

# MCC1563 MCC1463

## NEGATIVE VOLTAGE REGULATORS

### Advance Information

#### MONOLITHIC NEGATIVE VOLTAGE REGULATOR CHIP

The MCC1563/MCC1463 is a "three terminal" negative regulator designed to deliver continuous load current up to 500 mAdc and provide a maximum negative input voltage of -40 Vdc. Output current capability can be increased to greater than 10 Adc through use of one or more external transistors.

The MCC1563 and MCC1463 employ phosphorsilicate passivation that protects the entire die surface area, including metalization interconnects. All dice have a minimum gold-backed thickness of 4000 Angstroms. The interconnecting metalization and bonding pads are of evaporated aluminum.

- Electronic "Shutdown" and Short-Circuit Protection
- Low Output Impedance - 20 Milliohms typ
- Excellent Temperature Stability -  $TCV_O = \pm 0.002\%/^{\circ}\text{C}$  typ
- High Ripple Rejection - 0.002% typ
- 500 mA Current Capability

#### NEGATIVE-POWER-SUPPLY VOLTAGE REGULATOR CHIP

#### MONOLITHIC SILICON INTEGRATED CIRCUIT

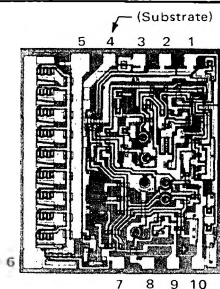


FIGURE 1 - TYPICAL CIRCUIT CONNECTION  
 $-3.5 \leq V_O \leq -37 \text{ Vdc}$ ,  $1 \leq I_L \leq 500 \text{ mA}$

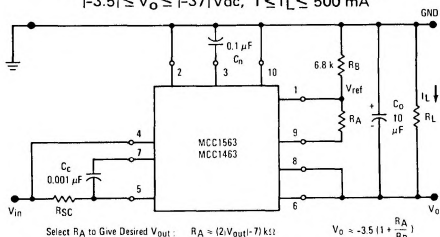


FIGURE 2 - TYPICAL NPN CURRENT BOOST CONNECTION  
( $V_O = -5.2 \text{ Vdc}$ ,  $I_L = 10 \text{ Adc [max]}$ )

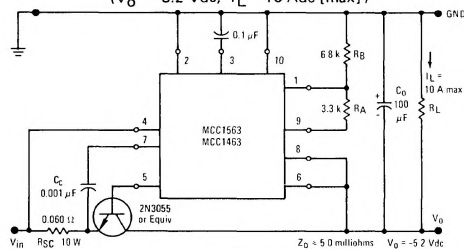
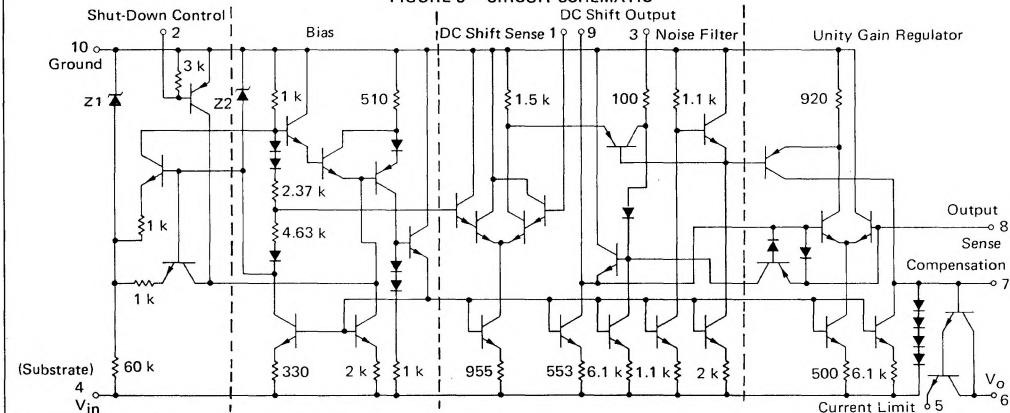


FIGURE 3 - CIRCUIT SCHEMATIC



This is advance information on a new introduction and specifications are subject to change without notice.

