GENERAL DESCRIPTION

The CM8562 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 1V to 6.0V. The desired output voltage could be programmable by two external voltage divider resistors.

The CM8562 is capable of sourcing or sinking up to 2A of current while regulating an output VOUT voltage to within 2%(DDR-I) , 3% (DDR-II) or less .

The CM8562 provides low profile 8-pin SOIC package to save system space.

FEATURES

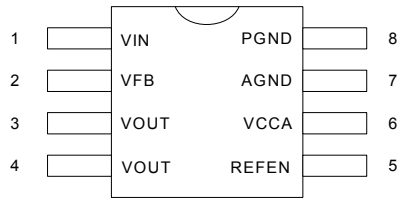
- Ideal for DDR-I、DDR-II and DDR-III
- 8-pin SOIC w/ power pad package, 5-Lead SOT-252 package
- 2 ways to adjust the output, VOUT with VFB pin
- Source and sink up to 2A , no heat sink required
- Integrated power MOSFETs
- Programmable output voltage by external resistors
- Output voltage could go down to 0.6V
- Iccq at VCCA less than 500uA
- Current limit protection and Short Circuit protection
- Thermal shutdown protection
- Shutdown for standby or suspend mode operation
- Minimum external components

APPLICATIONS

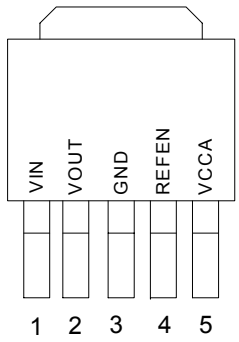
- Mother Board
- PCI/AGP Graphics
- Game/ Play Station
- Set Top Box
- IPC
- SCSI-III Bus terminator

PIN CONFIGURATION

SOP-8 (S08)
Top View



TO-252 (N252)
Top View



PIN DESCRIPTION

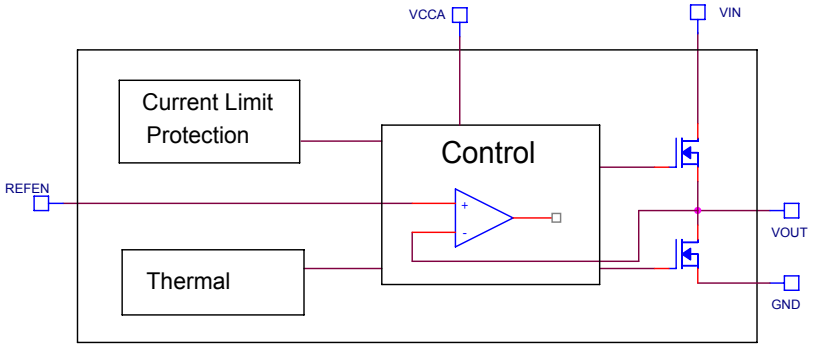
Pin No.		Symbol	Description	Operating Rating			
5-Lead	8-Pin			Min.	Typ.	Max.	Unit
1	1	VIN	Input Power	1	2.5/1.8/1.5	6	V
	2	VFB	Feedback node for the V_{OUT}			6	V
2	3,4	VOUT	Output Voltage			6	V
4	5	REFEN	Reference Voltage Input and Chip Enable			VCCA-1.9	V
5	6	VCCA	Voltage supply for internal circuits			6	V
3	7	AGND	Analog Ground				
	8	PGND	Power Ground				

