Thank you for your interest in **onsemi** products.

Your technical document begins on the following pages.

Your Feedback is Important to Us!

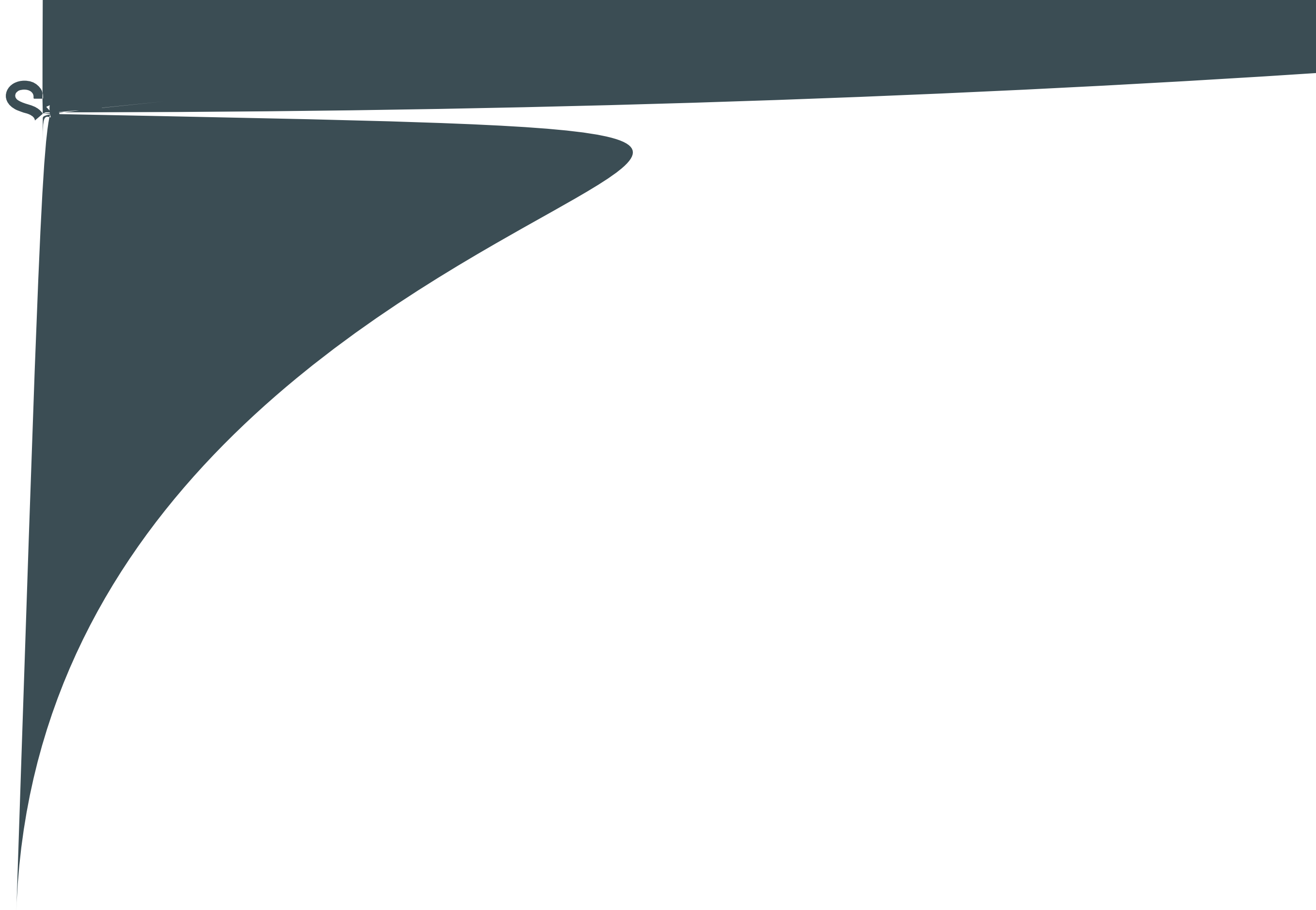
Please take a moment to participate in our short survey.
At **onsemi**, we are dedicated to delivering technical content that best meets your needs.

Help Us Improve – Take the Survey

This survey is intended to collect your feedback, capture any issues you may encounter, and to provide improvements you would like to suggest.

We look forward to your feedback.

