



Product Change Notification / SYST-14FECK752

Date:

18-Apr-2022

Product Category:

Power Management - System Supervisors/Voltage Detectors

PCN Type:

Document Change

Notification Subject:

Data Sheet - MIC826 Data Sheet Revision

Affected CPNs:

[SYST-14FECK752_Affected_CPN_04182022.pdf](#)

[SYST-14FECK752_Affected_CPN_04182022.csv](#)

Notification Text:

SYST-14FECK752

Microchip has released a new Product Documents for the MIC826 Data Sheet of devices. If you are using one of these devices please read the document located at [MIC826 Data Sheet](#).

Notification Status: Final

Description of Change: 1. Converted Micrel document MIC826 to Microchip data sheet DS20006668A.
2. Minor text changes throughout

Impacts to Data Sheet: See above details.

Reason for Change: To Improve Productivity

Change Implementation Status: Complete

Date Document Changes Effective: 18 April 2022

NOTE: Please be advised that this is a change to the document only the product has not been changed.

Markings to Distinguish Revised from Unrevised Devices: N/A

Attachments:

[MIC826 Data Sheet](#)

Please contact your local [Microchip sales office](#) with questions or concerns regarding this notification.

Terms and Conditions:

If you wish to receive Microchip PCNs via email please register for our PCN email service at our [PCN home page](#) select register then fill in the required fields. You will find instructions about registering for Microchips PCN email service in the [PCN FAQ](#) section.

If you wish to change your PCN profile, including opt out, please go to the [PCN home page](#) select login and sign into your myMicrochip account. Select a profile option from the left navigation bar and make the applicable selections.

Affected Catalog Part Numbers (CPN)

MIC826MYMT-TR
MIC826RYMT-TR
MIC826SYMT-T5
MIC826SYMT-TR
MIC826TYMT-T5
MIC826YYMT-TR
MIC826LYMT-TR
MIC826LYMT-T5
MIC826MYMT-TR
MIC826MYMT-T5
MIC826RYMT-TR
MIC826RYMT-T5
MIC826SYMT-TR
MIC826SYMT-T5
MIC826TYMT-TR
MIC826TYMT-T5
MIC826WYMT-TR
MIC826WYMT-T5
MIC826YYMT-TR
MIC826YYMT-T5
MIC826ZYMT-TR
MIC826ZYMT-T5

Voltage Supervisor with Watchdog Timer, Manual Reset, and Dual Outputs

Features

- Precision 1.8V to 5V Power Supply Monitor
- $\pm 0.5\%$ Threshold Accuracy at $T_A = +25^\circ\text{C}$
- $\pm 1.5\%$ Threshold Accuracy from $T_A = -40^\circ\text{C}$ to $+125^\circ\text{C}$
- 3.8 μA Supply Current (MIC826S/R/T/W/Y/Z)
- 4.8 μA Supply Current (MIC826L/M)
- Manual Reset Input
- 140 ms (min.) Reset Timeout Period
- 1.6s (typ.) Watchdog Timeout Period
- Float Watchdog Timer Input to Disable Watchdog Timer
- Active-High and Active-Low Push-Pull Outputs
- Ensured Reset Output Valid to $V_{CC} = 1\text{V}$
- -40°C to $+125^\circ\text{C}$ Junction Temperature Range
- 6-Lead 1.6 mm x 1.6 mm x 0.5 mm UDFN Package
- 50% Smaller Version of MAX823/MAX824/MAX825/ADM823/ADM824/ADM825
- 8x Lower Watchdog Input Current than the Competition

Applications

- Microprocessor Systems
- Computers
- Intelligent Instruments

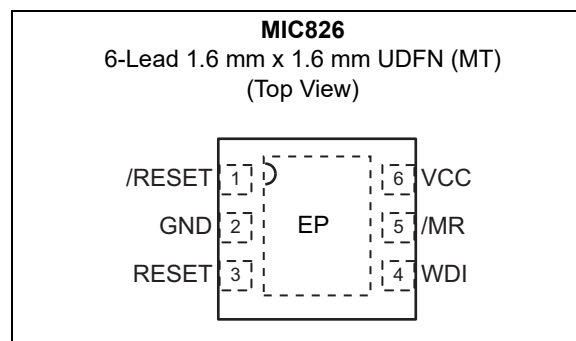
General Description

The MIC826 is a low-current, ultra-small, voltage supervisor with manual reset input, watchdog timer, and active-high and active-low push-pull outputs. The reset outputs are asserted and held when the supply voltage falls below the factory-programmed threshold voltage, when the /MR pin is pulled low, or if the watchdog times out. Reset is asserted for the reset timeout delay after the supply voltage increases above the rising threshold voltage or when manual reset input is asserted high.

The MIC826 features an integrated pull-up resistor on the /MR. An active-low push-pull reset output (/RESET) and an active-high reset output (RESET) provide flexibility when interfacing with various microcontrollers, PMICs, or load switches. The watchdog input can be left unconnected for applications that do not require watchdog monitoring.

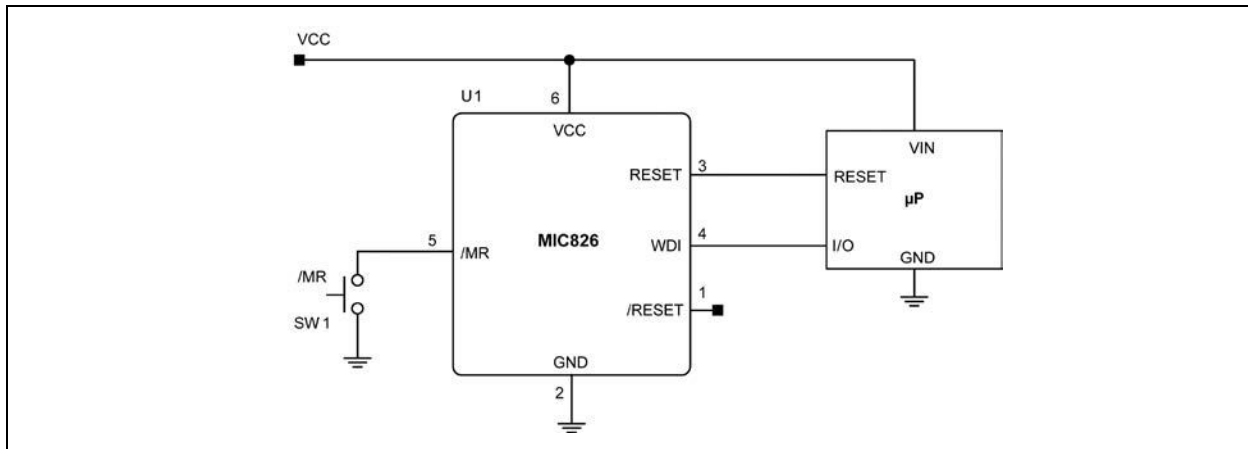
The MIC826 consumes a quiescent current of only 3.8 μA and is offered in a tiny, space-saving, 6-lead 1.6 mm x 1.6 mm UDFN package. It is rated for the -40°C to $+125^\circ\text{C}$ temperature range.

