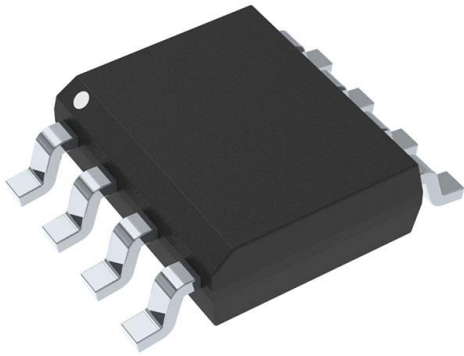


MC33064D-5R2 Datasheet

www.digi-electronics.com



<https://www.DiGi-Electronics.com>

| | |
|------------------------------|--|
| DiGi Electronics Part Number | MC33064D-5R2-DG |
| Manufacturer | onsemi |
| Manufacturer Product Number | MC33064D-5R2 |
| Description | IC SENSOR UNDERVOLTAGE 8SOIC |
| Detailed Description | Supervisor Open Drain or Open Collector 1 Channel 1.8-SOIC |

This model MC33064D-5R2 is available at DiGi Electronics.

DiGi Electronics offers a global database of semiconductor and electronic component datasheets.

We welcome your inquiries regarding pricing, lead time, or other product-related questions.

 [Request a Quote](#)

 [Datasheet Search](#)



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:

MC33064D-5R2

Series:

-

DiGi-Electronics Programmable:

Not Verified

Number of Voltages Monitored:

1

Output:

Open Drain or Open Collector

Reset Timeout:

-

Mounting Type:

Surface Mount

Supplier Device Package:

8-SOIC

Manufacturer:

onsemi

Product Status:

Obsolete

Type:

Simple Reset/Power-On Reset

Voltage - Threshold:

4.6V

Reset:

Active Low

Operating Temperature:

-40°C ~ 85°C

Package / Case:

8-SOIC (0.154", 3.90mm Width)

Base Product Number:

MC33064

Environmental & Export classification

RoHS Status:

RoHS non-compliant

REACH Status:

REACH Unaffected

HTSUS:

8542.39.0001

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

Undervoltage Sensing Circuit

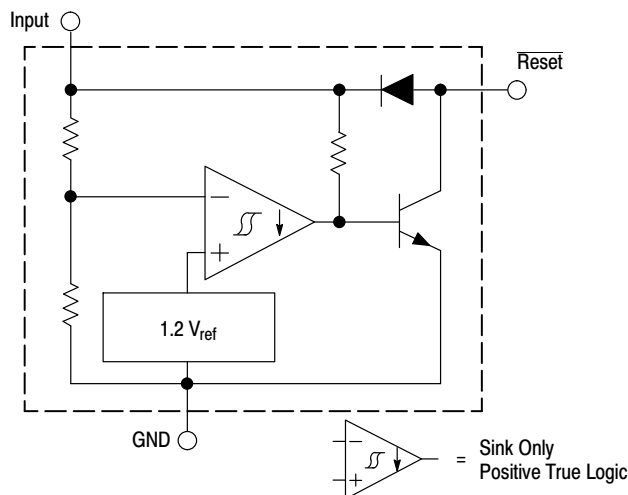
MC34064, MC33064, NCV33064

The MC34064 is an undervoltage sensing circuit specifically designed for use as a reset controller in microprocessor-based systems. It offers the designer an economical solution for low voltage detection with a single external resistor. The MC34064 features a trimmed-in-package bandgap reference, and a comparator with precise thresholds and built-in hysteresis to prevent erratic reset operation. The open collector reset output is capable of sinking in excess of 10 mA, and operation is guaranteed down to 1.0 V input with low standby current. The MC devices are packaged in 3-pin TO-92, micro size TSOP-5, 8-pin SOIC-8 and Micro8 surface mount packages. The NCV device is packaged in SOIC-8 and TO-92.

Applications include direct monitoring of the 5.0 V MPU/logic power supply used in appliance, automotive, consumer and industrial equipment.

Features

- Trimmed-In-Package Temperature Compensated Reference
- Comparator Threshold of 4.6 V at 25°C
- Precise Comparator Thresholds Guaranteed Over Temperature
- Comparator Hysteresis Prevents Erratic Reset
- Reset Output Capable of Sinking in Excess of 10 mA
- Internal Clamp Diode for Discharging Delay Capacitor
- Guaranteed Reset Operation with 1.0 V Input
- Low Standby Current
- Economical TO-92, TSOP-5, SOIC-8 and Micro8 Surface Mount Packages
- NCV Prefix for Automotive and Other Applications Requiring Site and Control Changes
- These Devices are Pb-Free and are RoHS Compliant



This device contains 21 active transistors.

Figure 1. Representative Block Diagram



SOIC-8
D SUFFIX
CASE 751

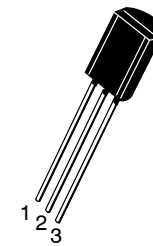


Micro8
DM SUFFIX
CASE 846A

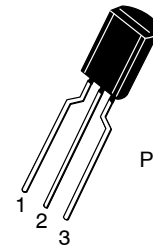


TSOP-5
SN SUFFIX
CASE 483

Pin 1. Ground
2. Input
3. Reset
4. NC
5. NC



STRAIGHT LEAD

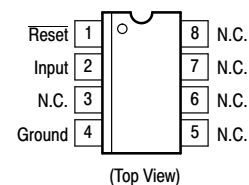


BENT LEAD

TO-92
CASE 29-10

Pin: 1. Reset
2. Input
3. Ground

PIN CONNECTIONS



ORDERING INFORMATION

See detailed ordering and shipping information on page 6 of this data sheet.

DEVICE MARKING INFORMATION

See general marking information in the device marking section on page 7 of this data sheet.

MC34064, MC33064, NCV33064**MAXIMUM RATINGS**

| Rating | Symbol | Value | Unit |
|--|-----------------|--------------------|--------------------|
| Power Input Supply Voltage | V_{in} | -1.0 to 10 | V |
| Reset Output Voltage | V_O | 10 | V |
| Reset Output Sink Current (Note 2) | I_{Sink} | Internally Limited | mA |
| Clamp Diode Forward Current, Reset to Input Pin (Note 2) | I_F | 100 | mA |
| Power Dissipation and Thermal Characteristics | | | |
| P Suffix, Plastic Package | | | |
| Maximum Power Dissipation @ $T_A = 25^\circ\text{C}$ | P_D | 625 | mW |
| Thermal Resistance, Junction-to-Air | $R_{\theta JA}$ | 200 | $^\circ\text{C/W}$ |
| D Suffix, Plastic Package | | | |
| Maximum Power Dissipation @ $T_A = 25^\circ\text{C}$ | P_D | 625 | mW |
| Thermal Resistance, Junction-to-Air | $R_{\theta JA}$ | 200 | $^\circ\text{C/W}$ |
| DM Suffix, Plastic Package | | | |
| Maximum Power Dissipation @ $T_A = 25^\circ\text{C}$ | P_D | 520 | mW |
| Thermal Resistance, Junction-to-Air | $R_{\theta JA}$ | 240 | $^\circ\text{C/W}$ |
| Operating Junction Temperature | T_J | +150 | $^\circ\text{C}$ |
| Operating Ambient Temperature | T_A | | $^\circ\text{C}$ |
| MC34064 | | 0 to +70 | |
| MC33064 | | -40 to +85 | |
| NCV33064 | | -40 to +125 | |
| Storage Temperature Range | T_{stg} | -65 to +150 | $^\circ\text{C}$ |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

- ESD data available upon request.