To learn more about **onsemi**, please visit our website at
www.onsemi.com



MAXIMUM RATINGS (Note 1)

Rating	Symbol	Value	Unit
Power Supply Input Voltage	V_{CC}	40	V
Comparator Input Voltage Range	V_{in}	1.0 to +40	V
Comparator Output Sink Current (Pins 5 and 6) (Note 2)	I_{Sink}	20	mA
Comparator Output Voltage	V_{out}	40	V
Power Dissipation and Thermal Characteristics (Note 2) P Suffix, Plastic Package, Case 626 Maximum Power Dissipation @ T_A = 70°C Thermal Resistance, Junction to Air D Suffix, Plastic Package, Case 751 Maximum Power Dissipation @ T_A = 70°C Thermal Resistance, Junction to Air DM Suffix, Plastic Package, Case 846A Thermal Resistance, Junction to Ambient	 P_D $R_{\theta JA}$ P_D $R_{\theta JA}$ $R_{\theta JA}$	 800 100 450 178 240	 mW °C/W mW °C/W °C/W
Operating Junction Temperature	T_J	+150	°C
Operating Ambient Temperature (Note 3) MC34161 MC33161 NCV33161	T_A	 0 to +70 40 to +105 40 to +125	°C
Storage Temperature Range	T_{stg}	55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the

ELECTRICAL CHARACTERISTICS (V_{CC} = 5.0 V, for typical values T_A = 25°C, for min/max values T_A is the operating ambient temperature range that applies [Notes 4 and 5], unless otherwise noted.)

Characteristics	Symbol	Min	Typ	Max	Unit
COMPARATOR INPUTS					
Threshold Voltage, V_{in} Increasing (T_A = 25°C) (T_A = T_{min} to T_{max})	V_{th}	1.245 1.235	1.27	1.295 1.295	V
Threshold Voltage Variation (V_{CC} = 2.0 V to 40 V)	ΔV_{th}		7.0	15	mV
Threshold Hysteresis, V_{in} Decreasing	V_H	15			

V_{ref}, REFERENCE VOLTAGE (V)

Figure 8. Reference Voltage

V_{sat}, OUTPUT SATURATION VOLTAGE (V)

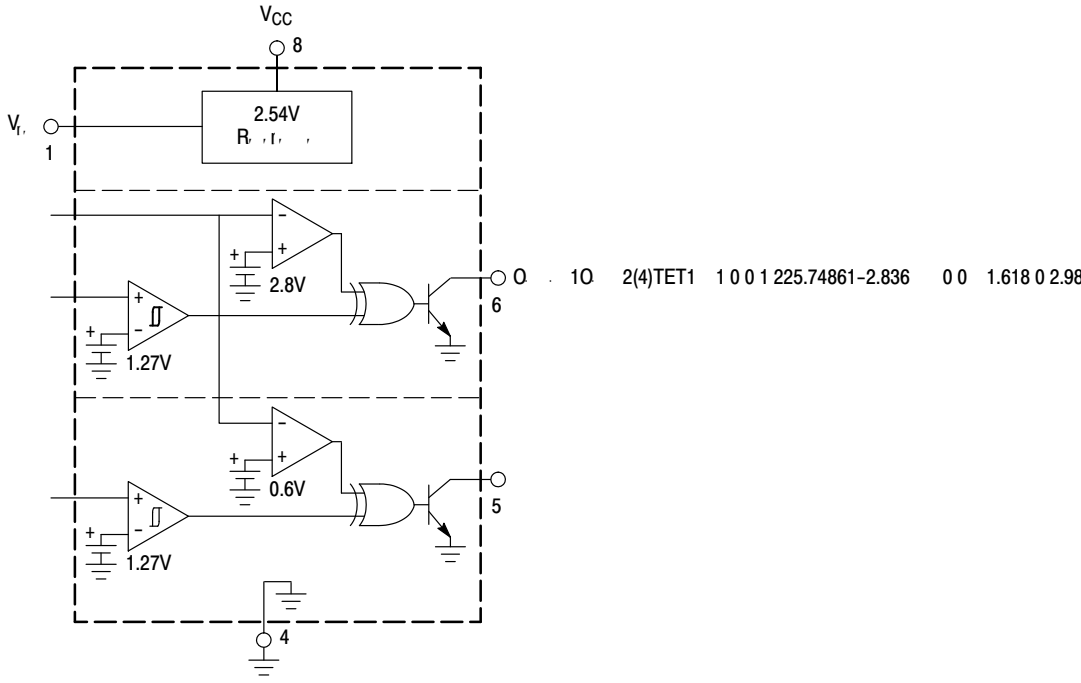
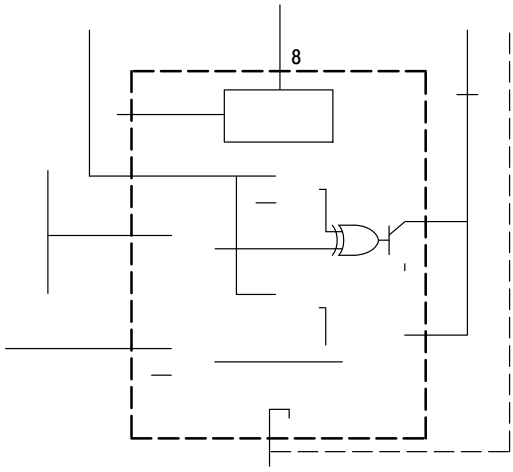