ORDERING INFORMATION

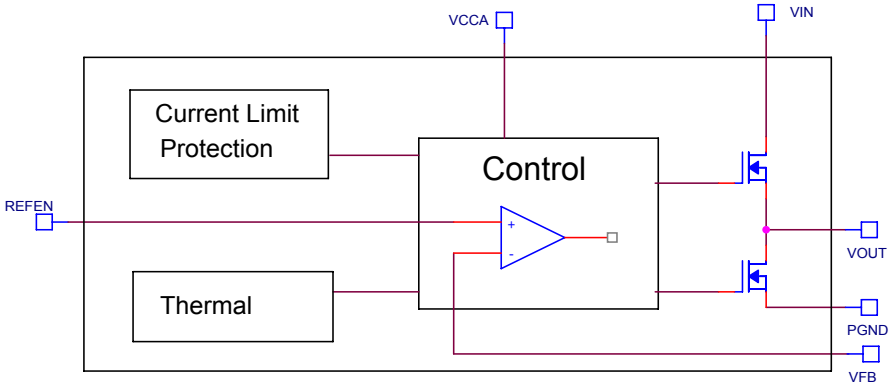
Part Number	Temperature Range	Package
CM8562IS	-40℃ to 85℃	8-Pin SOP (S08)
CM8562IN252	-40℃ to 85℃	5-Lead TO-252 (N252)
CM8562GIS*	-40℃ to 85℃	8-Pin SOP (S08)
CM8562GIN252*	-40℃ to 85℃	5-Lead TO-252 (N252)

