RAD-TOLERANT, HIGH-SPEED PWM CONTROLLER

Check for Samples: UC1825A-DIE

FEATURES

- **Rad-Tolerant: 30 kRad (Si) TID** (1)
- **Compatible With Voltage-Mode or Current-Mode Control Methods**
- **Practical Operation at Switching Frequencies**
- **50-ns Propagation Delay to Output**
- **High-Current Dual Totem Pole Outputs**
- **Trimmed Oscillator Discharge Current**
- **Low 100-µA Startup Current**
- **Pulse-by-Pulse Current Limiting Comparator**
- **Latched Overcurrent Comparator With Full Cycle Restart**

(1) Radiation tolerance is a typical value based upon initial device qualification with dose rate = 10 mrad/sec. Radiation Lot Acceptance Testing is available - contact factory for details.

DESCRIPTION

The UC1825A-DIE PWM controller is an improved version of the standard UC1825 family. Performance enhancements have been made to several of the circuit blocks. Error amplifier gain bandwidth product is 12 MHz, while input offset voltage is 2 mV. Current limit threshold is assured to a tolerance of 5%. Oscillator discharge current is specified at 10 mA for accurate dead time control. Frequency accuracy is improved to 6%. Startup supply current, typically 100 µA, is ideal for off-line applications. The output drivers are redesigned to actively sink current during UVLO at no expense to the startup current specification. In addition each output is capable of 2-A peak currents during transitions.

ORDERING INFORMATION(1)

PRODUCT	PACKAGE DESIGNATOR	PACKAGE	ORDERABLE PART NUMBER	PACKAGE QUANTITY
UC1825A	TD	Bare die in waffle pack(2)	UC1825AVTD1	81
			UC1825AVTD2	10

(1) For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI web site at www.ti.com.

(2) Processing is per the Texas Instruments space production baseline and is in compliance with the Texas Instruments Quality Control System in effect at the time of manufacture. Electrical screening consists of DC parametric and functional testing at room temperature only. Unless otherwise specified by Texas Instruments AC performance and performance over temperature is not warranted. Visual Inspection is performed in accordance with MIL-STD-883 Test Method 2010 Condition B at 75X minimum.

This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

BARE DIE INFORMATION

DIE THICKNESS	BACKSIDE FINISH	BACKSIDE POTENTIAL	BOND PAD METALLIZATION COMPOSITION	BOND PAD THICKNESS
10.5 mils.	Silicon with backgrind	Floating	Ti/AlCu2%	2214.3 nm

