



**MOTOROLA**

Order this document by MC3340/D

# MC3340

## Electronic Attenuator

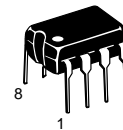
The MC3340 is a simple but very effective electronic attenuator. This device offers up to 80 dB of attenuation control for frequencies to 1.0 MHz. THD (distortion) is less than 1% – up to 15 dB attenuation and less than 3% – up to 40 dB.

Typical uses include instrumentation control, remote control audio amplifiers, electronic games, and CATV (cable TV) set-top converter audio control.

- Designed for use in:
  - DC Operated Volume Control
  - Compression and Expansion Amplifier Applications
- Controlled by DC Voltage or External Variable Resistor
- Economical 8-Pin Dual-In-Line Package

### ELECTRONIC ATTENUATOR

**SEMICONDUCTOR  
TECHNICAL DATA**



**P SUFFIX  
PLASTIC PACKAGE  
CASE 626**

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

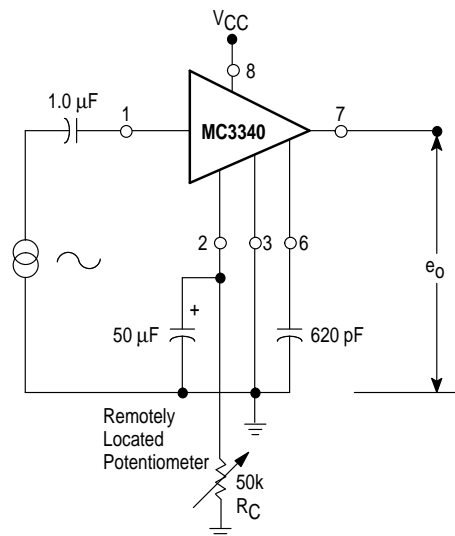
Rating	Symbol	Value	Unit
Power Supply Voltage	V <sub>CC</sub>	20	Vdc
Power Dissipation @ T <sub>A</sub> = 25°C Derate above T <sub>A</sub> = 25°C	P <sub>D</sub>	1.2 10	W mW/°C
Operating Ambient Temperature Range	T <sub>A</sub>	0 to 75	°C

#### ORDERING INFORMATION

Device	Operating Temperature Range	Package
MC3340P	T <sub>A</sub> = 0 to 75°C	Plastic DIP

**NOTE:** ESD data available upon request.

**Figure 1. Typical DC Remote Volume Control**

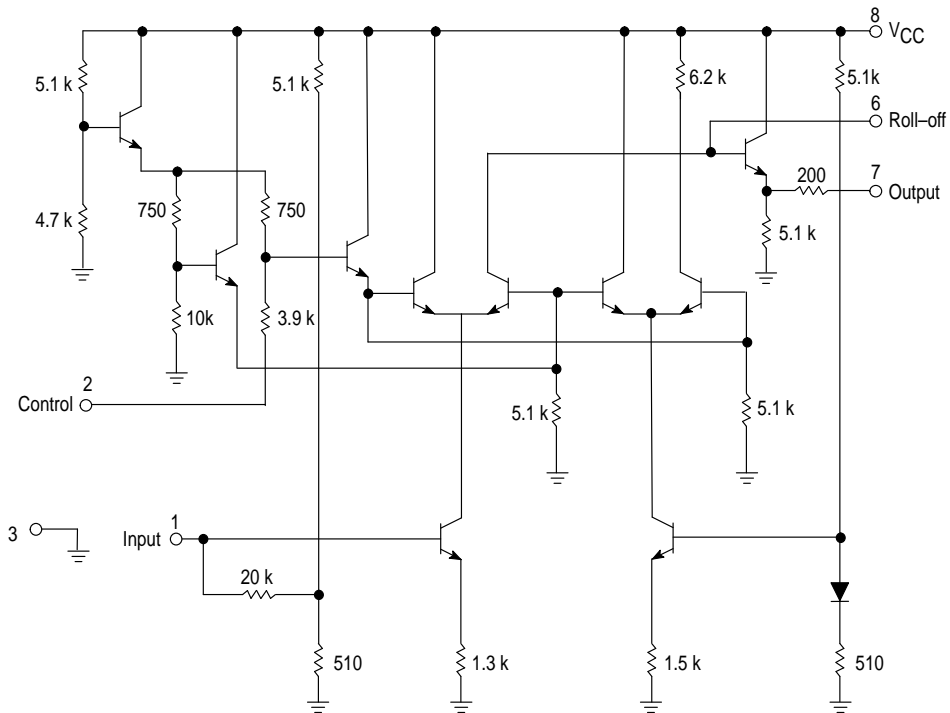


# MC3340

**ELECTRICAL CHARACTERISTICS** ( $e_{in} = 100 \text{ mVrms}$ ,  $f = 1.0 \text{ kHz}$ ,  $V_{CC} = 16 \text{ Vdc}$ ,  $T_A = +25^\circ\text{C}$ , unless otherwise noted.)