Package Type

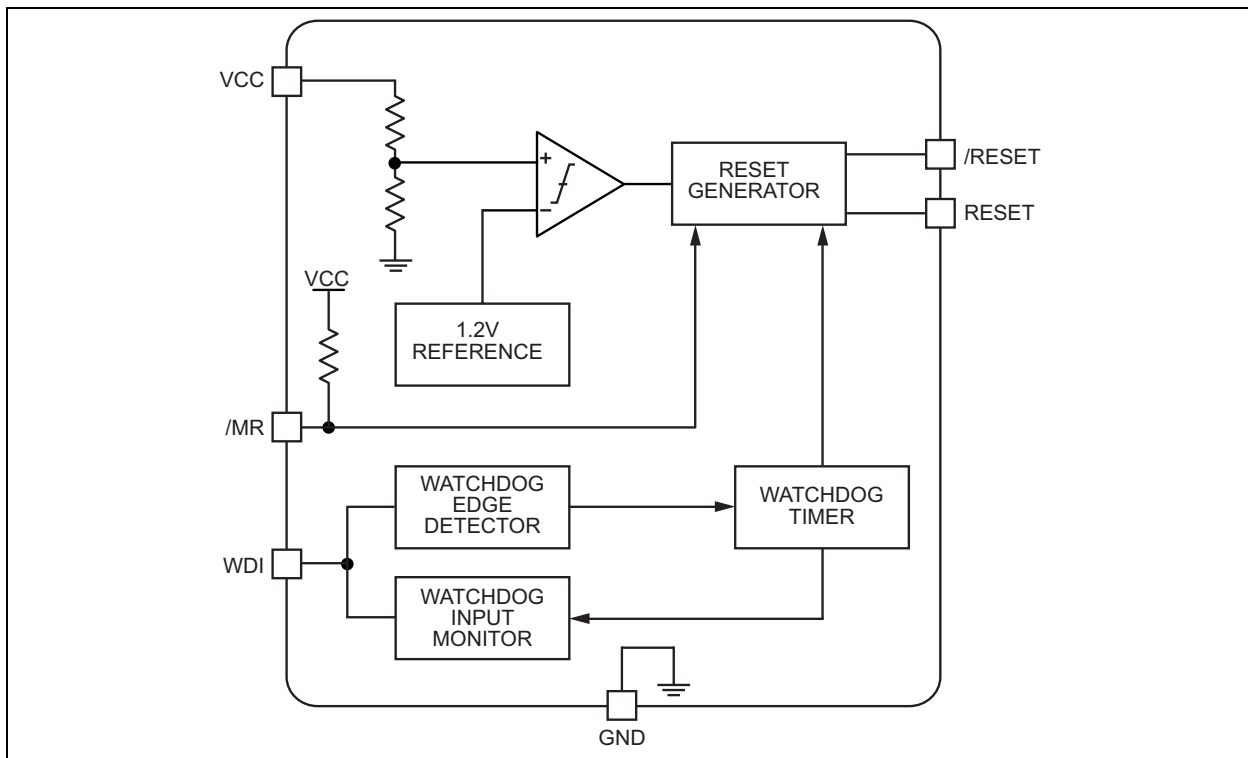


MIC826

Typical Application Circuit



Functional Block Diagram



1.0 ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings †

Supply Voltage (V_{CC})	–0.3V to +6.0V
/MR, WDI, RESET, /RESET	–0.3V to $V_{CC} + 0.3V$
Input Current, All Pins except (RESET, /RESET)	20 mA
Output Current (RESET, /RESET)	20 mA
ESD Rating (Note 1) Human Body Model	1.5 kV
ESD Rating (Note 1) Machine Model	200V

Operating Ratings ‡

Supply Voltage (V_{CC})	+1V to +5.5V
Watchdog Input (WDI)	0V to V_{CC}

† **Notice:** Stresses above those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at those or any other conditions above those indicated in the operational sections of this specification is not intended. Exposure to maximum rating conditions for extended periods may affect device reliability.

‡ **Notice:** The device is not guaranteed to function outside its operating ratings.

Note 1: Devices are ESD sensitive; use proper handling precautions. Human body model, 1.5 k Ω in series with 100 pF.

ELECTRICAL CHARACTERISTICS

Electrical Characteristics: $V_{CC} = 4.7V$ to $5.5V$ for MIC826L, $V_{CC} = 4.5V$ to $5.5V$ for MIC826M, $V_{CC} = 3.15V$ to $3.6V$ for MIC826T, $V_{CC} = 3.0V$ to $3.6V$ for MIC826S, $V_{CC} = 2.7V$ to $3.6V$ for MIC826R, $V_{CC} = 2.38V$ to $2.75V$ for MIC826Z, $V_{CC} = 2.25V$ to $2.75V$ for MIC826Y, $V_{CC} = 1.75V$ to $2.0V$ for MIC826W; $T_J = +25^\circ C$, **bold** values (Note 2) valid for $-40^\circ C \leq T_J \leq +125^\circ C$, unless otherwise noted. (Note 1)

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Power Supply Input						
Supply Voltage	V _{CC}	1.0	—	5.5	V	—
Supply Current	I _{VCC}	—	4.8	14	μA	MIC826L/M (WDI and /MR unconnected)
		—	3.8	8.4		MIC826T/S/R/Z/Y/W (WDI and /MR unconnected)
Reset Threshold Voltage						
Reset Threshold Voltage	V _{RST}	4.602	4.625	4.648	V	L (falling) T _A = 25°C
		4.556	—	4.694		L (falling) −40°C ≤ T _A ≤ +125°C
		4.353	4.375	4.397		M (falling) T _A = 25°C
		4.309	—	4.441		M (falling) −40°C ≤ T _A ≤ +125°C
		3.060	3.075	3.090		T (falling) T _A = 25°C
		3.029	—	3.121		T (falling) −40°C ≤ T _A ≤ +125°C
		2.910	2.925	2.940		S (falling) T _A = 25°C
		2.881	—	2.969		S (falling) −40°C ≤ T _A ≤ +125°C
		2.612	2.625	2.638		R (falling) T _A = 25°C
		2.586	—	2.664		R (falling) −40°C ≤ T _A ≤ +125°C
		2.303	2.315	2.327		Z (falling) T _A = 25°C
		2.280	—	2.350		Z (falling) −40°C ≤ T _A ≤ +125°C
		2.177	2.188	2.199		Y (falling) T _A = 25°C
		2.155	—	2.221		Y (falling) −40°C ≤ T _A ≤ +125°C
		1.657	1.665	1.673		W (falling) T _A = 25°C
		1.640	—	1.690		W (falling) −40°C ≤ T _A ≤ +125°C

ELECTRICAL CHARACTERISTICS (CONTINUED)

Electrical Characteristics: $V_{CC} = 4.7V$ to $5.5V$ for MIC826L, $V_{CC} = 4.5V$ to $5.5V$ for MIC826M, $V_{CC} = 3.15V$ to $3.6V$ for MIC826T, $V_{CC} = 3.0V$ to $3.6V$ for MIC826S, $V_{CC} = 2.7V$ to $3.6V$ for MIC826R, $V_{CC} = 2.38V$ to $2.75V$ for MIC826Z, $V_{CC} = 2.25V$ to $2.75V$ for MIC826Y, $V_{CC} = 1.75V$ to $2.0V$ for MIC826W; $T_J = +25^\circ C$, **bold** values (Note 2) valid for $-40^\circ C \leq T_J \leq +125^\circ C$, unless otherwise noted. (Note 1)

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Reset Threshold Hysteresis	V _{RST_HYS}	—	10	—	mV	L, M
		—	5	—		T, S, R, Z, Y, W
Reset Threshold Temperature Coefficient		—	40	—	ppm/°C	—
Reset Timeout Period	t _{RP}	140	200	280	ms	—
Reset Time						
VCC to /RESET Delay	t _{RD}	—	10	—	μs	—
Reset Outputs (/RESET, RESET)						
/RESET Output Voltage High	V _{OH}	V _{CC} – 1.5	—	—	V	L, M: V _{CC} = V _{RST(MAX)} , I _{SOURCE} = 120 μA
		0.8 x V _{CC}	—	—		T, S, R, Z, Y: V _{CC} = V _{RST(MAX)} , I _{SOURCE} = 30 μA
		0.8 x V _{CC}	—	—		W: V _{CC} = V _{RST(MAX)} , I _{SOURCE} = 20 μA
/RESET Output Voltage Low	V _{OL}	—	—	0.4	V	L, M: V _{CC} = V _{RST(MIN)} , I _{SINK} = 3.2 mA
		—	—	0.3		T, S, R, Z, Y, W: V _{CC} = V _{RST(MIN)} , I _{SINK} = 1.2 mA
		—	—	0.3		T _A = 0°C to +70°C, V _{CC} = 1V, I _{SINK} = 50 μA
		—	—	0.3		V _{CC} = 1.2V, I _{SINK} =100 μA
/RESET Output Short-Circuit Current (Note 3)	I _{SC}	—	—	800	μA	L, M: /RESET = 0V, V _{CC} = 5.5V
		—	—	400		T, S, R, Z, Y, W: /RESET = 0V, V _{CC} = 3.6V
RESET Output Voltage High	V _{OH}	0.8 x V _{CC}	—	—	V	V _{CC} > 1.6V, I _{SOURCE} = 150 μA
RESET Output Voltage Low	V _{OL}	—	—	0.4	V	L, M: V _{CC} = V _{RST(MAX)} , I _{SINK} = 3.2 mA
		—	—	0.3		T, S, R, Z, Y, W: V _{CC} = V _{RST(MAX)} , I _{SINK} = 1.2 mA
Watchdog Input (WDI) (Note 4)						
Watchdog Timeout Period	t _{WD}	1.12	1.60	2.40	sec.	—
Watchdog Pulse Width		50	—	—	ns	—
Watchdog Input Low Voltage	V _{IL}	—	—	0.3 x V _{CC}	V	—
Watchdog Input High Voltage	V _{IH}	0.7 x V _{CC}	—	—	V	—
Watchdog Input Current	I _{IN}	—	15	25	μA	WDI = V _{CC}
		–25	–15	—		WDI = 0V
Manual Reset Input (/MR)						
Input Low Voltage	V _{IL}	—	—	0.3 x V _{CC}	V	—
Input High Voltage	V _{IH}	0.7 x V _{CC}	—	—	V	—

ELECTRICAL CHARACTERISTICS (CONTINUED)

Electrical Characteristics: $V_{CC} = 4.7V$ to $5.5V$ for MIC826L, $V_{CC} = 4.5V$ to $5.5V$ for MIC826M, $V_{CC} = 3.15V$ to $3.6V$ for MIC826T, $V_{CC} = 3.0V$ to $3.6V$ for MIC826S, $V_{CC} = 2.7V$ to $3.6V$ for MIC826R, $V_{CC} = 2.38V$ to $2.75V$ for MIC826Z, $V_{CC} = 2.25V$ to $2.75V$ for MIC826Y, $V_{CC} = 1.75V$ to $2.0V$ for MIC826W; $T_J = +25^\circ C$, **bold** values (Note 2) valid for $-40^\circ C \leq T_J \leq +125^\circ C$, unless otherwise noted. (Note 1)

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
/MR Pulse Width		1.0	—	—	μs	—
/MR Noise Immunity (pulse width with no reset)		—	100	—	ns	—
/MR to RESET Delay		—	500	—	ns	—
/MR Internal Pull-Up Resistor		35	52	75	$k\Omega$	—

Note 1: Specifications are for packaged products only.