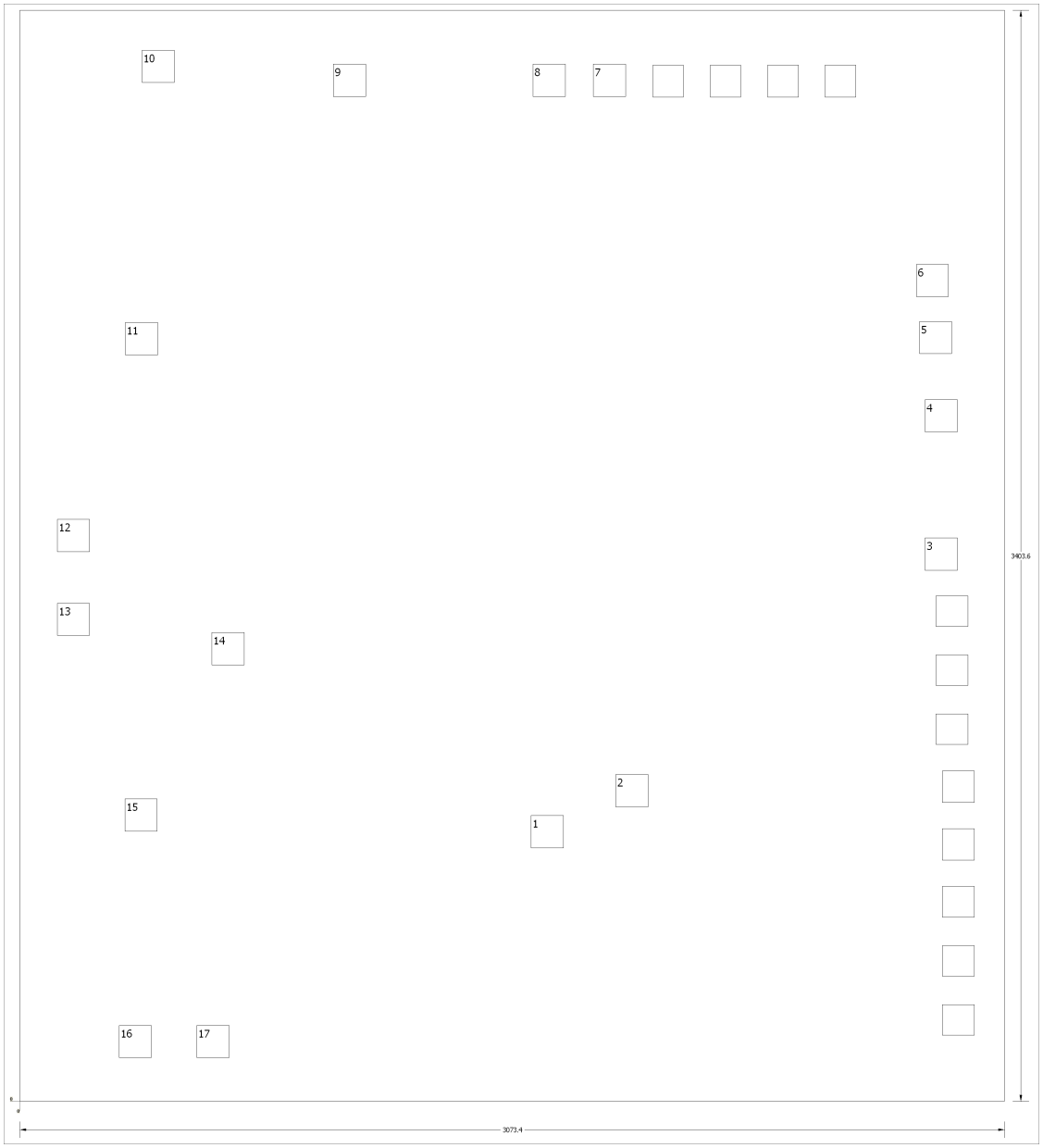

Table 1. Bond Pad Coordinates in Microns

DESCRIPTION	PAD NUMBER	X MIN	Y MIN	X MAX	Y MAX
INV	1	1595.12	789.94	1696.72	891.54
NI	2	1859.28	918.21	1960.88	1019.81
EAOUT	3	2824.48	1656.08	2926.08	1757.68
CLK/LEB	4	2824.48	2087.88	2926.08	2189.48
RT	5	2806.7	2331.72	2908.3	2433.32
CT	6	2796.54	2509.52	2898.14	2611.12
RAMP	7	1789.43	3134.36	1891.03	3235.96
SS	8	1601.47	3134.36	1703.07	3235.96
ILIM	9	977.9	3134.36	1079.5	3235.96
GND	10	381	3177.54	482.6	3279.14
OUTA	11	328.93	2327.91	430.53	2429.51
PGND	12	116.84	1714.5	218.44	1816.1
PGND	13	116.84	1452.88	218.44	1554.48
VC	14	599.44	1361.44	701.04	1463.04
OUTB	15	327.66	842.01	429.26	943.61
VCC	16	309.88	135.89	411.48	237.49
VREF	17	552.45	135.89	654.05	237.49

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
UC1825AVTD1	ACTIVE			0	81	TBD	Call TI	N / A for Pkg Type	0 to 0		Samples
UC1825AVTD2	ACTIVE			0	10	TBD	Call TI	N / A for Pkg Type	0 to 0		Samples

(1) The marketing status values are defined as follows:
ACTIVE: Product device recommended for new designs.
LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.
NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.
PREVIEW: Device has been announced but is not in production. Samples may or may not be available.
OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.
TBD: The Pb-Free/Green conversion plan has not been defined.
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Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

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