*Note : G : Suffix for Pb Free Product

BLOCK DIAGRAM

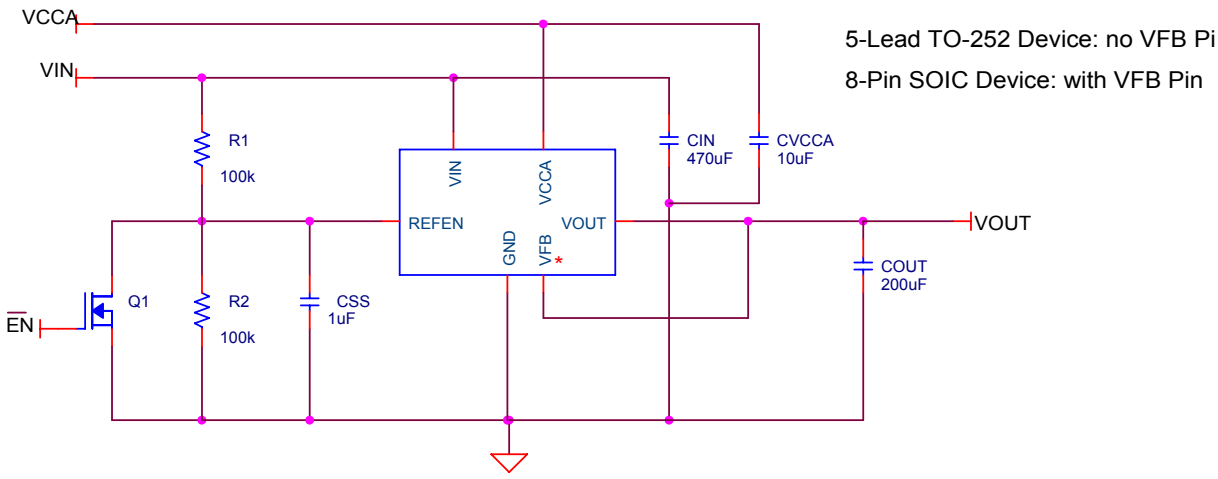


5-Pin Block Diagram

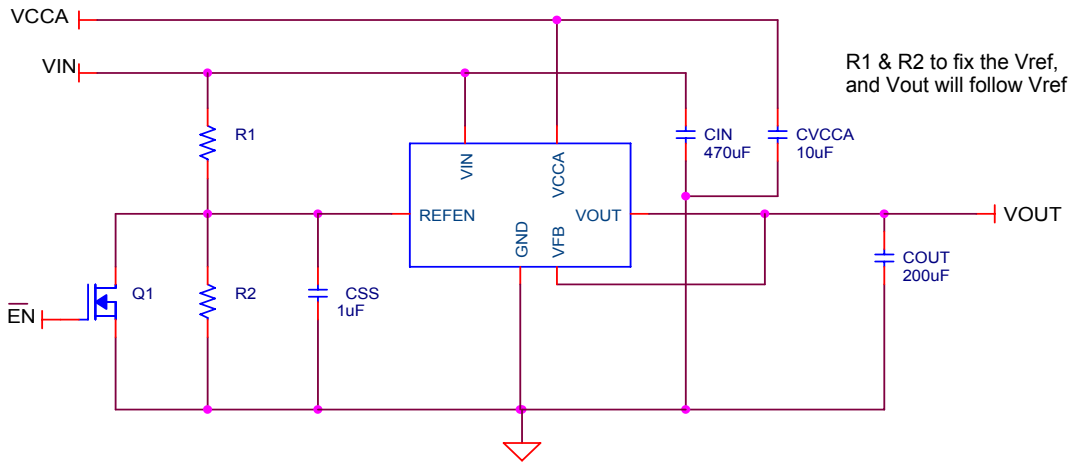


8-Pin Block Diagram

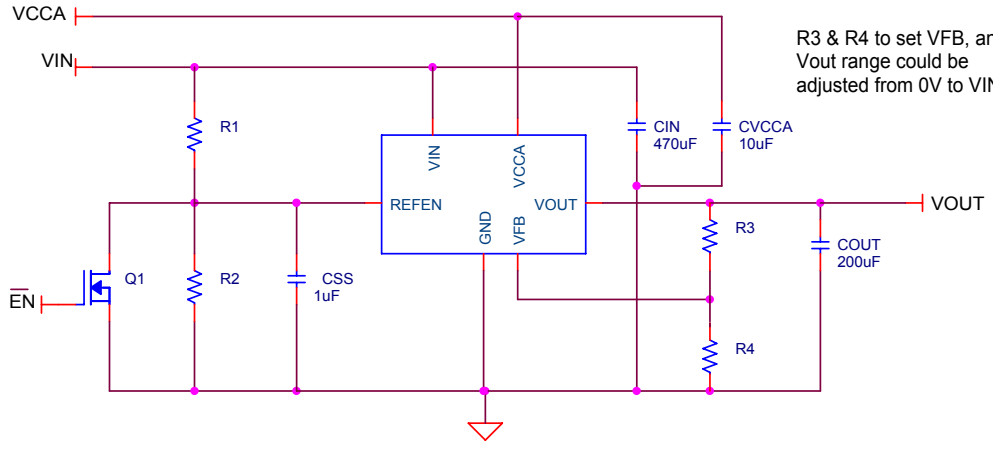
APPLICATION CIRCUITS



Application Circuit as VTT Termination



Application Circuit as Fixed LDO



Application Circuit as Adjustable LDO

ABSOLUTE MAXIMUM RATINGS

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

VIN, VCCA, VFB …….7V
Output RMS Current, Source or Sink .....……..2A
Storage Temperature ……..…… -65°C to 125°C

Lead Temperature (Soldering, 5 sec)…….. 260°C
Thermal Resistance(θ_{JC})…… 14°C/W (PSOP-8)
Thermal Resistance(θ_{JC})…… 8°C/W (TO-252)
Thermal Resistance(θ_{JA})……..…… 75°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	CM8562			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 -> 2A		0.8/1.2	2/3	%
		I_L: 0A -> -2A		0.8/1.2	2/3	%
$V_{DROPOUT}$	Dropout Voltage	VCCA>VOUT+1.9V Iout=2A		0.3	0.4	V
		VCCA>VOUT+1.9V Iout=1.5A		0.2	0.25	V
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	1	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	2			A
$I_{SC,GND}$	Short Current	Sourcing	2			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 CM8562 is a linear regulator that is capable of sinking and sourcing 2A of current without an external heat sink.

