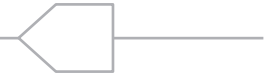


# AN-19

## Competitive Comparisons for Triple Video DACs



### Introduction

CADEKA's 8- and 10-bit, Triple Video DACs range from 100 to 180MSPS. These high-speed digital-to-analog (D/A) converters are optimized for use in video, display, and graphics applications. The latest products CDK3405 and CDK3404 offer a sampling frequency of 180MSPS making them well suited for display standards of 60Hz VGA (640 x 480), 72Hz SVGA (800 x 600), 75Hz XGA (1024 x 768), and 60Hz SXGA (1280 x 1024). The extended temperature range of -40°C to +125°C make the CDK3405 and CDK3404 excellent choices for several video applications including: LCD displays, medical ultrasound, automotive entertainment, ultra-mobile personal computers (UMPCs), mini-USB to VGA connectors, and other multimedia systems.

This application note compares the CADEKA DACs with various competitive products. The following products are reviewed:

- ADV7125 & MB86029 (Recommended Replacement = CDK3405 or CDK3404) - [Pages 1-2](#)
- ADV7123 (Recommended Replacement = CDK3400 or CDK3401) - [Page 3](#)

### ADV7125 & MB86029 vs. CDK3405, CDK3404, CDK3403, CDK3402

The CDK3405 or CDK3404 promises cost savings as well as superior INL, DNL, Output Current, PSRR, and Operating Temp Range. CDK3405 will sample and release in September 2009.

