MC1711

DIFFERENTIAL COMPARATORS

MONOLITHIC DUAL DIFFERENTIAL VOLTAGE COMPARATOR

. . . designed for use in level detection, low-level sensing, and memory applications.

Typical Characteristics:

- Differential Input –
  Input Offset Voltage = 1.0 mV
  Offset Voltage Drift = 5.0 μV/°C
- Fast Response Time – 40 ns
- Output Compatible with All Saturating Logic Forms –
  V_{out} = +4.5 V to -0.5 V Typical
- Low Output Impedance – 200 Ohms

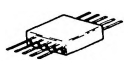
DUAL DIFFERENTIAL COMPARATOR INTEGRATED CIRCUIT

MONOLITHIC SILICON EPITAXIAL PASSIVATED

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Power Supply Voltage	V^+ V^-	+14 -7.0	Vdc Vdc
Differential Input Signal	V_{in}	±5.0	Volts
Common Mode Input Swing	CMV_{in}	±7.0	Volts
Peak Load Current	I_L	50	mA
Power Dissipation (package limitation) Metal Can Derate above T_A = 25°C Ceramic Dual In-line Package Derate above T_A = 75°C Flat Package Derate above T_A = 25°C	P_D	 680 4.6 670 6.7 500 3.3	 mW mW/°C mW mW/°C mW mW/°C
Operating Temperature Range	T_A	-55 to +125	°C
Storage Temperature Range	T_{stg}	-65 to +150	°C

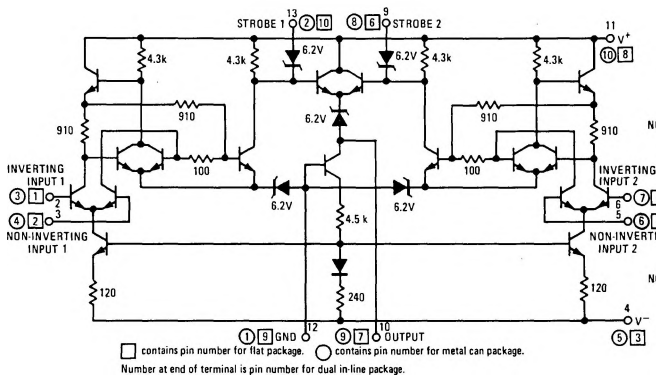
F SUFFIX
CERAMIC PACKAGE
CASE 606
TO-91



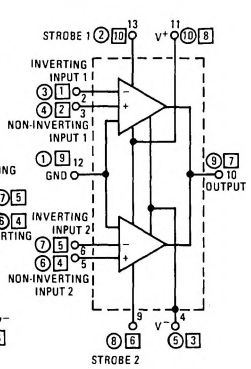
G SUFFIX
METAL PACKAGE
CASE 603-02
TO-100

L SUFFIX
CERAMIC PACKAGE
CASE 632
TO-116

CIRCUIT SCHEMATIC



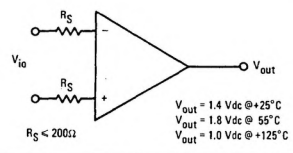
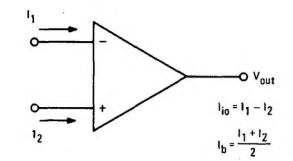
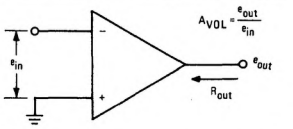
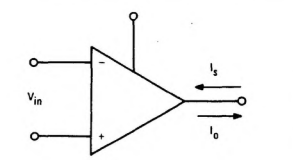
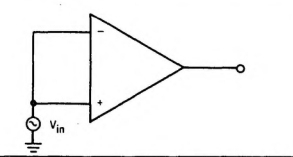
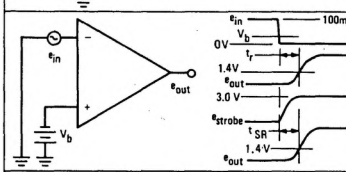
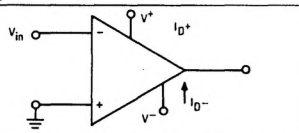
EQUIVALENT CIRCUIT



See Packaging Information Section for outline dimensions.

See current MCC1711/1711C data sheet for standard linear chip information.

