

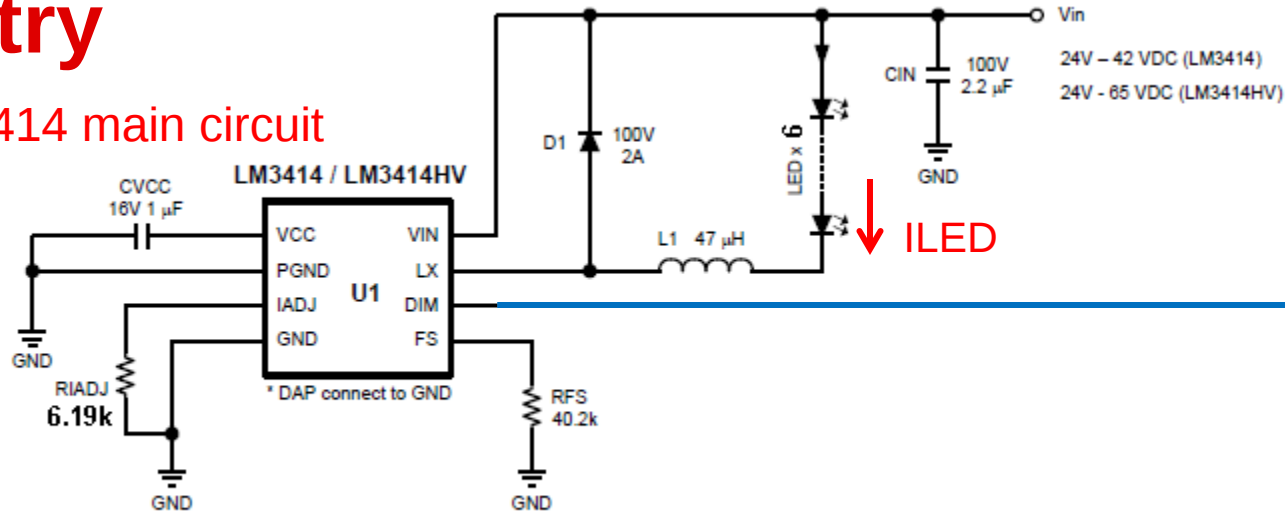
LM3414 0-10V DIMMING with Precise Analog-to-PWM dimmer

