

## 特性

- 工作输入电压：2.3V~6.6V
- 最大输出电流：250mA
- 固定的输出电压范围：0.9V, 1.05V, 1.2V, 1.5V, 1.8V, 2.5V, 2.7V, 3.0V, 3.3V 和 3.6V ( $\pm 2\%$ )
- 超低输入消耗电流：1.35 $\mu$ A (典型)
- 固定的陶瓷输出电容：1 $\mu$ F
- 关断时快速放电到地
- 上电时软启动功能
- 高 PSRR：在 1kHz 时为 75dB
- 低输出噪声：从 10Hz 到 100kHz 时为 50 $\mu$ V<sub>RMS</sub>
- 过电流和过温度保护特性
- 使能 / 除能功能
- 封装类型：4-pin DFN, 5-pin SOT23 和 3-pin SOT89

## 应用领域

- 物联网设备
- 智能 / 健康穿戴式设备

## 概述

HT73Lxx 系列芯片是低压差稳压器，其输入电压范围为 2.3V~6.6V，且可输出 0.9V~3.6V 范围内的固定电压。当 CE 输入脚为低，快速放电通道可通过一个内置的下拉电阻将输出电压拉低。即使输出脚短接到地，内建的过电流保护电路也可以避免芯片受到损坏。过温度保护电路确保芯片结点温度不会超过 150°C。

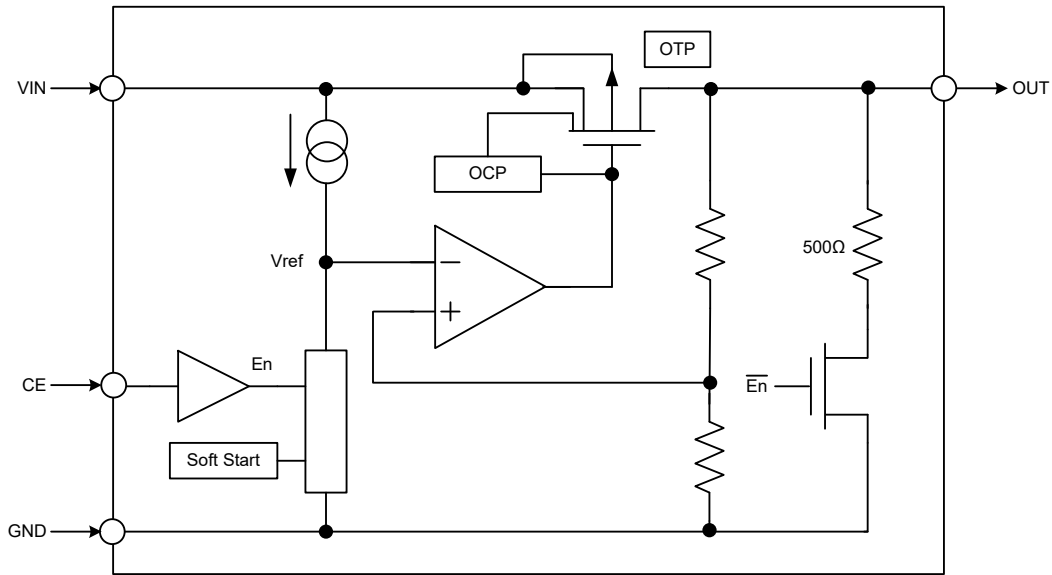
由于该系列芯片具有优异的 PSRR 和低输出噪声性能特性，它们适用于驱动 RF 应用产品，比如 Sub-1GHz 的收发器。其超小型的 4-pin DFN 封装，厚度仅为 0.4mm，使得该系列芯片也适用于空间有限的应用，比如金融 / 信用卡或智能穿戴式产品。

## 选型表

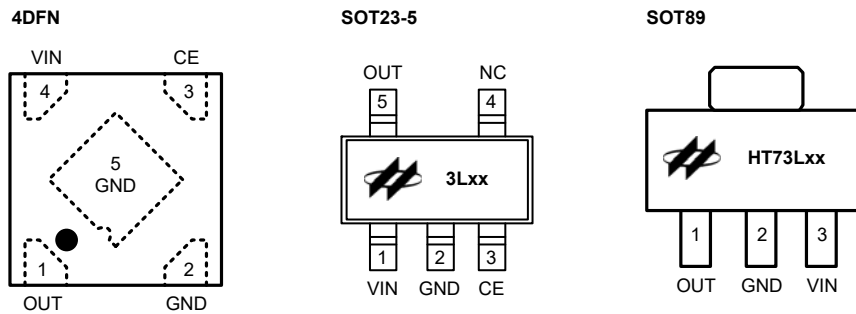
型号	输出电压	封装类型	正印
HT73L09	0.9V	4DFN SOT23-5 SOT89	xx (封装为 4DFN) 3Lxx (封装为 SOT23-5) HT73Lxx (封装为 SOT89 型)
HT73L10	1.05V		
HT73L12	1.2V		
HT73L15	1.5V		
HT73L18	1.8V		
HT73L25	2.5V		
HT73L27	2.7V		
HT73L30	3.0V		
HT73L33	3.3V		
HT73L36	3.6V		

注：“xx”表示输出电压。

### 方框图



### 引脚图



### 引脚描述

引脚编号			引脚名称	引脚描述
4DFN	SOT23-5	SOT89		
1	5	1	OUT	输出引脚
2	2	2	GND	接地引脚
3	3	—	CE	芯片使能引脚，高电平有效。此引脚不允许浮空。若不使用，必须与 VIN 连接
4	1	3	VIN	输入引脚
—	4	—	NC	未连接

## 极限参数

参数		范围	单位
$V_{IN}$		-0.3 ~ +7.0	V
$V_{CE}$		-0.3 ~ ( $V_{IN}+0.3$ )	V
工作温度范围, $T_a$		-40 ~ +85	°C
最大结温, $T_j, \max$		+150	°C
存储温度范围		-65 ~ +165	°C
结点到环境热阻, $\theta_{JA}$	4DFN	250	°C/W
	SOT23-5	500	°C/W
	SOT89	200	
功耗, $P_D$	4DFN	0.5	W
	SOT23-5	0.25	W
	SOT89	0.625	

注:  $P_D$  是在  $T_a = 25^\circ\text{C}$  时测得的。

## 建议工作条件

参数	范围	单位
$V_{IN}$	2.3 ~ 6.6	V
$V_{CE}$	0 ~ $V_{IN}$	V

## 电气特性

$V_{IN}=(V_{OUT}+1V)$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $T_a=+25^{\circ}C$  和  $C_{IN}=C_{OUT}=1\mu F$ , 除非有特别说明

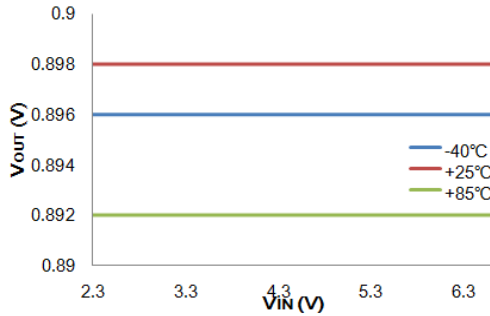
符号	参数	测试条件	最小	典型	最大	单位
$V_{IN}$	输入电压	—	2.3	—	6.6	V
$V_{OUT}$	输出电压范围	—	0.9	—	3.6	V
$V_O$	输出电压精度	$I_{OUT}=1mA$	-2	—	2	%
$I_{OUT}$	输出电流	$V_{IN}\geq 2.3V$	250	—	—	mA
$\frac{\Delta V_{OUT}}{V_{OUT}}$	负载调整率	$1mA\leq I_{OUT}\leq 200mA$	—	0.5	1	%
$V_{DIF}$	压差 (注)	$V_{OUT}<1.2V$ , $I_{OUT}=50mA$ , $V_{OUT}$ 变化 = 2%	—	320	500	mV
		$1.2V\leq V_{OUT}<1.5V$ , $I_{OUT}=50mA$ , $V_{OUT}$ 变化 = 2%	—	270	400	
		$1.5V\leq V_{OUT}<1.8V$ , $I_{OUT}=50mA$ , $V_{OUT}$ 变化 = 2%	—	160	240	
		$1.8V\leq V_{OUT}<2.5V$ , $I_{OUT}=50mA$ , $V_{OUT}$ 变化 = 2%	—	120	180	
		$2.5V\leq V_{OUT}<3.0V$ , $I_{OUT}=50mA$ , $V_{OUT}$ 变化 = 2%	—	100	150	
		$3.0V\leq V_{OUT}$ , $I_{OUT}=50mA$ , $V_{OUT}$ 变化 = 2%	—	75	130	
$I_{SS}$	静态电流	$V_{IN}=4.2V$ , $I_{OUT}=0mA$	—	1.35	2.5	$\mu A$
$I_{SHD}$	关断电流	$V_{CE}=0V$	—	0.01	0.1	$\mu A$
$\frac{V_{OUT}}{\Delta V_{IN}\times V_{OUT}}$	电压线性调整率	$(V_{OUT}+1V)\leq V_{IN}\leq 6.0V$ , $I_{OUT}=10mA$	—	0.02	0.1	%/V
$\frac{V_{OUT}}{\Delta V_a\times V_{OUT}}$	温度系数	$I_{OUT}=10mA$ , $-40^{\circ}C<T_a<85^{\circ}C$	—	$\pm 100$	—	ppm/ $^{\circ}C$
$I_{OCP}$	过流保护阈值	$V_{IN}=(V_{OUT}+1V)$	—	300	—	mA
$T_{OCP}$	OCP 去抖动时间	—	—	5	—	$\mu s$
$V_{IH}$	使能电平高阈值	CE 引脚, $V_{IN}=6V$	1.2	—	—	V
$V_{IL}$	使能电平低阈值	CE 引脚, $V_{IN}=6V$	—	—	0.4	V
$R_{DIS}$	放电电阻	使 $V_{IN}=6V$ , $CE=0V$ 且 $V_{OUT}=0.5V$	—	500	—	W
$T_{SHD}$	热关机阈值	—	—	150	—	$^{\circ}C$
$T_{REC}$	热恢复温度	—	—	125	—	$^{\circ}C$
PSRR	电源电压抑制比	$V_{OUT}=3.3V$ , $I_{OUT}=50mA$ , $f=1kHz$	—	75	—	dB
Noise	输出电压噪声	$V_{OUT}=3.3V$ , $I_{OUT}=30mA$ , $BW=10Hz\sim 100kHz$	—	50	—	$\mu V_{RMS}$

