

1.0 ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings*

Input Voltage 6.5V
 Output Voltage ($V_{SS} - 0.3$) to ($V_{IN} + 0.3$)
 Power Dissipation Internally Limited (**Note 6**)
 Operating Junction Temperature, T_J $-40^{\circ}\text{C} < T_J < 150^{\circ}\text{C}$
 Maximum Junction Temperature, T_J 150°C
 Storage Temperature -65°C to $+150^{\circ}\text{C}$
 Maximum Voltage on Any Pin ($V_{SS}-0.3$) to ($V_{IN}+0.3$)

***Notice:** Stresses above those listed under "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 listings of this specification is not implied. Exposure to maximum rating conditions for extended periods may affect device reliability.

PIN DESCRIPTIONS

Pin	Description
$\overline{\text{RESET}}$	$\overline{\text{RESET}}$ output remains low while V_{DET} is below the reset voltage threshold and for 300 msec after V_{DET} rises above reset threshold.
V_{OUT}	Regulated Voltage Output
GND	Ground Terminal
Bypass	Reference Bypass Input. Connecting an optional 470 pF to this input further reduces output noise.
$\overline{\text{SHDN}}$	Shutdown Control Input. The regulator is fully enabled when a logic high is applied to this input. The regulator enters shutdown when a logic low is applied to this input. During shutdown, regulator output voltage falls to zero, $\overline{\text{RESET}}$ output remains valid and supply current is reduced to 30 μA (typ.).
NC	No connect
V_{IN}	Power Supply Input
V_{DET}	Detected Input Voltage. V_{DET} and V_{IN} can be connected together.

ELECTRICAL CHARACTERISTICS

$V_{\text{IN}} = V_{\text{OUT}} + 1\text{V}$, $I_L = 0.1\text{ mA}$, $C_L = 3.3\text{ }\mu\text{F}$, $\overline{\text{SHDN}} > V_{\text{IH}}$, $T_A = 25^{\circ}\text{C}$, unless otherwise noted. **BOLDFACE** type specifications apply for junction temperature (**Note 8**) of -40°C to $+125^{\circ}\text{C}$.

Parameters	Sym	Min	Typ	Max	Units	Conditions
Input Operating Voltage	V_{IN}	2.7	—	6.0	V	Note 7
Maximum Output Current	I_{OUTMAX}	300	—	—	mA	
Output Voltage	V_{OUT}	— $V_R - 2.5\%$	$V_R \pm 0.5\%$ —	— $V_R + 2.5\%$	V	Note 1
V_{OUT} Temperature Coefficient	$\Delta V_{\text{OUT}}/\Delta T$	—	25	—	ppm/ $^{\circ}\text{C}$	Note 2
Line Regulation	$\Delta V_{\text{OUT}}/\Delta V_{\text{IN}}$	—	0.02	0.35	%	$(V_R + 1\text{V}) \leq V_{\text{IN}} \leq 6\text{V}$
Load Regulation	$\Delta V_{\text{OUT}}/I_{\text{OUT}}$	—	0.5	2.0	%	$I_L = 0.1\text{ mA}$ to I_{OUTMAX} , Note 3

Note 1: V_R is the regulator output voltage setting.

$$\text{2: } TCV_{\text{OUT}} = \frac{(V_{\text{OUTMAX}} - V_{\text{OUTMIN}}) \times 10^6}{V_{\text{OUT}} \times \Delta T}$$

- Regulation is measured at a constant junction temperature using low duty cycle pulse testing. Load regulation is tested over a load range from 0.1 mA to the maximum specified output current. Changes in output voltage due to heating effects are covered by the thermal regulation specification.
- Dropout voltage is defined as the input to output differential at which the output voltage drops 2% below its nominal value measured at a 1V differential.
- Thermal Regulation is defined as the change in output voltage at a time t after a change in power dissipation is applied, excluding load or line regulation effects. Specifications are for a current pulse equal to $I_{L\text{MAX}}$ at $V_{\text{IN}} = 6\text{V}$ for $t = 10\text{ msec}$.
- 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 causes the device to initiate thermal shutdown. Please see Section 4.0, "Thermal Considerations", of this data sheet for more details.
- The minimum V_{IN} has to meet two conditions: $V_{\text{IN}} \geq 2.7\text{V}$ and $V_{\text{IN}} \geq (V_R + V_{\text{DROPOUT}})$.
- The junction temperature of the device is approximated by soaking the device under test at an ambient temperature equal to the desired junction temperature. The test time is small enough such that the rise in the junction temperature over the ambient temperature is not significant.

ELECTRICAL CHARACTERISTICS (CONTINUED)

$V_{IN} = V_{OUT} + 1V$, $I_L = 0.1\text{ mA}$, $C_L = 3.3\text{ }\mu\text{F}$, $\overline{\text{SHDN}} > V_{IH}$, $T_A = 25^\circ\text{C}$, unless otherwise noted. BOLDFACE type specifications apply for junction temperature (Note 8) of -40°C to $+125^\circ\text{C}$.						
Parameters	Sym	Min	Typ	Max	Units	Conditions
Dropout Voltage (Note 4)	$V_{IN} - V_{OUT}$	—	1 70 210	30 130 390	mV	$I_L = 0.1\text{ mA}$ $I_L = 100\text{ mA}$ $I_L = 300\text{ mA}$
Supply Current	I_{SS1}	—	80	160	μA	$\overline{\text{SHDN}} = V_{IH}$
Shutdown Supply Current	I_{SS2}	—	30	60	μA	$\overline{\text{SHDN}} = 0V$
Power Supply Rejection Ratio	PSRR	—	60	—	dB	$f \leq 1\text{ kHz}$, $C_{BYPASS} = 1\text{ nF}$
Output Short Circuit Current	I_{OUTSC}	—	800	1200	mA	$V_{OUT} = 0V$
Thermal Regulation	$\Delta V_{OUT}/\Delta P_D$	—	0.04	—	%/W	Note 5
Output Noise	eN	—	900	—	nV/Hz	$f < 1\text{ kHz}$, $C_{OUT} = 1\text{ }\mu\text{F}$, $R_{LOAD} = 50\text{ }\Omega$, $C_{BYPASS} = 1\text{ nF}$
Wake-Up Time (from Shutdown Mode)	t_{WK}	—	10	20	μsec	$C_{IN} = 1\text{ }\mu\text{F}$, $V_{IN} = 5V$, $C_{OUT} = 4.7\text{ }\mu\text{F}$, $I_L = 30\text{ mA}$, See Figure 3-2
Settling Time (from Shutdown Mode)	t_s	—	50	—	μsec	$C_{IN} = 1\text{ }\mu\text{F}$, $V_{IN} = 5V$ $C_{OUT} = 4.7\text{ }\mu\text{F}$ $I_L = 30\text{ mA}$, See Figure 3-2
Thermal Shutdown Die Temperature	T_{SD}	—	150	—	$^\circ\text{C}$	
Thermal Shutdown Hysteresis	T_{HYS}	—	10	—	$^\circ\text{C}$	
Thermal Resistance Junction to Case	$R_{\theta JA}$	—	200	—	$^\circ\text{C/Watt}$	EIA/JEDEC JESD51-751-7 4-Layer Board
$\overline{\text{SHDN}}$ Input High Threshold	V_{IH}	45	—	—	% V_{IN}	$V_{IN} = 2.5V$ to $6.0V$
$\overline{\text{SHDN}}$ Input Low Threshold	V_{IL}	—	—	15	% V_{IN}	$V_{IN} = 2.5V$ to $6.0V$