February 19, 2013

HK Design Center, Lighting Power Products, PSS, POWER

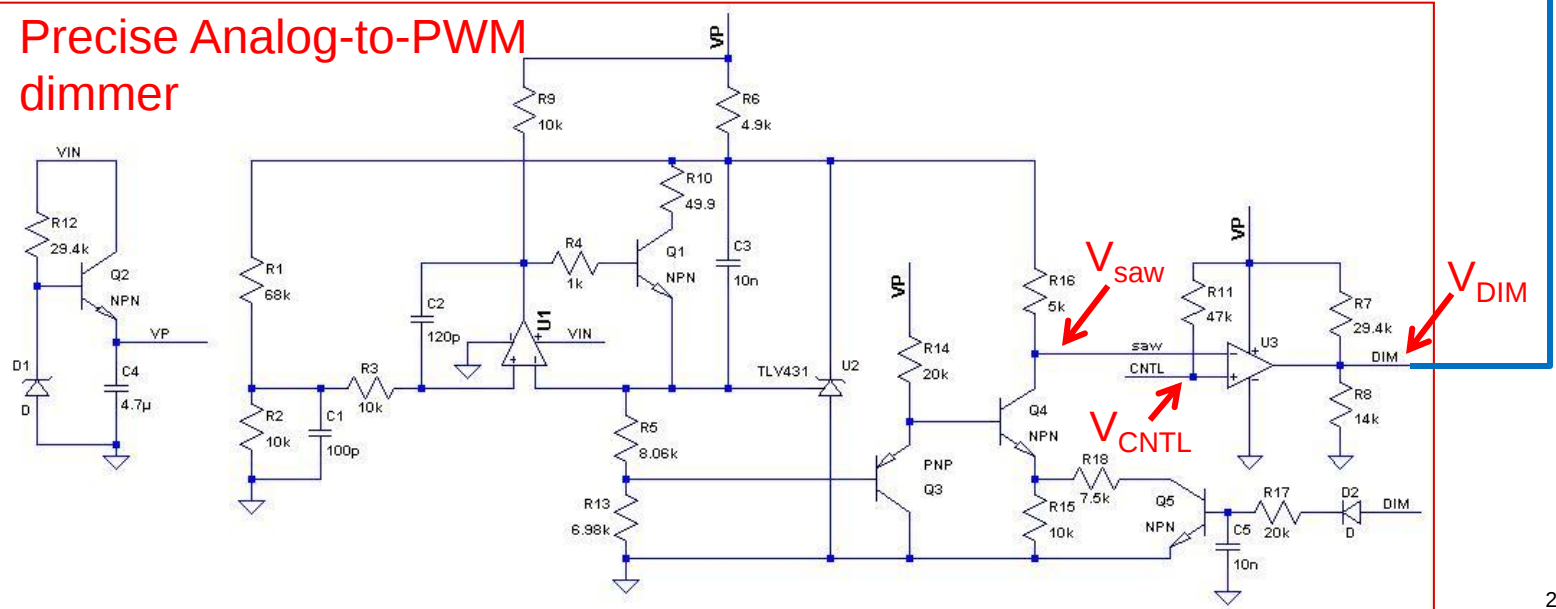
Circuitry

LM3414 main circuit



LM3414/14HV Design Example ($I_{OUT} = 500$ mA)

Precise Analog-to-PWM dimmer

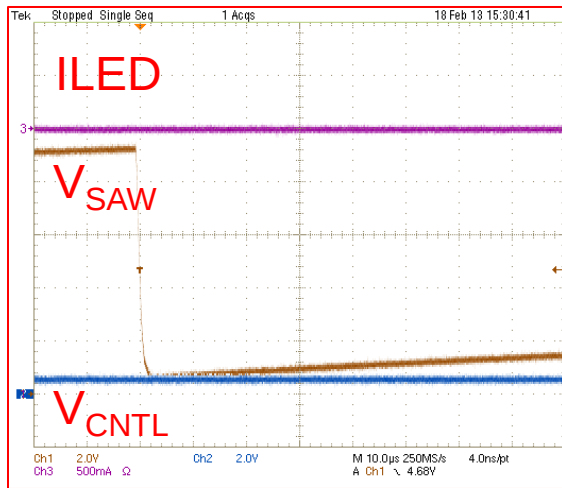


BOM

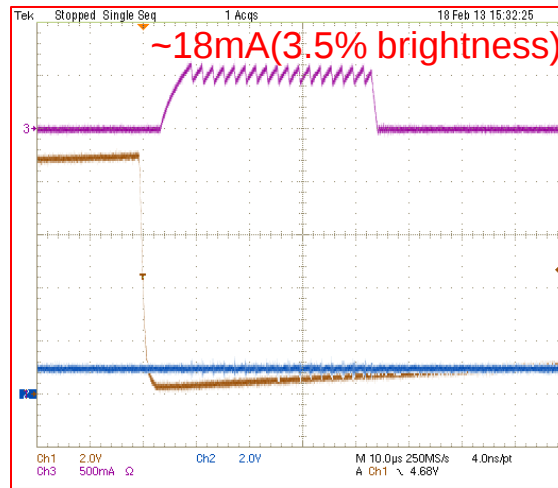
COUNT	RefDes	Value	Description	Size	Part Number	MFR
1	U1, U3	LM293	Dual Comparator	SO8	LM293	TI
1	U2	TLV431A	Shunt Regulator	SOT-23	TL431A	TI
4	Q1, Q2, Q4, Q5	BC846	NPN Transistor 65V	SOT-23	BC846	STD
1	Q3	2N3906	PNP Transistor	SOT-23	2N3906	STD
1	D1	CMDZ15L	Zener Diode, 15V	SMA	CMDZ15L	Central Semi
1	D2	1N4148	Diode	STD	1N4148	STD
1	R1	68kΩ	Resistor	STD	STD	STD