ELECTRICAL CHARACTERISTICS (For typical values $T_A = 25^\circ\text{C}$, for min/max values T_A is the operating ambient temperature range that applies [Notes 3 and 4] unless otherwise noted.)

| Characteristics | Symbol | Min | Typ | Max | Unit |
|-----------------|--------|-----|-----|-----|------|
|-----------------|--------|-----|-----|-----|------|

COMPARATOR

| | | | | | |
|--|----------|------|------|------|---|
| Threshold Voltage | | | | | V |
| High State Output (V_{in} Increasing) | V_{IH} | 4.5 | 4.61 | 4.7 | |
| Low State Output (V_{in} Decreasing) | V_{IL} | 4.5 | 4.59 | 4.7 | |
| Hysteresis | V_H | 0.01 | 0.02 | 0.05 | |

RESET OUTPUT

| | | | | | |
|--|------------|-----|------|-----|---------------|
| Output Sink Saturation | V_{OL} | | | | V |
| ($V_{in} = 4.0\text{ V}$, $I_{Sink} = 8.0\text{ mA}$) | | - | 0.46 | 1.0 | |
| ($V_{in} = 4.0\text{ V}$, $I_{Sink} = 2.0\text{ mA}$) | | - | 0.15 | 0.4 | |
| ($V_{in} = 1.0\text{ V}$, $I_{Sink} = 0.1\text{ mA}$) | | - | - | 0.1 | |
| Output Sink Current (V_{in} , $\overline{\text{Reset}} = 4.0\text{ V}$) | I_{Sink} | 10 | 27 | 60 | mA |
| Output Off-State Leakage (V_{in} , $\overline{\text{Reset}} = 5.0\text{ V}$) | I_{OH} | - | 0.02 | 0.5 | μA |
| Clamp Diode Forward Voltage, Reset to Input Pin ($I_F = 10\text{ mA}$) | V_F | 0.6 | 0.9 | 1.2 | V |

TOTAL DEVICE

| | | | | | |
|---|----------|------------|-----|-----|---------------|
| Operating Input Voltage Range | V_{in} | 1.0 to 6.5 | - | - | V |
| Quiescent Input Current ($V_{in} = 5.0\text{ V}$) | I_{in} | - | 390 | 500 | μA |

- Maximum package power dissipation limits must be observed.
- Low duty cycle pulse techniques are used during test to maintain junction temperature as close to ambient as possible.
- $T_{low} = 0^\circ\text{C}$ for MC34064 $T_{high} = +70^\circ\text{C}$ for MC34064
 -40°C for MC33064 $+85^\circ\text{C}$ for MC33064
 -40°C for NCV33064 $+125^\circ\text{C}$ for NCV33064
- NCV prefix is for automotive and other applications requiring site and change control.