2: Overtemperature limits are ensured by design and not product tested.

3: The /RESET short-circuit current is the maximum pull-up current when /RESET is driven low by μP bidirectional reset pin.

4: The WDI input is designed to drive a three-state output device with a $10 \mu A$ maximum leakage current and a maximum capacitance of $200 pF$.

TEMPERATURE SPECIFICATIONS

Parameters	Sym.	Min.	Typ.	Max.	Units	Conditions
Temperature Ranges						
Maximum Junction Temperature Range	$T_{J(MAX)}$	-40	—	+150	$^\circ C$	—
Operating Junction Temperature Range	T_J	-40	—	+125	$^\circ C$	Note 1
Storage Temperature Range	T_S	-65	—	+150	$^\circ C$	—
Package Thermal Resistances						
Thermal Resistance, UDFN 6-Ld	θ_{JA}	—	92.4	—	$^\circ C/W$	—
	θ_{JC}	—	56.4	—	$^\circ C/W$	—

Note 1: The maximum allowable power dissipation is a function of ambient temperature, the maximum allowable junction temperature and the thermal resistance from junction to air (i.e., T_A , T_J , θ_{JA}). Exceeding the maximum allowable power dissipation will cause the device operating junction temperature to exceed the maximum $+125^\circ C$ rating. Sustained junction temperatures above $+125^\circ C$ can impact the device reliability.

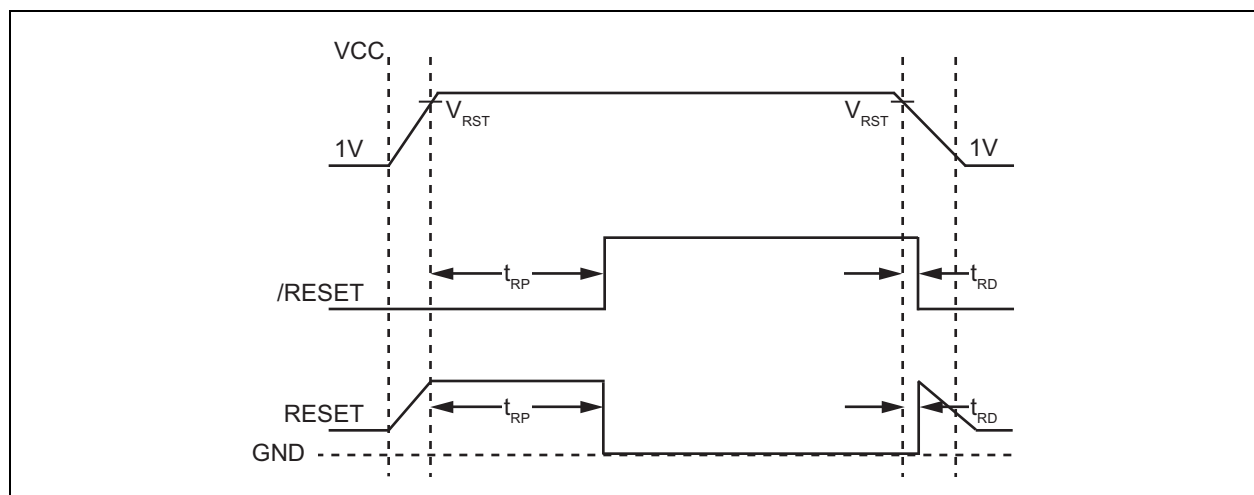


FIGURE 1-1: Timing Diagram.

2.0 TYPICAL PERFORMANCE CURVES

Note: The graphs and tables provided following this note are a statistical summary based on a limited number of samples and are provided for informational purposes only. The performance characteristics listed herein are not tested or guaranteed. In some graphs or tables, the data presented may be outside the specified operating range (e.g., outside specified power supply range) and therefore outside the warranted range.

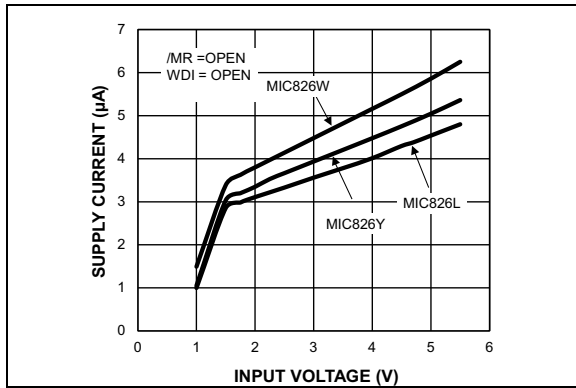


FIGURE 2-1: Supply Current vs. Input Voltage.

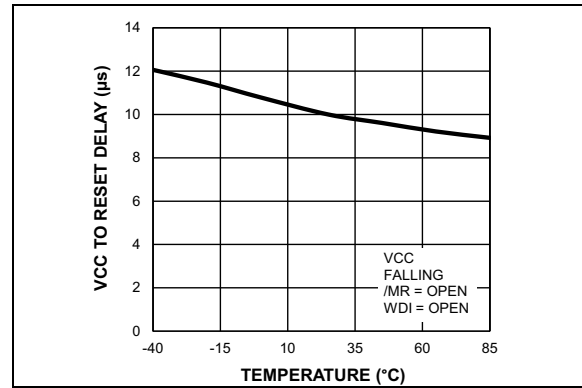


FIGURE 2-4: VCC to RESET Delay vs. Temperature.

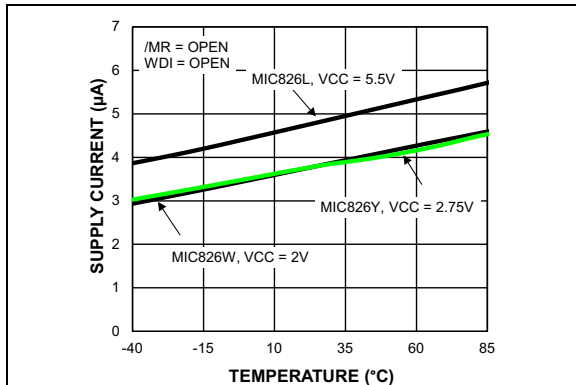


FIGURE 2-2: Supply Current vs. Temperature.

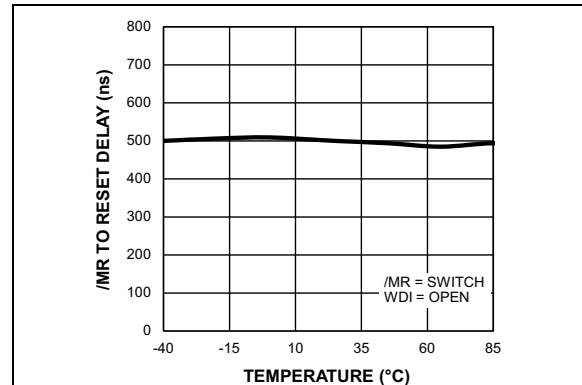


FIGURE 2-5: /MR to RESET Delay vs. Temperature.

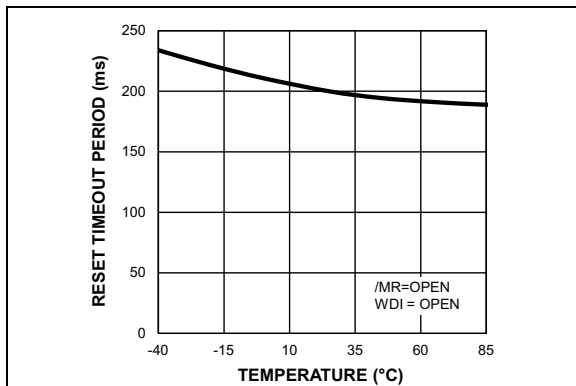


FIGURE 2-3: RESET Timeout Period vs. Temperature.

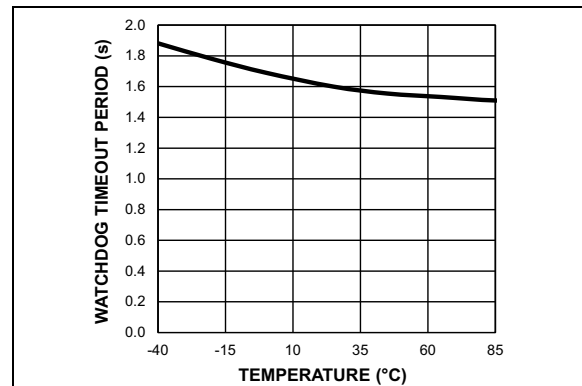


FIGURE 2-6: Watchdog Timeout Period vs. Temperature.