The CM8562 integrates power MOSFETs that are capable of source and sink 2A 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

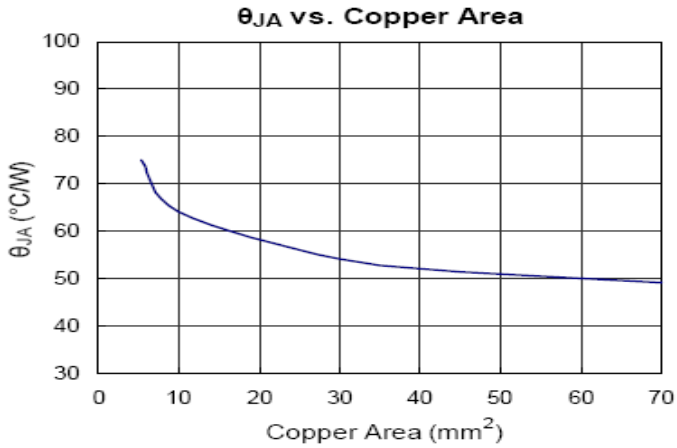
The input voltage pins (VIN) determine the output voltages (VOUT). At CM8562, the desired output voltage could be programmable by two external voltage divider resistors. VIN is suggested to connect to VDDQ of memory module for better tracking with memory VDDQ.

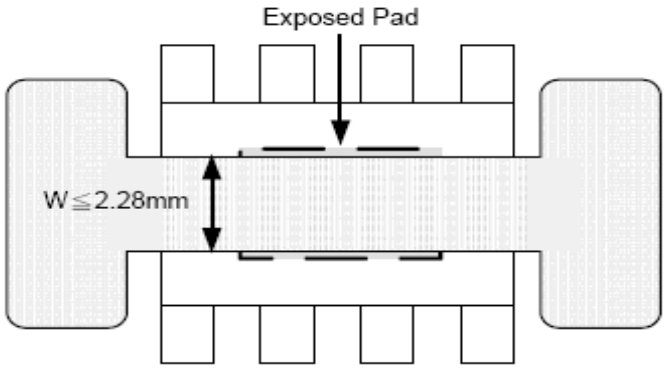
OTHER SUPPLY VOLTAGES

VCCA provide the voltage supply to the logic section and internal error amplifiers of CM8562.