Note 1: V_R is the regulator output voltage setting.

$$2: TC V_{OUT} = \frac{(V_{OUTMAX} - V_{OUTMIN}) \times 10^6}{V_{OUT} \times \Delta T}$$

- Regulation is measured at a constant junction temperature using low duty cycle pulse testing. Load regulation is tested over a load range from 0.1 mA to the maximum specified output current. Changes in output voltage due to heating effects are covered by the thermal regulation specification.
- Dropout voltage is defined as the input to output differential at which the output voltage drops 2% below its nominal value measured at a 1V differential.
- Thermal Regulation is defined as the change in output voltage at a time t after a change in power dissipation is applied, excluding load or line regulation effects. Specifications are for a current pulse equal to I_{LMAX} at $V_{IN} = 6V$ for $t = 10\text{ msec}$.
- 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 causes the device to initiate thermal shutdown. Please see Section 4.0, "Thermal Considerations", of this data sheet for more details.
- The minimum V_{IN} has to meet two conditions: $V_{IN} \geq 2.7V$ and $V_{IN} \geq (V_R + V_{DROPOUT})$.
- The junction temperature of the device is approximated by soaking the device under test at an ambient temperature equal to the desired junction temperature. The test time is small enough such that the rise in the junction temperature over the ambient temperature is not significant.

ELECTRICAL CHARACTERISTICS (CONTINUED)

$V_{IN} = V_{OUT} + 1V$, $I_L = 0.1\text{ mA}$, $C_L = 3.3\text{ }\mu\text{F}$, $\overline{\text{SHDN}} > V_{IH}$, $T_A = 25^\circ\text{C}$, unless otherwise noted. BOLDFACE type specifications apply for junction temperature (Note 8) of -40°C to $+125^\circ\text{C}$.						
Parameters	Sym	Min	Typ	Max	Units	Conditions
RESET Output						
Voltage Range	V_{DET}	1.0 1.2	—	6.0 6.0	V	$T_A = 0^\circ\text{C}$ to $+70^\circ\text{C}$ $T_A = -40^\circ\text{C}$ to $+125^\circ\text{C}$
Reset Threshold	V_{TH}	2.59	2.63	2.66	V	TC1300R-XX, $T_A = +25^\circ\text{C}$
		2.55	—	2.70		TC1300R-XX, $T_A = -40^\circ\text{C}$ to $+125^\circ\text{C}$
		2.36	2.40	2.43		TC1300Y-XX, $T_A = +25^\circ\text{C}$
		2.32	—	2.47		TC1300Y-XX, $T_A = -40^\circ\text{C}$ to $+125^\circ\text{C}$
Reset Threshold Tempco	$\Delta V_{TH} / \Delta T$	—	30	—	ppm/ $^\circ\text{C}$	
V_{DET} to Reset Delay	t_{RPD}	—	160	—	μsec	$V_{DET} = V_{TH}$ to $(V_{TH} - 100\text{ mV})$
Reset Active Timeout Period	t_{RPU}	140	300	560	msec	
RESET Output Voltage Low	V_{OL}	—	—	0.3	V	$V_{DET} = V_{TH\text{ min}}$, $I_{SINK} = 1.2\text{ mA}$
RESET Output Voltage High	V_{OH}	$0.8 V_{DET}$	—	—	V	$V_{DET} > V_{TH\text{ max}}$, $I_{SOURCE} = 500\text{ }\mu\text{A}$

Note 1: V_R is the regulator output voltage setting.

$$2: \quad TCV_{OUT} = \frac{(V_{OUTMAX} - V_{OUTMIN}) \times 10^6}{V_{OUT} \times \Delta T}$$

- Regulation is measured at a constant junction temperature using low duty cycle pulse testing. Load regulation is tested over a load range from 0.1 mA to the maximum specified output current. Changes in output voltage due to heating effects are covered by the thermal regulation specification.
- Dropout voltage is defined as the input to output differential at which the output voltage drops 2% below its nominal value measured at a 1V differential.
- Thermal Regulation is defined as the change in output voltage at a time t after a change in power dissipation is applied, excluding load or line regulation effects. Specifications are for a current pulse equal to I_{LMAX} at $V_{IN} = 6V$ for $t = 10\text{ msec}$.
- 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 causes the device to initiate thermal shutdown. Please see Section 4.0, "Thermal Considerations", of this data sheet for more details.
- The minimum V_{IN} has to meet two conditions: $V_{IN} \geq 2.7V$ and $V_{IN} \geq (V_R + V_{DROPOUT})$.
- The junction temperature of the device is approximated by soaking the device under test at an ambient temperature equal to the desired junction temperature. The test time is small enough such that the rise in the junction temperature over the ambient temperature is not significant.

2.0 TYPICAL CHARACTERISTICS

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.

Junction temperature (T_J) is approximated by soaking the device under test at an ambient temperature equal to the desired Junction temperature. The test time is small enough such that the rise in the Junction temperature over the Ambient temperature is not significant.

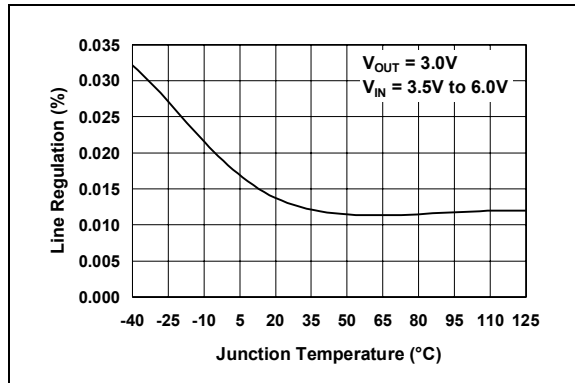


FIGURE 2-1: Line Regulation vs. Temperature.