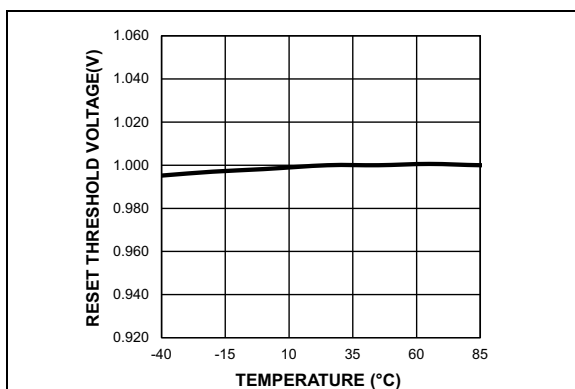


FIGURE 2-7: *Normalized Reset Threshold vs. Temperature.*

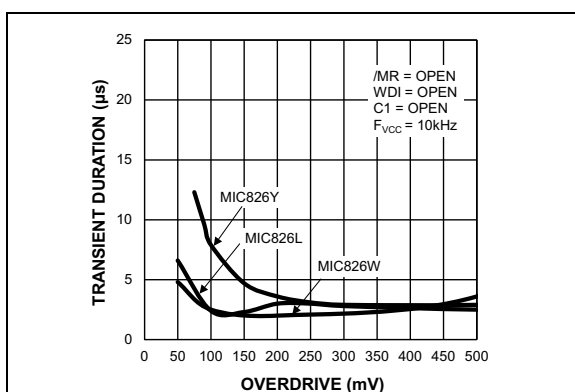


FIGURE 2-8: *Supply Transient Duration vs. Overdrive.*

3.0 PIN DESCRIPTIONS

The descriptions of the pins are listed in [Table 3-1](#).

TABLE 3-1: PIN FUNCTION TABLE

Pin Number	Pin Name	Description
1	/RESET	Active-Low Reset Output. Pulses low for 200 ms when triggered, and remains low whenever V_{CC} is below the reset threshold or when /MR is a logic low. It remains low for 200 ms after one of the following occurs: V_{CC} rises above the reset threshold, the watchdog triggers a reset, or /MR goes low to high.
2	GND	Supply Ground.
3	RESET	Active-High Reset Output. Pulses high for 200 ms when triggered, and remains high whenever V_{CC} is below the reset threshold or when /MR is a logic low. It remains high for 200 ms after one of the following occurs: V_{CC} rises above the reset threshold, the watchdog triggers a reset, or /MR goes low to high. RESET is the inverse of /RESET.
4	WDI	Watchdog Input. If WDI remains either high or low for longer than the watchdog timeout period, the internal watchdog timer runs out and a reset is triggered. The internal watchdog timer clears whenever reset is asserted, or whenever WDI sees a rising or falling edge. If WDI is left unconnected or is connected to a three-stated buffer output, the watchdog feature is disabled.
5	/MR	Manual Reset Input. A logic low on /MR asserts reset. Reset remains asserted as long as /MR is held low and for 200 ms after /MR returns high. The active-low input has an internal 52 k Ω pull-up resistor. It can be driven from a CMOS logic line or shorted to ground with a switch. Leave open or connect to VCC if unused.
6	VCC	Supply Voltage Pin. VCC is the input to the supply voltage monitor. When the supply voltage falls below the reset threshold voltage, reset outputs (/RESET and RESET) are triggered immediately. When the supply voltage rises above the reset threshold plus hysteresis voltage, the reset outputs remain asserted for the duration of the reset timeout period. A decoupling ceramic capacitor (minimum 0.1 μ F) must be connected between VCC and GND close to the pins.
EP	ePAD	Exposed Pad. Connect to GND.

4.0 FUNCTIONAL DESCRIPTION

4.1 Design and Product Advantages

The MIC826 is a voltage supervisor reset IC with a manual reset input, watchdog input, and dual reset outputs. The MIC826 asserts and holds a reset when the supply voltage falls below the factory-programmed threshold voltage, when $\overline{\text{MR}}$ is at low logic level, or when watchdog input times out. Reset is asserted for a fixed reset timeout period after the supply voltage increases above the rising threshold voltage or when the manual reset input is asserted high.

The MIC826 features an active-low, push-pull reset output ($\overline{\text{RESET}}$) and an active-high, push-pull reset output (RESET). It also contains 52 k Ω pull-up resistors on the $\overline{\text{MR}}$ input to make it easy to connect to pushbutton inputs. The MIC826 also features a watchdog (WDI) input.

4.2 Manual Reset Input ($\overline{\text{MR}}$)

The $\overline{\text{MR}}$ input pin has integrated pull-up resistors to keep the current consumption low when the pushbutton switch is pressed.

4.3 Reset Outputs ($\overline{\text{RESET}}$ and RESET)

There are two reset outputs: $\overline{\text{RESET}}$ and RESET. Both outputs are push-pull, which eliminates the need for pull-up resistors. The RESET output is the inverse of the $\overline{\text{RESET}}$ output.

4.4 Asserting $\overline{\text{RESET}}$ and RESET Outputs

4.4.1 WHEN FUNCTIONING AS A MANUAL RESET

The reset outputs $\overline{\text{RESET}}$ and RESET are asserted while the $\overline{\text{MR}}$ pin is driven low. Both reset outputs remain asserted for a factory-programmed reset timeout delay time, t_{RP} . The typical value of a reset timeout period is 200 ms. The $\overline{\text{RESET}}$ pin is driven low while the RESET pin is driven high whenever $\overline{\text{MR}}$ is pulled low.

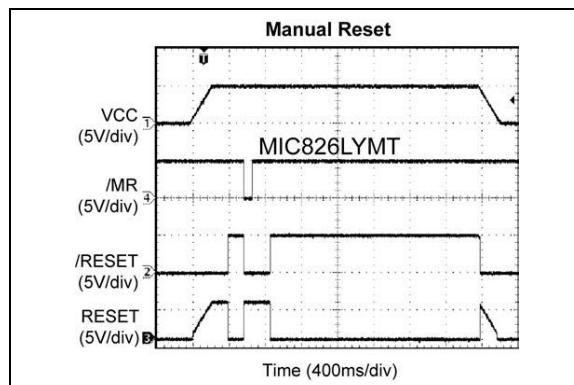


FIGURE 4-1: Manual Reset Function.

4.4.2 WHEN FUNCTIONING AS A VOLTAGE SUPERVISOR

The $\overline{\text{RESET}}$ pin is asserted whenever V_{CC} falls below the reset threshold voltage, V_{RST} ($V_{CC} < V_{RST}$). The V_{CC} pin circuitry includes hysteresis to prevent $\overline{\text{RESET}}$ or RESET pin chattering due to noise. The $\overline{\text{RESET}}$ pin remains asserted for the duration of the reset timeout delay (t_{RP}) after V_{CC} has risen above the reset threshold voltage plus the hysteresis. The reset function ensures that a microprocessor is properly reset and powers up in a known condition after a power failure. The $\overline{\text{RESET}}$ remains valid with V_{CC} as low as 1V. The RESET output is a complement of the $\overline{\text{RESET}}$ output.

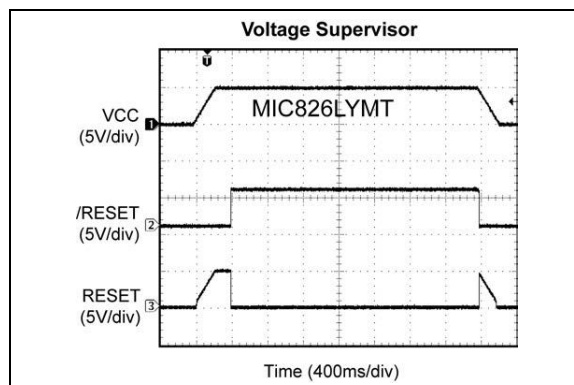


FIGURE 4-2: Voltage Supervisor Function.

4.4.3 WATCHDOG INPUT

The MIC826 has an on-chip watchdog timer that can reset the microprocessor if it fails to strobe the WDI input within a preset timeout period (t_{WD}). If the WDI pin is left unconnected, this function is disabled. The watchdog timeout period starts when either of the reset outputs becomes inactive and either a high-to-low or low-to-high transition occurs before the watchdog timeout period (t_{WD}). If the watchdog timer times out, then the reset outputs will assert and stay asserted for a reset timeout period (t_{RP}). The watchdog timer is also cleared whenever the reset outputs are asserted by

MIC826

/MR, or if V_{CC} falls below V_{RST} . The watchdog timer starts again whenever the reset outputs are de-asserted.

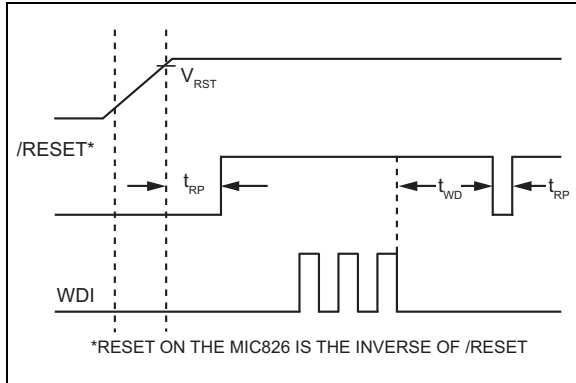


FIGURE 4-3: Watchdog Timing.