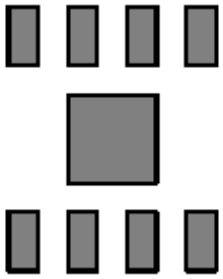
DIFFERENT HEATSINK AREA

Thermal Resistance vs. Different Cooper Area Layout Design

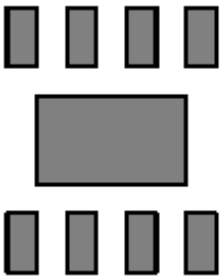




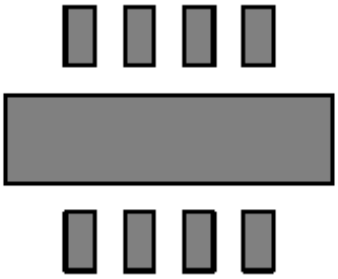
Dog-Bone Layout



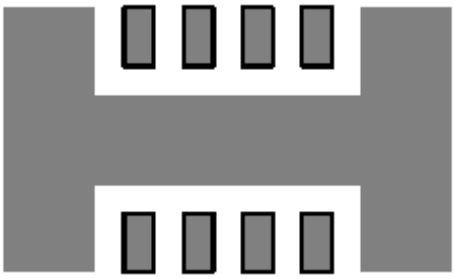
Minimum Footprint , θ_{JA} = 75℃/W



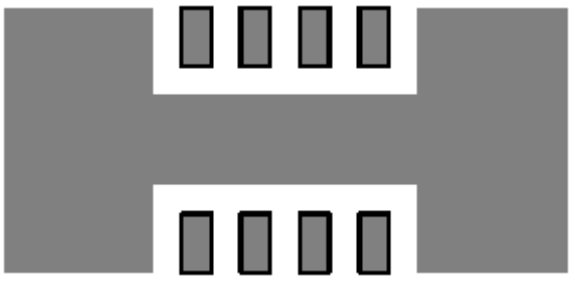
Copper Area = 10mm^2 , θ_{JA} = 64℃/W



Copper Area = 30mm^2 , θ_{JA} = 54℃/W



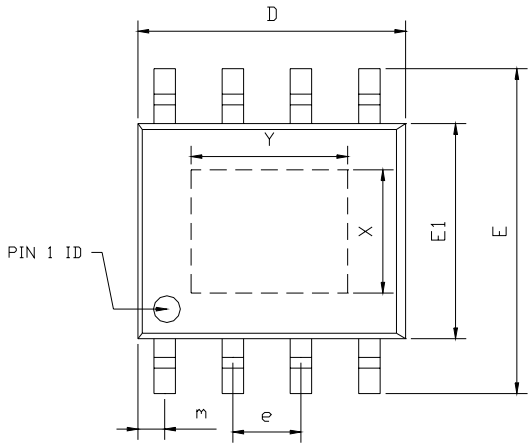
Copper Area = 50mm^2 , θ_{JA} = 51℃/W



Copper Area = 70mm^2 , θ_{JA} = 49℃/W

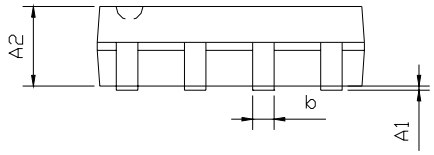
PACKAGE DIMENSION

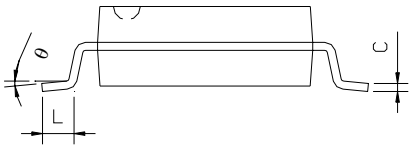
8-Pin SOP w/ Power Pad (PS08)



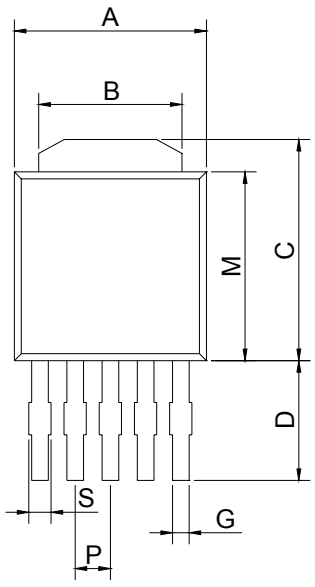
SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHS		
	MIN	NOM	MAX	MIN	NOM	MAX
A1	0.10	---	0.25	0.004	---	0.010
A2	1.40	---	1.55	0.055	---	0.061
b	0.30	---	0.51	0.012	---	0.020
C	0.15	---	0.26	0.006	---	0.010
D	4.60	---	5.06	0.169	---	0.199
E	5.79	---	6.20	0.228	---	0.244
E1	3.76	---	4.01	0.148	---	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°

EXPOSED PAD DIMENSION : (mm)
PAD SIZE: X=2.34 ; Y=2.92

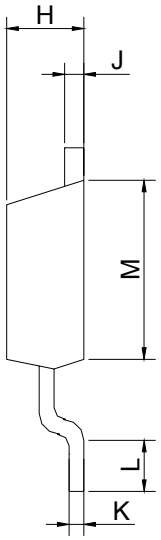




5-Lead TO-252 (N252)



Front View



Side View

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	6.40	---	6.80	0.252	---	0.268
B	5.20	---	5.50	0.205	---	0.217
C	6.80	---	7.20	0.268	---	0.283
D	2.20	---	2.80	0.087	---	0.110
G	0.40	---	0.60	0.016	---	0.024
P	1.27REF			0.05REF		
H	2.20	---	2.40	0.087	---	0.094
J	0.45	---	0.55	0.018	---	0.022
K	0.05	---	0.15	0.002	---	0.006
L	0.90	---	1.50	0.035	---	0.059
M	5.40	---	5.80	0.212	---	0.228
S	0.50	---	0.80	0.019	---	0.031

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