



## 3A SINK & SOURCE ADJUSTABLE LINEAR BUS TERMINATOR

### GENERAL DESCRIPTION

The CM8560 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 CM8560 is capable of sourcing or sinking up to 3A of current while regulating an output VOUT voltage to within 2% (DDR-I), 3% (DDR-II) or less.

The CM8560 provides low profile 5-lead TO-263 package to save system space.

### FEATURES

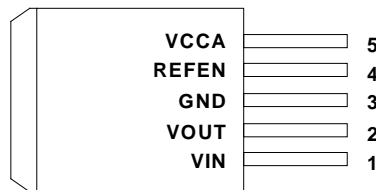
- ◆ Ideal for DDR-I and DDR-II
- ◆ 5-Lead TO-263 packages
- ◆ Source and sink up to 3A, no heat sink required
- ◆ Integrated power MOSFETs
- ◆ Programmable output voltage by external resistors
- ◆ Output voltage could go down to 0.6V
- ◆ Iccq at VCCA less than 500uA
- ◆ Current limit protection and Short 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

TO-263 (N263)  
Top View



## 3A SINK & SOURCE ADJUSTABLE LINEAR BUS TERMINATOR

### PIN DESCRIPTION

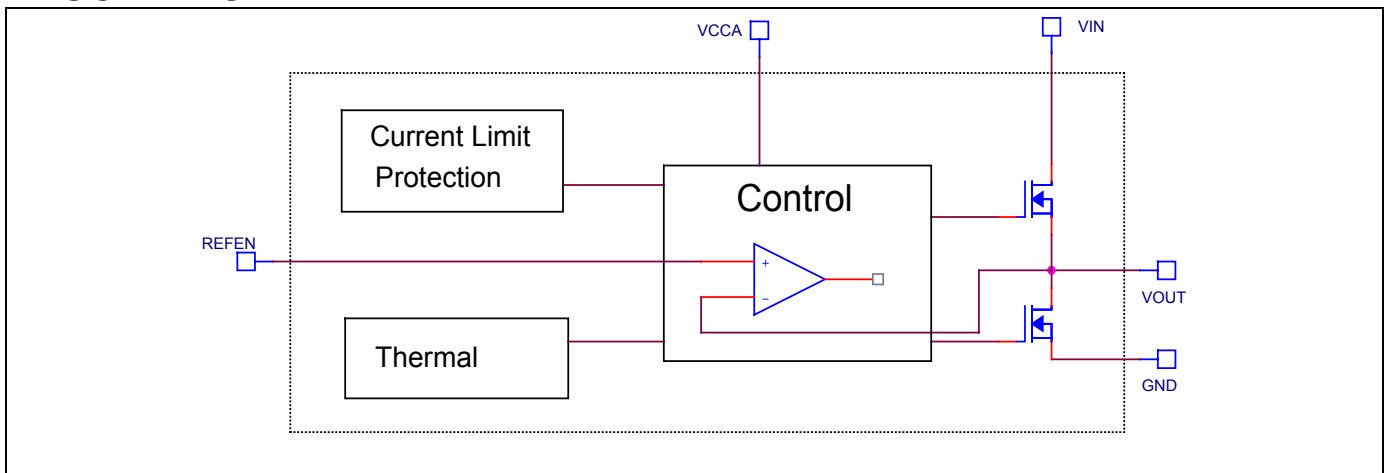
Pin No.	Symbol	Description	Operating Rating			
			Min.	Typ.	Max.	Unit
1	VIN	Input Power		2.5/1.8		V
2	VOUT	Output Voltage			6	V
3	GND	Ground				
4	REFEN	Reference Voltage Input and Chip Enable			VCCA-2.5	V
5	VCCA	Voltage supply for internal circuits				V