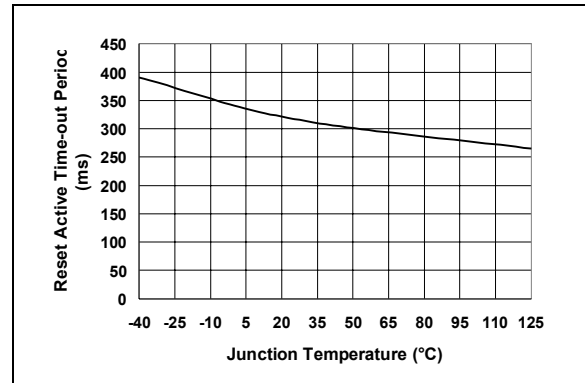


FIGURE 2-4: Reset Active Time-out Period vs. Temperature.

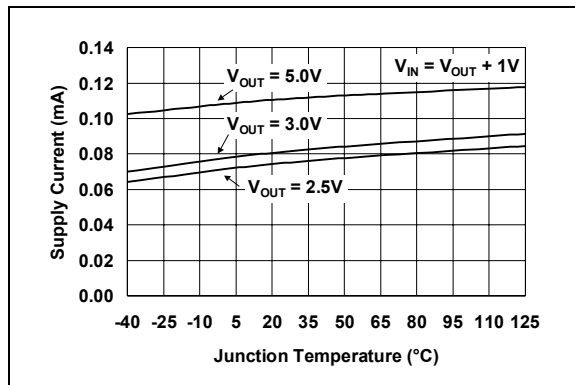


FIGURE 2-2: Supply Current vs. Temperature.

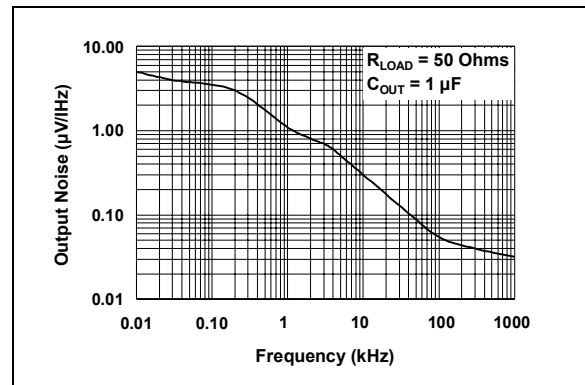


FIGURE 2-5: Output Noise vs. Frequency.

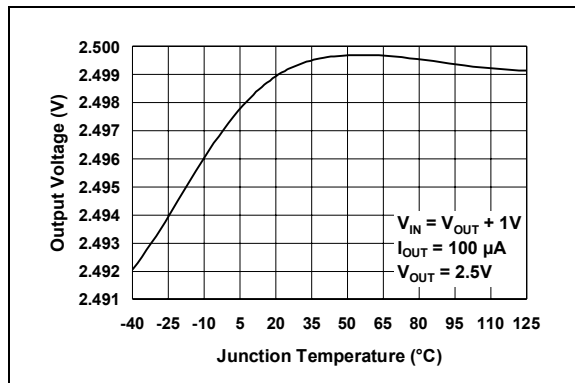


FIGURE 2-3: Normalized V_{OUT} vs. Temperature.

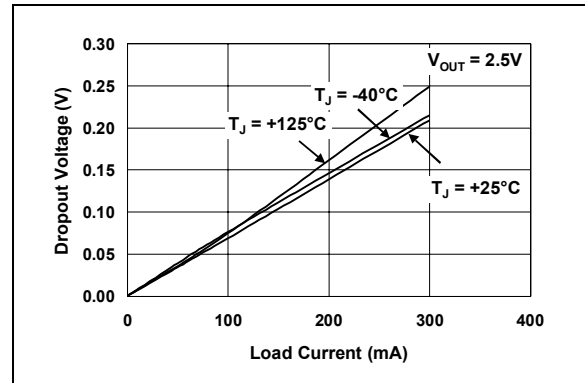


FIGURE 2-6: Dropout Voltage vs. Load Current (2.5V).

2.0 TYPICAL CHARACTERISTICS (CON'T)

Junction temperature (T_J) is approximated by soaking the device under test at an ambient temperature equal to the desired Junction temperature. The test time is small enough such that the rise in the Junction temperature over the Ambient temperature is not significant.

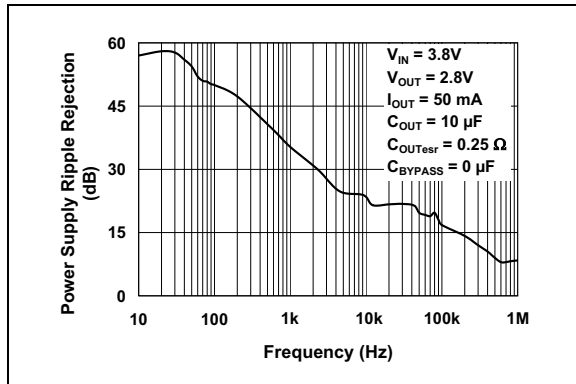


FIGURE 2-7: Power Supply Rejection Ratio vs. Frequency.

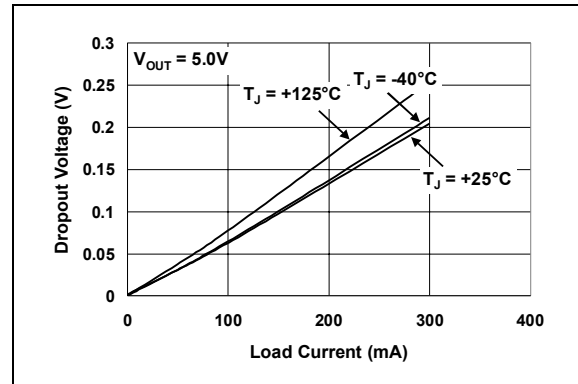


FIGURE 2-10: Dropout Voltage vs. Load Current (5.0V).

