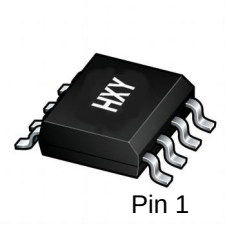
概述

MC34063为一单片 DC-DC 变换集成电路，内含温度补偿 的参考电压源（1.25V）、比较器、能有效限制电流及控制工作周 期的振荡器，驱动器及大电流输出开关管等,外配少量元件，就能 组成升压、降压及电压反转型 DC-DC 变换器。

该电路采用 DIP8 和 SOP8 封装形式。

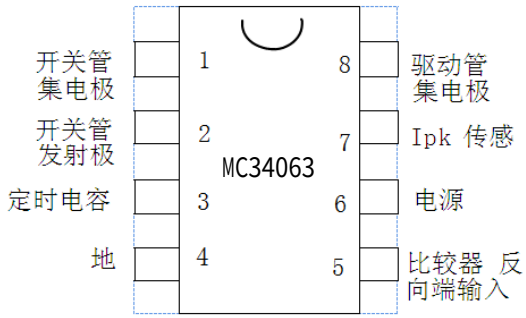


SOP-8

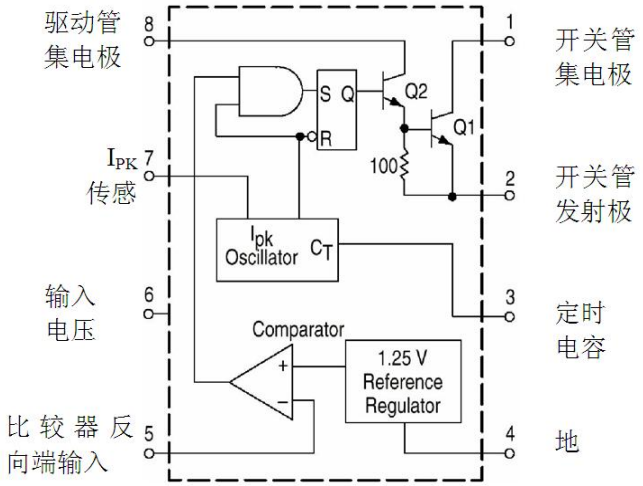
主要特点

- 工作电压范围宽 3.0V~40V
- 静态电流小
- 管脚排列图
- 具有输出电流限制功能,输出电流保护功能
- 输出开关极限电流达 1.3A
- 输出电压可调
- 工作频率可达 100kHz
- 内部基准参考电压精度 2%

引脚排列



功能框图



引出端功能说明

引出端序号	功　　能	符号	引出端序号	功　　能	符号
1	开关管集电极	SC	5	比较器反向端输入	FB
2	开关管发射极	SE	6	输入电压	VCC
3	定 时 电 容	CT	7	检　　测	Ipk
4	地	GND	8	驱动管集电极	DC

极限值

参数名称	符 号	数 值		单位
		最小	最大	
电源电压	Vcc		40	V
比较器输入电压范围	VIR	-0.3	40	V
输出管集电极电压	Vc(switch)		40	V
输出管发射极电压(VPIN1=32V)	VE(switch)		40	V
输出管集电极与发射极间的电压	VCE(switch)		40	V
驱动管集电极电压	Vc(driver)		40	V
驱动管集电极电流	Ic(driver)		100	mA
输出电流	ISW		1.3	A
功耗	PD		1.25	W
工作环境温度	TA	0	+70	℃
贮存温度	Tstg	-65	+150	℃

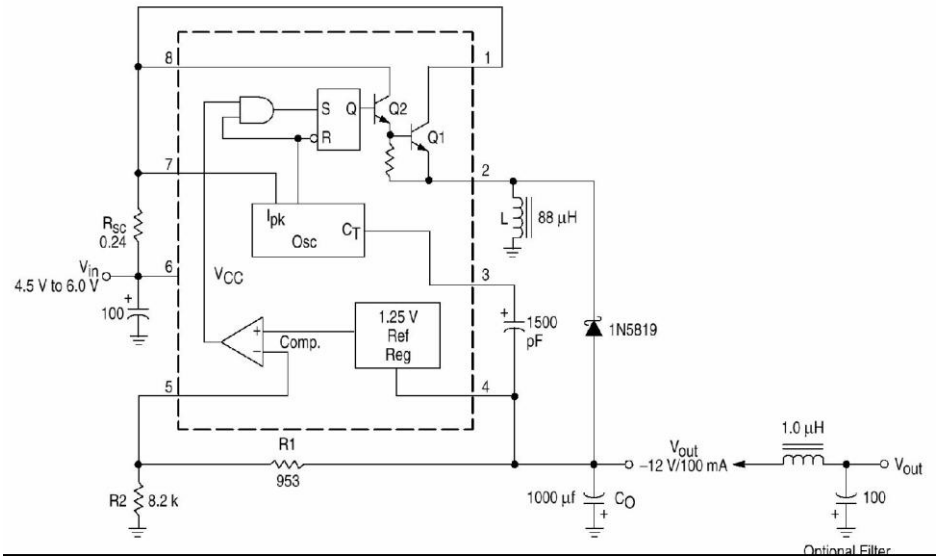
电特性 (Vcc=5.0V;TA=0℃~70℃,除非另外规定)