### ORDERING INFORMATION

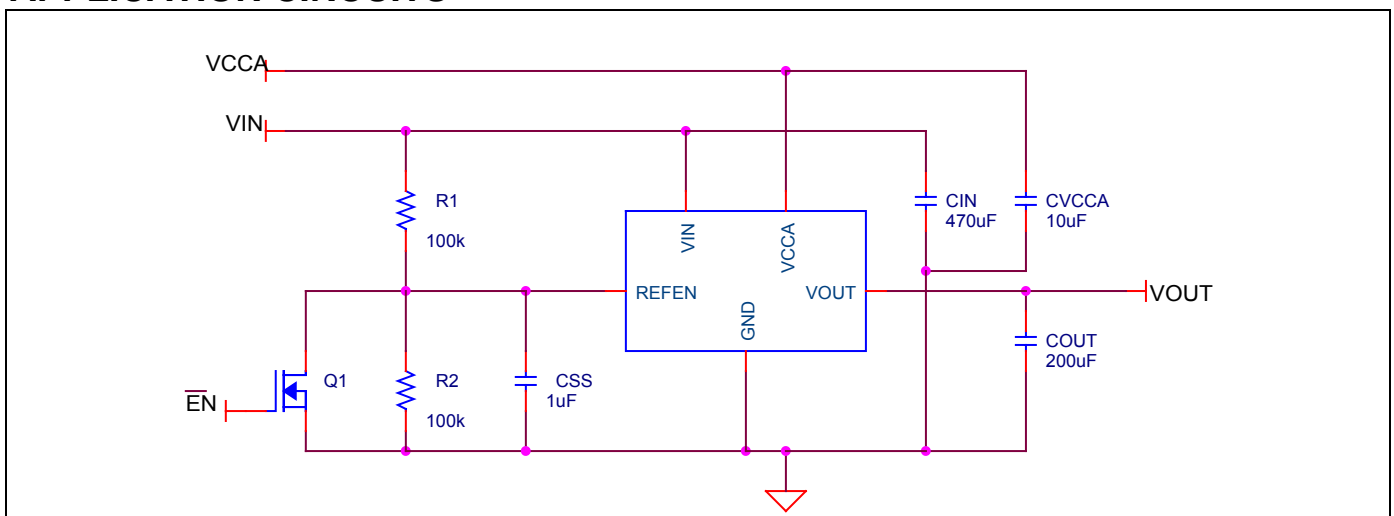
Part Number	Temperature Range	Package
CM8560IN263	-40°C to 85°C	5-Lead TO-263 (N263)
CM8560GIN263*	-40°C to 85°C	5-Lead TO-263 (N263)

\*Note: Add suffix "G" for Pb Free Product

### BLOCK DIAGRAM



### APPLICATION CIRCUITS



**3A SINK & SOURCE ADJUSTABLE LINEAR BUS TERMINATOR**
**ABSOLUTE MAXIMUM RATINGS**

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

V<sub>IN</sub>, V<sub>CCA</sub> .....7V  
 Output RMS Current, Source or Sink .....3A

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

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

Thermal Resistance( $\theta_{JC}$ )..... .7.7°C/W

**ELECTRICAL CHARACTERISTICS** (Unless otherwise stated, these specifications apply T<sub>A</sub>=25°C; V<sub>IN</sub>=+2.5V and V<sub>CCA</sub>=+3.3V, V<sub>REFEN</sub>=1.25V) maximum ratings are stress ratings only and functional device operation is not implied. (Note 1)

Symbol	Parameter	Test Conditions	CM8560			Unit
			Min.	Typ.	Max.	
V <sub>OS</sub>	Output Offset Voltage	I <sub>OUT</sub> =0A (Note 2)	-20		20	mV
I <sub>OP</sub>	Operating Current at V <sub>IN</sub>	No load, C <sub>out</sub> =200uF			1	mA
$\Delta$ V <sub>LOAD</sub>	Load Regulation (DDR I/II)	I <sub>L</sub> : 0A -> 3A		0.8/1.2	2/3	%
		I <sub>L</sub> : 0A -> -3A		0.8/1.2	2/3	%
I <sub>CCQ</sub>	Quiescent Current at V <sub>CCA</sub>	At Room Temp.		190	230	μA
I <sub>SHDN</sub>	Current in Shutdown Mode	REFEN<0.2V, R <sub>L</sub> = 10 Ohm		90	110	μA
V <sub>IN</sub>	Input Voltage Range (Note 3)	No Load	1.35/1	2.5/1.8	6	V
V <sub>CCA</sub>	Input Voltage Range (Note 3)	R <sub>L</sub> = 10 Ohm	3.75		6	V
<b>SHORT CIRCUIT PROTECTION</b>						
I <sub>LIMIT</sub>	Current Limit			5		A
I <sub>SC,VIN</sub>	Short Current	Sinking	2			A
I <sub>SC,GND</sub>	Short Current	Sourcing	3			A
<b>OVER THERMAL PROTECTION</b>						
THSD	Thermal Shutdown Temperature	3.75V<=V <sub>CCA</sub> <=6V	125	150		°C
	Thermal Shutdown Hysteresis		25	30	35	°C
<b>REFEN FUNCTION</b>						
	REFEN Threshold	V <sub>REFEN</sub> < V <sub>IN</sub> V <sub>REFEN</sub> < V <sub>CCA</sub> - 2.5V	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:** V<sub>OS</sub> = V<sub>REFEN</sub> - V<sub>OUT</sub>

**Note 3:** Keep V<sub>CCA</sub> >= V<sub>IN</sub> and V<sub>CCA</sub> >= V<sub>REFEN</sub> + 2.5V on operation power on and power off sequences

**Note 4:** Guaranteed by design, not 100% test

**3A SINK & SOURCE ADJUSTABLE LINEAR BUS TERMINATOR**
**FUNCTIONAL DESCRIPTION**

The CM8560 is a linear regulator that is capable of sinking and sourcing 3A of current without an external heat sink.

