MOTOROLA

MC34268

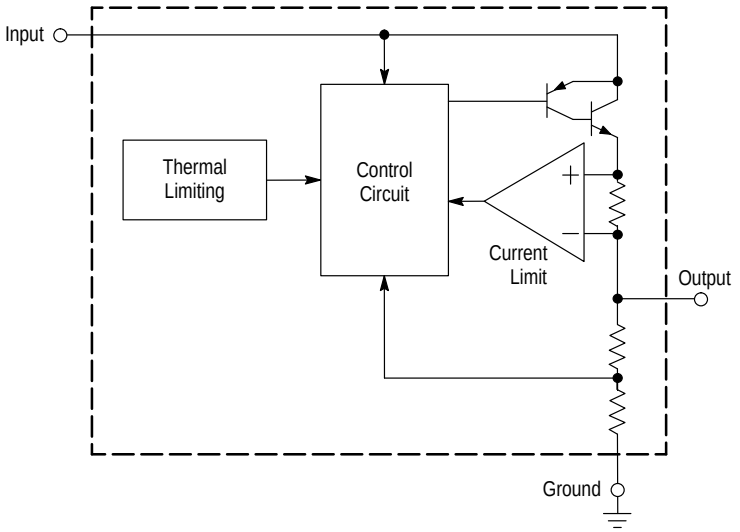
SCSI-2 Active Terminator Regulator

The MC34268 is a medium current, low dropout positive voltage regulator specifically designed for use in SCSI–2 active termination circuits. This device offers the circuit designer an economical solution for precision voltage regulation, while keeping power losses to a minimum. The regulator consists of a 1.0 V dropout composite PNP/NPN pass transistor, current limiting, and thermal limiting. These devices are packaged in the 8–pin SOP–8 and 3–pin DPAK surface mount power packages.

Applications include active SCSI–2 terminators and post regulation of switching power supplies.

- 2.85 V Output Voltage for SCSI–2 Active Termination
- 1.0 V Dropout
- Output Current in Excess of 800 mA
- Thermal Protection
- Short Circuit Protection
- Output Trimmed to 1.4% Tolerance
- No Minimum Load Required
- Space Saving DPAK and SOP–8 Surface Mount Power Packages

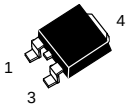
Simplified Block Diagram



SCSI–2 ACTIVE TERMINATOR REGULATOR

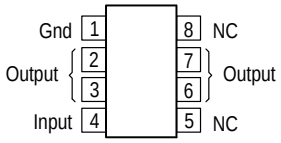
SEMICONDUCTOR TECHNICAL DATA

D SUFFIX
PLASTIC PACKAGE
CASE 751
(SOP–8)

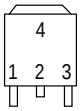


DT SUFFIX
PLASTIC PACKAGE
CASE 369A
(DPAK)

PIN CONNECTIONS



(Top View)



Pin 1. Ground
2. Output
3. Input
4. Output

(Top View)

ORDERING INFORMATION

Device	Operating Temperature Range	Package
MC34268D	T_J = 0° to +125°C	SOP–8
MC34268DT		DPAK

MOTOROLA

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Power Supply Input Voltage	V_{in}	15	V
Power Dissipation and Thermal Characteristics DT Suffix, Plastic Package, Case 369A T_A = 25°C, Derate Above T_A = 25°C Thermal Resistance, Junction–to–Case Thermal Resistance, Junction–to–Air D Suffix, Plastic Package, Case 751 T_A = 25°C, Derate Above T_A = 25°C Thermal Resistance, Junction–to–Case Thermal Resistance, Junction–to–Air	 P_D $R_{\theta JC}$ $R_{\theta JA}$ P_D $R_{\theta JC}$ $R_{\theta JA}$	 Internally Limted 5.0 87 Internally Limited 22 140	 W °C/W °C/W W °C/W °C/W
Operating Junction Temperature Range	T_J	0 to +150	°C
Storage Temperature	T_{stg}	– 55 to +150	°C

ELECTRICAL CHARACTERISTICS

(V_{in} = 4.25 V, C_O = 10 μF, for typical values T_J = 25°C, for min/max values T_J = 0°C to +125°C, unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Output Voltage (T_J = 25°C, I_O = 0 mA) Output Voltage, over Line, Load, and Temperature (V_{in} = 3.9 V to 15 V, I_O = 0 mA to 490 mA)	V_O	2.81 2.76	2.85 2.85	2.89 2.93	V
Line Regulation (V_{in} = 4.25 V to 15 V, I_O = 0 mA, T_J = 25°C)	Reg_{line}	—	—	0.3	%
Load Regulation (I_O = 0 mA to 800 mA, T_J = 25°C)	Reg_{load}	—	—	0.5	%
Dropout Voltage (I_O = 490 mA)	$V_{in} – V_O$	—	0.95	1.1	V
Ripple Rejection (f = 120 Hz)	RR	55	—	—	dB
Maximum Output Current (V_{in} = 5.0 V)	$I_{(max)}$	800	—	—	mA
Bias Current (V_{in} = 4.25 V, I_O = 0 mA)	I_B	—	5.0 to 3.0	8.0	mA
Minimum Load Current to maintain Regulation (V_{in} = 15 V)	$I_{L(min)}$	—	—	0	mA