4.5 Watchdog Input Current

The WDI input current is the current sourced or sunk by the WDI pin when the WDI input is driven low or high, respectively. The WDI input is designed to drive a tri-state output device with a 10 μ A maximum leakage current and a maximum capacitance of 200 pF.

4.6 VCC Transient

The MIC826 is relatively immune to small negative-going V_{CC} glitches below the reset threshold. As shown in Figure 4-4, the overdrive voltage is the difference between the threshold voltage and the minimum point of the V_{CC} glitch. Typically, an overdrive of 100 mV with duration of 2 μ s or less will not cause a reset.

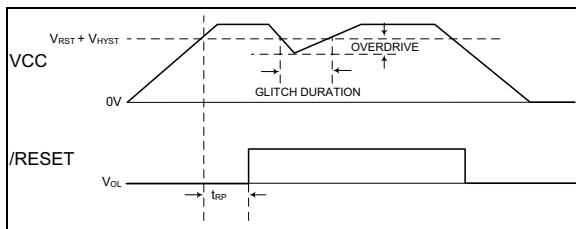


FIGURE 4-4: VCC Transient.

4.7 Reset Valid Up to $V_{CC} = 1V$

The MIC826 is a supervisory circuit that monitors the power supply voltage level. If the power supply voltage level falls below the factory-programmed threshold level, then the reset signals are asserted. The MIC826 maintains the reset states with V_{CC} as low as 1V.

4.8 Supply Bypass Capacitor

An optional 0.1 μ F input bypass capacitor can be placed from VCC (Pin 6) to GND (Pin 2) to increase glitch rejection.

5.0 TYPICAL APPLICATIONS

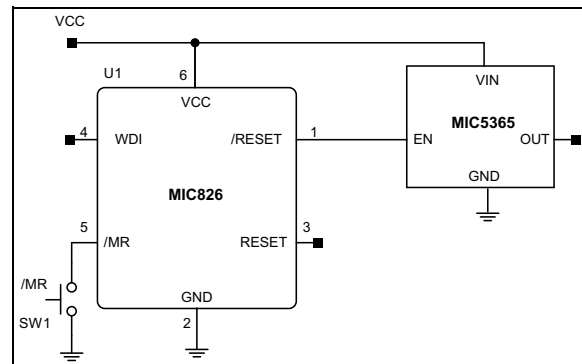


FIGURE 5-1: MIC826 for Precision Power Good Function.

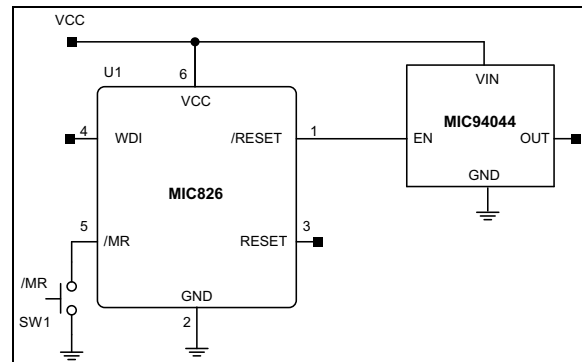


FIGURE 5-2: MIC826 Used for Load Switch.

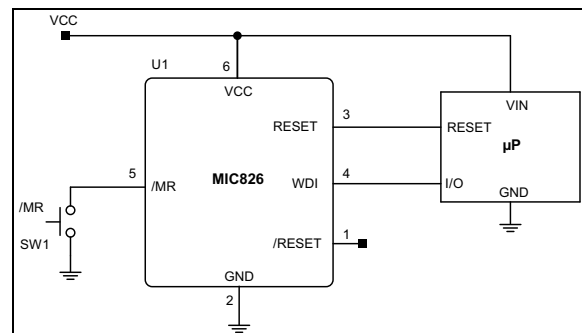


FIGURE 5-3: MIC826 Used for Microcontroller Reset with Watchdog Input.

6.0 EVALUATION BOARD SCHEMATIC

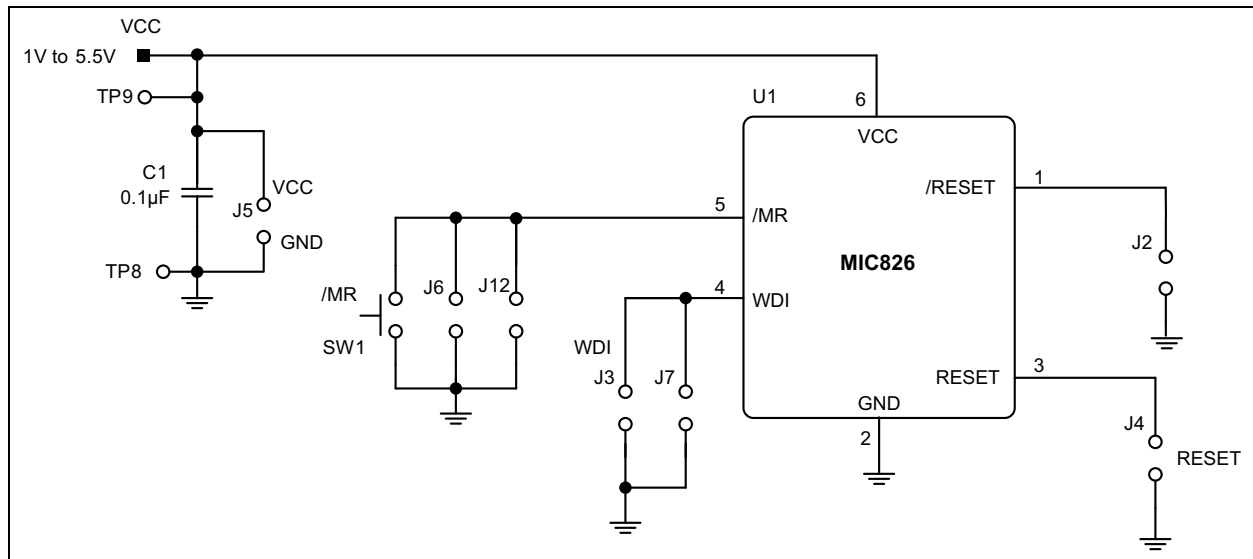


FIGURE 6-1: MIC826 Evaluation Board Schematic.

6.1 Bill of Materials

TABLE 6-1: BILL OF MATERIALS

Item	Part Number	Manufacturer	Description	Qty.
C1	GRM188R71C104KA01D	Murata	0.1 µF, 16V capacitor, X7R, 0603	1
U1	MIC826xYMT	Microchip	Voltage Supervisor with Watchdog Timer, Manual Reset, and Dual Outputs	1

7.0 PCB LAYOUT RECOMMENDATIONS

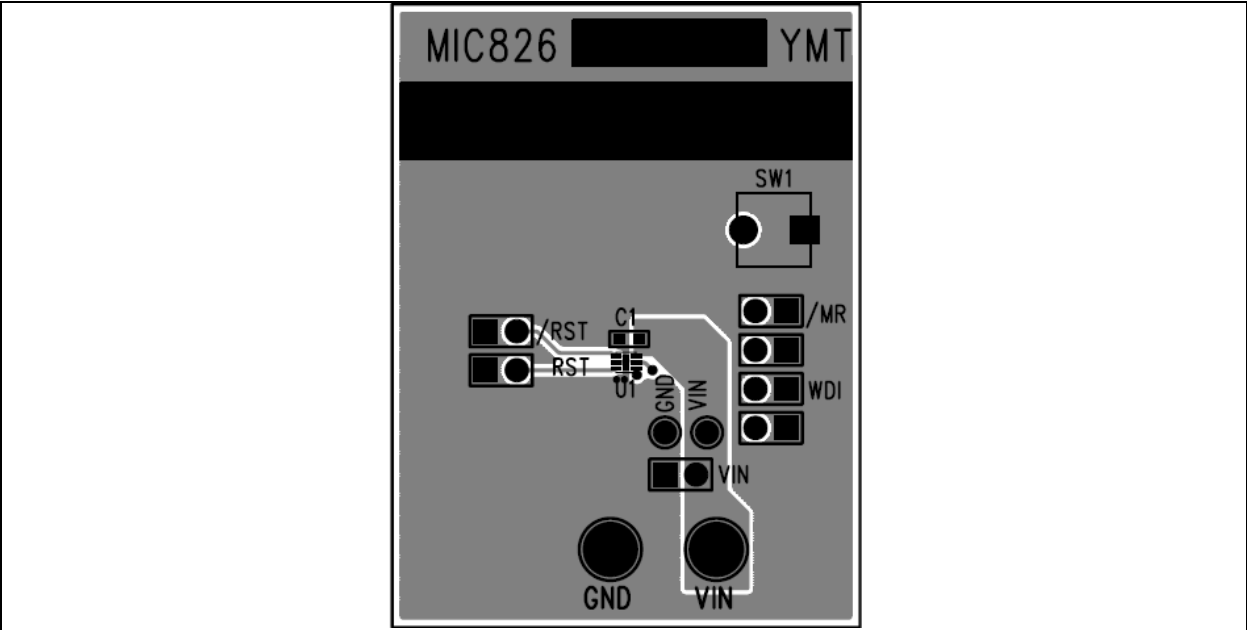


FIGURE 7-1: Top Layer.