Figure 14. MC34161 Representative Block Diagram



The above figure shows the MC34161 configured as a dual positive overvoltage detector. As the input voltage increases from ground, the LED will turn ‘ON’ when V_{S1} or V_{S2} exceeds V_2. With the dashed line output connection, the circuit becomes a dual positive undervoltage detector. As the input voltage decreases from the peak towards ground, the LED will turn ‘ON’ when V_{S1} or V_{S2} falls below V_1.

For known resistor values, the voltage trip points are:

$$V_1 = (V_{th} - V_H)\left(\frac{R_2}{R_1} + 1\right) \qquad V_2 = V_{th}\left(\frac{R_2}{R_1} + 1\right)$$

For a specific trip voltage, the required resistor ratio is:

$$\frac{R_2}{R_1} = \frac{V_1}{V_{th} - V_H} - 1 \qquad \frac{R_2}{R_1} = \frac{V_2}{V_{th}} - 1$$

Figure 16. Dual Positive Overvoltage Detector

The above figure shows the MC34161 configured as a positive voltage window detector. This is accomplished by connecting channel 1 as an undervoltage detector,

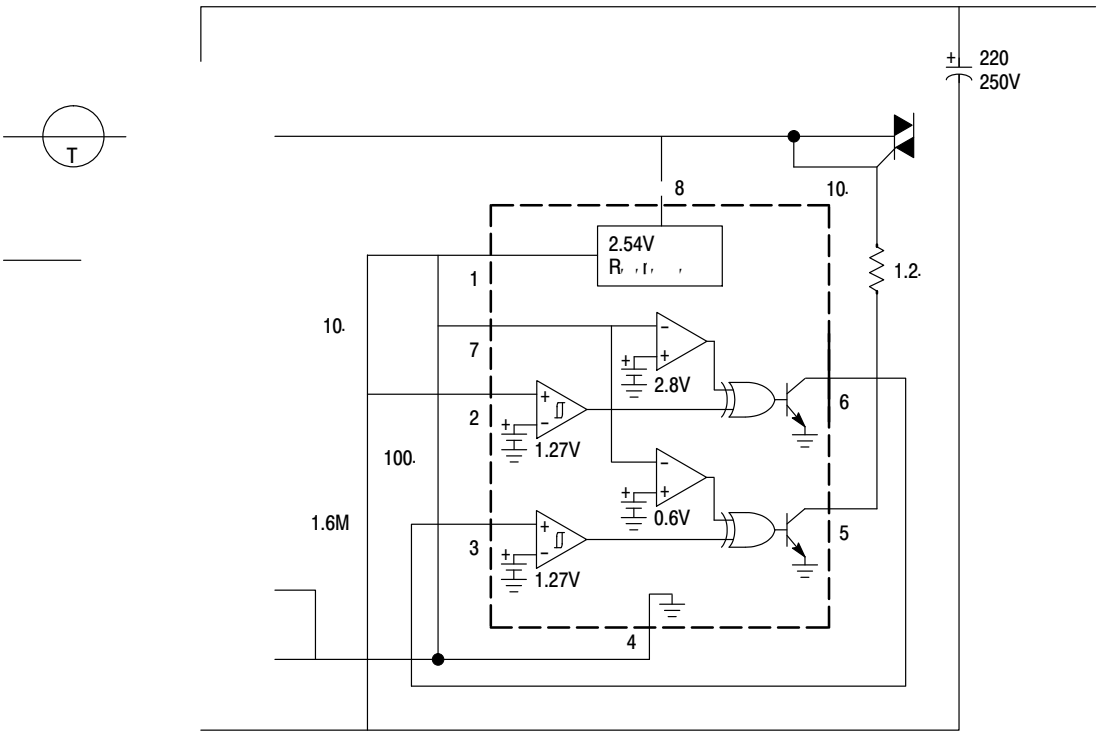


Figure 26. Automatic AC Line Voltage Selector

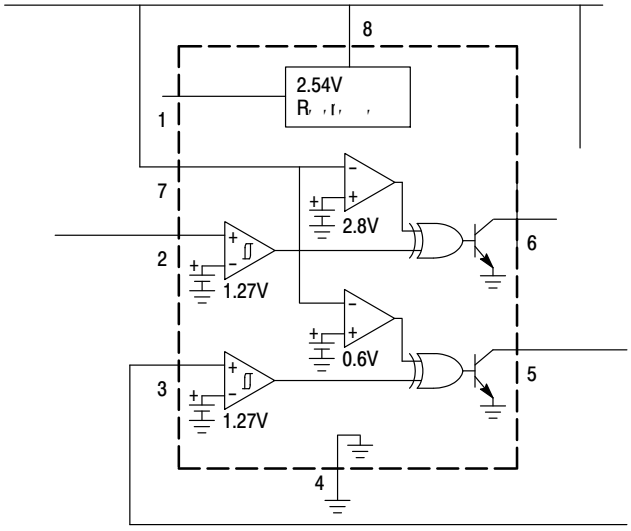


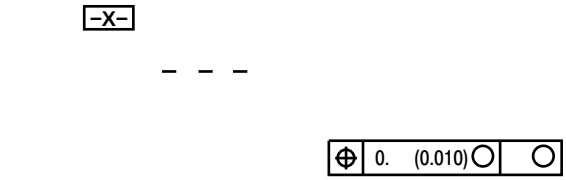
Figure 27. Step−Down Converter

ORDERING INFORMATION

Device	Package	Shipping†
MC34161PG	PDIP 8 (Pb Free)	50 Units / Rail
MC34161DG	SOIC 8 (Pb Free)	98 Units / Rail
MC34161DR2G		2500 / Tape & Reel
MC34161DMR2G	Micro8 (Pb Free)	4000 / Tape & Reel
MC33161PG	PDIP 8 (Pb Free)	50 Units / Rail
MC33161DG	SOIC 8 (Pb Free)	98 Units / Rail
MC33161DR2G		2500 / Tape & Reel
NCV33161DR2G*		2500 / Tape & Reel