3	R2, R3, R9	10kΩ	Resistor	STD	STD	STD
1	R4	1kΩ	Resistor	STD	STD	STD
1	R5	8.06kΩ	Resistor	STD	STD	STD
1	R8	14kΩ	Resistor	STD	STD	STD
1	R6	4.9kΩ	Resistor	STD	STD	STD
1	R7	29.4kΩ	Resistor	STD	STD	STD
1	R10	49.9Ω	Resistor	STD	STD	STD
1	R11	47kΩ	Resistor	STD	STD	STD
1	R12	29.4kΩ	Resistor	STD	STD	STD
1	R13	6.98kΩ	Resistor	STD	STD	STD
1	R14	20kΩ	Resistor	STD	STD	STD
1	R15	10kΩ	Resistor	STD	STD	STD
1	R17	20kΩ	Resistor	STD	STD	STD
1	R16	5kΩ	Resistor	STD	STD	STD
1	R18	7.5kΩ	Resistor	STD	STD	STD
1	C1	100pF	Capacitor, 25V	STD	STD	STD
1	C2	120pF	Capacitor, 25V	STD	STD	STD
1	C3	10nF	Capacitor, 25V	STD	STD	STD
1	C4	4.7uF	Capacitor, 50V	STD	STD	STD
1	C5	10nF	Capacitor, 25V	STD	STD	STD