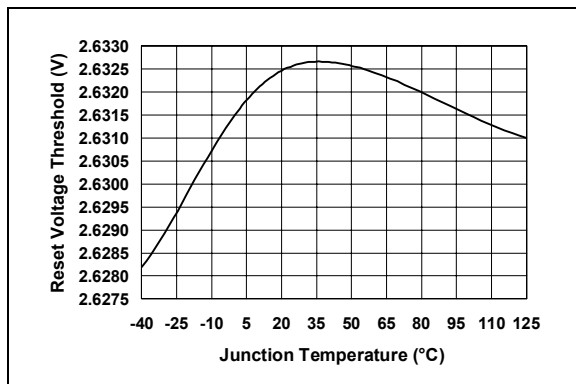


FIGURE 2-8: Reset Voltage Threshold vs. Junction Temperature.

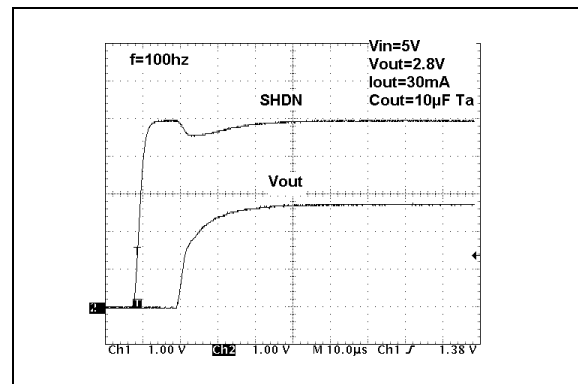


FIGURE 2-11: Wake-Up Response Time.

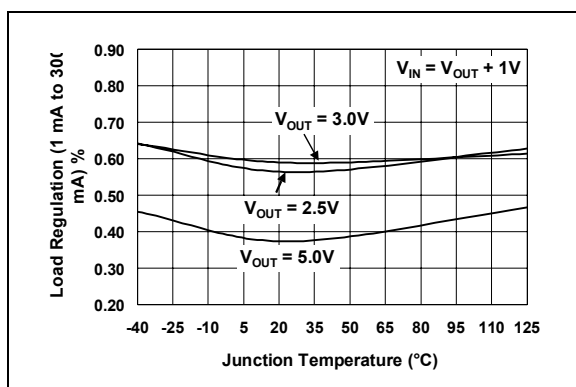


FIGURE 2-9: Load Regulation vs. Temperature.

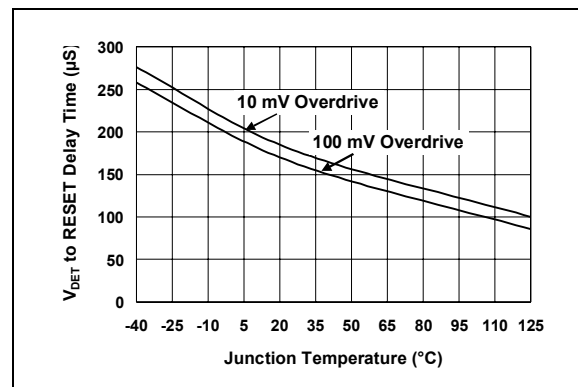


FIGURE 2-12: V_{DET} to Reset Delay vs. Temperature.

2.0 TYPICAL CHARACTERISTICS (CON'T)

Junction temperature (T_J) is approximated by soaking the device under test at an ambient temperature equal to the desired Junction temperature. The test time is small enough such that the rise in the Junction temperature over the Ambient temperature is not significant.

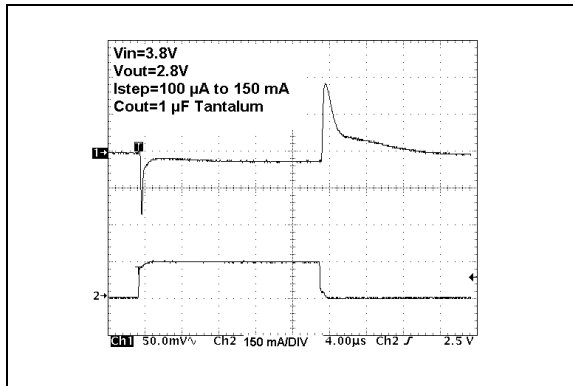


FIGURE 2-13: Load Transient Response
1 μ F Output Capacitor.

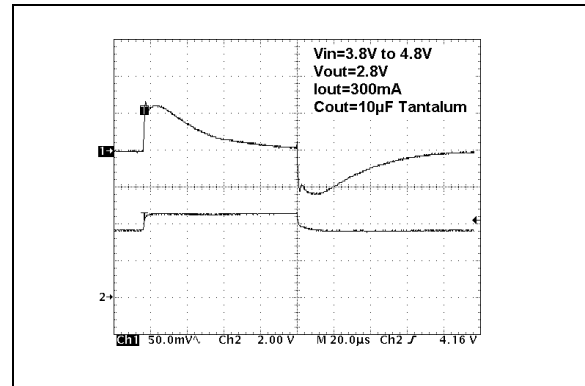


FIGURE 2-16: Line Transient Response
10 μ F Output Capacitor.

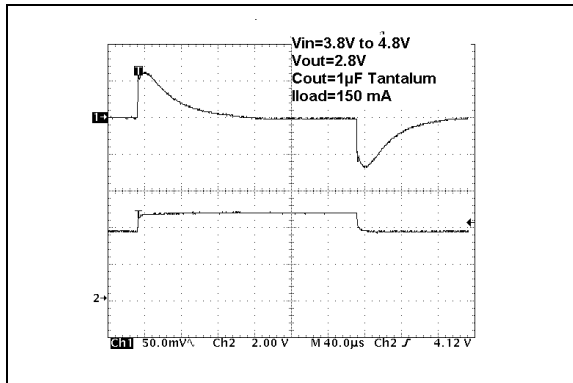


FIGURE 2-14: Line Transient Response
1 μ F Output Capacitor.

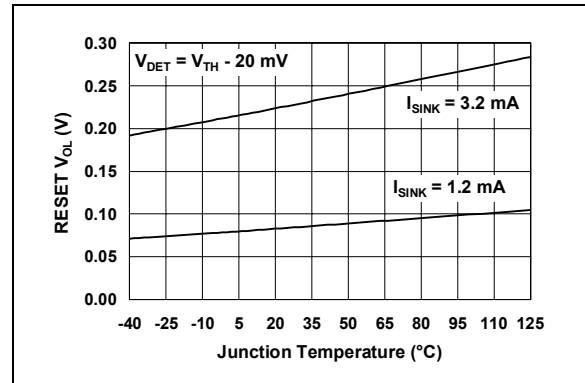


FIGURE 2-17: RESET Output Voltage Low
vs. Junction Temperature.

