

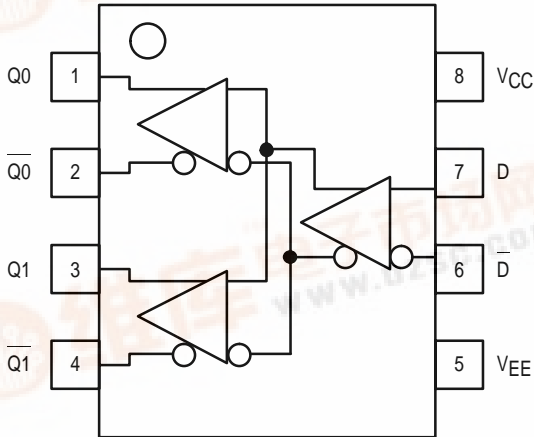
**MOTOROLA**  
SEMICONDUCTOR TECHNICAL DATA

# Coaxial Cable Driver

The MC10EL/100EL89 is a differential fanout gate specifically designed to drive coaxial cables. The device is especially useful in Digital Video Broadcasting applications; for this application, since the system is polarity free, each output can be used as an independent driver. The driver boasts a gain of approximately 40 and produces output swings twice as large as a standard ECL output. When driving a coaxial cable, proper termination is required at both ends of the line to minimize signal loss. The 1.6V output swings allow for termination at both ends of the cable, while maintaining the required 800mV swing at the receiving end of the cable. Because of the larger output swings, the device cannot be terminated into the standard -2.0V. All of the DC parameters are tested with a 50Ω to -3.0V load. The driver accepts a standard differential ECL input and can run off of the Digital Video Broadcast standard -5.0V supply.

- 375ps Propagation Delay
- 1.6V Output Swings
- 75kΩ Internal Input Pulldown Resistors
- >1000V ESD Protection

### LOGIC DIAGRAM AND PINOUT ASSIGNMENT



## MC10EL89



**D SUFFIX**  
PLASTIC SOIC PACKAGE  
CASE 751-05

### PIN DESCRIPTION

PIN	FUNCTION
D Q0, Q1	Data Inputs Data Outputs



# MC10EL89

## DC CHARACTERISTICS ( $V_{EE} = V_{EE}(\text{min})$ to $V_{EE}(\text{max})$ ; $V_{CC} = \text{GND}$ )

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
$I_{EE}$	Power Supply Current		23	28		23	28		23	28		23	28	mA
$V_{OH}$	Output HIGH Voltage <sup>1</sup>	-1.23	-1.10	-0.98	-1.17	-1.05	-0.93	-1.13	-1.02	-0.90	-1.06	-0.96	-0.81	V
$V_{OL}$	Output LOW Voltage <sup>1</sup>	-2.90	-2.72	-2.58	-3.00	-2.70	-2.56	-3.00	-2.70	-2.56	-3.05	-2.67	-2.51	V
$V_{EE}$	Power Supply Voltage	-4.75		-5.5	-4.75		-5.5	-4.75		-5.5	-4.75		-5.5	V
$I_{IH}$	Input HIGH Current			150			150			150			150	μA

1.  $V_{OH}$  and  $V_{OL}$  specified for 50Ω to -3.0V load.

## AC CHARACTERISTICS ( $V_{EE} = V_{EE}(\text{min})$ to $V_{EE}(\text{max})$ ; $V_{CC} = \text{GND}$ )

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
$t_{PLH}$ $t_{PHL}$	Propagation Delay to Output	200	340	480	250	340	430	260	350	440	310	400	490	ps
$t_{SKEW}$	Within-Device Skew		5	20		5	20		5	20		5	20	
$V_{PP}$	Minimum Input Swing <sup>1</sup>	150			150			150			150			mV
$V_{CMR}$	Common Mode Range <sup>2</sup>	-0.4		See <sup>2</sup>	-0.4		See <sup>2</sup>	-0.4		See <sup>2</sup>	-0.4		See <sup>2</sup>	V
$t_r$ $t_f$	Output Rise/Fall Times Q (20% - 80%)	205	330	455	205	330	455	205	330	455	205	330	455	ps

1. Minimum input swing for which AC parameters are guaranteed. The device has a DC gain of  $\approx 40$ .
2. The CMR range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between  $V_{PPmin}$  and 1V. The lower end of the CMR range is dependent on  $V_{EE}$  and is equal to  $V_{EE} + 2.5V$ .