注: 1. 电压差定义为在  $V_{IN}=V_{OUT}+1V$  与一个 50mA 固定负载条件下使输出电压下降 2%, 此时的输入电压减去输出电压的差值。

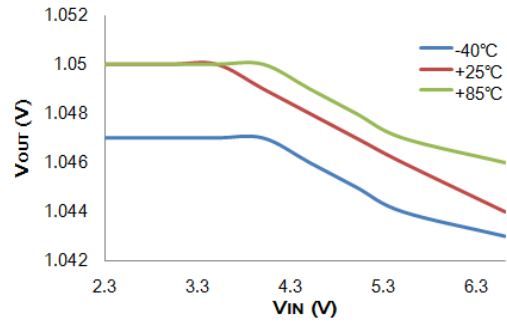
2. 最大工作电压 6.6V 通过 125 $^{\circ}C$ /1000 小时高温寿命试验。

## 典型性能特性

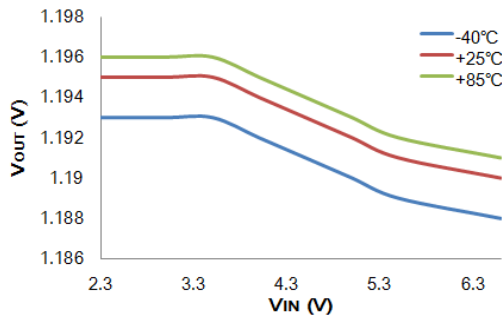
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



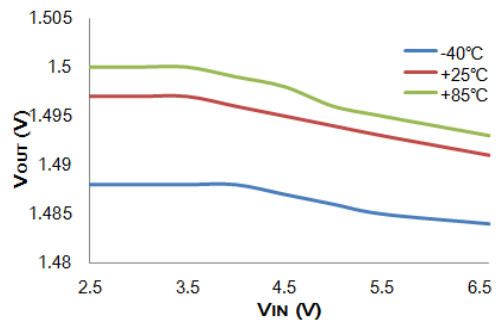
电压线性调整率: HT73L09 ( $I_{OUT}=10mA$ )



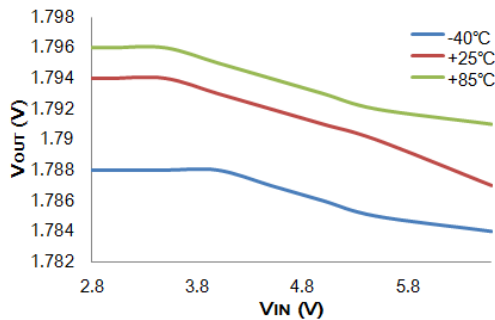
电压线性调整率: HT73L10 ( $I_{OUT}=10mA$ )



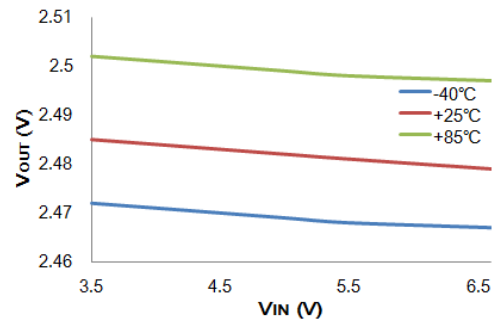
电压线性调整率: HT73L12 ( $I_{OUT}=10mA$ )



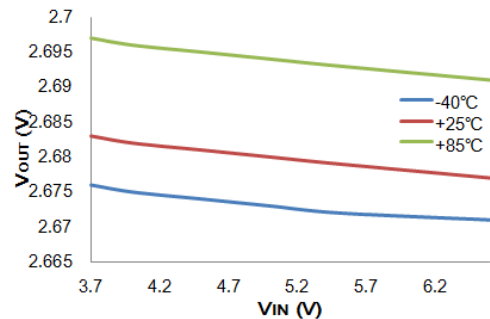
电压线性调整率: HT73L15 ( $I_{OUT}=10mA$ )



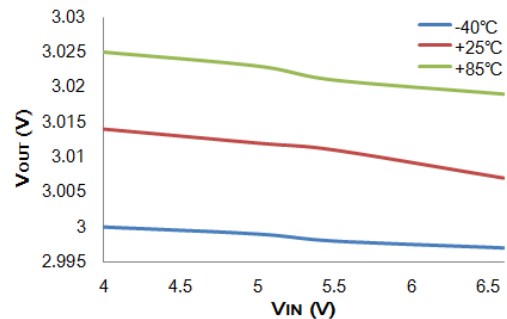
电压线性调整率: HT73L18 ( $I_{OUT}=10mA$ )



电压线性调整率: HT73L25 ( $I_{OUT}=10mA$ )

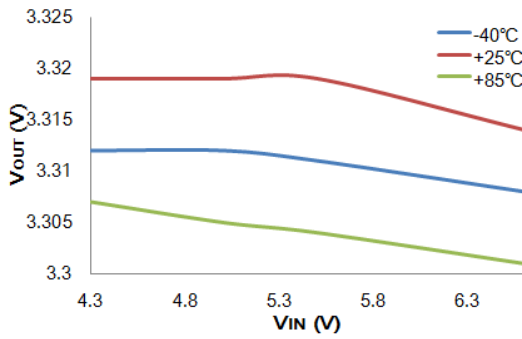


电压线性调整率: HT73L27 ( $I_{OUT}=10mA$ )

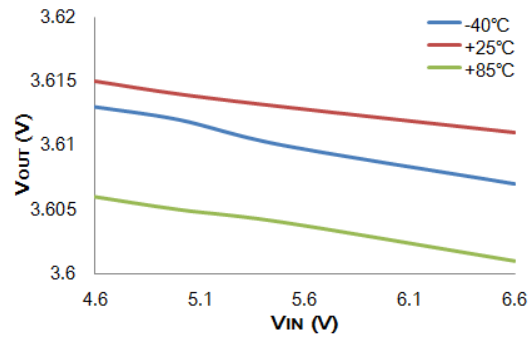


电压线性调整率: HT73L30 ( $I_{OUT}=10mA$ )

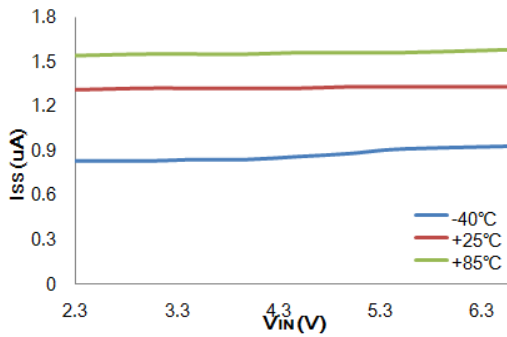
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



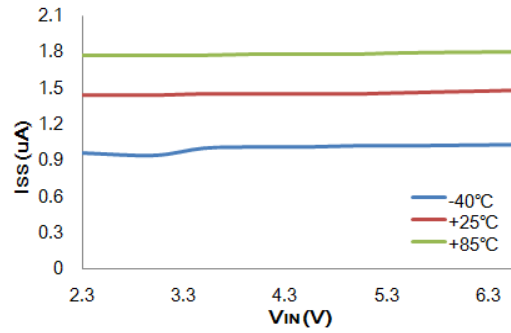
电压线性调整率: HT73L33 ( $I_{OUT}=10mA$ )



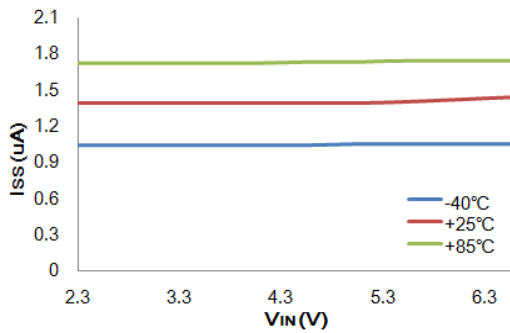
电压线性调整率: HT73L36 ( $I_{OUT}=10mA$ )



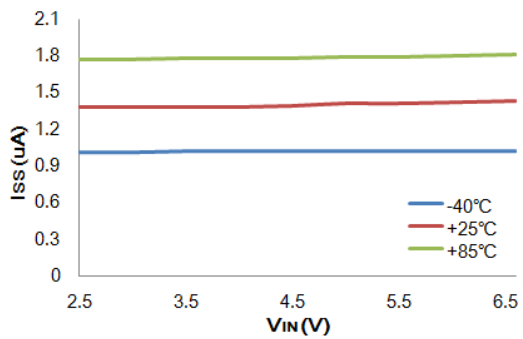
Iss vs Vin: HT73L09 ( $I_{OUT}=0mA$ )