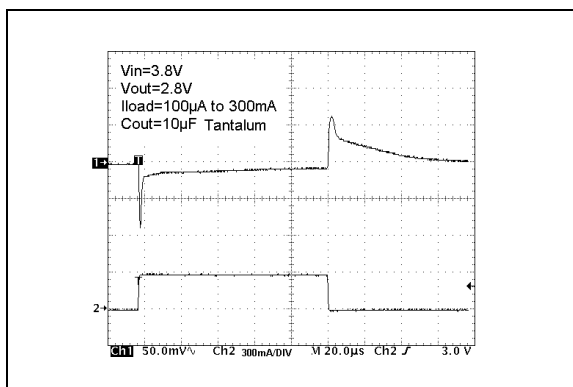


FIGURE 2-15: Load Transient Response
10 μ F Output Capacitor.

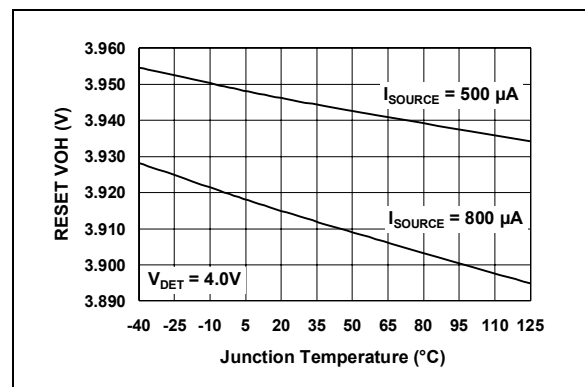


FIGURE 2-18: RESET Output Voltage High
vs. Junction Temperature.

3.0 DETAILED DESCRIPTION

The TC1300 is a combination of a fixed output, low dropout regulator and a microcontroller monitor/RESET. Unlike bipolar regulators, the TC1300 supply current does not increase with load current. In addition, V_{OUT} remains stable and within regulation over the entire specified operating load range (0 mA to 300 mA) and operating input voltage range (2.7V to 6.0V).

Figure 3-1 shows a typical application circuit. The regulator is enabled any time the shutdown input (SHDN) is above V_{IH} . The regulator is shutdown (disabled) when SHDN is at or below V_{IL} . SHDN may be controlled by a CMOS logic gate or an I/O port of a microcontroller. If the SHDN input is not required, it should be connected directly to the input supply. While in shutdown, supply current decreases to 30 μ A (typical), V_{OUT} falls to zero and RESET remains valid.

3.1 RESET Output

The RESET output is driven active-low within 160 μ sec of V_{DET} falling through the reset voltage threshold. RESET is maintained active for a minimum of 140 msec after V_{DET} rises above the reset threshold. The TC1300 has an active-low RESET output. The output of the TC1300 is valid down to $V_{DET} = 1V$ and is optimized to reject fast transient glitches on the V_{DET} line.

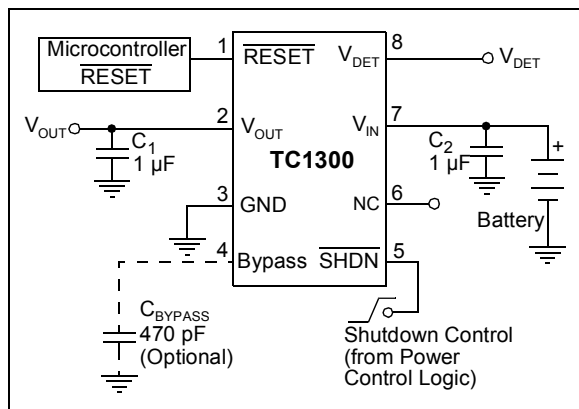


FIGURE 3-1: Typical Application Circuit.

3.2 Output Capacitor

A 1 μ F (min) capacitor from V_{OUT} to ground is required. A 1 μ F capacitor should also be connected from V_{IN} to GND if there is more than 10 inches of wire between the regulator and the AC filter capacitor, or if a battery is used as the power source. As with all low dropout regulators, a minimum output capacitance is required to stabilize the output voltage. For the TC1300, a minimum of 1 μ F of output capacitance is enough to stabilize the device over the entire operating load and line range. The selected output capacitor plays an important role in compensating the LDO regulator. For the

TC1300, the selected output capacitor equivalent series resistance (ESR) range is 0.1 ohms to 5 ohms when using 1 μ F of output capacitance, and 0.01 ohms to 5 ohms when using 10 μ F of output capacitance. Because of the ESR requirement, tantalum and aluminum electrolytic capacitors are recommended. Aluminum electrolytic capacitors are not recommended for operation at temperatures below -25°C. When operating from sources other than batteries, rejection and transient responses can be improved by increasing the value of the input and output capacitors and employing passive filtering techniques.

3.3 Bypass Input (Optional)

An optional 470 pF capacitor connected from the Bypass input to ground reduces noise present on the internal reference, which in turn significantly reduces output noise and improves PSRR performance. This input may be left unconnected. Larger capacitor values may be used, but results in a longer time period to rated output voltage when power is initially applied.

3.4 Turn On Response

The turn-on response is defined as two separate response categories, Wake-Up Time (t_{WK}) and Settling Time (t_S).

The TC1300 has a fast Wake-Up Time (10 μ sec typical) when released from shutdown. See Figure 3-2 for the Wake-Up Time designated as t_{WK} . The Wake-Up Time is defined as the time it takes for the output to rise to 2% of the V_{OUT} value after being released from shutdown.

The total turn-on response is defined as the Settling Time (t_S) (see Figure 3-2). Settling Time (inclusive with t_{WK}) is defined as the condition when the output is within 2% of its fully enabled value (50 μ sec typical) when released from shutdown. The settling time of the output voltage is dependent on load conditions and output capacitance on V_{OUT} (RC response).

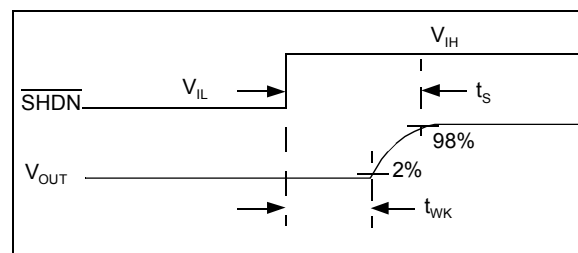


FIGURE 3-2: Wake-Up Response Time.