ELECTRICAL CHARACTERISTICS (each comparator) $V^+ = +12$ Vdc. $V^- = -6.0$ Vdc. $T_A = 25°C$ unless otherwise noted)

Characteristic Definitions	Characteristic	Symbol	Min	Typ	Max	Unit
	Input Offset Voltage CMV_{in} = 0 Vdc, T_A = +25°C T_A = +25°C CMV_{in} = 0 Vdc, T_A = -55 to +125°C T_A = -55 to +125°C	V_{io}	 - - - -	 1.0 1.0 - -	 3.5 5.0 4.5 6.0	mVdc
	Temperature Coefficient of Input Offset Voltage	TC_{Vio}	-	5.0	-	μV/°C
	Input Offset Current V_{out} = 1.4 Vdc, T_A = +25°C V_{out} = 1.8 Vdc, T_A = -55°C V_{out} = 1.0 Vdc, T_A = +125°C	I_{io}	 - - -	 0.5 - -	 10 20 20	μAdc
	Input Bias Current V_{out} = 1.4 Vdc, T_A = +25°C V_{out} = 1.8 Vdc, T_A = -55°C V_{out} = 1.0 Vdc, T_A = +125°C	I_b	 - - -	 25 - -	 75 150 150	μAdc
	Voltage Gain T_A = +25°C T_A = -55 to +125°C	A_{VOL}	 750 500	 1500 -	 - -	V/V
	Output Resistance	R_{out}	-	200	-	ohms
	Differential Voltage Range	V_{in}	±5.0	-	-	Vdc
	Positive Output Voltage $V_{in} \geq 10$ mVdc, $0 \leq I_o \leq 5.0$ mA	V_{OH}	2.5	3.2	5.0	Vdc
	Negative Output Voltage $V_{in} \geq -10$ mVdc	V_{OL}	-1.0	-0.5	0	Vdc
	Strobed Output Level $V_{strobe} \leq 0.3$ Vdc	$V_{OL(st)}$	-1.0	-	0	Vdc
	Output Sink Current $V_{in} \geq -10$ mV, $V_{out} \geq 0$	I_S	0.5	0.8	-	mAdc
	Strobe Current V_{strobe} = 100 mVdc	I_{st}	-	1.2	2.5	mAdc
	Input Common Mode Range V^- = -7.0 Vdc	CM_{Vin}	±5.0	-	-	Volts
	Response Time $V_b = 5.0$ mV + V_{io}	t_R	-	40	-	ns
	Strobe Release Time	t_{SR}	-	12	-	ns
	Power Supply Current $V_{out} \leq 0$ Vdc	I_{D^+} I_{D^-}	- -	8.6 3.9	- -	mAdc
	Power Consumption		-	130	200	mW