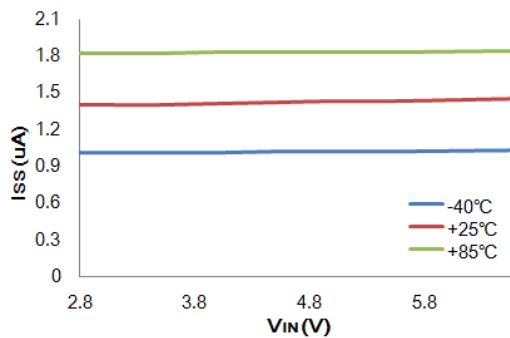
Iss vs Vin: HT73L10 ( $I_{OUT}=0mA$ )



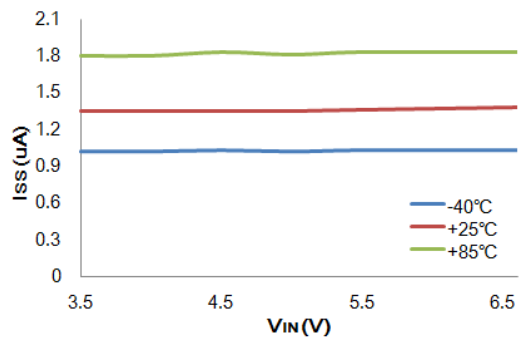
Iss vs Vin: HT73L12 ( $I_{OUT}=0mA$ )



Iss vs Vin: HT73L15 ( $I_{OUT}=0mA$ )

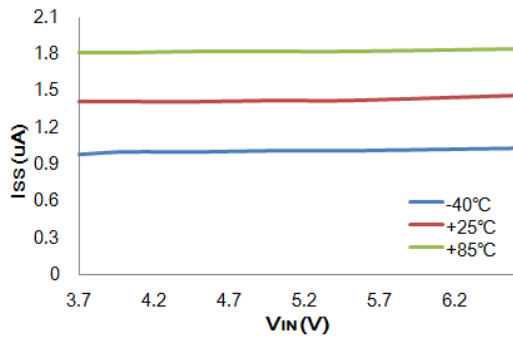


Iss vs Vin: HT73L18 ( $I_{OUT}=0mA$ )

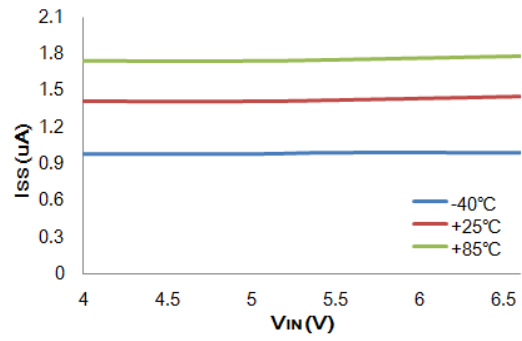


Iss vs Vin: HT73L25 ( $I_{OUT}=0mA$ )

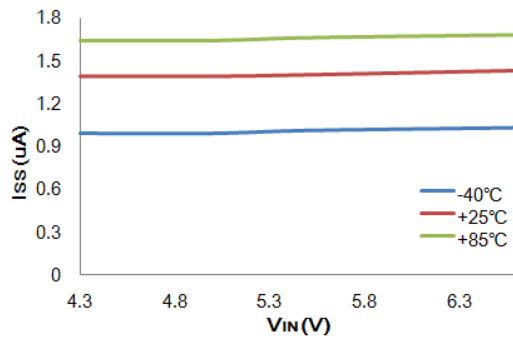
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



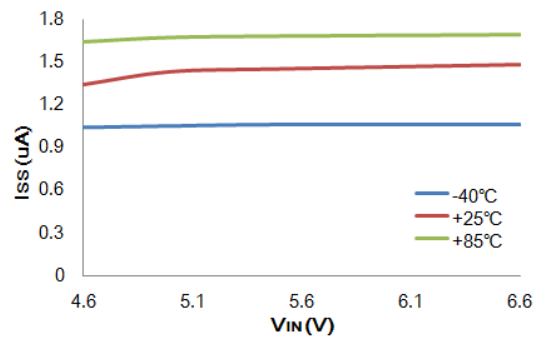
I<sub>SS</sub> vs V<sub>IN</sub>: HT73L27 (I<sub>OUT</sub>=0mA)



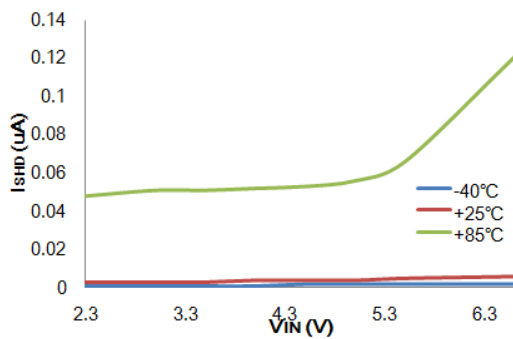
I<sub>SS</sub> vs V<sub>IN</sub>: HT73L30 (I<sub>OUT</sub>=0mA)



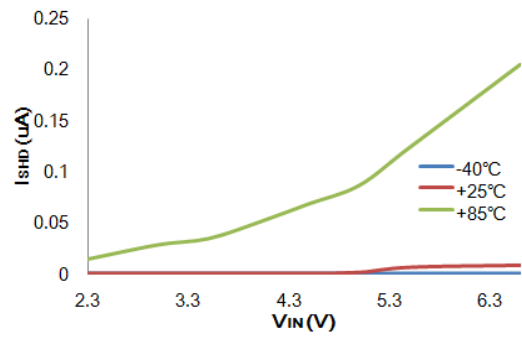
I<sub>SS</sub> vs V<sub>IN</sub>: HT73L33 (I<sub>OUT</sub>=0mA)



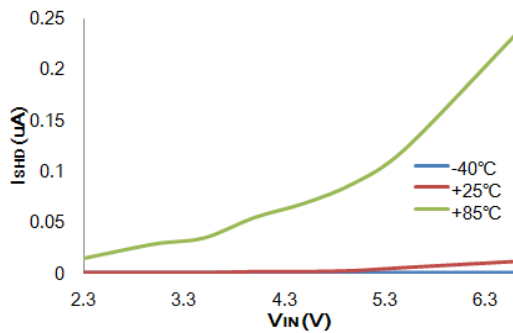
I<sub>SS</sub> vs V<sub>IN</sub>: HT73L36 (I<sub>OUT</sub>=0mA)



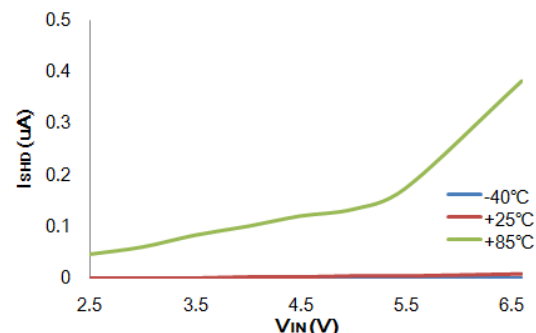
I<sub>SHD</sub> vs V<sub>IN</sub>: HT73L09 (I<sub>OUT</sub>=0mA)



I<sub>SHD</sub> vs V<sub>IN</sub>: HT73L10 (I<sub>OUT</sub>=0mA)

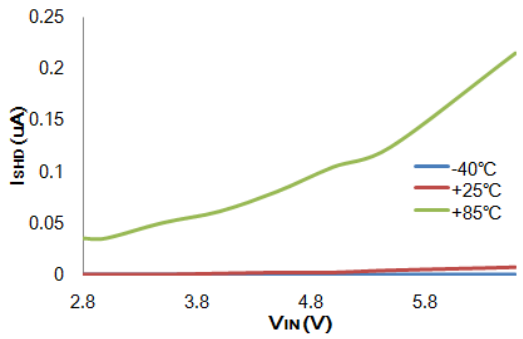


I<sub>SHD</sub> vs V<sub>IN</sub>: HT73L12 (I<sub>OUT</sub>=0mA)

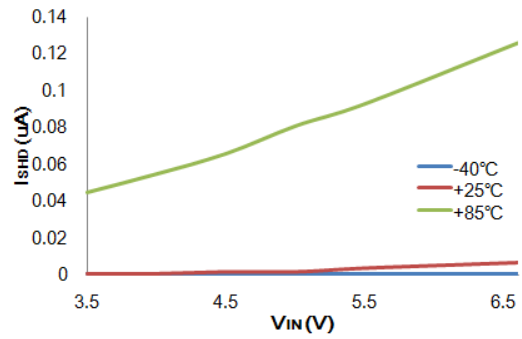


I<sub>SHD</sub> vs V<sub>IN</sub>: HT73L15 (I<sub>OUT</sub>=0mA)

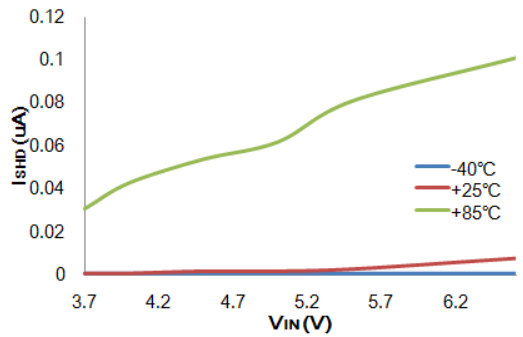
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



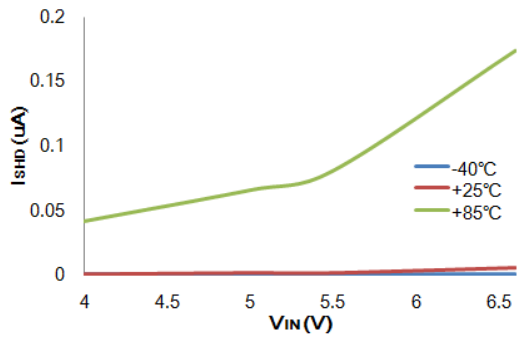
$I_{SHD}$  vs  $V_{IN}$ : HT73L18 ( $I_{OUT}=0mA$ )