MC34064, MC33064, NCV33064

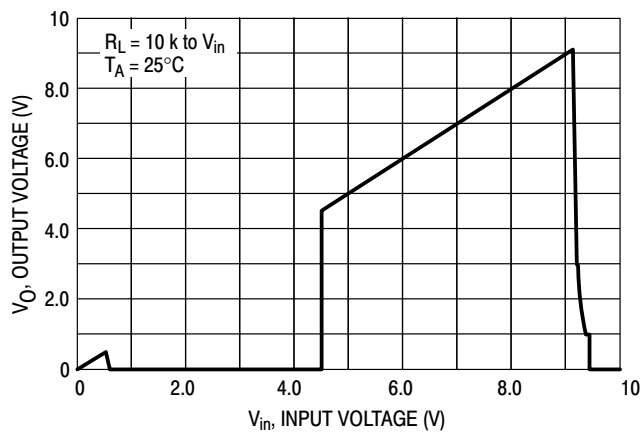


Figure 2. Reset Output Voltage versus Input Voltage

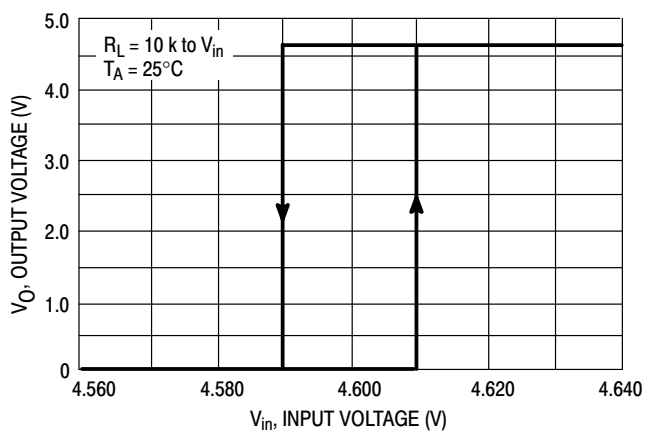


Figure 3. Reset Output Voltage versus Input Voltage

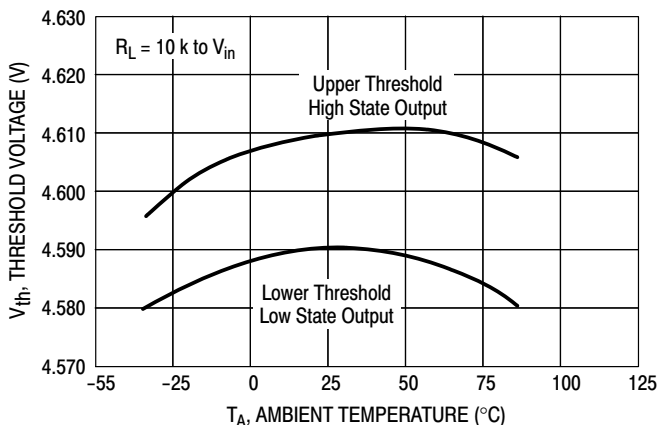


Figure 4. Comparator Threshold Voltage versus Temperature

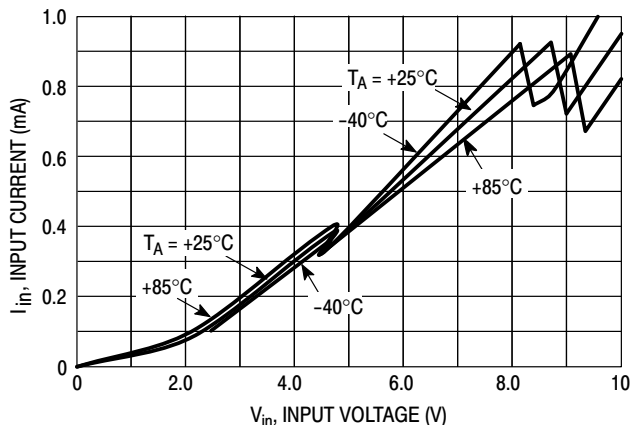


Figure 5. Input Current versus Input Voltage

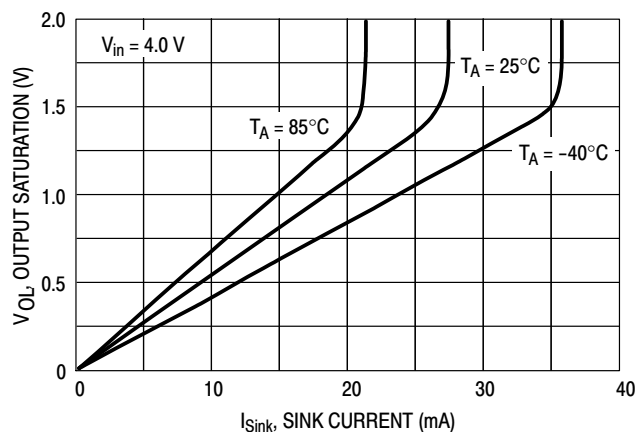


Figure 6. Reset Output Saturation versus Sink Current

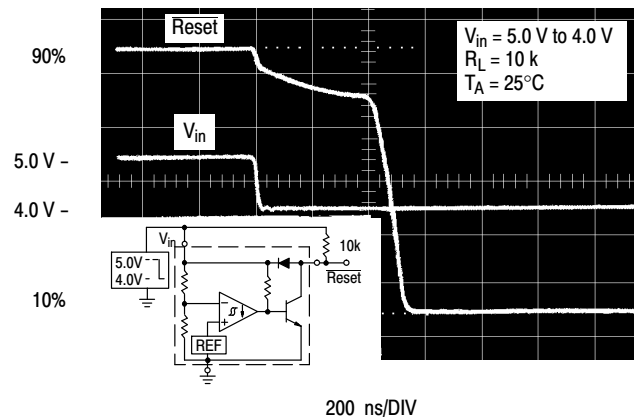


Figure 7. Reset Delay Time

MC34064, MC33064, NCV33064

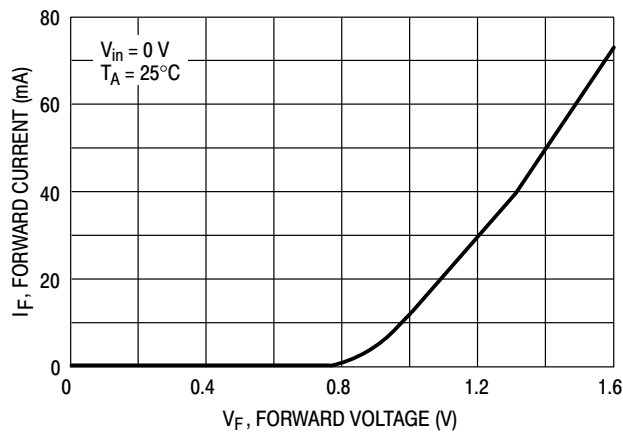


Figure 8. Clamp Diode Forward Current versus Voltage

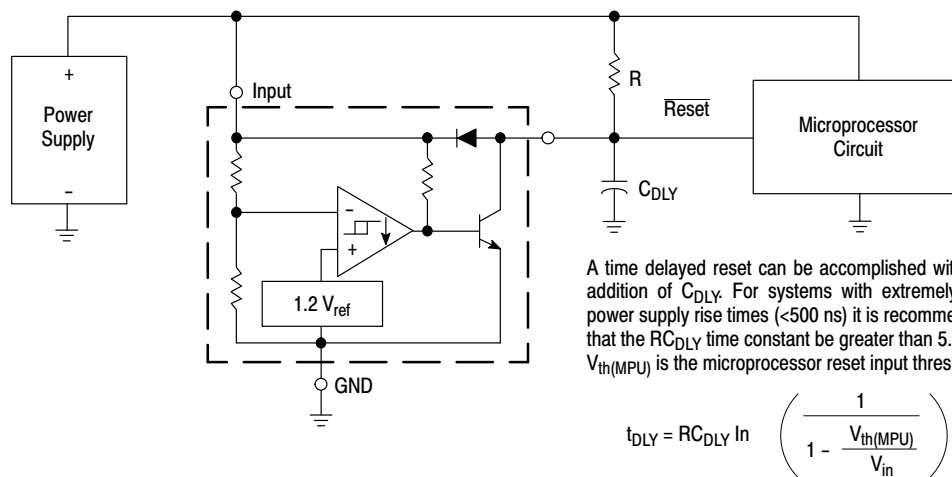
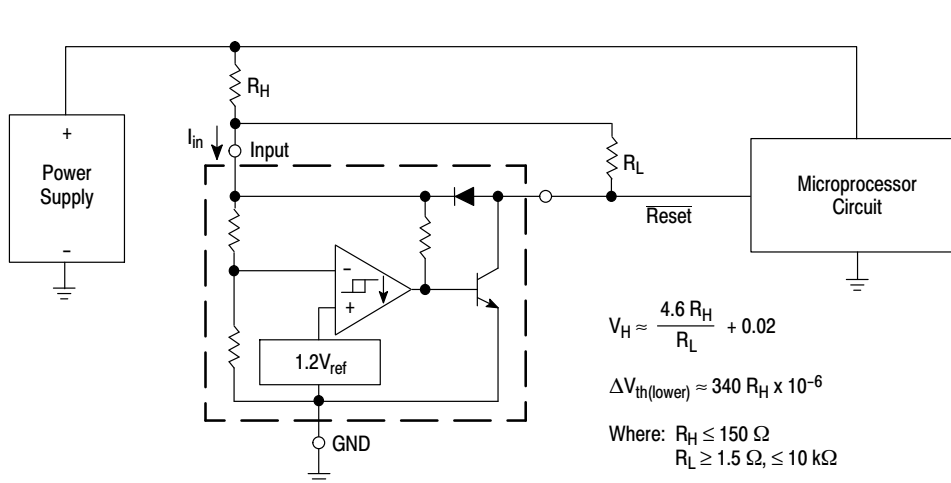