4.0 THERMAL CONSIDERATIONS

4.1 Thermal Shutdown

Integrated thermal protection circuitry shuts the regulator off when the die temperature exceeds 150°C. The regulator remains off until the die temperature drops to approximately 140°C.

4.2 Power Dissipation

The amount of power the regulator dissipates is primarily a function of input and output voltage, and output current. The following equation is used to calculate worst case *actual* power dissipation:

EQUATION

$$P_D \approx (V_{INMAX} - V_{OUTMIN}) I_{LOADMAX}$$

Where:

P_D = worst case actual power dissipation
 V_{INMAX} = maximum voltage on V_{IN}
 V_{OUTMIN} = minimum regulator output voltage
 $I_{LOADMAX}$ = maximum output (load) current

The maximum allowable power dissipation, P_{DMAX} , is a function of the maximum ambient temperature (T_{AMAX}), the maximum recommended die temperature (125°C) and the thermal resistance from junction-to-air (θ_{JA}). The MSOP-8 package has a θ_{JA} of approximately 200°C/Watt when mounted on a FR4 dielectric copper clad PC board.

EQUATION

$$P_{DMAX} = \frac{(T_{JMAX} - T_{AMAX})}{\theta_{JA}}$$

The worst case actual power dissipation equation can be used in conjunction with the LDO maximum allowable power dissipation equation to ensure regulator thermal operation is within limits. For example:

Given:

$$\begin{aligned} V_{INMAX} &= 4.1V \\ V_{OUTMIN} &= 3.0V - 2.5\% \\ I_{LOADMAX} &= 200 \text{ mA} \\ T_{JMAX} &= 125^\circ\text{C} \\ T_{AMAX} &= 55^\circ\text{C} \\ \theta_{JA} &= 200^\circ\text{C/W} \end{aligned}$$

Find:

EQUATION: ACTUAL POWER DISSIPATION

$$\begin{aligned} P_D &\approx (V_{INMAX} - V_{OUTMIN}) I_{LOADMAX} \\ &= [(4.1) - (3.0 \times .975)] 200 \times 10^{-3} \\ &= 220 \text{ mW} \end{aligned}$$

EQUATION: MAXIMUM ALLOWABLE POWER DISSIPATION

$$\begin{aligned} P_{DMAX} &= \frac{(T_{JMAX} - T_{AMAX})}{\theta_{JA}} \\ &= \frac{(125 - 55)}{200} \\ &= 350 \text{ mW} \end{aligned}$$

In this example, the TC1300 dissipates a maximum of only 220 mW; below the allowable limit of 350 mW. In a similar manner, the maximum actual power dissipation equation and the maximum allowable power dissipation equation can be used to calculate maximum current and/or input voltage limits. For example, the maximum allowable V_{IN} is found by substituting the maximum allowable power dissipation of 350 mW into the actual power dissipation equation, from which $V_{INMAX} = 4.97V$.

4.3 Layout Considerations

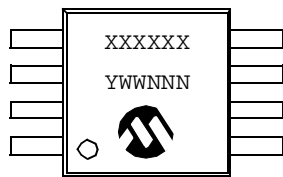
The primary path of heat conduction out of the package is via the package leads. Therefore, layouts having a ground plane, wide traces at the pads and wide power supply bus lines combine to lower θ_{JA} and, therefore, increase the maximum allowable power dissipation limit.

TC1300

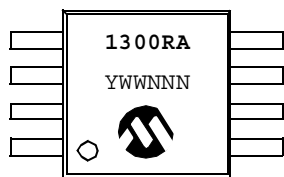
5.0 PACKAGING INFORMATION

5.1 Package Marking Information

8-Lead MSOP



Example:

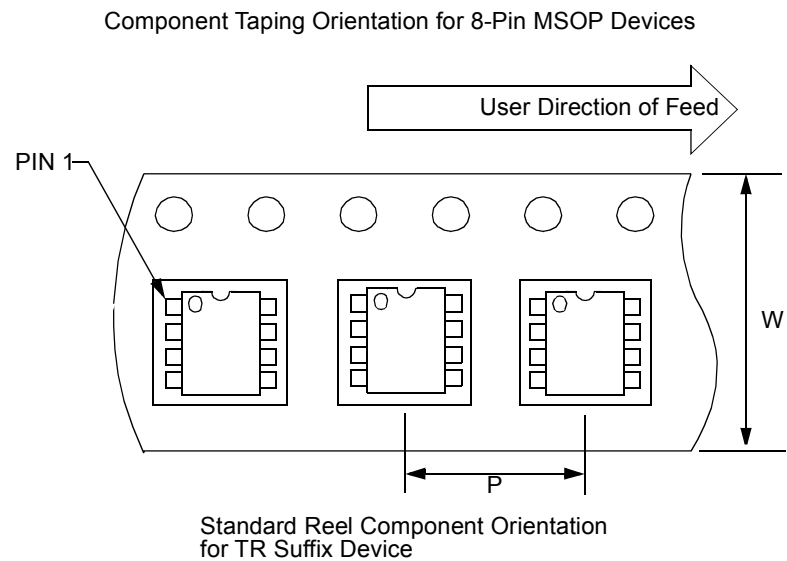


Part Number	Marking Code (XXXXXX)
TC1300R - 2.5VUA	1300RA
TC1300Y - 2.7VUA	1300YF
TC1300R - 2.8VUA	1300RB
TC1300R - 2.85VUA	1300RC
TC1300R - 3.0VUA	1300RD
TC1300R - 3.3VUA	1300RE

Legend:	XX...X Customer specific information*
	Y Year code (last digit of calendar year)
	WW Week code (week of January 1 is week '01')
	NNN Alphanumeric traceability code
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.

* Standard marking consists of Microchip part number, year code, week code, traceability code (facility code, mask rev#, and assembly code). For marking beyond this, certain price adders apply. Please check with your Microchip Sales Office.