MC33161DMR2G	Micro8 (Pb Free)	4000 / Tape & Reel
NCV33161DMR2G*		4000 / Tape & Reel

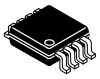
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

*NCV: T_{low} = 40°C, T_{high} = +125°C. Guaranteed by design. NCV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC Q100 Qualified and PPAP Capable.



C	1.35	1.75	0.053	0.069
D	0.33	0.51	0.013	0.020
G	1.27 BSC		0.050 BSC	
H	0.10	0.25	0.004	0.010
J	0.19	0.25	0.007	0.010
K	0.40	1.27	0.016	0.050
M	0	8	0	8
N	0.25	0.50	0.010	0.020
S	5.80	6.20	0.228	0.244

0. (0.010) 1 0 1 1 0 0 1 . 0 0 0 0 . 1 1 0 1 1 . 1 0 . 0 0 0 1 . 1 1 0 0 1 1 0 ( ) 0 1 . 1 1 0 0 1 1 . 1 1 . 1 0 0 . 0 0 0 . 1 1 . 1 0 0 . 0 0 0 1 1 . 1 0 0 0 1 0 0 0 0 .)



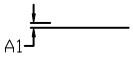
SCALE 2:1

Micro8
CASE 846A−02
ISSUE K

DATE 16 JUL 2020

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE PROTRUSION SHALL BE 0.10 mm IN EXCESS OF



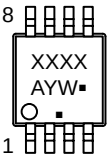
NSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIO

⌓|0.038 (0.0015)|

DIM	MILLIMETER		
	MIN.	NOM.	
A	---	---	
A1	0.05	0.08	
c	0.13	0.18	
E			

RECOMMENDED
MOUNTING FOOTPRINT

GENERIC
MARKING DIAGRAM*



XXXX = Specific Device Code
A = Assembly Location
Y = Year
W = Work Week
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

STYLE 1:
PIN 1. SOURCE
2. SOURCE
3. SOURCE
4. GATE
5. DRAIN
6. DRAIN
7. DRAIN
8. DRAIN

STYLE 2:
PIN 1. SOURCE 1
2. GATE 1
3. SOURCE 2
4. GATE 2
5. DRAIN 2
6. DRAIN 2
7. DRAIN 1
8. DRAIN 1

STYLE 3:
PIN 1. N-SOURCE
2. N-GATE
3. P-SOURCE
4. P-GATE
5. P-DRAIN
6. P-DRAIN
7. N-DRAIN
8. N-DRAIN