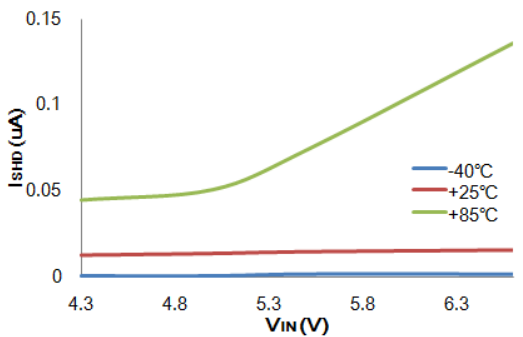
$I_{SHD}$  vs  $V_{IN}$ : HT73L25 ( $I_{OUT}=0mA$ )



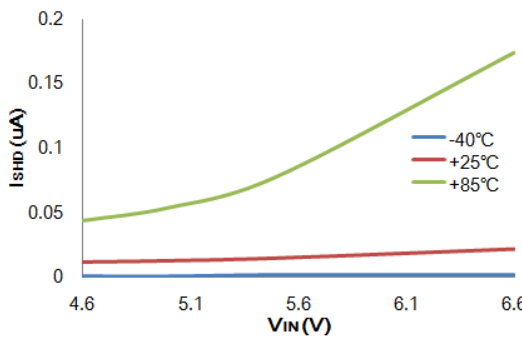
$I_{SHD}$  vs  $V_{IN}$ : HT73L27 ( $I_{OUT}=0mA$ )



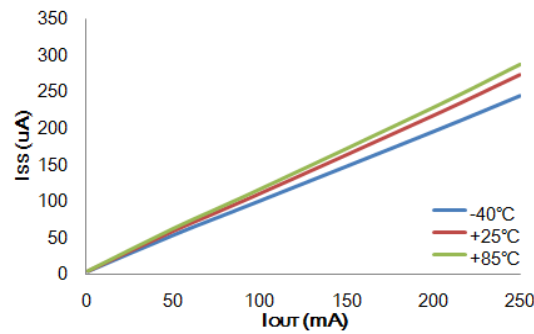
$I_{SHD}$  vs  $V_{IN}$ : HT73L30 ( $I_{OUT}=0mA$ )



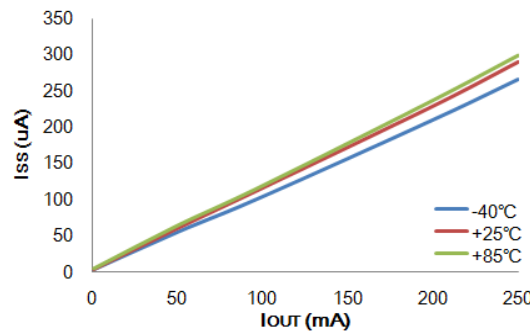
$I_{SHD}$  vs  $V_{IN}$ : HT73L33 ( $I_{OUT}=0mA$ )



$I_{SHD}$  vs  $V_{IN}$ : HT73L36 ( $I_{OUT}=0mA$ )



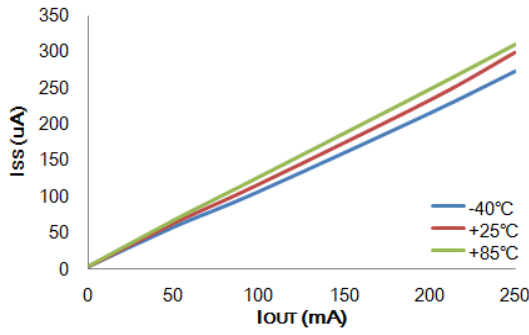
$I_{SS}$  vs  $I_{OUT}$ : HT73L09 ( $V_{IN}=2.3V$ )



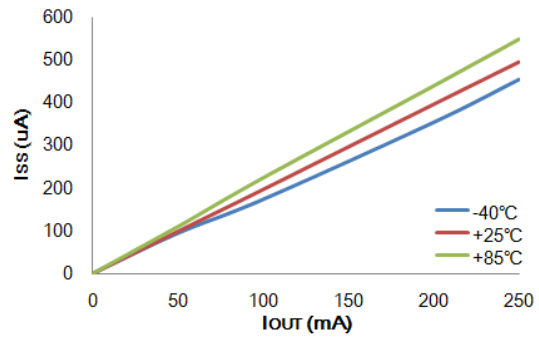
$I_{SS}$  vs  $I_{OUT}$ : HT73L10 ( $V_{IN}=2.3V$ )



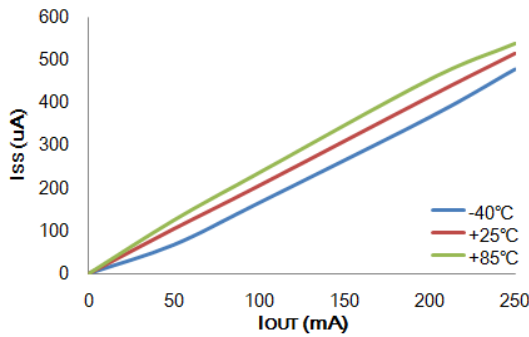
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



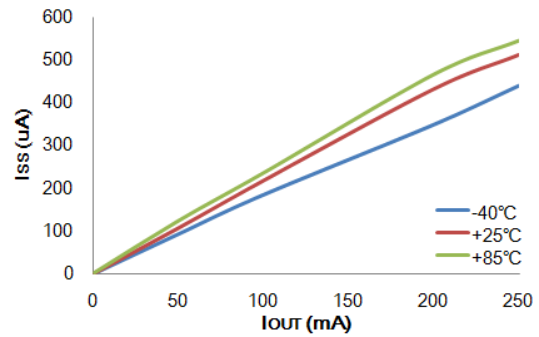
I<sub>SS</sub> vs I<sub>OUT</sub>: HT73L12 ( $V_{IN}=2.3V$ )



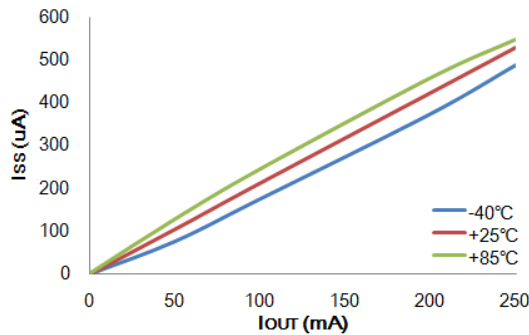
I<sub>SS</sub> vs I<sub>OUT</sub>: HT73L15 ( $V_{IN}=2.5V$ )



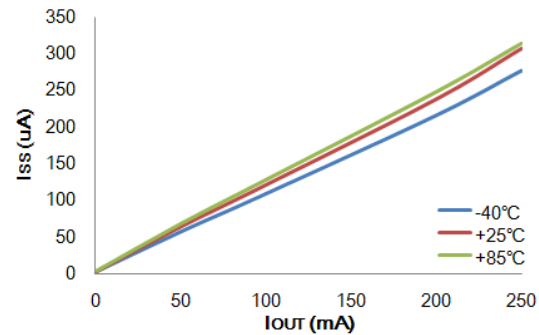
I<sub>SS</sub> vs I<sub>OUT</sub>: HT73L18 ( $V_{IN}=2.8V$ )



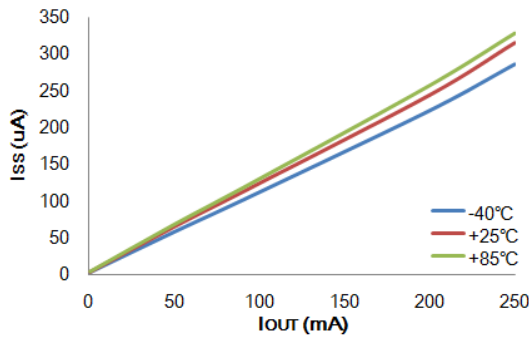
I<sub>SS</sub> vs I<sub>OUT</sub>: HT73L25 ( $V_{IN}=3.5V$ )



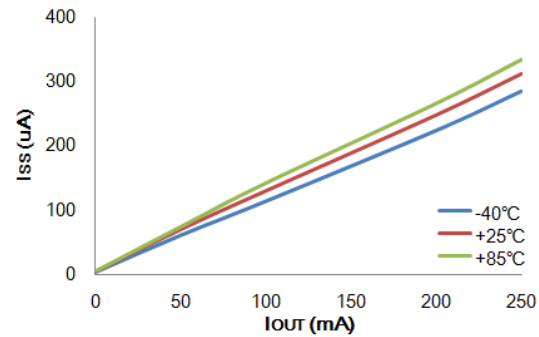
I<sub>SS</sub> vs I<sub>OUT</sub>: HT73L27 ( $V_{IN}=3.7V$ )



I<sub>SS</sub> vs I<sub>OUT</sub>: HT73L30 ( $V_{IN}=4.0V$ )

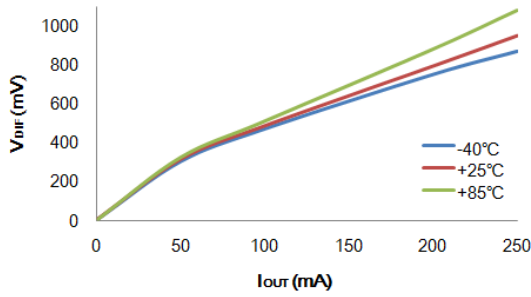


I<sub>SS</sub> vs I<sub>OUT</sub>: HT73L33 ( $V_{IN}=4.3V$ )