### Comparison

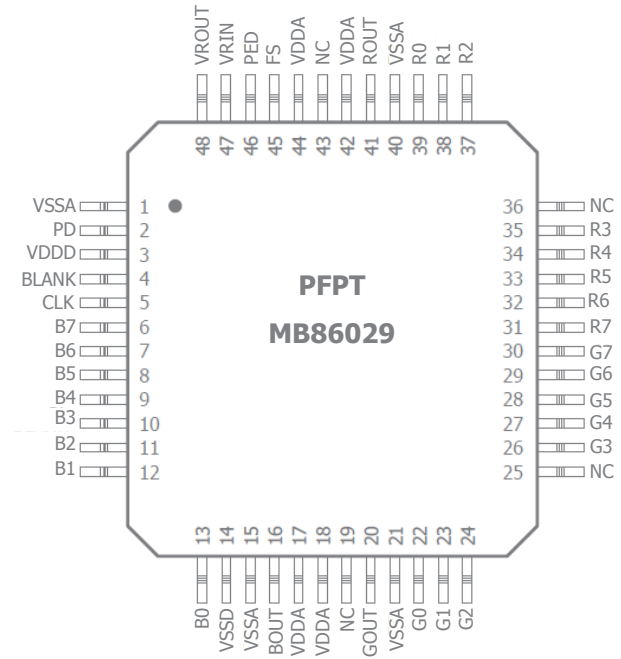
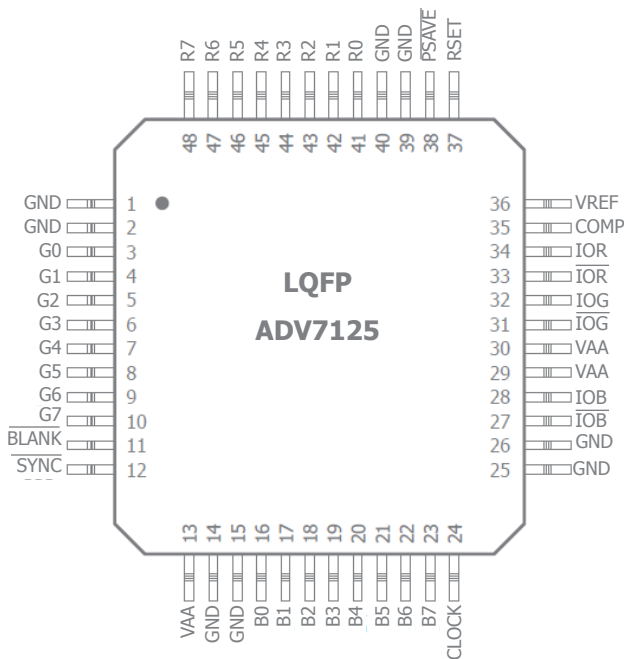
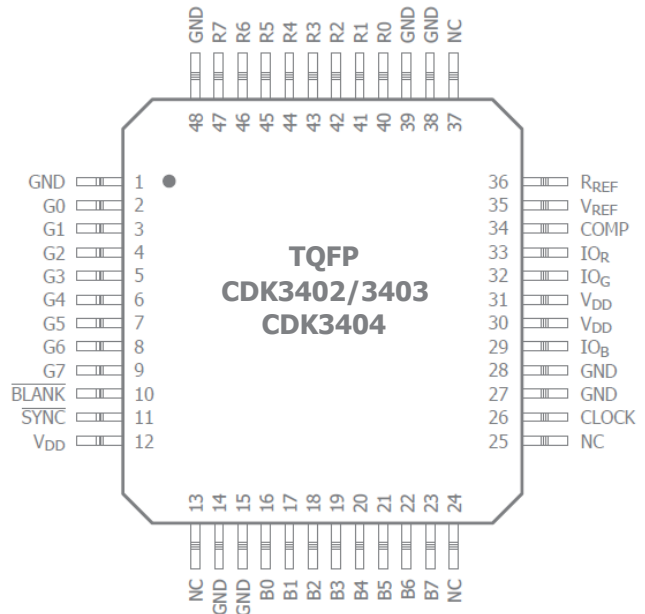
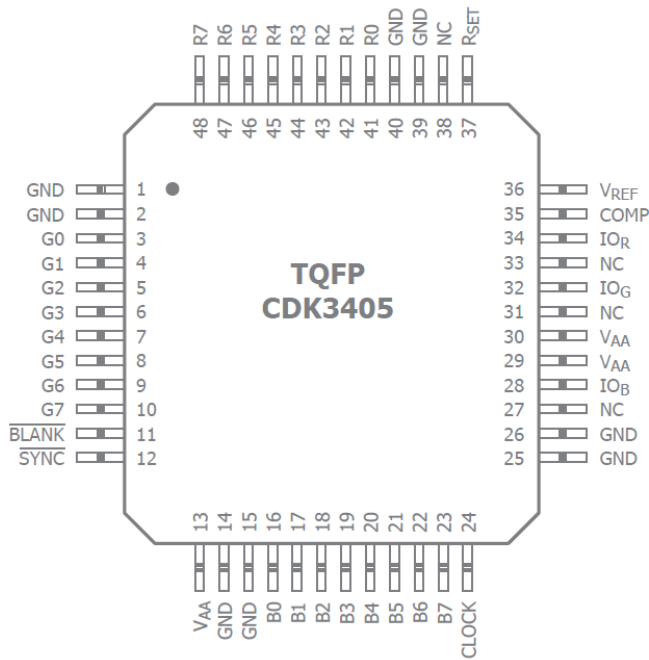
Specification	CDK3404 CDK3405	ADV7125 KSTZ50	ADV7125 KSTZ140	MB86029	ADV7125 WBSTZ170	CDK3402	CDK3403
#Channels	3	3	3	3	3	3	3
Resolution (bits)	8	8	8	8	8	8	8
Sampling Rate (MSPS)	180	50	140	60	170	100	150
DNL ( $\pm$ LSB) (max)	0.5	1	1	1	1	0.77	0.77
INL ( $\pm$ LSB) (max)	0.5	1	1	1	1	0.77	0.77
Power Consumption (typ) (mW)	300	228	243	500	NS	655	655
Power Down or Power Save Mode	No	Yes	Yes	Yes	Yes	No	No
Complementary Outputs	No	Yes	Yes	No	Yes	No	No
SYNC and BLANK Controls	Yes	Yes	Yes	BLANK	Yes	Yes	Yes
Output Type	Current	Current	Current	Current	Current	Current	Current
Output Current (max) (mA)	30	26.5	26.5	>21	26.5	>14	>14
Settling Time ( $\mu$ s)	0.0025	NS	NS	0.015	NS	NS	NS
PSRR (max) (%/%)	0.01	0.5	0.5	NS	0.5	1	1
Internal Reference Voltage (typ) (V)	1.25	1.235	1.235	2.5	1.235	1.235	1.235
# of Supplies	1	1	1		1	1	1
Analog Voltage AVDD (min) (V)	3	3	3	4.75	3	4.75	4.75
Analog Voltage AVDD (max) (V)	3.6	5.25	5.25	5.25	5.25	5.25	5.25
Operating Temp Range (°C)	-40 to 125	-40 to 85	-40 to 85	0 to 70	-40 to 85	0 to 70	0 to 70
Package	TQFP-48	LQFP-48	LQFP-48	PFPT-48	LQFP-48	TQFP-48	TQFP-48

Note: NS = Not Specified. ADV7125 power consumption assumes 3.3V supply and RSET=560 $\Omega$ , which yields analog output levels quoted in the Specifications section of the ADV7125 data sheet. This RSET value is the most common value used in video applications.



## ADV7125 & MB86028 vs. CDK3405, CDK3404, CDK3403, CDK3402 continued

Pinout Diagram Comparison (TQFP Package and LQFP Package differ only by package height. PFPT is larger.)