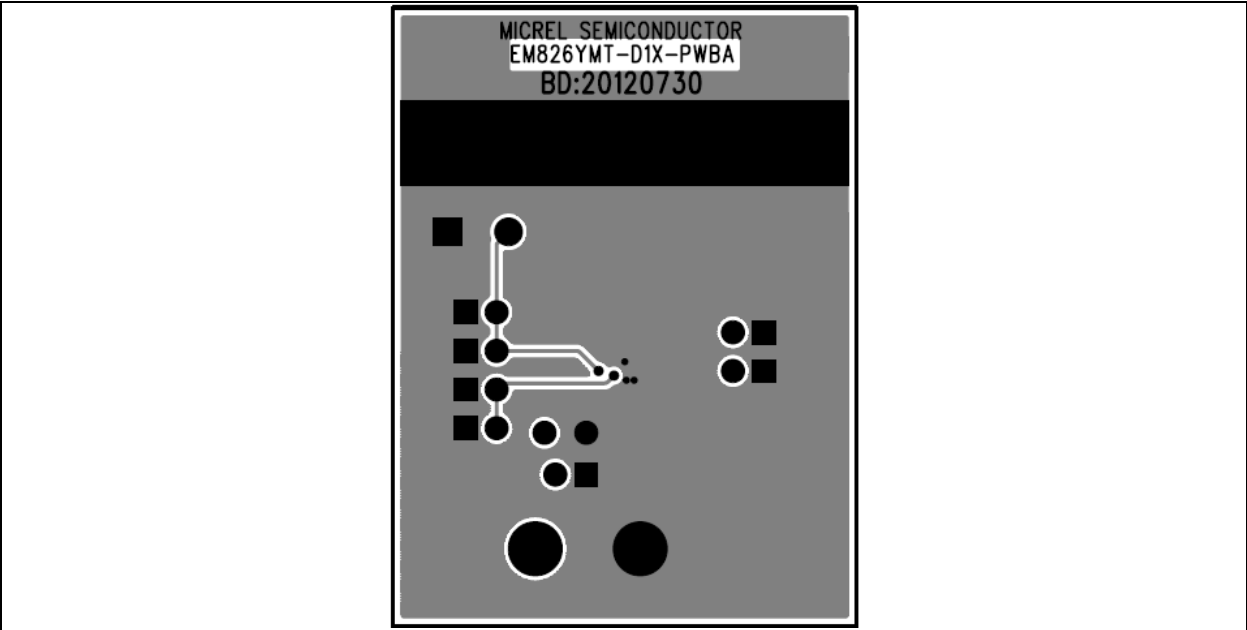
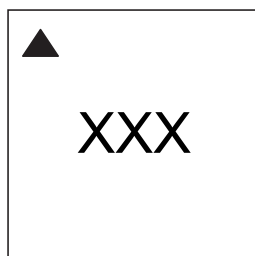


FIGURE 7-2: Bottom Layer.

8.0 PACKAGING INFORMATION

8.1 Package Marking Information

6-Lead UDFN*



Example

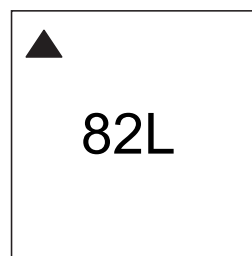


TABLE 8-1: MARKING CODES

Part Number	Marking Code	Nominal Threshold Voltage
MIC826LYMT	82L	4.625
MIC826MYMT	82M	4.375
MIC826TYMT	82T	3.075
MIC826SYMT	82S	2.925
MIC826RYMT	82R	2.625
MIC826ZYMt	82Z	2.315
MIC826YYMT	82Y	2.188
MIC826WYMT	82W	1.665

Legend: XX...X Product code or customer-specific information
Y Year code (last digit of calendar year)
YY Year code (last 2 digits of calendar year)
WW Week code (week of January 1 is week '01')
NNN Alphanumeric traceability code
(e3) Pb-free JEDEC® designator for Matte Tin (Sn)
* This package is Pb-free. The Pb-free JEDEC designator ((e3)) can be found on the outer packaging for this package.
•, ▲, ▼ Pin one index is identified by a dot, delta up, or delta down (triangle mark).

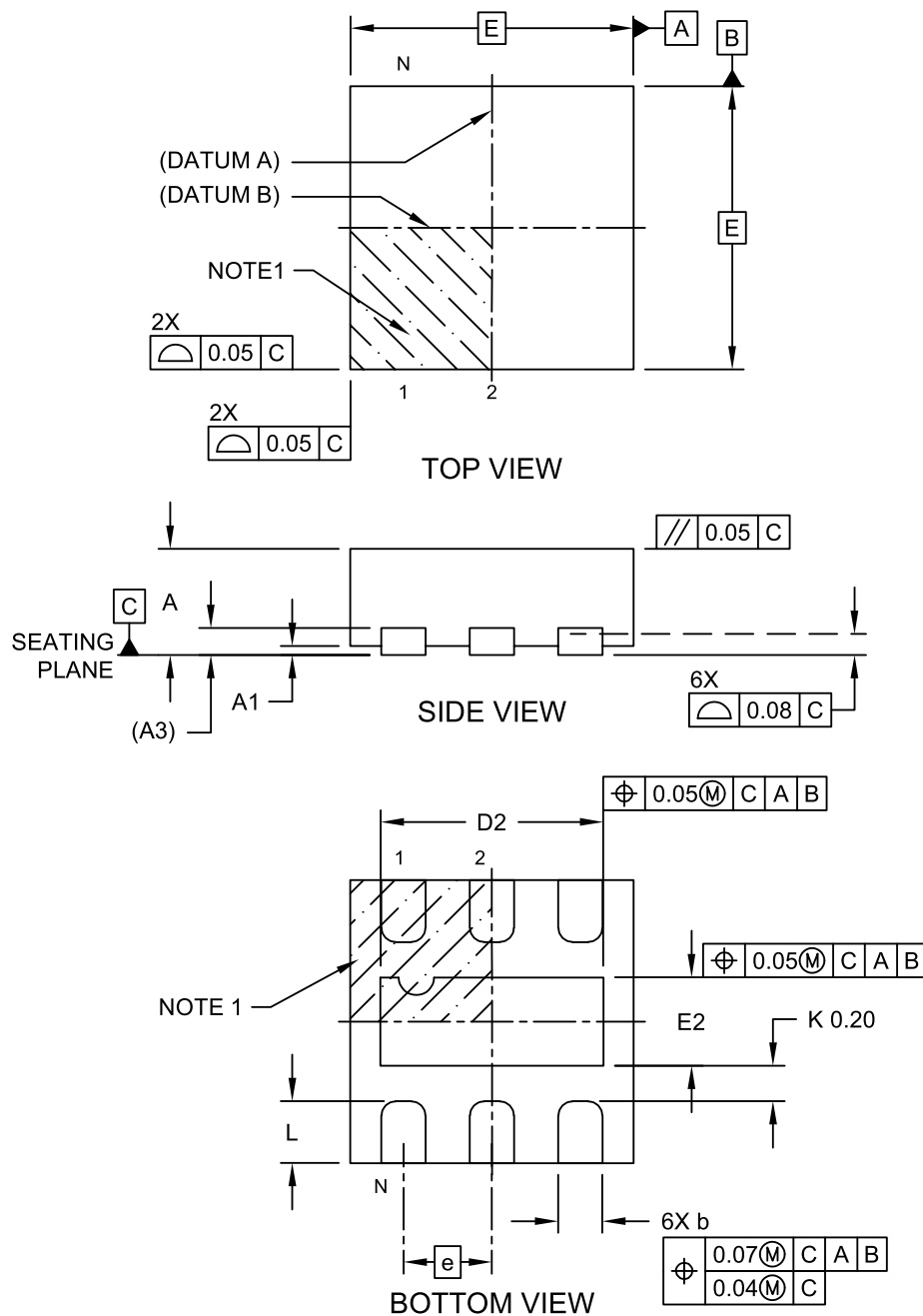
Note: In the event the full Microchip part number cannot be marked on one line, it will be carried over to the next line, thus limiting the number of available characters for customer-specific information. Package may or may not include the corporate logo.
Underbar (_) symbol may not be to scale.