特性条件	符号	规范值			单 位
		最小	典型	最大	
振荡器部分					
振荡频率(VPIN5=0V,CT=1.0F,TA=25℃)	fosc	24	33	42	KHz
充电电流(VCC=5.0V~32V,TA=25℃)	Ichg	24	33	42	uA
放电电流(VCC=5.0V~32V,TA=25℃)	Idischg	140	200	260	uA
放电与充电电流之比(VPIN7=VCC,TA=25℃)	Idischg/Ichg	5.2	6.2	7.5	--
电流限制器电压灵敏度(Ichg=Idischg,TA=25℃)	V_{IPK}	250	300	350	mV
输出部分:					
饱和压降(ISW=1.0A,PIN1,8连接)	V_{CE}(sat)	--	1.0	1.3	V
饱和压降(ISW=1.0A,RPIN8=82到VCC)	V_{CE}(sat)	--	0.45	0.7	V
直流放大倍数(ISW=1A,VCE=5V,TA=25℃)	hfe	50	120	--	--
集电极漏电流(VCE=30V)	I_C(off)	--	0.01	100	uA

特性条件	符号	规范值			单 位
		最小	典型	最大	
比较器部分:					
阈值电压(TA=25℃) (TA=0~70℃)	Vth	1.23 1.21	1.25 --	1.27 1.29	V
输入偏置电流(VIN=0V)	I_{IB}	--	-40	-400	nA
阈值电压线性调整率(VCC=3.0~30V)	Regline	--	1.4	5.0	mV
整体部分:					
电源电流(VCC=5.0V~30V,CT=1.0nF, VPIN7=Vcc,VPIN5>Vth ,VPIN2=GND,其余悬空)	ICC	-----	2.5	4.0	mA

应用电路图

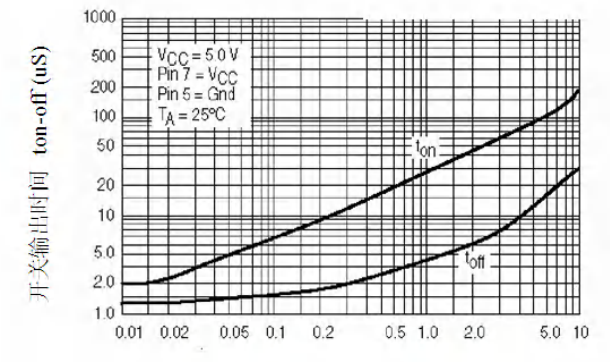
MC34063作反转式DC-DC 变换器



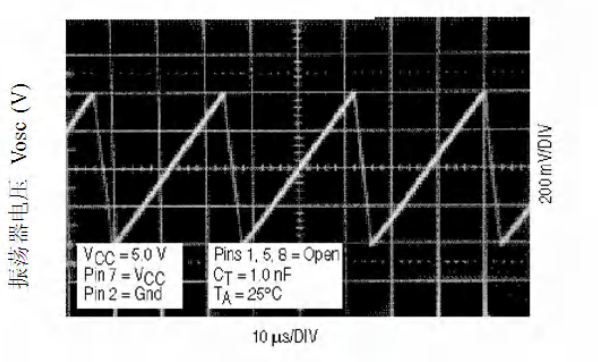
如图3 所示， 当加接LC 滤波器后,能进一步减小电压纹波及噪声,特性见下表

参数	测试条件	结果
线性调整率	VIN=4.5~6.0V,Io=100mA	3.0mV=0.012%
负载调整率	VIN=5.0V,Io=10~100mA	0.022V=+0.09%
输出纹波	VIN=5.0V,Io=100mA	500mVpp
电路限制电流	VIN=5.0V,RL=0.1	910mA
效率	VIN=5.0V,Io=100mA	64.5%
输出纹波	VIN=5.0V,Io=100mA	70mVpp