Figure 9. Low Voltage Microprocessor Reset



TEST DATA

| V_H (mV) | ΔV_{th} (mV) | R_H (Ω) | R_L (k Ω) |
|------------|----------------------|--------------------|---------------------|
| 20 | 0 | 0 | 0 |
| 51 | 3.4 | 10 | 1.5 |
| 40 | 6.8 | 20 | 4.7 |
| 81 | 6.8 | 20 | 1.5 |
| 71 | 10 | 30 | 2.7 |
| 112 | 10 | 30 | 1.5 |
| 100 | 16 | 47 | 2.7 |
| 164 | 16 | 47 | 1.5 |
| 190 | 34 | 100 | 2.7 |
| 327 | 34 | 100 | 1.5 |
| 276 | 51 | 150 | 2.7 |
| 480 | 51 | 150 | 1.5 |

Figure 10. Low Voltage Microprocessor Reset with Additional Hysteresis

MC34064, MC33064, NCV33064

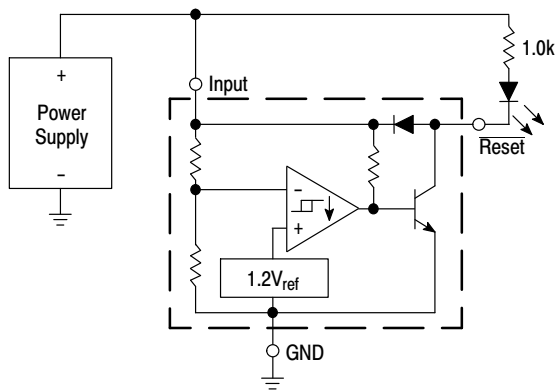


Figure 11. Voltage Monitor

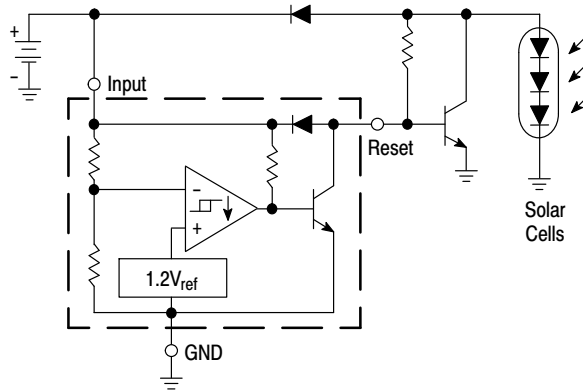
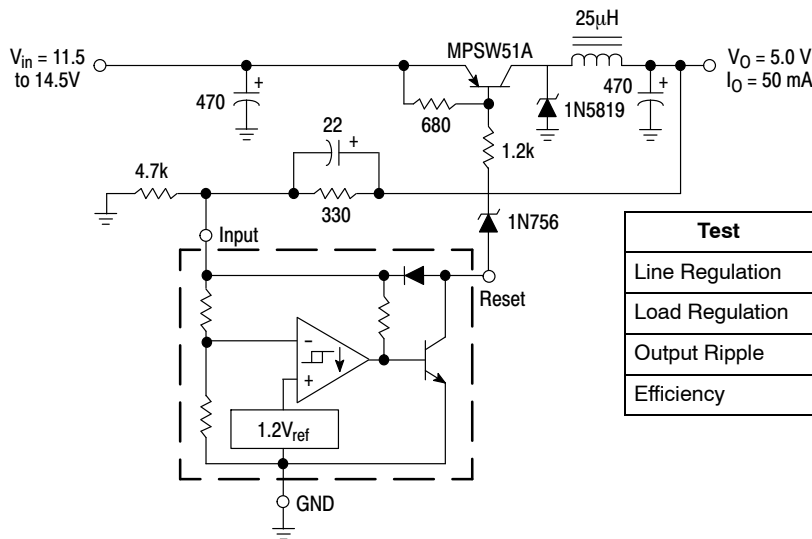
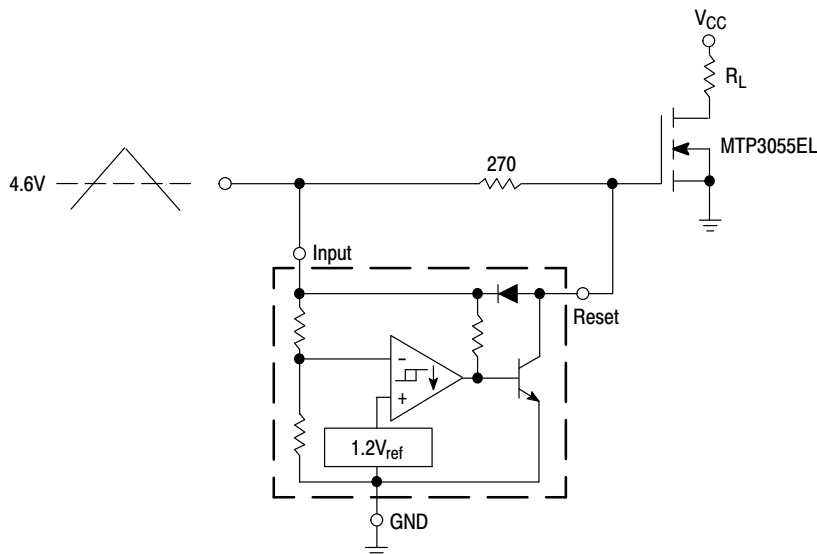


Figure 12. Solar Powered Battery Charger



| Test | Conditions | Results |
|-----------------|---|---------|
| Line Regulation | $V_{in} = 11.5\text{ V to }14.5\text{ V}, I_O = 50\text{ mA}$ | 35 mV |
| Load Regulation | $V_{in} = 12.6\text{ V}, I_O = 0\text{ mA to }50\text{ mA}$ | 12 mV |
| Output Ripple | $V_{in} = 12.6\text{ V}, I_O = 50\text{ mA}$ | 60 mVpp |
| Efficiency | $V_{in} = 12.6\text{ V}, I_O = 50\text{ mA}$ | 77% |

Figure 13. Low Power Switching Regulator



Overheating of the logic level power MOSFET due to insufficient gate voltage can be prevented with the above circuit. When the input signal is below the 4.6 V threshold of the MC34064, its output grounds the gate of the L² MOSFET.

