < VIN VREFEN < VCCA – 1.9V	0.4	0.5	0.6	V

Note 1: Limits are guaranteed by 100% testing, sampling, or correlation with worst case test conditions

Note 2: VOS = VREFEN – VOUT

Note 3: Keep VCCA >= VIN and VCCA >= VREFEN + 1.9V on operation power on and power off sequences

Note 4: Guaranteed by design, not 100% test

FUNCTIONAL DESCRIPTION

The CM8561 is a linear regulator that is capable of sinking and sourcing 1.5A of current without an external heat sink.

The CM8561 integrates power MOSFETs that are capable of source and sink 1.5A of current while maintaining excellent voltage regulation. The output voltage can be regulated within 3% or less by using the external feedback. Separate voltage supply inputs have been added to fit applications with various power supplies for the databus and power buses.

OUTPUTS

The output voltage pins (VOUT) are tied to the databus, address, or clock lines via an external inductor. Output voltage is determined by the VIN.

INPUTS

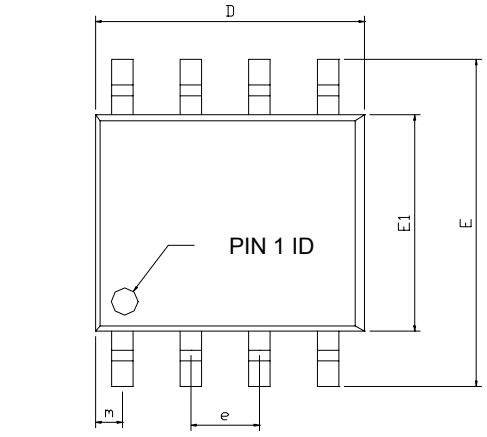
The input voltage pins (VIN) determine the output voltages (VOUT). At CM8561, the desired output voltage could be programmable by two external voltage divider resistors. VIN is suggested to connect to VDDQ of memory module for better tracking with memory VDDQ.

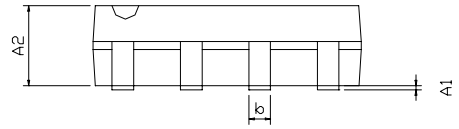
OTHER SUPPLY VOLTAGES

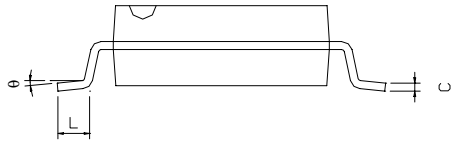
VCCA provide the voltage supply to the logic section and internal error amplifiers of CM8561.

PACKAGE DIMENSION

8-Pin SOP (S08)







SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHS		
	MIN	NOM	MAX	MIN	NOM	MAX
A1	0.10	---	0.25	0.004	---	0.010
A2	1.40	---	1.55	0.055	---	0.061
b	0.30	---	0.51	0.012	---	0.020
C	0.15	---	0.26	0.006	---	0.010
D	4.60	---	5.06	0.169	---	0.199
E	5.79	---	6.20	0.228	---	0.244
E1	3.76	---	4.01	0.148	---	0.158
e	---	1.27	---	---	0.050	---
L	0.38	---	0.69	0.015	---	0.035
m	0.43	---	0.69	0.017	---	0.027
θ	0°	---	8°	0°	---	8°

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