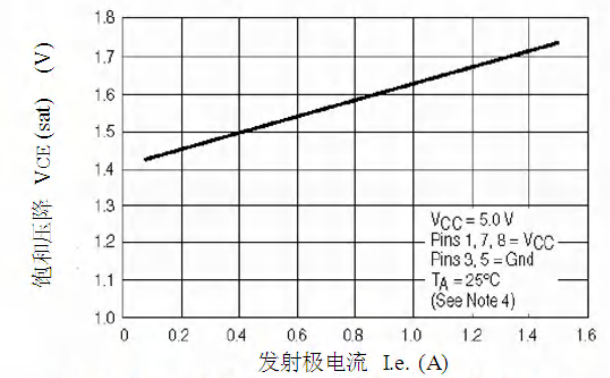
特性曲线



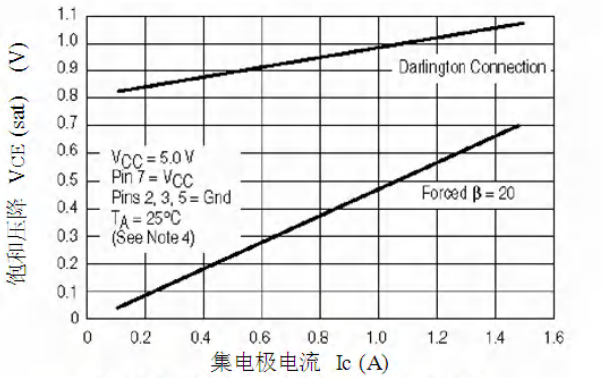
振荡器定时电容开关特性曲线



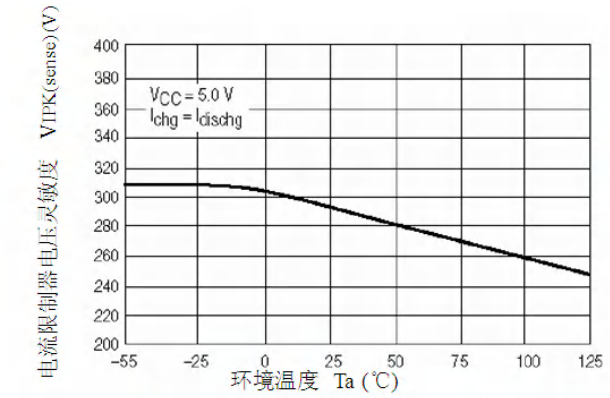
振荡器定时电容波形



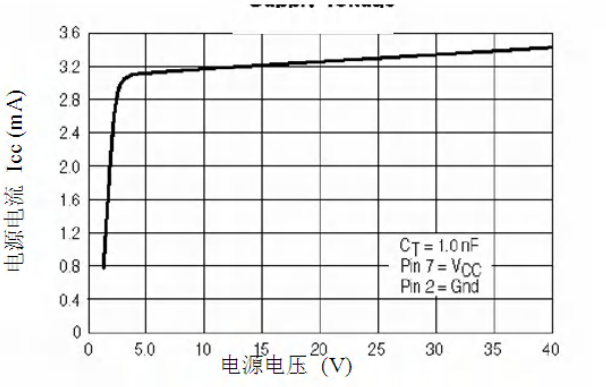
发射极输出饱和压降—发射极电流特性曲线



共发射极开关输出饱和压降—集电极电流特性曲线

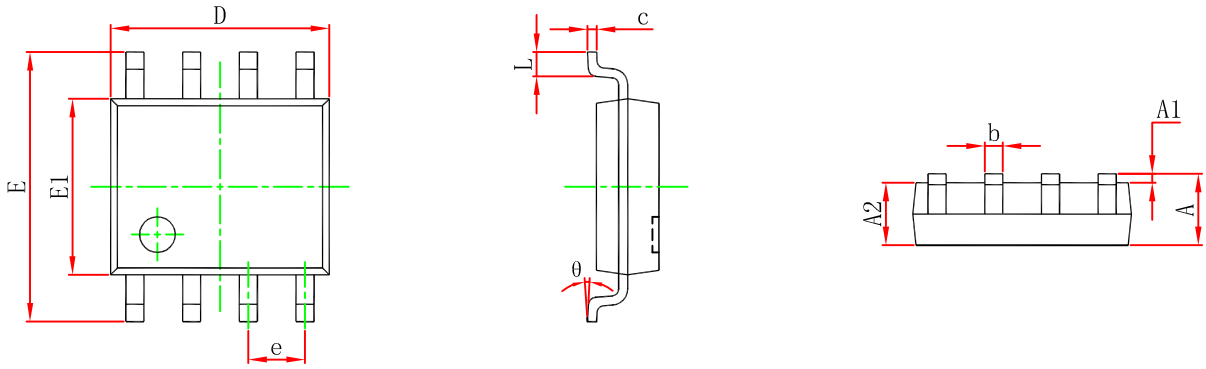


电流限制器电压灵敏度—温度特性曲线

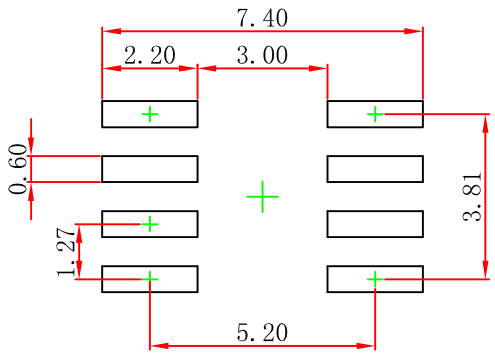


静态工作电流—工作电压特性曲线

SOP-8 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

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