Figure 14. MOSFET Low Voltage Gate Drive Protection

MC34064, MC33064, NCV33064**ORDERING INFORMATION**

| Device | Operating Temperature Range | Package | Shipping [†] |
|------------------|--|---------------------|--------------------------|
| MC34064D-5G | $T_A = 0^\circ\text{C to } +70^\circ\text{C}$ | SOIC-8 (Pb-Free) | 98 Units / Rail |
| MC34064D-5R2G | | SOIC-8 (Pb-Free) | 2500 Units/ Tape & Reel |
| MC34064DM-5R2G | | Micro8 (Pb-Free) | 4000 Units / Tape & Reel |
| MC34064P-5G | | TO-92 (Pb-Free) | 2000 Units / Bag |
| MC34064P-5RAG | | TO-92 (Pb-Free) | 2000 Units / Tape & Reel |
| MC34064P-5RPG | | TO-92 (Pb-Free) | 2000 Units / Ammo Pack |
| MC34064P-5RMG | | TO-92 (Pb-Free) | |
| MC34064SN-5T1G | | TSOP-5 (Pb-Free) | 3000 Units / Tape & Reel |
| MC33064D-5G | $T_A = -40^\circ\text{C to } +85^\circ\text{C}$ | SOIC-8 (Pb-Free) | 98 Units / Rail |
| MC33064D-5R2G | | SOIC-8 (Pb-Free) | 2500 Units / Tape & Reel |
| MC33064DM-5R2G | | Micro8 (Pb-Free) | 4000 Units / Tape & Reel |
| MC33064P-5G | | TO-92 (Pb-Free) | 2000 Units / Bag |
| MC33064P-5RAG | | TO-92 (Pb-Free) | 2000 Units / Tape & Reel |
| MC33064P-5RPG | | TO-92 (Pb-Free) | 2000 Units / Ammo Pack |
| MC33064SN-5T1G | | TSOP-5 (Pb-Free) | 3000 Units / Tape & Reel |
| NCV33064D-5R2G* | $T_A = -40^\circ\text{C to } +125^\circ\text{C}$ | SOIC-8 (Pb-Free) | 2500 Units / Tape & Reel |
| NCV33064P-5RAG* | | TO-92 (Pb-Free) | 2000 Units / Tape & Reel |
| NCV33064P-5RPG* | | TO-92 (Pb-Free) | 2000 Units / Ammo Pack |
| NCV33064DM-5R2G* | | Micro8 (Pb-Free) | 4000 Units / Tape & Reel |

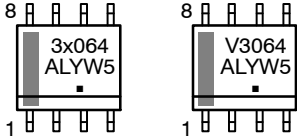
[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

*NCV33064: $T_{low} = -40^\circ\text{C}$, $T_{high} = +125^\circ\text{C}$. Guaranteed by design. NCV prefix is for automotive and other applications requiring site and change control.

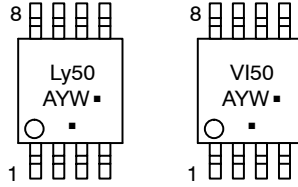
MC34064, MC33064, NCV33064

MARKING DIAGRAMS

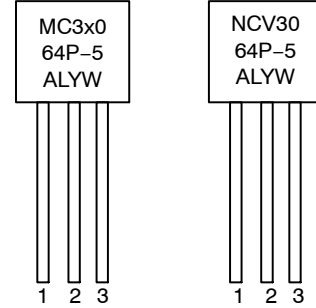
**SOIC-8
D SUFFIX
CASE 751**



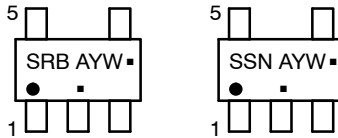
**Micro8
DM SUFFIX
CASE 846A**



**TO-92
P SUFFIX
CASE 029**



**TSOP-5
SN SUFFIX
CASE 483**

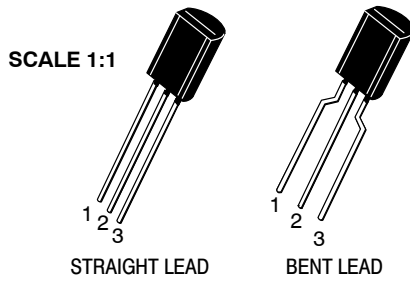


MC34064

MC33064

- x = 3 or 4
- y = C or I
- A = Assembly Location
- L = Wafer Lot
- Y = Year
- W = Work Week
- = Pb-Free Package

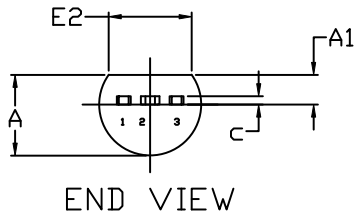
(Note: Microdot may be in either location)



TO-92 (TO-226) 1 WATT
CASE 29-10
ISSUE D

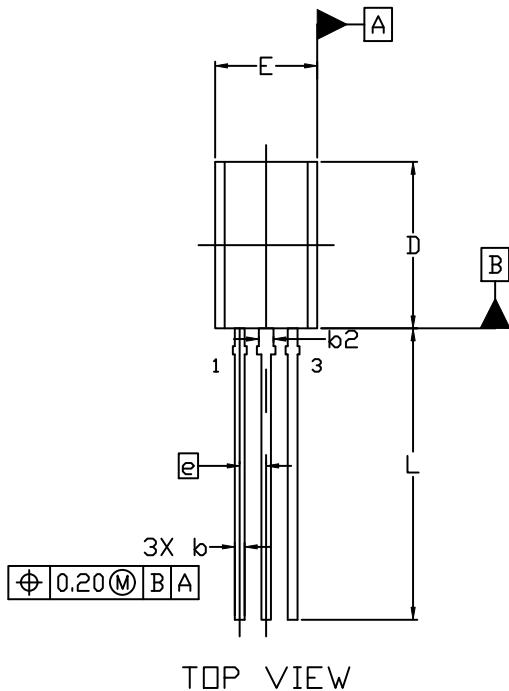
DATE 05 MAR 2021

STRAIGHT LEAD



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH OR GATE PROTRUSIONS.
4. DIMENSION b AND b2 DOES NOT INCLUDE DAMBAR PROTRUSION. LEAD WIDTH INCLUDING PROTRUSION SHALL NOT EXCEED 0.20. DIMENSION b2 LOCATED ABOVE THE DAMBAR PORTION OF MIDDLE LEAD.



| DIM | MILLIMETERS | | |
|-----|-------------|-------|-------|
| | MIN. | NOM. | MAX. |
| A | 3.75 | 3.90 | 4.05 |
| A1 | 1.28 | 1.43 | 1.58 |
| b | 0.38 | 0.465 | 0.55 |
| b2 | 0.62 | 0.70 | 0.78 |
| c | 0.35 | 0.40 | 0.45 |
| D | 7.85 | 8.00 | 8.15 |
| E | 4.75 | 4.90 | 5.05 |
| E2 | 3.90 | --- | --- |
| e | 1.27 BSC | | |
| L | 13.80 | 14.00 | 14.20 |