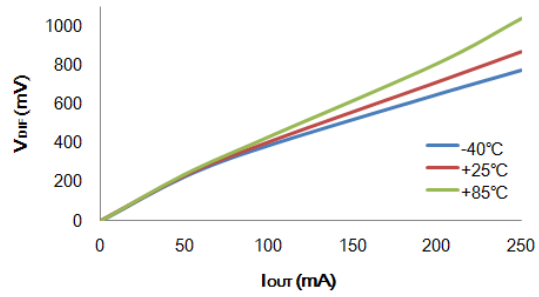


I<sub>SS</sub> vs I<sub>OUT</sub>: HT73L36 ( $V_{IN}=4.6V$ )

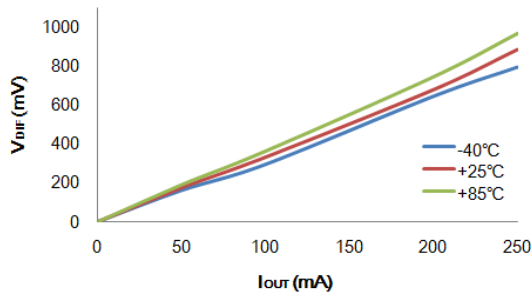
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



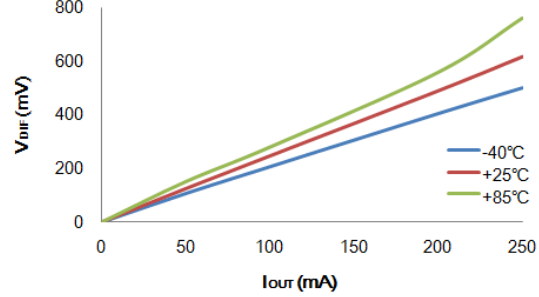
压差: HT73L09



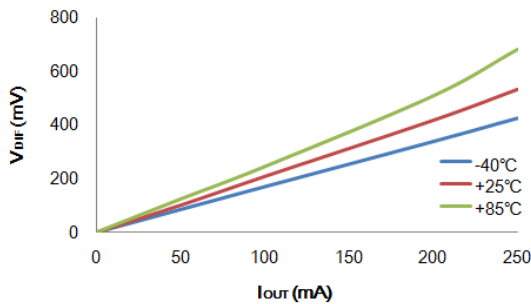
压差: HT73L10



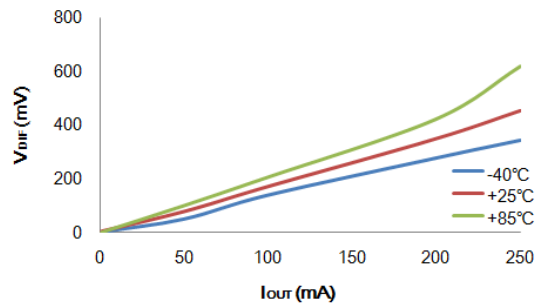
压差: HT73L12



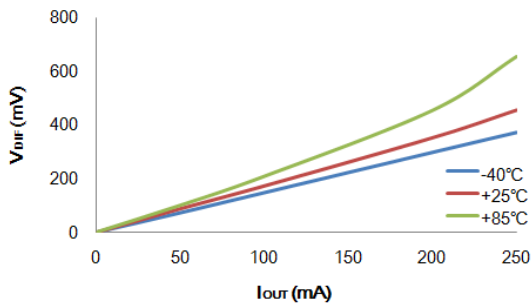
压差: HT73L15



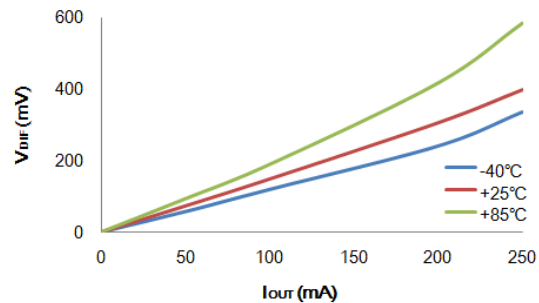
压差: HT73L18



压差: HT73L25

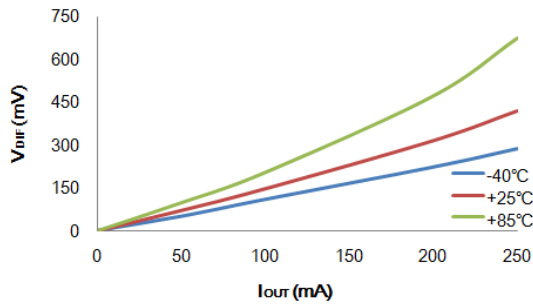


压差: HT73L27

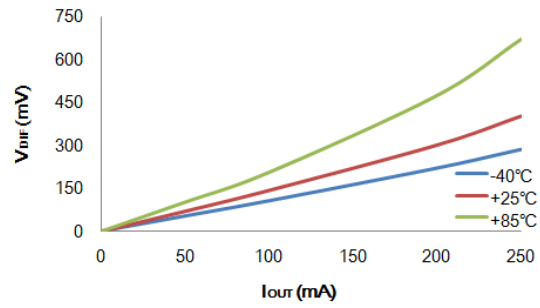


压差: HT73L30

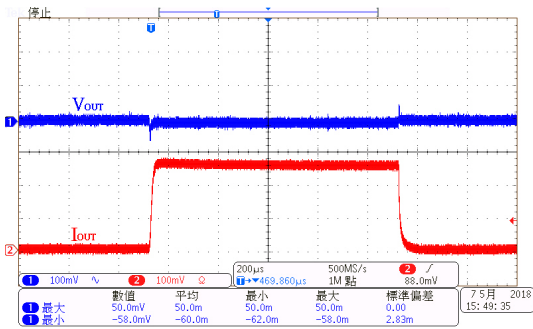
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



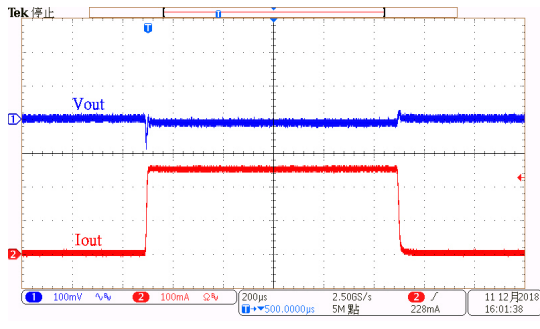
压差: HT73L33



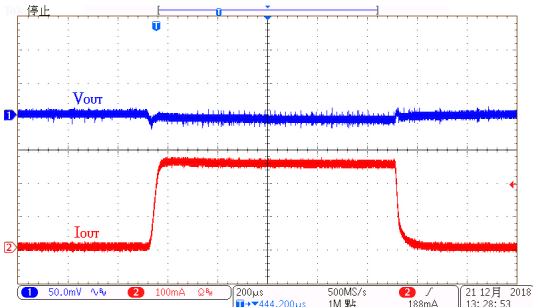
压差: HT73L36



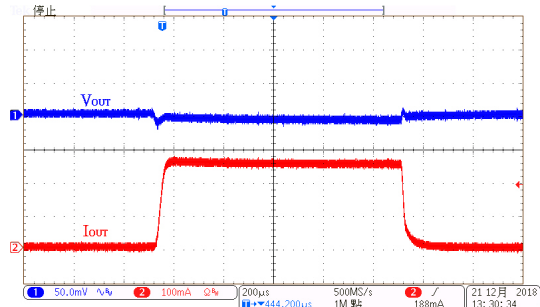
负载瞬态响应: HT73L09  
( $V_{IN}=2.3V$ ,  $I_{OUT}=1mA$  to  $250mA$ )



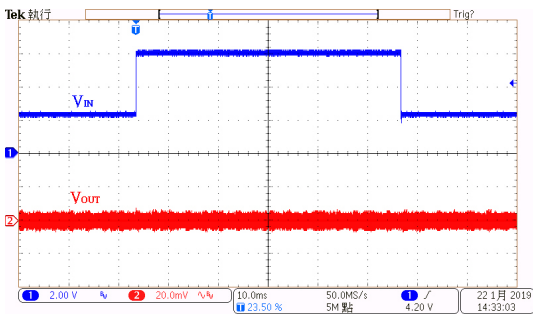
负载瞬态响应: HT73L10  
( $V_{IN}=2.3V$ ,  $I_{OUT}=1mA$  to  $250mA$ )



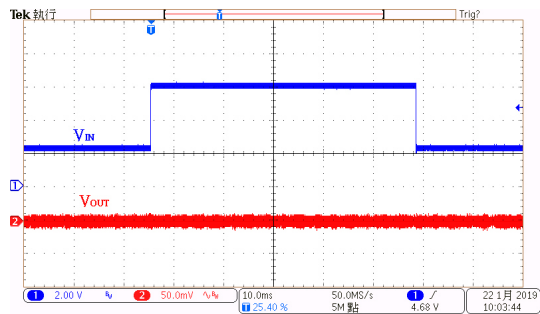
负载瞬态响应: HT73L09  
( $V_{IN}=6.0V$ ,  $I_{OUT}=1mA$  to  $250mA$ )



负载瞬态响应: HT73L10  
( $V_{IN}=6.0V$ ,  $I_{OUT}=1mA$  to  $250mA$ )