Note: If the full seven-character YYWWNNN code cannot fit on the package, the following truncated codes are used based on the available marking space:
6 Characters = YWWNNN; 5 Characters = WWNNN; 4 Characters = WNNN; 3 Characters = NNN;
2 Characters = NN; 1 Character = N

6-Lead 1.6 mm x 1.6 mm UDFN Package Outline and Recommended Land Pattern

6-Lead Ultra Thin Plastic Dual Flat, No Lead (HKA) - 1.6x1.6x0.6 mm Body [UDFN] With 1.26x0.50 mm Exposed Pad; Micrel Legacy Package TDFN1616-6LD-PL-1

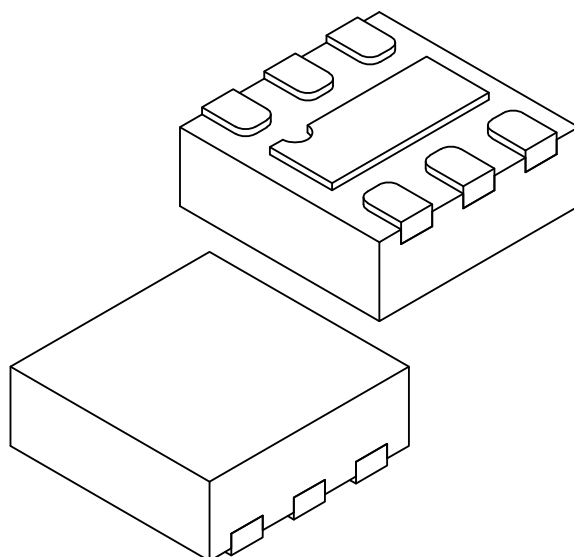
Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



Microchip Technology Drawing C04-1154 Rev A Sheet 1 of 2

6-Lead Ultra Thin Plastic Dual Flat, No Lead (HKA) - 1.6x1.6x0.6 mm Body [UDFN] With 1.26x0.50 mm Exposed Pad; Micrel Legacy Package TDFN1616-6LD-PL-1

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



Units		MILLIMETERS		
Dimension Limits		MIN	NOM	MAX
Number of Terminals	N	6		
Pitch	e	0.50 BSC		
Overall Height	A	0.50	0.55	0.60
Standoff	A1	0.00	0.02	0.05
Terminal Thickness	A3	0.152 REF		
Overall Length	D	1.60 BSC		
Exposed Pad Length	D2	1.21	1.26	1.31
Overall Width	E	1.60 BSC		
Exposed Pad Width	E2	0.45	0.50	0.55
Terminal Width	b	0.20	0.25	0.30
Terminal Length	L	0.30	0.35	0.40
Terminal-to-Exposed-Pad	K	0.20	—	—

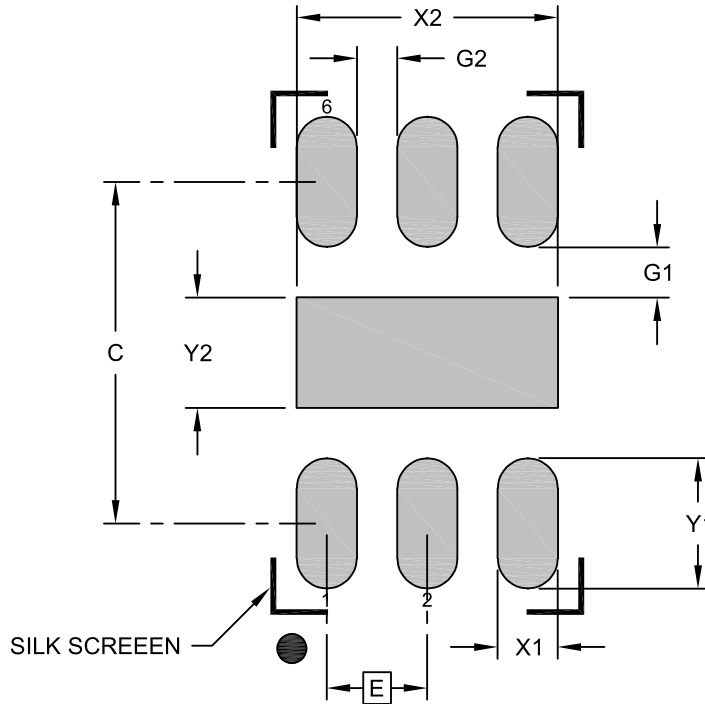
Notes:

- Pin 1 visual index feature may vary, but must be located within the hatched area.
- Package is saw singulated
- Dimensioning and tolerancing per ASME Y14.5M
 - BSC: Basic Dimension. Theoretically exact value shown without tolerances.
 - REF: Reference Dimension, usually without tolerance, for information purposes only.

Microchip Technology Drawing C04-1154 Rev A Sheet 2 of 2

6-Lead Ultra Thin Plastic Dual Flat, No Lead (HKA) - 1.6x1.6x0.6 mm Body [UDFN] With 1.26x0.50 mm Exposed Pad; Micrel Legacy Package TDFN1616-6LD-PL-1

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



RECOMMENDED LAND PATTERN

Units		MILLIMETERS		
Dimension Limits		MIN	NOM	MAX
Contact Pitch	E	0.50 BSC		
Center Pad Width	X2			1.30
Center Pad Length	Y2			0.55
Contact Pad Spacing	C		1.70	
Contact Pad Width (X6)	X1			0.30
Contact Pad Length (X6)	Y1			0.65
Contact Pad to Center Pad (X6)	G1	0.25		
Contact Pad to Contact Pad (X4)	G2	0.20		

Notes:

1. Dimensioning and tolerancing per ASME Y14.5M
BSC: Basic Dimension. Theoretically exact value shown without tolerances.

Microchip Technology Drawing C04-3154 Rev A

APPENDIX A: REVISION HISTORY

Revision A (April 2022)

- Converted Micrel document MIC826 to Microchip data sheet DS20006668A.
- Minor text changes throughout.

MIC826

NOTES:

PRODUCT IDENTIFICATION SYSTEM

To order or obtain information, e.g., on pricing or delivery, contact your local Microchip representative or sales office.

<u>Part Number</u>	<u>X</u>	<u>X</u>	<u>XX</u>	<u>-XX</u>	Examples:
Device	Nominal Threshold Voltage	Temp. Range	Package	Media Type	
Device: MIC826: Voltage Supervisor with Watchdog Timer, Manual Reset, and Dual Outputs Nominal Threshold Voltage: L = 4.625 M = 4.375 T = 3.075 S = 2.925 R = 2.625 Z = 2.315 Y = 2.188 W = 1.665 Temperature Range: Y = -40°C to +125°C Package: MT = 6-Lead 1.6 mm x 1.6 mm UDFN Media Type: TR = 5,000/Reel T5 = 500/Reel					a) MIC826LYMT-TR: MIC826, 4.625 Nom. Threshold Voltage, -40°C to +125°C Temp. Range, 6-Lead UDFN, 5,000/Reel b) MIC826MYMT-T5: MIC826, 4.375 Nom. Threshold Voltage, -40°C to +125°C Temp. Range, 6-Lead UDFN, 500/Reel c) MIC826TYMT-TR: MIC826, 3.075 Nom. Threshold Voltage, -40°C to +125°C Temp. Range, 6-Lead UDFN, 5,000/Reel d) MIC826SYMT-T5: MIC826, 2.925 Nom. Threshold Voltage, -40°C to +125°C Temp. Range, 6-Lead UDFN, 500/Reel e) MIC826RYMT-TR: MIC826, 2.625 Nom. Threshold Voltage, -40°C to +125°C Temp. Range, 6-Lead UDFN, 5,000/Reel f) MIC826ZYMT-T5: MIC826, 2.315 Nom. Threshold Voltage, -40°C to +125°C Temp. Range, 6-Lead UDFN, 500/Reel g) MIC826YYMT-TR: MIC826, 2.188 Nom. Threshold Voltage, -40°C to +125°C Temp. Range, 6-Lead UDFN, 5,000/Reel h) MIC826WYMT-T5: MIC826, 1.665 Nom. Threshold Voltage, -40°C to +125°C Temp. Range, 6-Lead UDFN, 500/Reel Note 1: Tape and Reel identifier only appears in the catalog part number description. This identifier is used for ordering purposes and is not printed on the device package. Check with your Microchip Sales Office for package availability with the Tape and Reel option.

MIC826

NOTES:

Note the following details of the code protection feature on Microchip products:

- Microchip products meet the specifications contained in their particular Microchip Data Sheet.
 - Microchip believes that its family of products is secure when used in the intended manner, within operating specifications, and under normal conditions.
 - Microchip values and aggressively protects its intellectual property rights. Attempts to breach the code protection features of Microchip product is strictly prohibited and may violate the Digital Millennium Copyright Act.
 - Neither Microchip nor any other semiconductor manufacturer can guarantee the security of its code. Code protection does not mean that we are guaranteeing the product is “unbreakable”. Code protection is constantly evolving. Microchip is committed to continuously improving the code protection features of our products.
-

This publication and the information herein may be used only with Microchip products, including to design, test, and integrate Microchip products with your application. Use of this information in any other manner violates these terms. Information regarding device applications is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. Contact your local Microchip sales office for additional support or, obtain additional support at <https://www.microchip.com/en-us/support/design-help/client-support-services>.

THIS INFORMATION IS PROVIDED BY MICROCHIP “AS IS”. MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTIES RELATED TO ITS CONDITION, QUALITY, OR PERFORMANCE.