Remarks: Revised the resistor value in red color

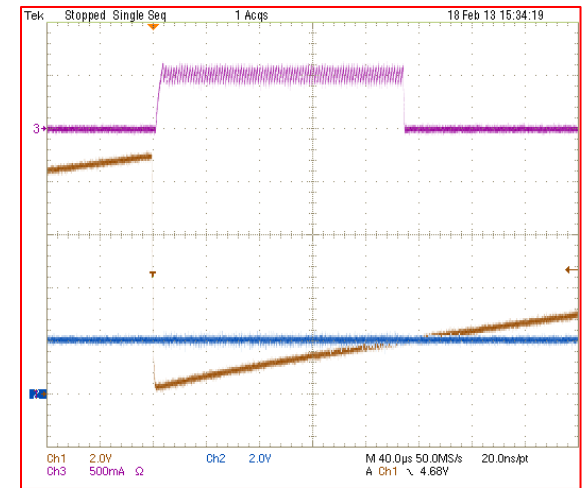
System Waveforms



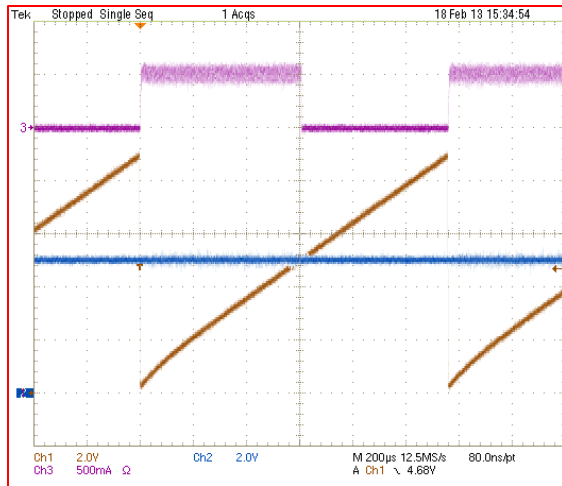
0.5V



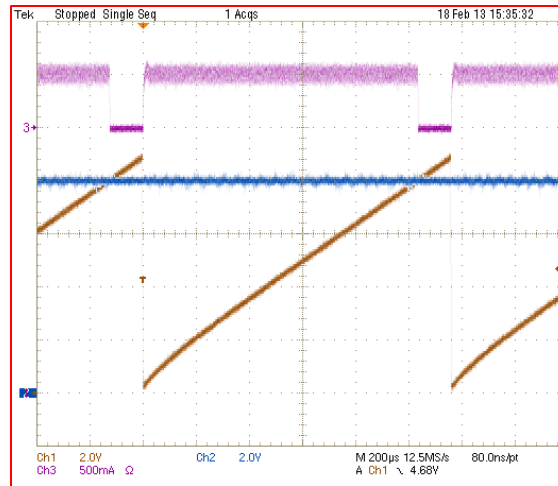
0.91V



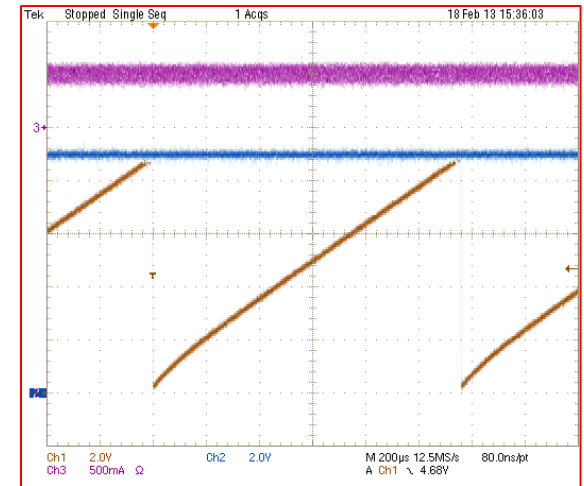
2V



5V



8V

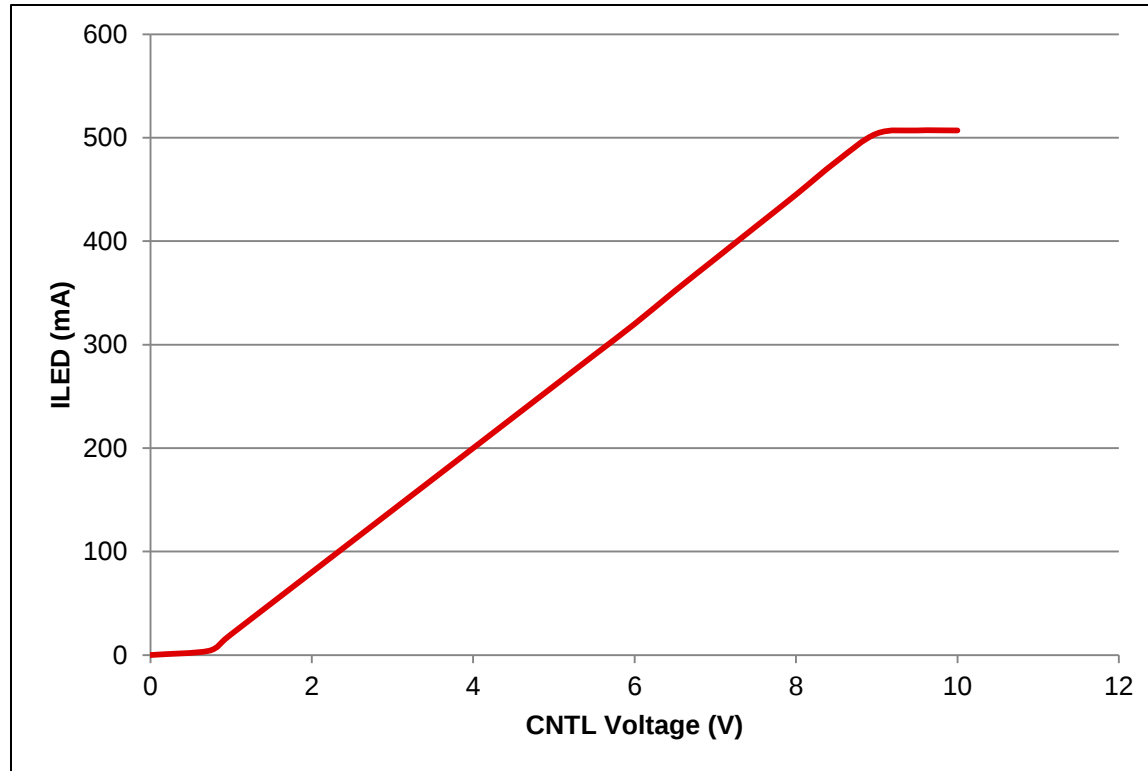


9V

Supply Voltage = 25V, LED Voltage = 20V, LED Current = 510mA

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Dimming LED Current



Supply Voltage = 25V
LED Voltage = 20V
LED Current = 510mA