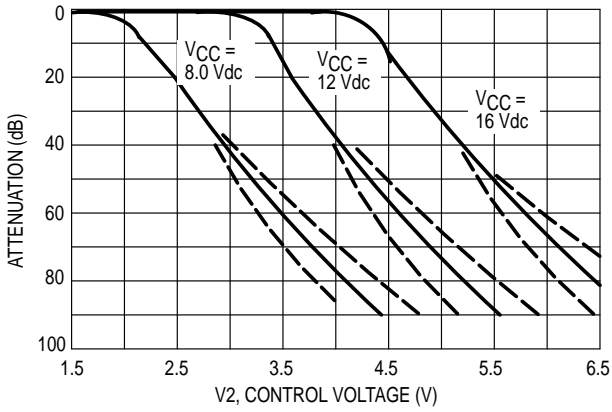
Circuit	Characteristics	Min	Typ	Max	Unit
	Operating Power Supply Voltage	9.0	–	18	Vdc
	Control Terminal Sink Current, Pin 2 ( $e_{in} = 0$ )	–	–	2.0	mAdc
	Maximum Input Voltage	–	–	0.5	Vrms
	Voltage Gain	11	13	–	dB
	Attenuation Range from Maximum Gain ( $V_2 = 6.5 \text{ Vdc}$ )	70	80	–	dB
	Total Harmonic Distortion (Pin 2 Gnd) ( $e_{in} = 100 \text{ mVrms}$ , $e_o = A_V \cdot e_{in}$ )	–	0.6	1.0	%

**Figure 2. Representative Schematic Diagram**

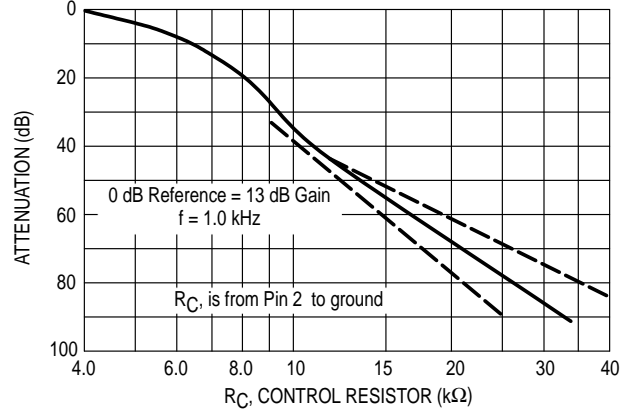


# MC3340

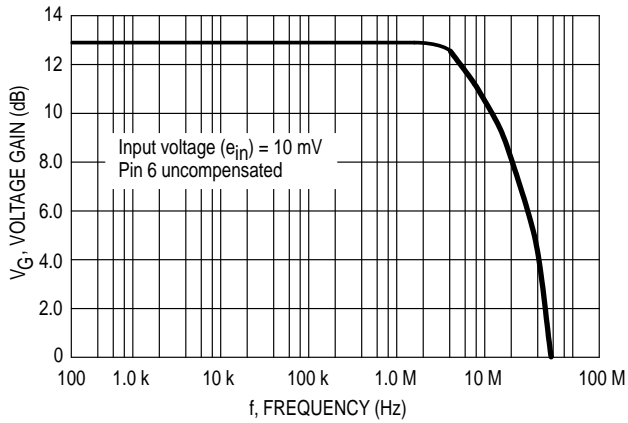
**Figure 3. Attenuation versus DC Control Voltage**



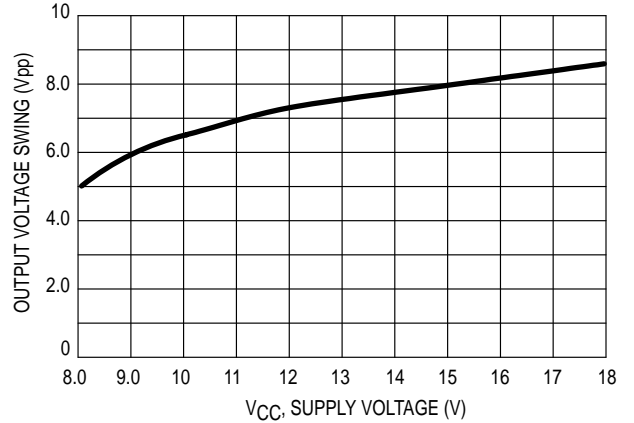
**Figure 4. Attenuation versus Control Resistor**