TYPICAL CHARACTERISTICS

FIGURE 1 – VOLTAGE TRANSFER CHARACTERISTICS

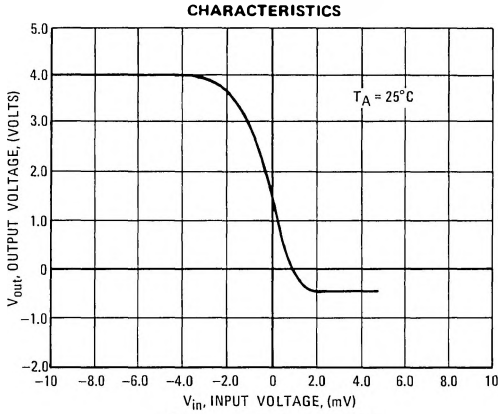


FIGURE 2 – INPUT BIAS CURRENT versus TEMPERATURE

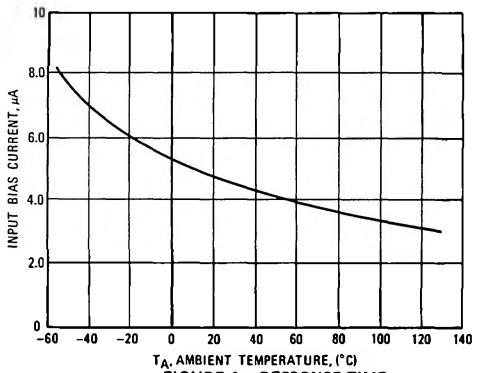


FIGURE 3 – VOLTAGE GAIN versus TEMPERATURE

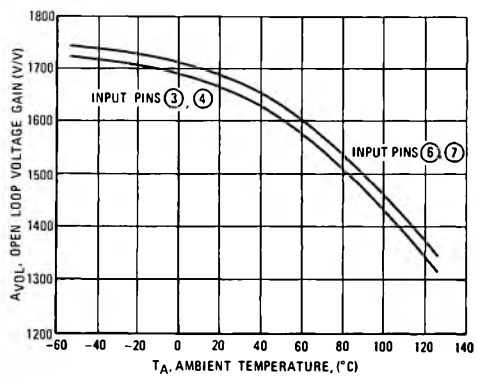


FIGURE 4 – RESPONSE TIME FOR VARIOUS INPUT OVERDRIVES

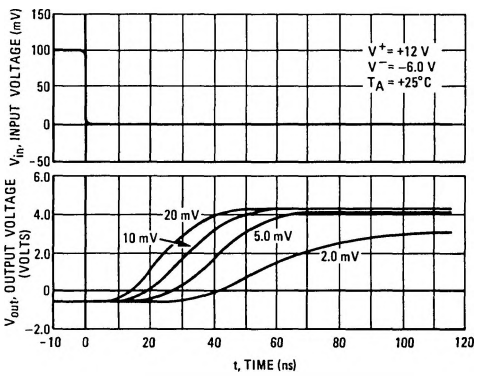


FIGURE 5 – POWER DISSIPATION versus TEMPERATURE

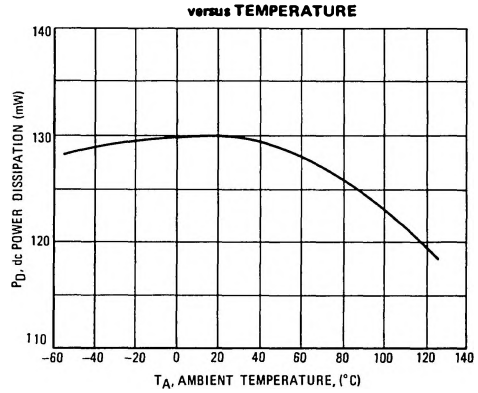


FIGURE 6 – STROBE RELEASE TIME FOR VARIOUS INPUT OVERDRIVES

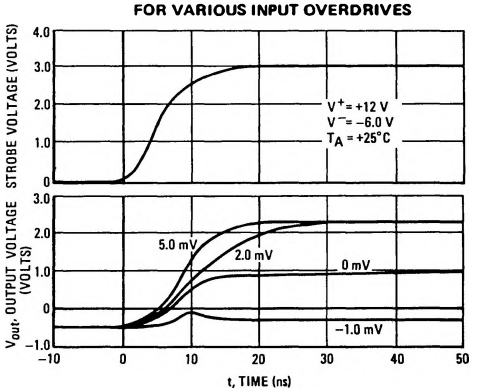


FIGURE 7 – COMMON MODE PULSE RESPONSE

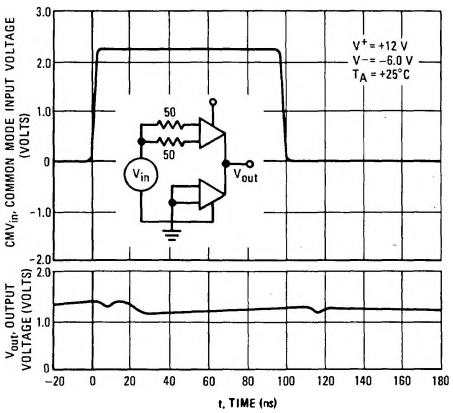


FIGURE 8 – OUTPUT PULSE STRETCHING WITH CAPACITIVE LOADING

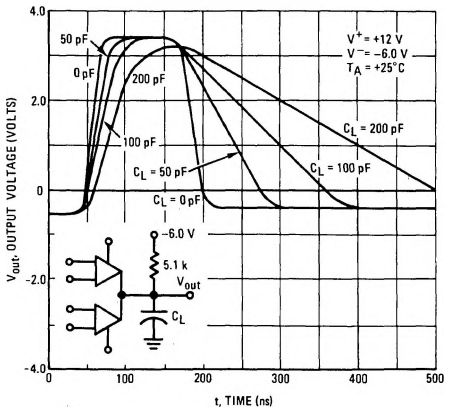


FIGURE 9 – SERIES RESISTANCE versus MRTL FAN-OUTS

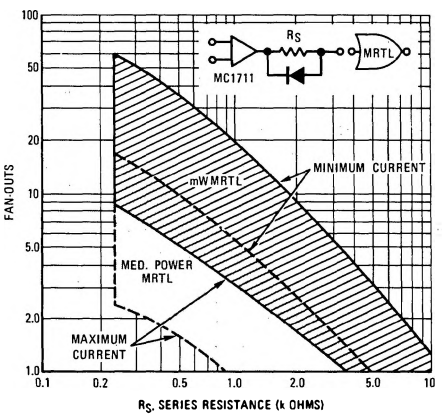


FIGURE 10 – FAN-OUT CAPABILITY WITH MDTL OR MTTL OUTPUT SWING