The CM8560 integrates power MOSFETs that are capable of source and sink 3A 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**

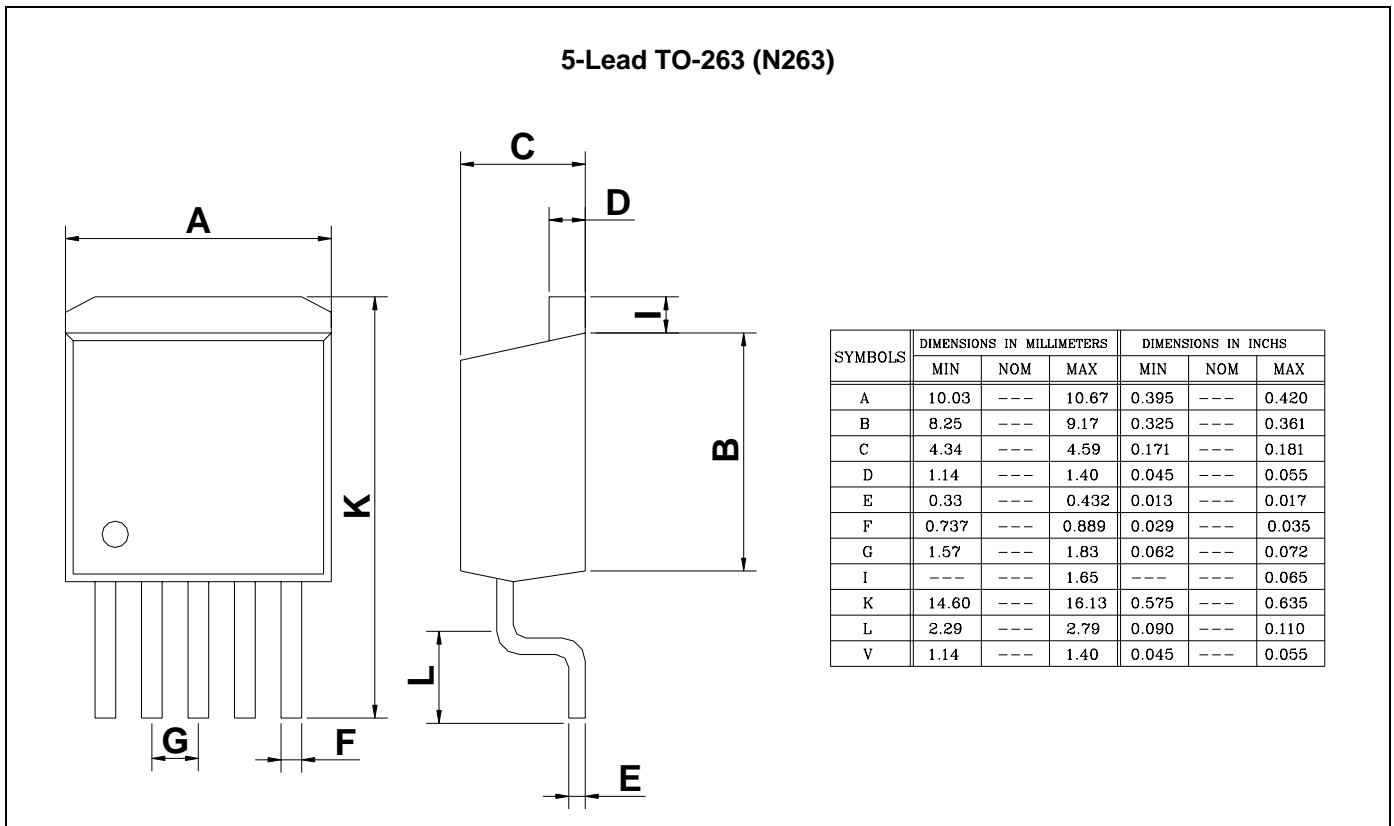
The output voltage pins (VOUT) are tied to the databus, address, or clock lines via an external inductor. Output voltage is determined by the VIN.

**INPUTS**

The input voltage pins (VIN) determine the output voltages (VOUT). At CM8560, 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 CM8560.

**PACKAGE DIMENSION**


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