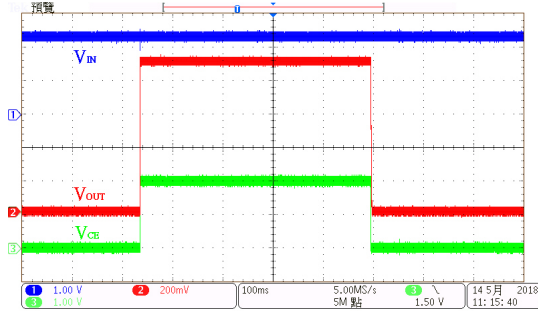


线性瞬态响应: HT73L09  
( $V_{IN}=2.3V$  to  $6.0V$ ,  $I_{OUT}=10mA$ )

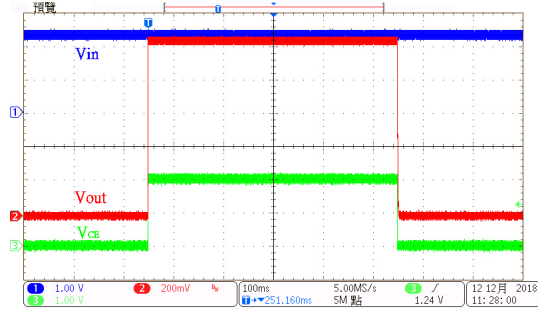


线性瞬态响应: HT73L10  
( $V_{IN}=2.3V$  to  $6.0V$ ,  $I_{OUT}=10mA$ )

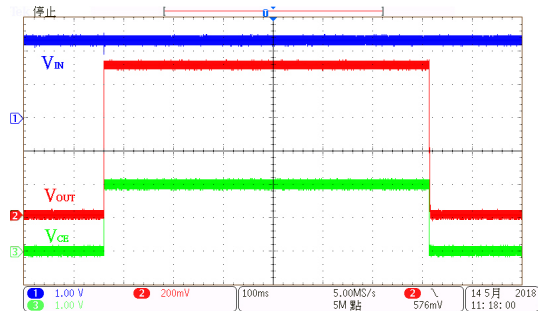
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



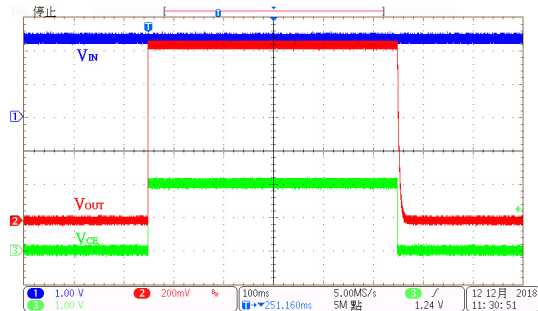
上电 / 掉电响应: HT73L09  
( $V_{IN}=2.3V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )



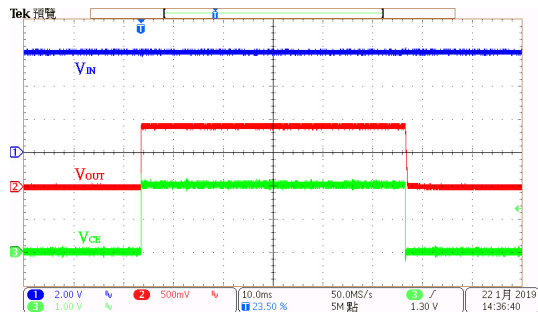
上电 / 掉电响应: HT73L10  
( $V_{IN}=2.3V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )



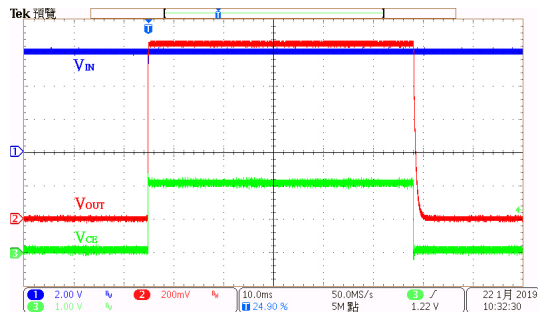
上电 / 掉电响应: HT73L09  
( $V_{IN}=2.3V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )



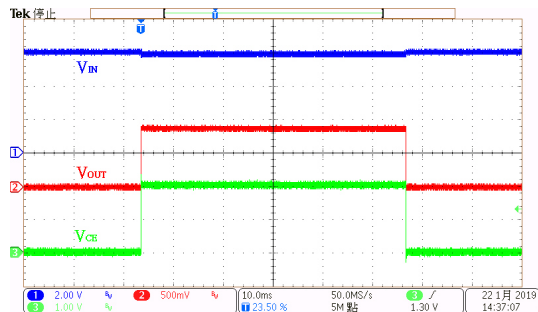
上电 / 掉电响应: HT73L10  
( $V_{IN}=2.3V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )



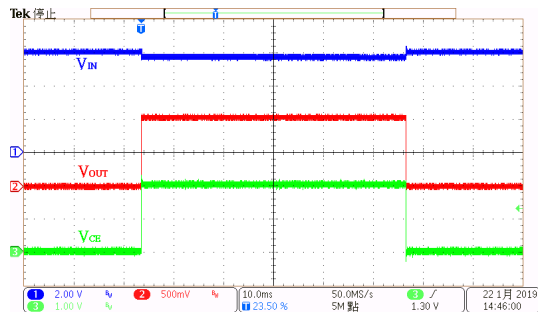
上电 / 掉电响应: HT73L09  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )



上电 / 掉电响应: HT73L10  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )

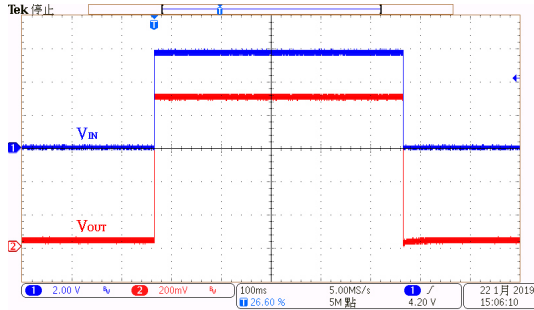


上电 / 掉电响应: HT73L09  
( $V_{IN}=6.0V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )

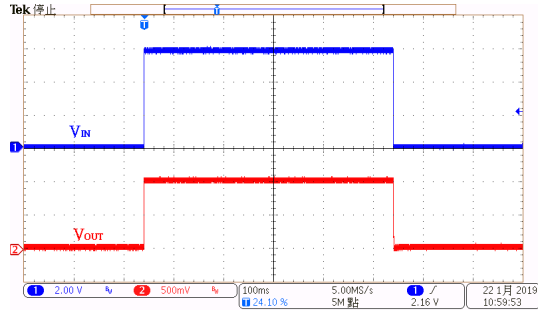


上电 / 掉电响应: HT73L10  
( $V_{IN}=6.0V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )

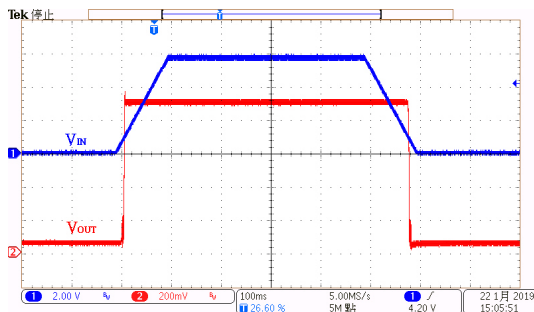
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



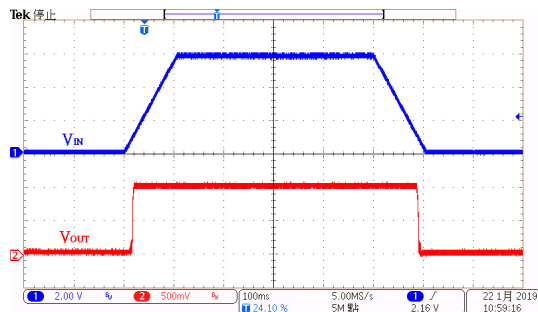
电源上电 / 掉电响应: HT73L09  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=0.1ms$ )



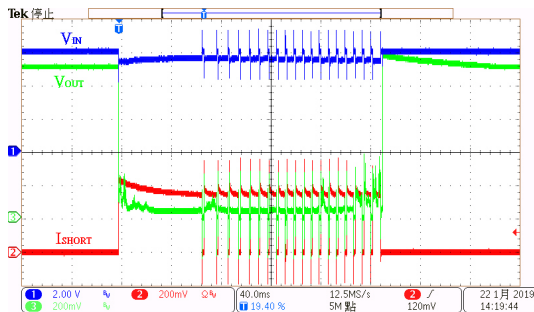
电源上电 / 掉电响应: HT73L10  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=0.1ms$ )



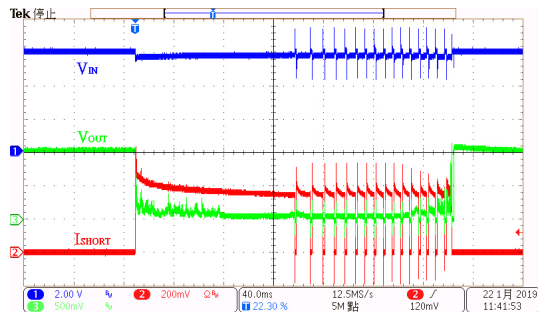
电源上电 / 掉电响应: HT73L09  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=100ms$ )



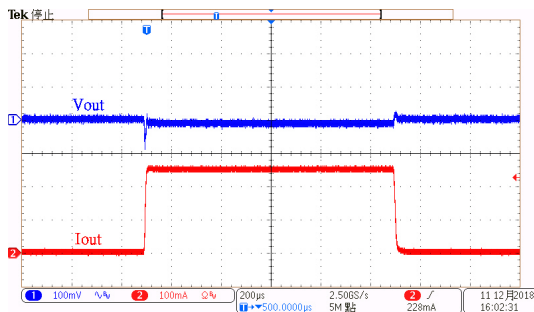
电源上电 / 掉电响应: HT73L10  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=100ms$ )