5.2 Package Dimensions

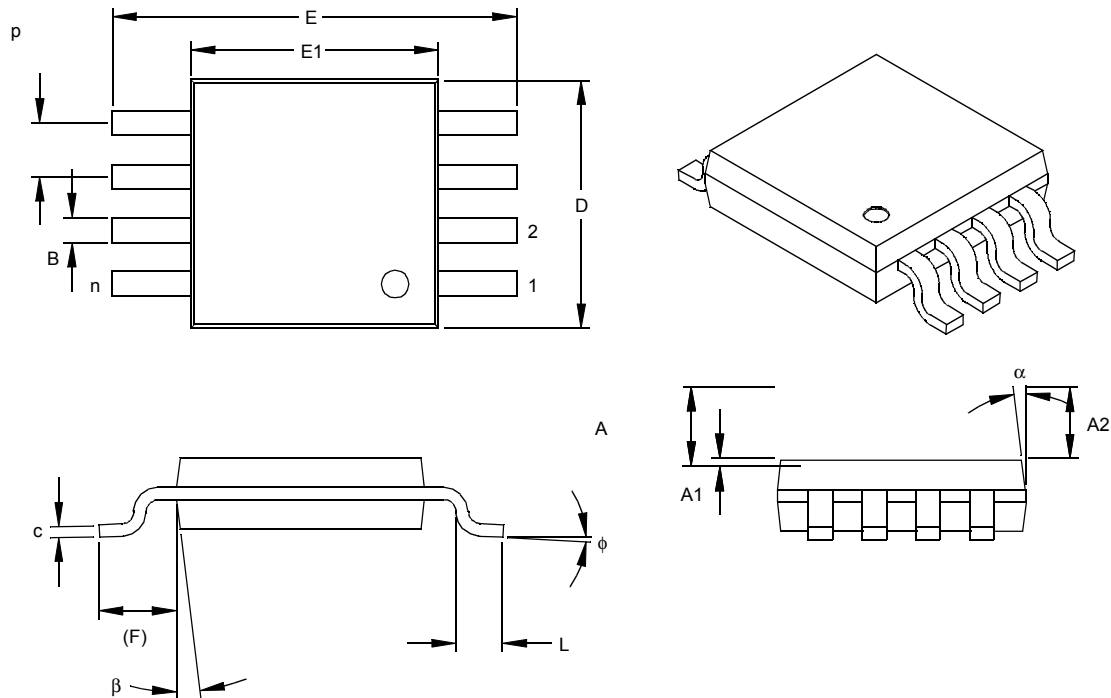


Carrier Tape, Number of Components Per Reel and Reel Size:

Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
8-Pin MSOP	12 mm	8 mm	2500	13 in.

TC1300

8-Lead Plastic Micro Small Outline Package (UA) (MSOP)



Units		INCHES			MILLIMETERS*		
Dimension Limits		MIN	NOM	MAX	MIN	NOM	MAX
Number of Pins	n		8				8
Pitch	p	.026			0.65		
Overall Height	A			.044			1.18
Molded Package Thickness	A2	.030	.034	.038	0.76	0.86	0.97
Standoff §	A1	.002		.006	0.05		0.15
Overall Width	E	.184	.193	.200	4.67	4.90	5.08
Molded Package Width	E1	.114	.118	.122	2.90	3.00	3.10
Overall Length	D	.114	.118	.122	2.90	3.00	3.10
Foot Length	L	.016	.022	.028	0.40	0.55	0.70
Footprint (Reference)	F	.035	.037	.039	0.90	0.95	1.00
Foot Angle	φ	0		6	0		6
Lead Thickness	c	.004	.006	.008	0.10	0.15	0.20
Lead Width	B	.010	.012	.016	0.25	0.30	0.40
Mold Draft Angle Top	α		7			7	
Mold Draft Angle Bottom	β		7			7	

*Controlling Parameter
§ Significant Characteristic

Notes:

Dimensions D and E1 do not include mold flash or protrusions. Mold flash or protrusions shall not exceed .010" (0.254mm) per side.

Drawing No. C04-111

PRODUCT IDENTIFICATION SYSTEM

To order or obtain information, e.g., on pricing or delivery, refer to the factory or the listed sales office.

<u>PART NO.</u>	<u>-X.X</u>	<u>X</u>	<u>/XX</u>
Device	Output Voltages	Temperature Range	Package
Device:	TC1300X-X.XXXX:	300mA CMOS LDO w/Shutdown, Bypass & Independent Delayed Reset	
	TC1300X-X.XXXXTR:	300mA CMOS LDO w/Shutdown, Bypass & Independent Delayed Reset (Tape and Reel)	
Output Voltages:	2.5V = 2.5		
	2.7V = 2.7		
RESET Threshold	2.8V = 2.8		
Voltages:	2.85V = 2.85		
- 2.4V = Y	3.0V = 3.0		
- 2.63V = R	3.3V = 3.3		
Temperature Range:	V = -40°C to +125°C		
Package:	UA = Micro Small Outline Package (MSOP), 8-lead		

Examples:

- a) TC1300R-2.5VUA: 300mA CMOS LDO w/ Shutdown, Bypass & Independent Delayed Reset, 2.5V output voltage, 2.63V RESET Threshold.
- b) TC1300R-2.8VUA: 300mA CMOS LDO w/Shutdown, Bypass & Independent Delayed Reset, 2.8V output voltage, 2.63V RESET Threshold.
- c) TC1300R-2.85VUA: 300mA CMOS LDO w/ Shutdown, Bypass & Independent Delayed Reset, 2.85V output voltage, 2.63V RESET Threshold.
- d) TC1300R-3.0VUA: 300mA CMOS LDO w/Shutdown, Bypass & Independent Delayed Reset, 3.0V output voltage, 2.63V RESET Threshold.
- e) TC1300R-3.3VUA: 300mA CMOS LDO w/Shutdown, Bypass & Independent Delayed Reset, 3.3V output voltage, 2.63V RESET Threshold.
- f) TC1300R-2.85VUATR: 300mA CMOS LDO w/ Shutdown, Bypass & Independent Delayed Reset, 2.85V output voltage, 2.63V RESET Threshold, tape and reel.
- g) TC1300Y-2.7VUA: 300mA CMOS LDO w/ Shutdown, Bypass & independent Delayed Reset, 2.7V output voltage, 2.4V RESET Threshold.