IN NO EVENT WILL MICROCHIP BE LIABLE FOR ANY INDIRECT, SPECIAL, PUNITIVE, INCIDENTAL, OR CONSEQUENTIAL LOSS, DAMAGE, COST, OR EXPENSE OF ANY KIND WHATSOEVER RELATED TO THE INFORMATION OR ITS USE, HOWEVER CAUSED, EVEN IF MICROCHIP HAS BEEN ADVISED OF THE POSSIBILITY OR THE DAMAGES ARE FORESEEABLE. TO THE FULLEST EXTENT ALLOWED BY LAW, MICROCHIP’S TOTAL LIABILITY ON ALL CLAIMS IN ANY WAY RELATED TO THE INFORMATION OR ITS USE WILL NOT EXCEED THE AMOUNT OF FEES, IF ANY, THAT YOU HAVE PAID DIRECTLY TO MICROCHIP FOR THE INFORMATION.

Use of Microchip devices in life support and/or safety applications is entirely at the buyer’s risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights unless otherwise stated.

For information regarding Microchip’s Quality Management Systems, please visit www.microchip.com/quality.

Trademarks

The Microchip name and logo, the Microchip logo, Adaptec, AnyRate, AVR, AVR logo, AVR Freaks, BesTime, BitCloud, CryptoMemory, CryptoRF, dsPIC, flexPWR, HELDO, IGLOO, JukeBlox, KeeLoq, Klear, LANCheck, LinkMD, maxStylus, maxTouch, MediaLB, megaAVR, Microsemi, Microsemi logo, MOST, MOST logo, MPLAB, OptoLyzer, PIC, picoPower, PICSTART, PIC32 logo, PolarFire, Prochip Designer, QTouch, SAM-BA, SenGenuity, SpyNIC, SST, SST Logo, SuperFlash, Symmetricom, SyncServer, Tachyon, TimeSource, tinyAVR, UNI/O, Vectron, and XMEGA are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

AgileSwitch, APT, ClockWorks, The Embedded Control Solutions Company, EtherSynch, Flashtec, Hyper Speed Control, HyperLight Load, IntelliMOS, Libero, motorBench, mTouch, Powermite 3, Precision Edge, ProASIC, ProASIC Plus, ProASIC Plus logo, QuietWire, SmartFusion, SyncWorld, Temux, TimeCesium, TimeHub, TimePictra, TimeProvider, TrueTime, WinPath, and ZL are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Adjacent Key Suppression, AKS, Analog-for-the-Digital Age, Any Capacitor, AnyIn, AnyOut, Augmented Switching, BlueSky, BodyCom, CodeGuard, CryptoAuthentication, CryptoAutomotive, CryptoCompanion, CryptoController, dsPICDEM, dsPICDEM.net, Dynamic Average Matching, DAM, ECAN, Espresso T1S, EtherGREEN, GridTime, IdealBridge, In-Circuit Serial Programming, ICSP, INICnet, Intelligent Paralleling, Inter-Chip Connectivity, JitterBlocker, Knob-on-Display, maxCrypto, maxView, memBrain, Mindi, MiWi, MPASM, MPF, MPLAB Certified logo, MPLIB, MPLINK, MultiTRAK, NetDetach, NVm Express, NVMe, Omniscient Code Generation, PICDEM, PICDEM.net, PICKit, PICTail, PowerSmart, PureSilicon, QMatrix, REAL ICE, Ripple Blocker, RTAX, RTG4, SAM-ICE, Serial Quad I/O, simpleMAP, SimpliPHY, SmartBuffer, SmartHLS, SMART-I.S., storClad, SQL, SuperSwitcher, SuperSwitcher II, Switchtec, SynchroPHY, Total Endurance, TSHARC, USBCheck, VariSense, VectorBlox, VeriPHY, ViewSpan, WiperLock, XpressConnect, and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

The Adaptec logo, Frequency on Demand, Silicon Storage Technology, Symmcom, and Trusted Time are registered trademarks of Microchip Technology Inc. in other countries.

GestIC is a registered trademark of Microchip Technology Germany II GmbH & Co. KG, a subsidiary of Microchip Technology Inc., in other countries.

All other trademarks mentioned herein are property of their respective companies.

© 2022, Microchip Technology Incorporated and its subsidiaries.

All Rights Reserved.

ISBN: 978-1-6683-0272-9

Worldwide Sales and Service

AMERICAS

Corporate Office
2355 West Chandler Blvd.
Chandler, AZ 85224-6199
Tel: 480-792-7200
Fax: 480-792-7277
Technical Support:
<http://www.microchip.com/support>
Web Address:
www.microchip.com

Atlanta
Duluth, GA
Tel: 678-957-9614
Fax: 678-957-1455

Austin, TX
Tel: 512-257-3370

Boston
Westborough, MA
Tel: 774-760-0087
Fax: 774-760-0088

Chicago
Itasca, IL
Tel: 630-285-0071
Fax: 630-285-0075

Dallas
Addison, TX
Tel: 972-818-7423
Fax: 972-818-2924

Detroit
Novi, MI
Tel: 248-848-4000

Houston, TX
Tel: 281-894-5983

Indianapolis
Noblesville, IN
Tel: 317-773-8323
Fax: 317-773-5453
Tel: 317-536-2380

Los Angeles
Mission Viejo, CA
Tel: 949-462-9523
Fax: 949-462-9608
Tel: 951-273-7800

Raleigh, NC
Tel: 919-844-7510

New York, NY
Tel: 631-435-6000

San Jose, CA
Tel: 408-735-9110
Tel: 408-436-4270

Canada - Toronto
Tel: 905-695-1980
Fax: 905-695-2078

ASIA/PACIFIC

Australia - Sydney
Tel: 61-2-9868-6733

China - Beijing
Tel: 86-10-8569-7000

China - Chengdu
Tel: 86-28-8665-5511

China - Chongqing
Tel: 86-23-8980-9588

China - Dongguan
Tel: 86-769-8702-9880

China - Guangzhou
Tel: 86-20-8755-8029

China - Hangzhou
Tel: 86-571-8792-8115

China - Hong Kong SAR
Tel: 852-2943-5100

China - Nanjing
Tel: 86-25-8473-2460

China - Qingdao
Tel: 86-532-8502-7355

China - Shanghai
Tel: 86-21-3326-8000

China - Shenyang
Tel: 86-24-2334-2829

China - Shenzhen
Tel: 86-755-8864-2200

China - Suzhou
Tel: 86-186-6233-1526

China - Wuhan
Tel: 86-27-5980-5300

China - Xian
Tel: 86-29-8833-7252

China - Xiamen
Tel: 86-592-2388138

China - Zhuhai
Tel: 86-756-3210040

ASIA/PACIFIC

India - Bangalore
Tel: 91-80-3090-4444

India - New Delhi
Tel: 91-11-4160-8631

India - Pune
Tel: 91-20-4121-0141

Japan - Osaka
Tel: 81-6-6152-7160

Japan - Tokyo
Tel: 81-3-6880-3770

Korea - Daegu
Tel: 82-53-744-4301

Korea - Seoul
Tel: 82-2-554-7200

Malaysia - Kuala Lumpur
Tel: 60-3-7651-7906

Malaysia - Penang
Tel: 60-4-227-8870

Philippines - Manila
Tel: 63-2-634-9065

Singapore
Tel: 65-6334-8870

Taiwan - Hsin Chu
Tel: 886-3-577-8366

Taiwan - Kaohsiung
Tel: 886-7-213-7830

Taiwan - Taipei
Tel: 886-2-2508-8600

Thailand - Bangkok
Tel: 66-2-694-1351

Vietnam - Ho Chi Minh
Tel: 84-28-5448-2100

EUROPE

Austria - Wels
Tel: 43-7242-2244-39
Fax: 43-7242-2244-393

Denmark - Copenhagen
Tel: 45-4485-5910
Fax: 45-4485-2829

Finland - Espoo
Tel: 358-9-4520-820

France - Paris
Tel: 33-1-69-53-63-20
Fax: 33-1-69-30-90-79

Germany - Garching
Tel: 49-8931-9700

Germany - Haan
Tel: 49-2129-3766400

Germany - Heilbronn
Tel: 49-7131-72400

Germany - Karlsruhe
Tel: 49-721-625370

Germany - Munich
Tel: 49-89-627-144-0
Fax: 49-89-627-144-44

Germany - Rosenheim
Tel: 49-8031-354-560

Israel - Ra'anana
Tel: 972-9-744-7705

Italy - Milan
Tel: 39-0331-742611
Fax: 39-0331-466781

Italy - Padova
Tel: 39-049-7625286

Netherlands - Drunen
Tel: 31-416-690399
Fax: 31-416-690340

Norway - Trondheim
Tel: 47-7288-4388

Poland - Warsaw
Tel: 48-22-3325737

Romania - Bucharest
Tel: 40-21-407-87-50

Spain - Madrid
Tel: 34-91-708-08-90
Fax: 34-91-708-08-91

Sweden - Gothenberg
Tel: 46-31-704-60-40

Sweden - Stockholm
Tel: 46-8-5090-4654

UK - Wokingham
Tel: 44-118-921-5800
Fax: 44-118-921-5820