## ADV7123 vs. CDK3400, CDK3401

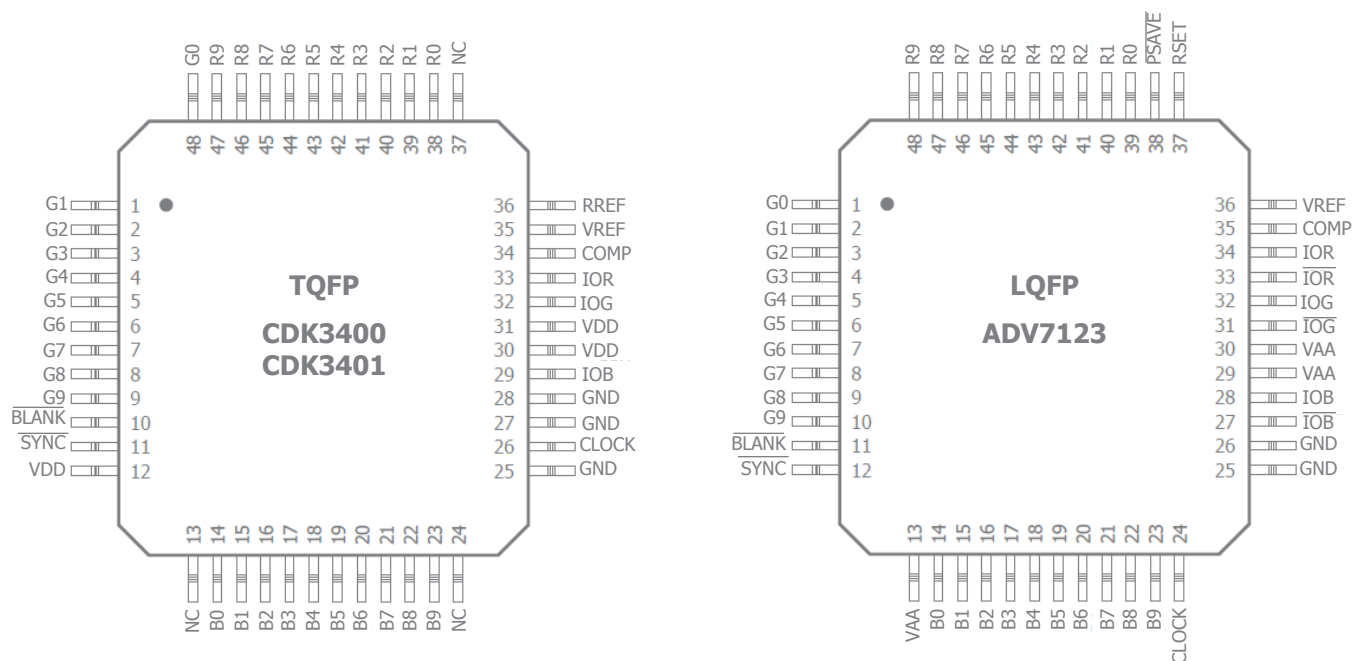
The CDK3400 or CDK3401 promises cost savings as well as superior Output Current and PSRR.

### Comparison at 5V

Specification	CDK3400	ADV7123 KSTZ50	CDK3401	ADV7123 KSTZ140	ADV7123 JSTZ240	ADV7123 JSTZ330
#Channels	3	3	3	3	3	3
Resolution (bits)	10	10	10	10	10	10
Sampling Rate (MSPS)	100	50	150	140	240	330
DNL ( $\pm$ LSB) (max)	2.56	1	2.56	1	1	1
INL ( $\pm$ LSB) (max)	2.56	1	2.56	1	1	1
Power Consumption (max) (mW)	655	405	655	435	485	N/A
Power Down or Power Save Mode	No	Yes	No	Yes	Yes	Yes
Complementary Outputs	No	Yes	No	Yes	Yes	Yes
SYNC and BLANK Controls	Yes	Yes	Yes	Yes	Yes	Yes
Output Type	Current	Current	Current	Current	Current	Current
Output Current (max) (mA)	>26.7	26.5	>26.7	26.5	26.5	26.5
PSRR (max) (%/%)	0.05	0.5	0.05	0.5	0.5	0.5
Internal Reference Voltage (typ) (V)	1.235	1.235	1.235	1.235	1.235	1.235
# of Supplies	1	1	1	1	1	1
Analog Voltage AVDD (min) (V)	4.75	3	4.75	3	3	3
Analog Voltage AVDD (max) (V)	5.25	5.25	5.25	5.25	5.25	5.25
Operating Temp Range ( $^{\circ}$ C)	0 to 70	-40 to 85	0 to 70	-40 to 85	0 to 70	0 to 70
Package	TQFP-48	LQFP-48	TQFP-48	LQFP-48	LQFP-48	LQFP-48

Note: NS = Sot Specified. ADV7123 power consumption assumes 3.3V supply and RSET=560 $\Omega$ , which yields analog output levels quoted in the Specifications section of the ADV7123 data sheet. This RSET value is the most common value used in video applications.

### Pinout Diagram Comparison (TQFP Package and LQFP Package differ only by package height.)





For additional information regarding our products, please visit CADEKA at: [cadeka.com](http://cadeka.com)

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