



Application Hint 52

DAC Controlled Output with Bypass

By Martin Galinski

Description

This circuit allows a DAC signal to adjust the output voltage dynamically. This saves battery life by reducing power consumption where applicable. Also, the MIC94060 places a 100mΩ bypass switch for maximum efficiency at high power.

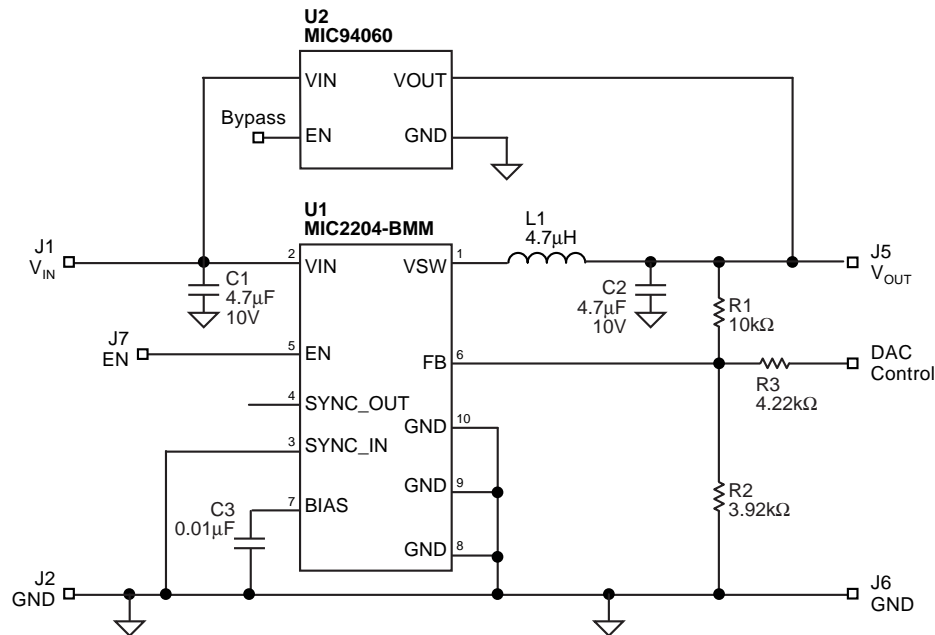
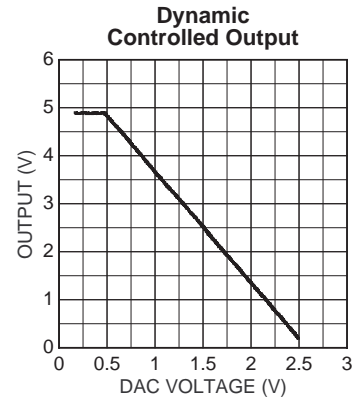
$$V_{OUT} = \frac{-R1 \times V_{DAC}}{R3} + \frac{R1}{R3} + \frac{R1}{R2} + 1$$

$$R1 = 10k\Omega$$

$$R2 = 3.92k\Omega$$

$$R3 = 4.22k\Omega$$

$$V_{OUT} = -2.369V_{DAC} + 5.92$$



DAC Controlled Output with Bypass Circuit

Bill of Materials

Item	Part Number	Manufacturer	Description	Qty.
C1, C2	LMK212BJ475MG	Taiyo Yuden ⁽¹⁾	4.7 μ F/6.3V Ceramic Capacitor	2
C3	VJ0603Y103KMXX	Vitramon ⁽²⁾	0.01 μ F/25V Ceramic Capacitor	1
L1	LQH32CN4R7M11	Murata ⁽³⁾	4.7 μ H Inductor	1
R1	CRCW06031002FRT1	Vishay ⁽⁴⁾	10k Ω Resistor	1
R2	CRCW06033921FRT2	Vishay ⁽⁴⁾	3.92k Ω Resistor	1
R3	CRCW06034221FRT3	Vishay ⁽⁴⁾	4.22k Ω Resistor	1
U1	MIC2204BMM	Micrel, Inc. ⁽⁵⁾	High Efficiency 2MHz Buck Regulator	1
U2	MIC94060	Micrel, Inc. ⁽⁵⁾	100M Ω SC-70 Smart Load Switch	1

1. Taiyo Yuden: www.taiyo-yuden.com

2. Vitramon: www.vishay.com

3. Murata: www.murata.com

4. Vishay: www.vishay.com

6. **Micrel, Inc.:** www.micrel.com

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