STYLES AND MARKING ON PAGE 3

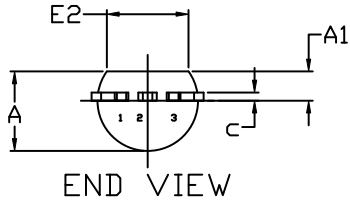
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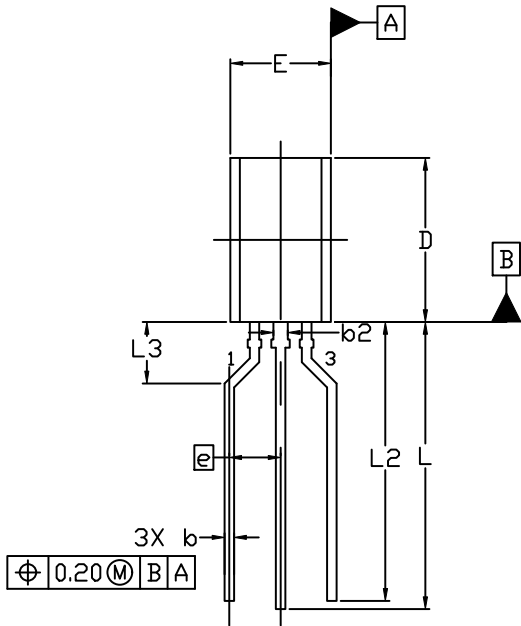
TO-92 (TO-226) 1 WATT
CASE 29-10
ISSUE D

DATE 05 MAR 2021

FORMED LEAD



END VIEW



TOP VIEW

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH OR GATE PROTRUSIONS.
4. DIMENSION b AND b2 DOES NOT INCLUDE DAMBAR PROTRUSION. LEAD WIDTH INCLUDING PROTRUSION SHALL NOT EXCEED 0.20. DIMENSION b2 LOCATED ABOVE THE DAMBAR PORTION OF MIDDLE LEAD.

| DIM | MILLIMETERS | | |
|-----|-------------|-------|-------|
| | MIN. | NDM. | MAX. |
| A | 3.75 | 3.90 | 4.05 |
| A1 | 1.28 | 1.43 | 1.58 |
| b | 0.38 | 0.465 | 0.55 |
| b2 | 0.62 | 0.70 | 0.78 |
| c | 0.35 | 0.40 | 0.45 |
| D | 7.85 | 8.00 | 8.15 |
| E | 4.75 | 4.90 | 5.05 |
| E2 | 3.90 | --- | --- |
| e | 2.50 BSC | | |
| L | 13.80 | 14.00 | 14.20 |
| L2 | 13.20 | 13.60 | 14.00 |
| L3 | 3.00 REF | | |

STYLES AND MARKING ON PAGE 3

| | | |
|-------------------------|------------------------------|--|
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| DESCRIPTION: | TO-92 (TO-226) 1 WATT | PAGE 2 OF 3 |

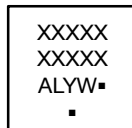
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**TO-92 (TO-226) 1 WATT
CASE 29-10
ISSUE D**

DATE 05 MAR 2021

- STYLE 1:
PIN 1. EMITTER
2. BASE
3. COLLECTOR
- STYLE 2:
PIN 1. BASE
2. EMITTER
3. COLLECTOR
- STYLE 3:
PIN 1. ANODE
2. ANODE
3. CATHODE
- STYLE 4:
PIN 1. CATHODE
2. CATHODE
3. ANODE
- STYLE 5:
PIN 1. DRAIN
2. SOURCE
3. GATE
- STYLE 6:
PIN 1. GATE
2. SOURCE & SUBSTRATE
3. DRAIN
- STYLE 7:
PIN 1. SOURCE
2. DRAIN
3. GATE
- STYLE 8:
PIN 1. DRAIN
2. GATE
3. SOURCE & SUBSTRATE
- STYLE 9:
PIN 1. BASE 1
2. EMITTER
3. BASE 2
- STYLE 10:
PIN 1. CATHODE
2. GATE
3. ANODE
- STYLE 11:
PIN 1. ANODE
2. CATHODE & ANODE
3. CATHODE
- STYLE 12:
PIN 1. MAIN TERMINAL 1
2. GATE
3. MAIN TERMINAL 2
- STYLE 13:
PIN 1. ANODE 1
2. GATE
3. CATHODE 2
- STYLE 14:
PIN 1. EMITTER
2. COLLECTOR
3. BASE
- STYLE 15:
PIN 1. ANODE 1
2. CATHODE
3. ANODE 2
- STYLE 16:
PIN 1. ANODE
2. GATE
3. CATHODE
- STYLE 17:
PIN 1. COLLECTOR
2. BASE
3. EMITTER
- STYLE 18:
PIN 1. ANODE
2. CATHODE
3. NOT CONNECTED
- STYLE 19:
PIN 1. GATE
2. ANODE
3. CATHODE
- STYLE 20:
PIN 1. NOT CONNECTED
2. CATHODE
3. ANODE
- STYLE 21:
PIN 1. COLLECTOR
2. EMITTER
3. BASE
- STYLE 22:
PIN 1. SOURCE
2. GATE
3. DRAIN
- STYLE 23:
PIN 1. GATE
2. SOURCE
3. DRAIN
- STYLE 24:
PIN 1. EMITTER
2. COLLECTOR/ANODE
3. CATHODE
- STYLE 25:
PIN 1. MT 1
2. GATE
3. MT 2
- STYLE 26:
PIN 1. V_{CC}
2. GROUND 2
3. OUTPUT
- STYLE 27:
PIN 1. MT
2. SUBSTRATE
3. MT
- STYLE 28:
PIN 1. CATHODE
2. ANODE
3. GATE
- STYLE 29:
PIN 1. NOT CONNECTED
2. ANODE
3. CATHODE
- STYLE 30:
PIN 1. DRAIN
2. GATE
3. SOURCE
- STYLE 31:
PIN 1. GATE
2. DRAIN
3. SOURCE
- STYLE 32:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
- STYLE 33:
PIN 1. RETURN
2. INPUT
3. OUTPUT
- STYLE 34:
PIN 1. INPUT
2. GROUND
3. LOGIC
- STYLE 35:
PIN 1. GATE
2. COLLECTOR
3. EMITTER

**GENERIC
MARKING DIAGRAM***



- XXXX = Specific Device Code
- A = Assembly Location
- L = Wafer Lot
- Y = Year
- W = Work Week
- = Pb-Free Package

(Note: Microdot may be in either location)

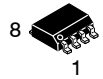
*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