MCC1563, MCC1463 (continued)

MAXIMUM RATINGS (T<sub>A</sub> = +25°C unless otherwise noted)

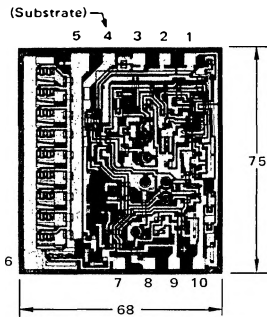
Rating	Symbol	MCC1563	MCC1463	Unit
Input Voltage	V <sub>in</sub>	-40	-35	Vdc
Peak Load Current	I <sub>L</sub> pk	600		mA
Current, Pin 2	I <sub>pin 2</sub>	10		mA
Operating Temperature Range	T <sub>A</sub>	-55 to +125		°C
Junction Temperature Range	T <sub>J</sub>	-65 to +175		°C

ELECTRICAL CHARACTERISTICS (I<sub>L</sub> = 100 mAdc, T<sub>A</sub> = +25°C unless otherwise noted)

Characteristic	Symbol	MCC1563			MCC1463			Unit
		Min	Typ	Max	Min	Typ	Max	
Input Voltage	V <sub>in</sub>	-	-	-40	-	-	-35	Vdc
Output Voltage Range	V <sub>O</sub>	-3.6	-	-37	-3.8	-	-32	Vdc
Reference Voltage (Pin 1 to Ground)	V <sub>ref</sub>	-3.4	-3.5	-3.6	-3.2	-3.5	-3.8	Vdc
Minimum Input-Output Voltage Differential (R <sub>SC</sub> = 0)	V <sub>in</sub> - V <sub>O</sub>	-	1.5	2.7	-	1.5	3.0	Vdc
Bias Current (I <sub>L</sub> = 1.0 mAdc, I <sub>b</sub> = I <sub>in</sub> - I <sub>L</sub> )	I <sub>b</sub>	-	7.0	11	-	7.0	14	mAdc
Output Noise (C <sub>n</sub> = 0.1 μF, f = 10 Hz to 5.0 MHz)	v <sub>n</sub>	-	120	-	-	120	-	μV(rms)
Temperature Coefficient of Output Voltage	TCV <sub>O</sub>	-	±0.002	-	-	±0.002	-	%/°C
Input Regulation	Reg <sub>in</sub>	-	0.002	-	-	0.003	-	%/V <sub>O</sub>
Load Regulation (T <sub>J</sub> = Constant [1.0 mA ≤ I <sub>L</sub> ≤ 20 mA])	Reg <sub>L</sub>	-	0.4	-	-	0.7	-	mV
Output Impedance (f = 1.0 kHz)	Z <sub>O</sub>	-	20	-	-	35	-	milliohms
Shutdown Current (V <sub>in</sub> = -35 Vdc)	I <sub>sd</sub>	-	7.0	15	-	14	50	μAdc

See current MC1563/1463 data sheet for additional information.

MCC1563/MCC1463 BONDING DIAGRAM



All dimensions are nominal and in mils (10<sup>-3</sup> inches).

Die Dimensions

Thickness = 8.0

Bonding Pads = 4.0 x 4.0

PACKAGING AND HANDLING

The MCC1563/MCC1463 voltage regulator is now available as a single monolithic die or encapsulated in the Case 602A and Case 614 hermetic packages. The phosphorsilicate passivation protects the metalization and active area of the die but care must be exercised when removing the dice from the shipping carrier to avoid scratching the bonding pads. A vacuum pickup is useful for the handling of dice. Tweezers are not recommended for this purpose.

The non-spill type shipping carrier consists of a compartmentalized tray and fitted cover. Die are placed in the carrier with geometry side up.