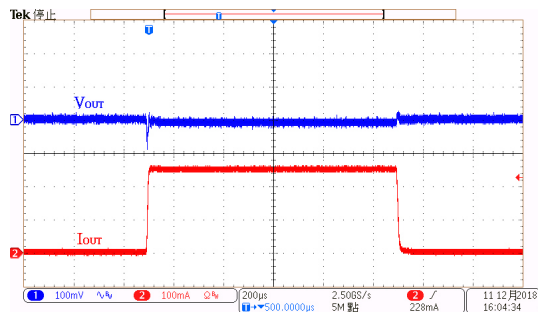
短路保护: HT73L09  
( $V_{IN}=6.0V$ ,  $V_{OUT}$  短路)



短路保护: HT73L10  
( $V_{IN}=6.0V$ ,  $V_{OUT}$  短路)

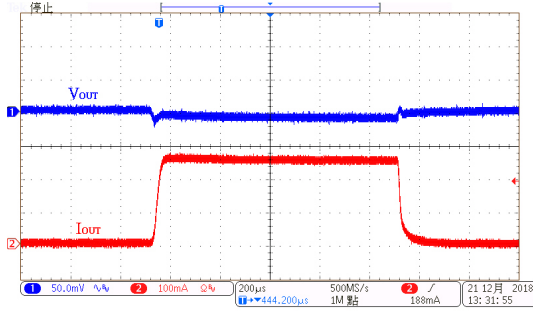


负载瞬态响应: HT73L12  
( $V_{IN}=2.3V$ ,  $I_{OUT}=1mA$  to  $250mA$ )

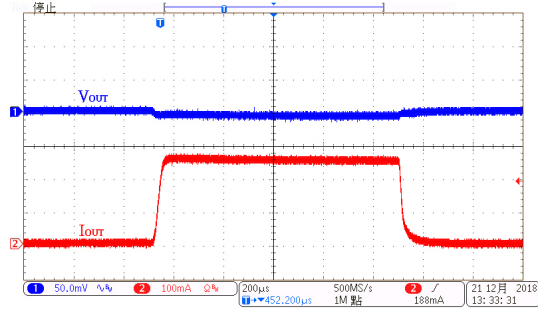


负载瞬态响应: HT73L15  
( $V_{IN}=2.5V$ ,  $I_{OUT}=1mA$  to  $250mA$ )

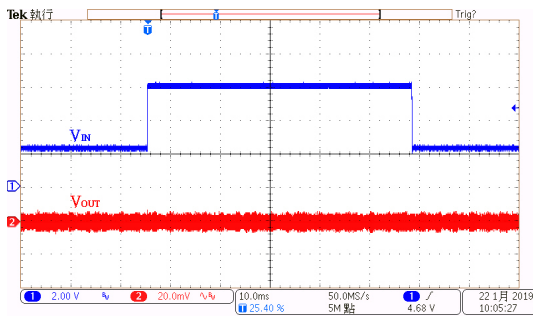
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



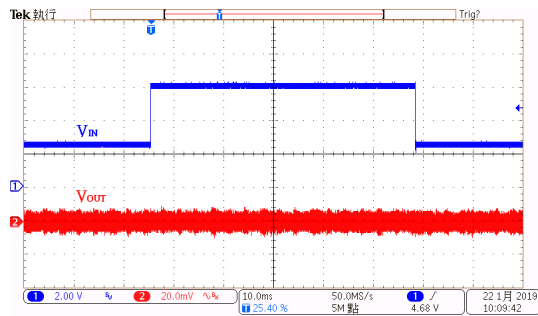
负载瞬态响应: HT73L12  
( $V_{IN}=6.0V$ ,  $I_{OUT}=1mA$  to  $250mA$ )



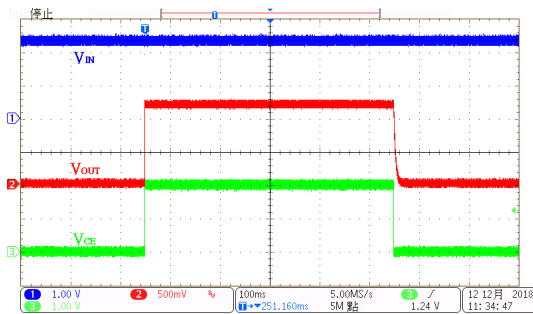
负载瞬态响应: HT73L15  
( $V_{IN}=6.0V$ ,  $I_{OUT}=1mA$  to  $250mA$ )



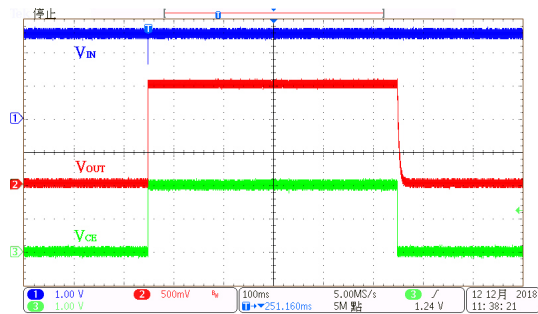
线性瞬态响应: HT73L12  
( $V_{IN}=2.3V$  to  $6.0V$ ,  $I_{OUT}=10mA$ )



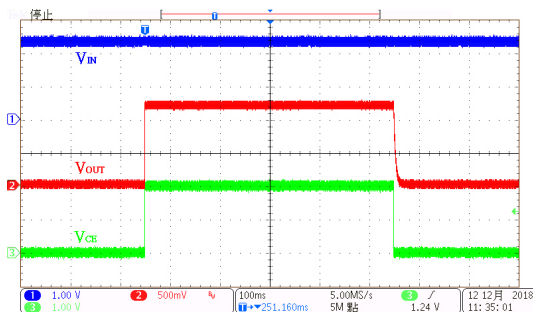
线性瞬态响应: HT73L15  
( $V_{IN}=2.5V$  to  $6.0V$ ,  $I_{OUT}=10mA$ )



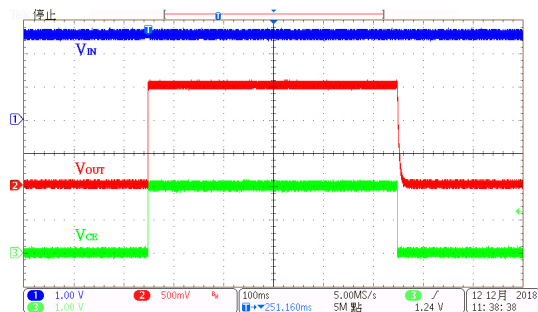
上电 / 掉电响应: HT73L12  
( $V_{IN}=2.3V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )



上电 / 掉电响应: HT73L15  
( $V_{IN}=2.5V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )

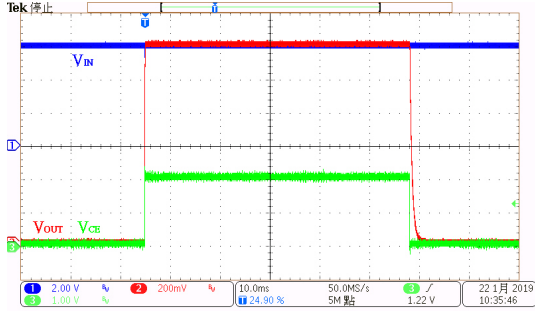


上电 / 掉电响应: HT73L12  
( $V_{IN}=2.3V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )

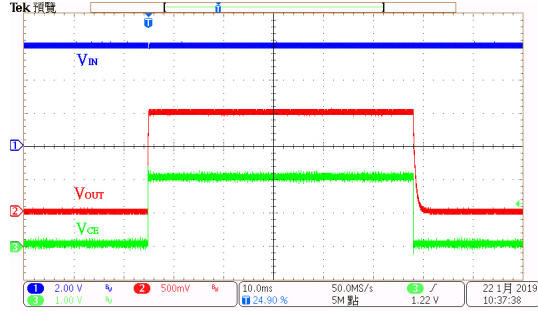


上电 / 掉电响应: HT73L15  
( $V_{IN}=2.5V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )

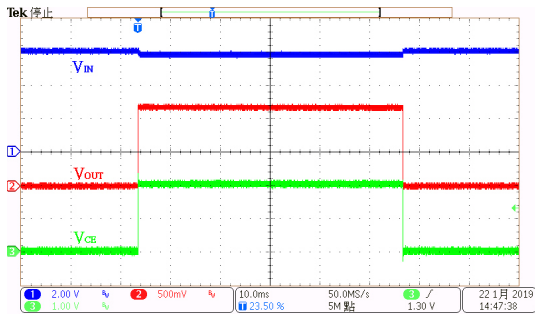
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



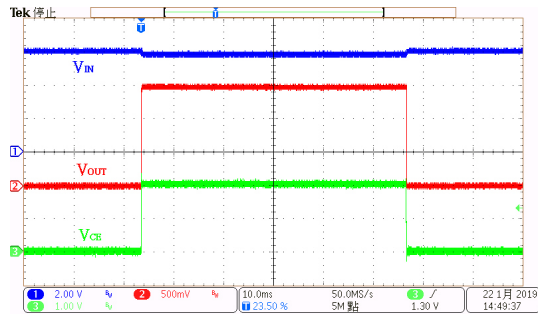
上电 / 掉电响应: HT73L12  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )