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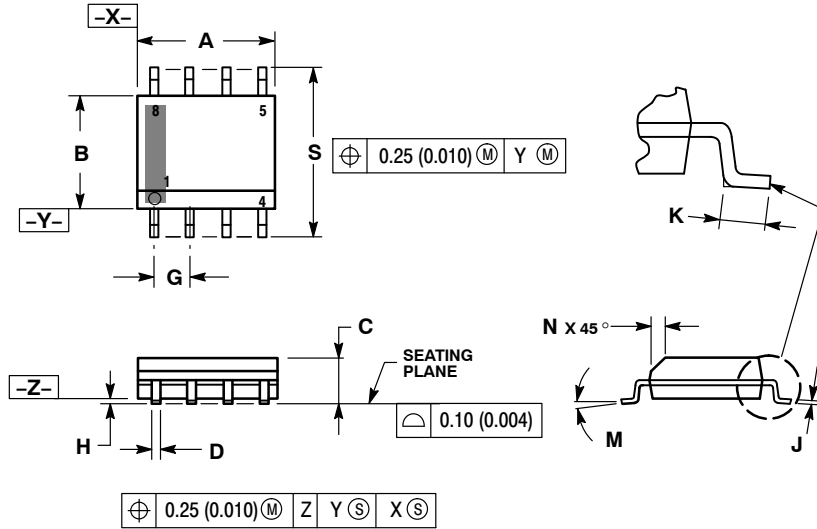
**MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS**



SCALE 1:1

**SOIC-8 NB
CASE 751-07
ISSUE AK**

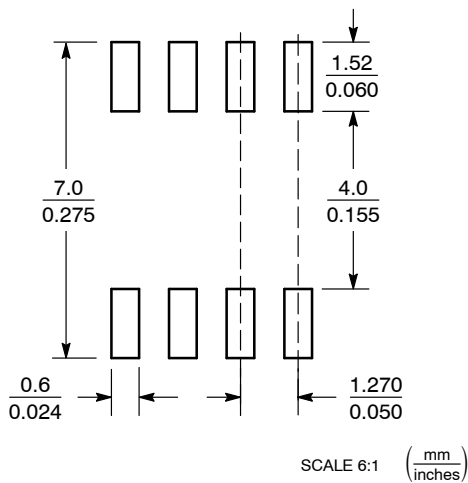
DATE 16 FEB 2011



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: MILLIMETER.
 3. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
 4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
 5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.
 6. 751-01 THRU 751-06 ARE OBSOLETE. NEW STANDARD IS 751-07.

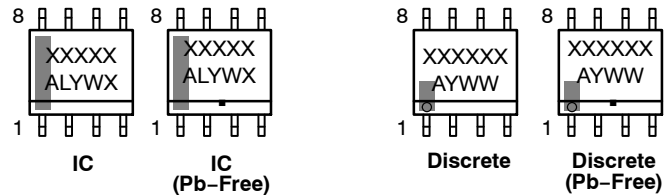
| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 4.80 | 5.00 | 0.189 | 0.197 |
| B | 3.80 | 4.00 | 0.150 | 0.157 |
| C | 1.35 | 1.75 | 0.053 | 0.069 |
| D | 0.33 | 0.51 | 0.013 | 0.020 |
| G | 1.27 BSC | | 0.050 BSC | |
| H | 0.10 | 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 |

SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the onsemi Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

GENERIC MARKING DIAGRAM*



XXXXXX = Specific Device Code
 A = Assembly Location
 L = Wafer Lot
 Y = Year
 W = Work Week
 ■ = Pb-Free Package

XXXXXX = Specific Device Code
 A = Assembly Location
 Y = Year
 WW = Work Week
 ■ = Pb-Free Package

*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.

STYLES ON PAGE 2

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SOIC-8 NB
CASE 751-07
ISSUE AK