Figure 1. Dropout Voltage versus Output Load Current

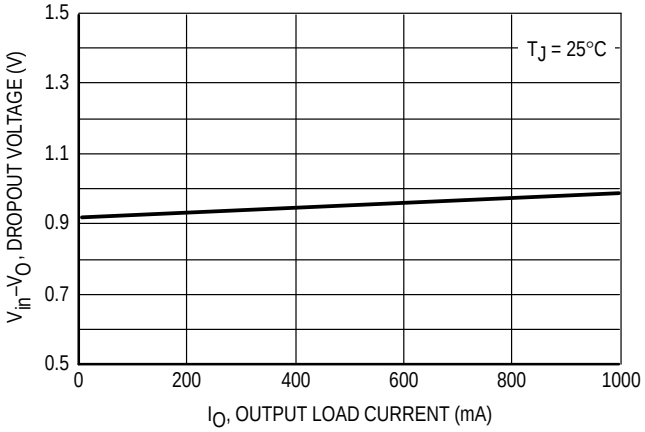


Figure 2. Transient Load Regulation

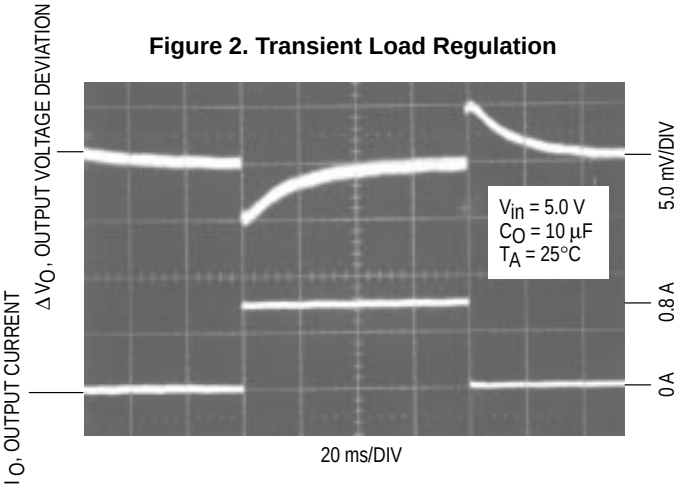


Figure 3. Typical SCSI Application

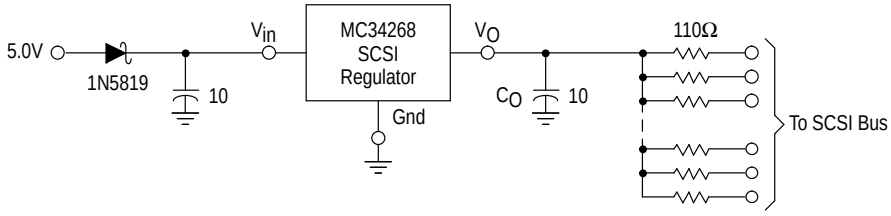


Figure 3 is a circuit of a typical SCSI terminator application. The MC34268 is designed specifically to provide 2.85 V required to drive a SCSI–2 bus. The output current capability of the regulator is in excess of 800 mA; enough to drive standard SCSI–2, fast SCSI–2, and some wide SCSI–2 applications. The typical dropout voltage is less than 1.0 V, allowing the IC to regulate to input voltages less than 4.0 V. Internal protective features include current and thermal limiting.

The MC34268 requires an external 10 μF capacitor with an ESR of less than 10 Ω for stability over temperature. With economical electrolytic capacitors, cold temperature operation can pose a stability problem. As temperature decreases, the capacitance also decreases and the ESR increases, which could cause the circuit to oscillate. Tantalum capacitors may be a better choice if small size is a requirement. Also, the capacitance and ESR of a tantalum capacitor is more stable over temperature.

Figure 4. SOP–8 Thermal Resistance versus P.C.B. Copper Length

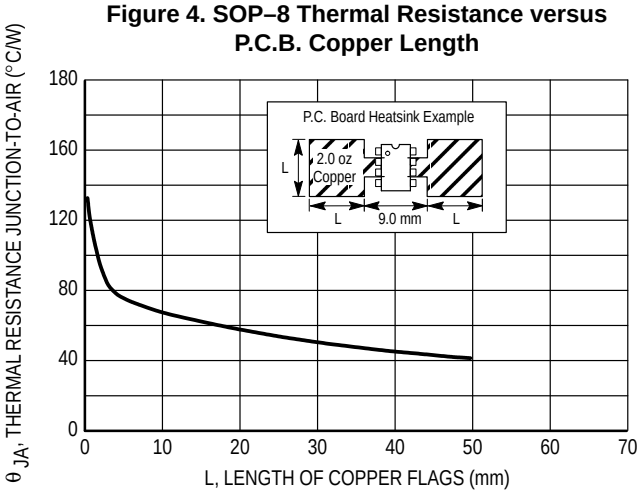


Figure 5. DPAK Thermal Resistance versus P.C.B. Copper Length