Sales and Support

Data Sheets

Products supported by a preliminary Data Sheet may have an errata sheet describing minor operational differences and recommended workarounds. To determine if an errata sheet exists for a particular device, please contact one of the following:

1. Your local Microchip sales office
2. The Microchip Corporate Literature Center U.S. FAX: (480) 792-7277
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TC1300

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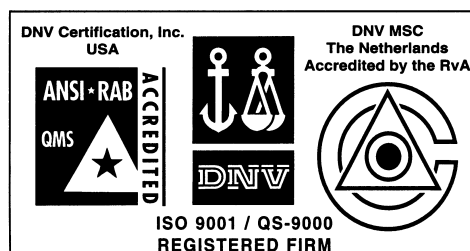
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WORLDWIDE SALES AND SERVICE

AMERICAS

Corporate Office

2355 West Chandler Blvd.
Chandler, AZ 85224-6199
Tel: 480-792-7200 Fax: 480-792-7277
Technical Support: 480-792-7627
Web Address: <http://www.microchip.com>

Rocky Mountain

2355 West Chandler Blvd.
Chandler, AZ 85224-6199
Tel: 480-792-7966 Fax: 480-792-4338

Atlanta

500 Sugar Mill Road, Suite 200B
Atlanta, GA 30350
Tel: 770-640-0034 Fax: 770-640-0307

Boston

2 Lan Drive, Suite 120
Westford, MA 01886
Tel: 978-692-3848 Fax: 978-692-3821

Chicago

333 Pierce Road, Suite 180
Itasca, IL 60143
Tel: 630-285-0071 Fax: 630-285-0075

Dallas

4570 Westgrove Drive, Suite 160
Addison, TX 75001
Tel: 972-818-7423 Fax: 972-818-2924

Detroit

Tri-Atria Office Building
32255 Northwestern Highway, Suite 190
Farmington Hills, MI 48334
Tel: 248-538-2250 Fax: 248-538-2260

Kokomo

2767 S. Albright Road
Kokomo, Indiana 46902
Tel: 765-864-8360 Fax: 765-864-8387

Los Angeles

18201 Von Karman, Suite 1090
Irvine, CA 92612
Tel: 949-263-1888 Fax: 949-263-1338

San Jose

Microchip Technology Inc.
2107 North First Street, Suite 590
San Jose, CA 95131
Tel: 408-436-7950 Fax: 408-436-7955

Toronto

6285 Northam Drive, Suite 108
Mississauga, Ontario L4V 1X5, Canada
Tel: 905-673-0699 Fax: 905-673-6509

ASIA/PACIFIC

Australia

Microchip Technology Australia Pty Ltd
Suite 22, 41 Rawson Street
Epping 2121, NSW
Australia
Tel: 61-2-9868-6733 Fax: 61-2-9868-6755

China - Beijing

Microchip Technology Consulting (Shanghai)
Co., Ltd., Beijing Liaison Office
Unit 915
Bei Hai Wan Tai Bldg.
No. 6 Chaoyangmen Beidajie
Beijing, 100027, No. China
Tel: 86-10-85282100 Fax: 86-10-85282104

China - Chengdu

Microchip Technology Consulting (Shanghai)
Co., Ltd., Chengdu Liaison Office
Rm. 2401, 24th Floor,
Ming Xing Financial Tower
No. 88 TIDU Street
Chengdu 610016, China
Tel: 86-28-86766200 Fax: 86-28-86766599

China - Fuzhou

Microchip Technology Consulting (Shanghai)
Co., Ltd., Fuzhou Liaison Office
Unit 28F, World Trade Plaza
No. 71 Wusi Road
Fuzhou 350001, China
Tel: 86-591-7503506 Fax: 86-591-7503521

China - Shanghai

Microchip Technology Consulting (Shanghai)
Co., Ltd.
Room 701, Bldg. B
Far East International Plaza
No. 317 Xian Xia Road
Shanghai, 200051
Tel: 86-21-6275-5700 Fax: 86-21-6275-5060

China - Shenzhen

Microchip Technology Consulting (Shanghai)
Co., Ltd., Shenzhen Liaison Office
Rm. 1315, 13/F, Shenzhen Kerry Centre,
Renminnan Lu
Shenzhen 518001, China
Tel: 86-755-82350361 Fax: 86-755-82366086

China - Hong Kong SAR

Microchip Technology Hongkong Ltd.
Unit 901-6, Tower 2, Metroplaza
223 Hing Fong Road
Kwai Fong, N.T., Hong Kong
Tel: 852-2401-1200 Fax: 852-2401-3431

India

Microchip Technology Inc.
India Liaison Office
Divyasree Chambers
1 Floor, Wing A (A3/A4)
No. 11, O'Shaughnessy Road
Bangalore, 560 025, India
Tel: 91-80-2290061 Fax: 91-80-2290062

Japan

Microchip Technology Japan K.K.
Benex S-1 6F
3-18-20, Shinyokohama
Kohoku-Ku, Yokohama-shi
Kanagawa, 222-0033, Japan
Tel: 81-45-471-6166 Fax: 81-45-471-6122

Korea

Microchip Technology Korea
168-1, Youngbo Bldg. 3 Floor
Samsung-Dong, Kangnam-Ku
Seoul, Korea 135-882
Tel: 82-2-554-7200 Fax: 82-2-558-5934

Singapore

Microchip Technology Singapore Pte Ltd.
200 Middle Road
#07-02 Prime Centre
Singapore, 188980
Tel: 65-6334-8870 Fax: 65-6334-8850

Taiwan

Microchip Technology (Barbados) Inc.,
Taiwan Branch
11F-3, No. 207
Tung Hua North Road
Taipei, 105, Taiwan
Tel: 886-2-2717-7175 Fax: 886-2-2545-0139

EUROPE

Austria

Microchip Technology Austria GmbH
Durisolstrasse 2
A-4600 Wels
Austria
Tel: 43-7242-2244-399
Fax: 43-7242-2244-393

Denmark

Microchip Technology Nordic ApS
Regus Business Centre
Lautrup høj 1-3
Ballerup DK-2750 Denmark
Tel: 45 4420 9895 Fax: 45 4420 9910

France

Microchip Technology SARL
Parc d'Activite du Moulin de Massy
43 Rue du Saule Trapu
Batiment A - 1er Etage
91300 Massy, France
Tel: 33-1-69-53-63-20 Fax: 33-1-69-30-90-79

Germany

Microchip Technology GmbH
Steinheilstrasse 10
D-85737 Ismaning, Germany
Tel: 49-89-627-144 0 Fax: 49-89-627-144-44

Italy

Microchip Technology SRL
Centro Direzionale Colleoni
Palazzo Taurus 1 V. Le Colleoni 1
20041 Agrate Brianza
Milan, Italy
Tel: 39-039-65791-1 Fax: 39-039-6899883

United Kingdom

Microchip Ltd.
505 Eskdale Road
Winnersh Triangle
Wokingham
Berkshire, England RG41 5TU
Tel: 44 118 921 5869 Fax: 44-118 921-5820

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