DATE 16 FEB 2011

- STYLE 1:
 PIN 1. EMITTER
 2. COLLECTOR
 3. COLLECTOR
 4. EMITTER
 5. EMITTER
 6. BASE
 7. BASE
 8. EMITTER
- STYLE 2:
 PIN 1. COLLECTOR, DIE, #1
 2. COLLECTOR, #1
 3. COLLECTOR, #2
 4. COLLECTOR, #2
 5. BASE, #2
 6. EMITTER, #2
 7. BASE, #1
 8. EMITTER, #1
- STYLE 3:
 PIN 1. DRAIN, DIE #1
 2. DRAIN, #1
 3. DRAIN, #2
 4. DRAIN, #2
 5. GATE, #2
 6. SOURCE, #2
 7. GATE, #1
 8. SOURCE, #1
- STYLE 4:
 PIN 1. ANODE
 2. ANODE
 3. ANODE
 4. ANODE
 5. ANODE
 6. ANODE
 7. ANODE
 8. COMMON CATHODE
- STYLE 5:
 PIN 1. DRAIN
 2. DRAIN
 3. DRAIN
 4. DRAIN
 5. GATE
 6. GATE
 7. SOURCE
 8. SOURCE
- STYLE 6:
 PIN 1. SOURCE
 2. DRAIN
 3. DRAIN
 4. SOURCE
 5. SOURCE
 6. GATE
 7. GATE
 8. SOURCE
- STYLE 7:
 PIN 1. INPUT
 2. EXTERNAL BYPASS
 3. THIRD STAGE SOURCE
 4. GROUND
 5. DRAIN
 6. GATE 3
 7. SECOND STAGE Vd
 8. FIRST STAGE Vd
- STYLE 8:
 PIN 1. COLLECTOR, DIE #1
 2. BASE, #1
 3. BASE, #2
 4. COLLECTOR, #2
 5. COLLECTOR, #2
 6. EMITTER, #2
 7. EMITTER, #1
 8. COLLECTOR, #1
- STYLE 9:
 PIN 1. EMITTER, COMMON
 2. COLLECTOR, DIE #1
 3. COLLECTOR, DIE #2
 4. EMITTER, COMMON
 5. EMITTER, COMMON
 6. BASE, DIE #2
 7. BASE, DIE #1
 8. EMITTER, COMMON
- STYLE 10:
 PIN 1. GROUND
 2. BIAS 1
 3. OUTPUT
 4. GROUND
 5. GROUND
 6. BIAS 2
 7. INPUT
 8. GROUND
- STYLE 11:
 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 12:
 PIN 1. SOURCE
 2. SOURCE
 3. SOURCE
 4. GATE
 5. DRAIN
 6. DRAIN
 7. DRAIN
 8. DRAIN
- STYLE 13:
 PIN 1. N.C.
 2. SOURCE
 3. SOURCE
 4. GATE
 5. DRAIN
 6. DRAIN
 7. DRAIN
 8. DRAIN
- STYLE 14:
 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
- STYLE 15:
 PIN 1. ANODE 1
 2. ANODE 1
 3. ANODE 1
 4. ANODE 1
 5. CATHODE, COMMON
 6. CATHODE, COMMON
 7. CATHODE, COMMON
 8. CATHODE, COMMON
- STYLE 16:
 PIN 1. EMITTER, DIE #1
 2. BASE, DIE #1
 3. EMITTER, DIE #2
 4. BASE, DIE #2
 5. COLLECTOR, DIE #2
 6. COLLECTOR, DIE #2
 7. COLLECTOR, DIE #1
 8. COLLECTOR, DIE #1
- STYLE 17:
 PIN 1. VCC
 2. V2OUT
 3. V1OUT
 4. TXE
 5. RXE
 6. VEE
 7. GND
 8. ACC
- STYLE 18:
 PIN 1. ANODE
 2. ANODE
 3. SOURCE
 4. GATE
 5. DRAIN
 6. DRAIN
 7. CATHODE
 8. CATHODE
- STYLE 19:
 PIN 1. SOURCE 1
 2. GATE 1
 3. SOURCE 2
 4. GATE 2
 5. DRAIN 2
 6. MIRROR 2
 7. DRAIN 1
 8. MIRROR 1
- STYLE 20:
 PIN 1. SOURCE (N)
 2. GATE (N)
 3. SOURCE (P)
 4. GATE (P)
 5. DRAIN
 6. DRAIN
 7. DRAIN
 8. DRAIN
- STYLE 21:
 PIN 1. CATHODE 1
 2. CATHODE 2
 3. CATHODE 3
 4. CATHODE 4
 5. CATHODE 5
 6. COMMON ANODE
 7. COMMON ANODE
 8. CATHODE 6
- STYLE 22:
 PIN 1. I/O LINE 1
 2. COMMON CATHODE/VCC
 3. COMMON CATHODE/VCC
 4. I/O LINE 3
 5. COMMON ANODE/GND
 6. I/O LINE 4
 7. I/O LINE 5
 8. COMMON ANODE/GND
- STYLE 23:
 PIN 1. LINE 1 IN
 2. COMMON ANODE/GND
 3. COMMON ANODE/GND
 4. LINE 2 IN
 5. LINE 2 OUT
 6. COMMON ANODE/GND
 7. COMMON ANODE/GND
 8. LINE 1 OUT
- STYLE 24:
 PIN 1. BASE
 2. EMITTER
 3. COLLECTOR/ANODE
 4. COLLECTOR/ANODE
 5. CATHODE
 6. CATHODE
 7. COLLECTOR/ANODE
 8. COLLECTOR/ANODE
- STYLE 25:
 PIN 1. VIN
 2. N/C
 3. REXT
 4. GND
 5. IOUT
 6. IOUT
 7. IOUT
 8. IOUT
- STYLE 26:
 PIN 1. GND
 2. dv/dt
 3. ENABLE
 4. ILIMIT
 5. SOURCE
 6. SOURCE
 7. SOURCE
 8. VCC
- STYLE 27:
 PIN 1. ILIMIT
 2. OVLO
 3. UVLO
 4. INPUT+
 5. SOURCE
 6. SOURCE
 7. SOURCE
 8. DRAIN
- STYLE 28:
 PIN 1. SW_TO_GND
 2. DASIC OFF
 3. DASIC_SW_DET
 4. GND
 5. V_MON
 6. VBULK
 7. VBULK
 8. VIN
- STYLE 29:
 PIN 1. BASE, DIE #1
 2. EMITTER, #1
 3. BASE, #2
 4. EMITTER, #2
 5. COLLECTOR, #2
 6. COLLECTOR, #2
 7. COLLECTOR, #1
 8. COLLECTOR, #1
- STYLE 30:
 PIN 1. DRAIN 1
 2. DRAIN 1
 3. GATE 2
 4. SOURCE 2
 5. SOURCE 1/DRAIN 2
 6. SOURCE 1/DRAIN 2
 7. SOURCE 1/DRAIN 2
 8. GATE 1

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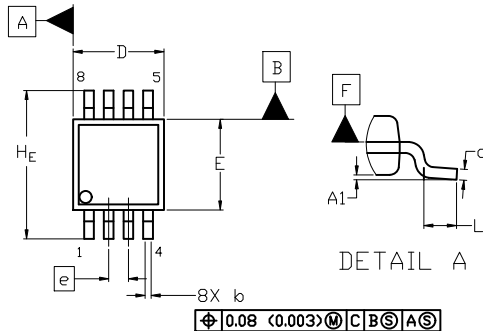
**MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS**



SCALE 2:1

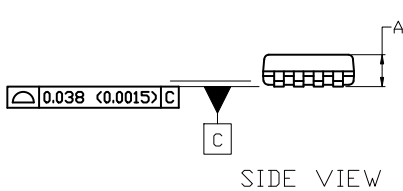
**Micro8
CASE 846A-02
ISSUE K**

DATE 16 JUL 2020

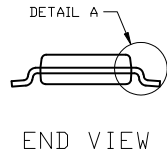


TOP VIEW

NOTE 3



SIDE VIEW

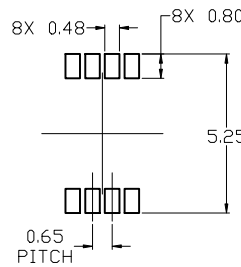


END VIEW

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 MAXIMUM MATERIAL CONDITION.
4. DIMENSIONS *D* AND *E* DO NOT INCLUDE MOLD FLASH, PROTRUSION OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.15 mm PER SIDE. DIMENSION *E* DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 mm PER SIDE. DIMENSIONS *D* AND *E* ARE DETERMINED AT DATUM *F*.
5. DATUMS *A* AND *B* ARE TO BE DETERMINED AT DATUM *F*.
6. *A1* IS DEFINED AS THE VERTICAL DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT ON THE PACKAGE BODY.

$\phi 0.08$ (0.003) M C B S A S

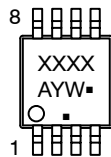


RECOMMENDED MOUNTING FOOTPRINT

For additional information on our Pb-Free strategy and soldering details, please download the [DN Semiconductor Soldering and Mounting Techniques Reference Manual, SLDERRM/D](#).

| DIM | MILLIMETERS | | |
|----------------------|-------------|------|------|
| | MIN. | NOM. | MAX. |
| A | --- | --- | 1.10 |
| A1 | 0.05 | 0.08 | 0.15 |
| <i>b</i> | 0.25 | 0.33 | 0.40 |
| <i>c</i> | 0.13 | 0.18 | 0.23 |
| <i>D</i> | 2.90 | 3.00 | 3.10 |
| <i>E</i> | 2.90 | 3.00 | 3.10 |
| <i>e</i> | 0.65 BSC | | |
| <i>H_E</i> | 4.75 | 4.90 | 5.05 |
| <i>L</i> | 0.40 | 0.55 | 0.70 |

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:

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

STYLE 2:

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:

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

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