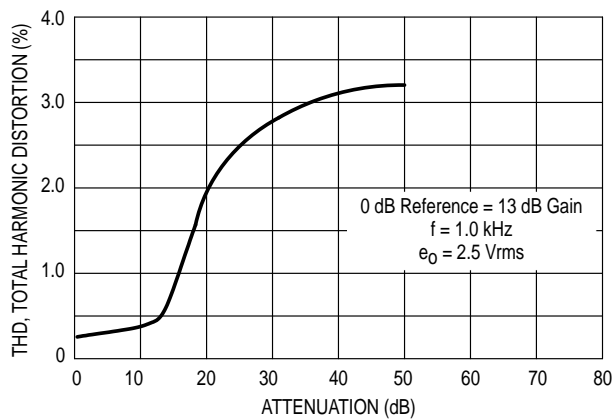
**Figure 5. Frequency Response**



**Figure 6. Output Voltage Swing**

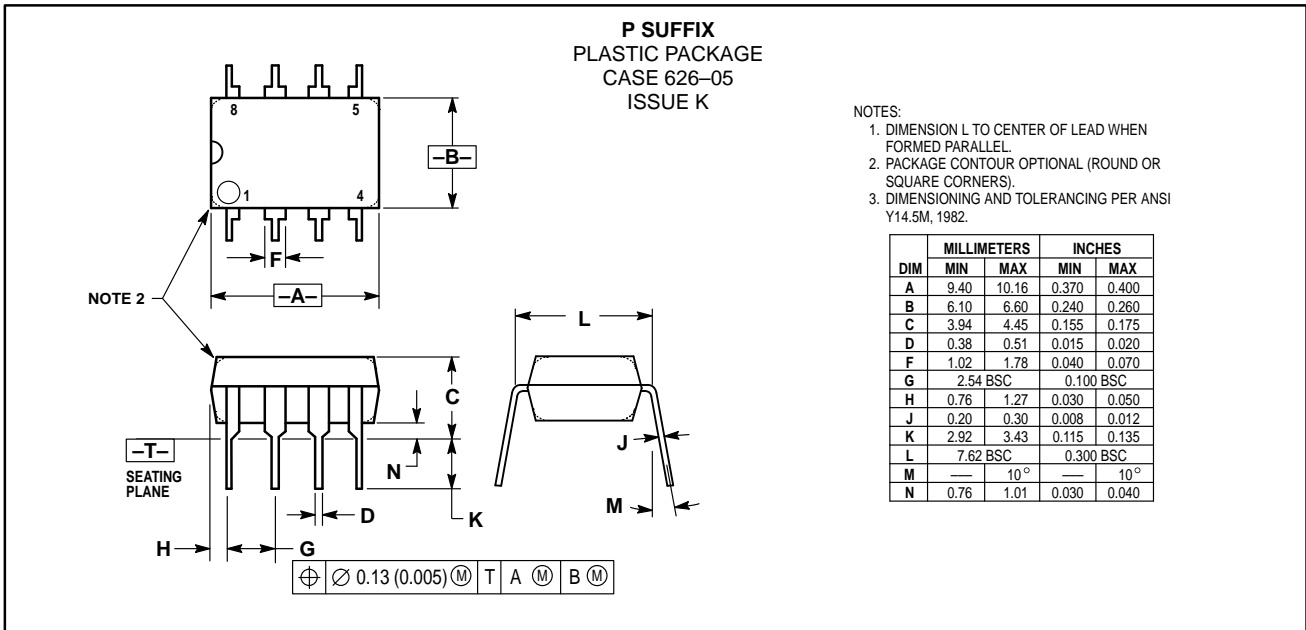


**Figure 7. Total Harmonic Distortion**



# MC3340

## OUTLINE DIMENSIONS



Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters which may be provided in Motorola data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

Mfax is a trademark of Motorola, Inc.

**How to reach us:**

**USA/EUROPE/Locations Not Listed:** Motorola Literature Distribution;  
 P.O. Box 5405, Denver, Colorado 80217. 1-303-675-2140 or 1-800-441-2447

**JAPAN:** Nippon Motorola Ltd.; SPD, Strategic Planning Office, 141,  
 4-32-1 Nishi-Gotanda, Shinagawa-ku, Tokyo, Japan. 81-3-5487-8488

**Customer Focus Center: 1-800-521-6274**

**Mfax™:** RMFAX0@email.sps.mot.com – TOUCHTONE 1-602-244-6609  
 Motorola Fax Back System – US & Canada ONLY 1-800-774-1848  
 – http://sps.motorola.com/mfax/

**ASIA/PACIFIC:** Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,  
 51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

**HOME PAGE:** <http://motorola.com/sps/>