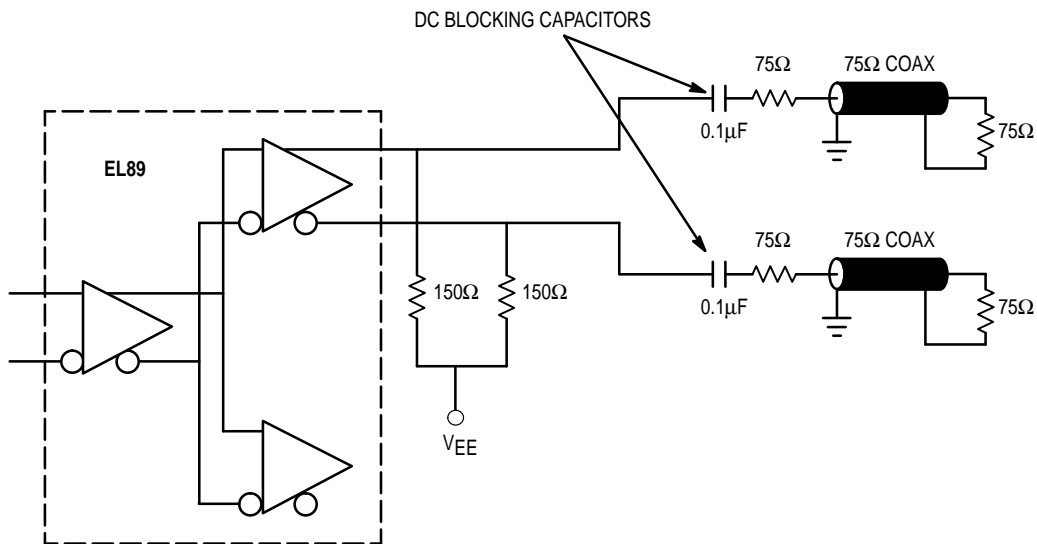
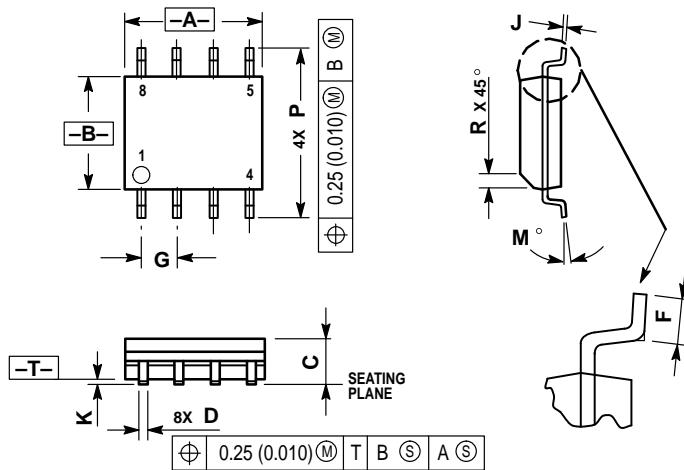


Figure 1. EL89 Termination Configuration

OUTLINE DIMENSIONS

D SUFFIX  
PLASTIC SOIC PACKAGE  
CASE 751-05  
ISSUE P



- NOTES:
1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
  2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  3. DIMENSIONS ARE IN MILLIMETER.
  4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
  5. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
  6. DIMENSION D DOES NOT INCLUDE MOLD PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

DIM	MILLIMETERS	
	MIN	MAX
A	4.80	5.00
B	3.80	4.00
C	1.35	1.75
D	0.35	0.49
F	0.40	1.25
G	1.27 BSC	
J	0.18	0.25
K	0.10	0.25
M	0°	7°
P	5.80	6.20
R	0.25	0.50

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