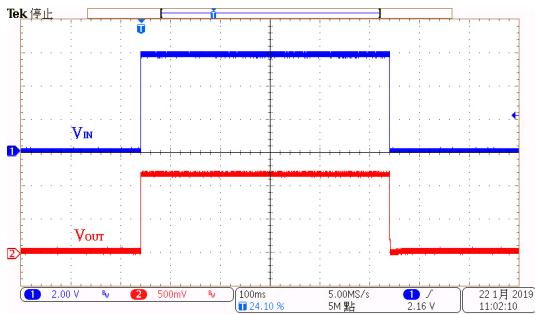
上电 / 掉电响应: HT73L15  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )



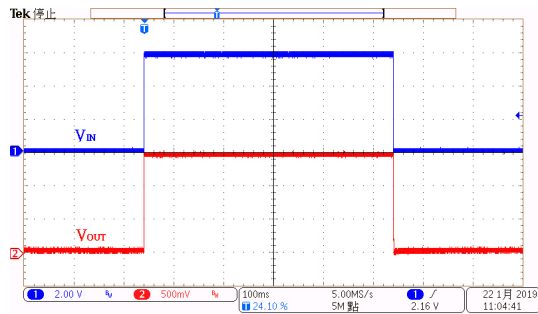
上电 / 掉电响应: HT73L12  
( $V_{IN}=6.0V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )



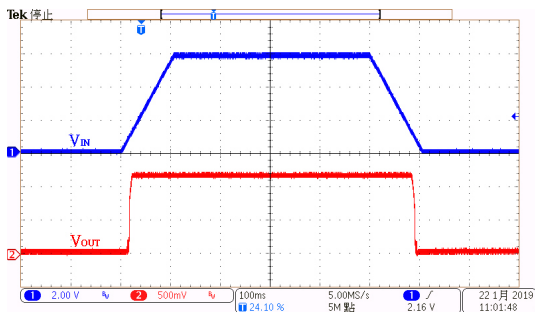
上电 / 掉电响应: HT73L15  
( $V_{IN}=6.0V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )



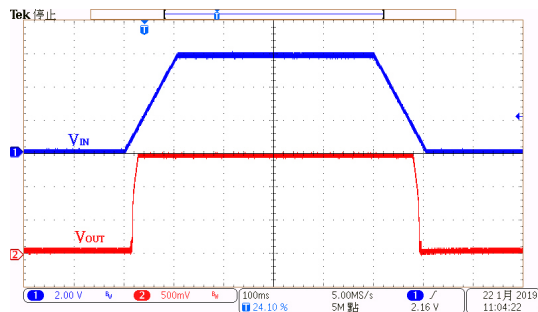
电源上电 / 掉电响应: HT73L12  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=0.1ms$ )



电源上电 / 掉电响应: HT73L15  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=0.1ms$ )

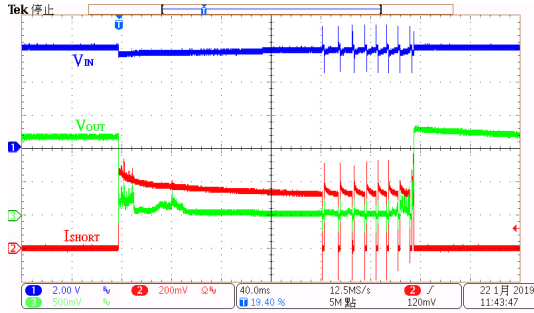


电源上电 / 掉电响应: HT73L12  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=100ms$ )

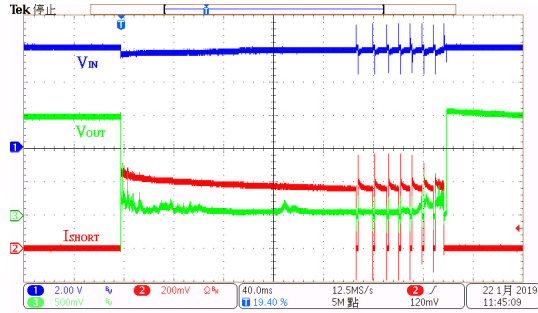


电源上电 / 掉电响应: HT73L15  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=100ms$ )

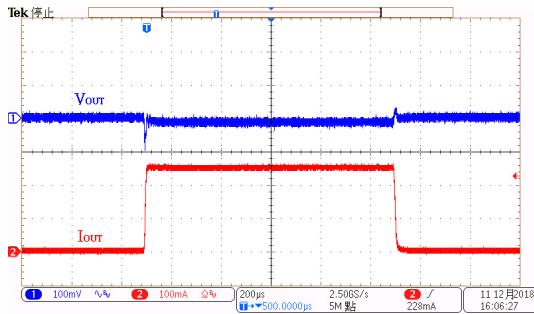
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



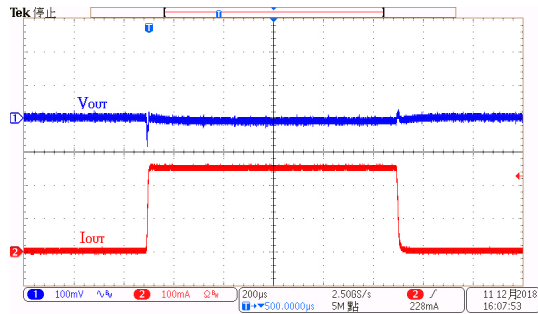
短路保护: HT73L12  
( $V_{IN}=6.0V$ ,  $V_{OUT}$  短路)



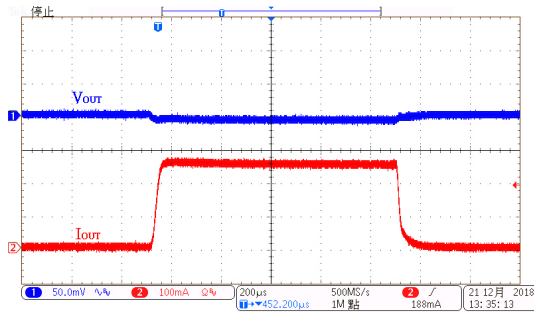
短路保护: HT73L15  
( $V_{IN}=6.0V$ ,  $V_{OUT}$  短路)



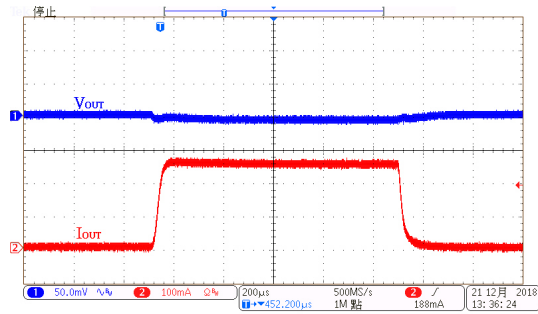
负载瞬态响应: HT73L18  
( $V_{IN}=2.8V$ ,  $I_{OUT}=1mA$  to  $250mA$ )



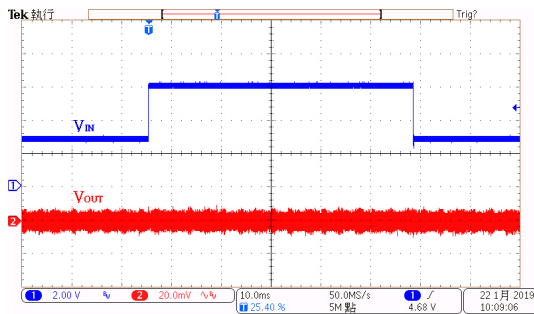
负载瞬态响应: HT73L25  
( $V_{IN}=3.5V$ ,  $I_{OUT}=1mA$  to  $250mA$ )



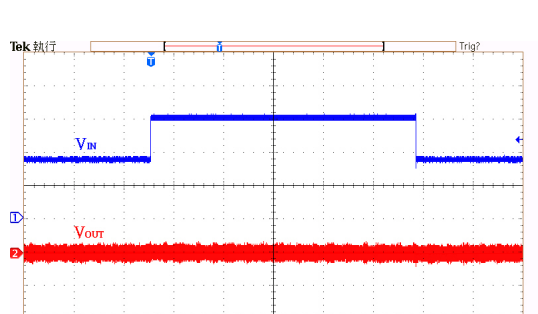
负载瞬态响应: HT73L18  
( $V_{IN}=6.0V$ ,  $I_{OUT}=1mA$  to  $250mA$ )



负载瞬态响应: HT73L25  
( $V_{IN}=6.0V$ ,  $I_{OUT}=1mA$  to  $250mA$ )



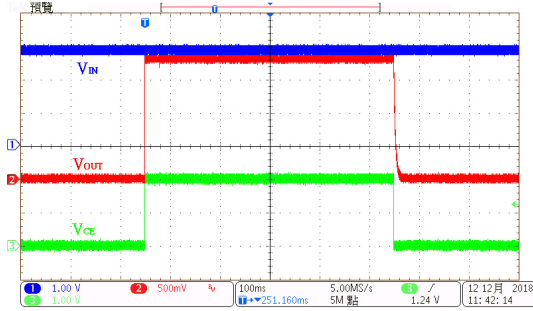
线性瞬态响应: HT73L18  
( $V_{IN}=2.8V$  to  $6.0V$ ,  $I_{OUT}=10mA$ )



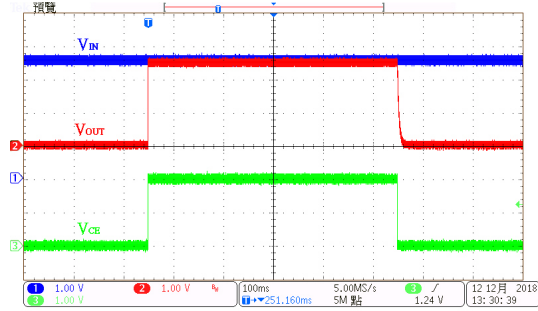
线性瞬态响应: HT73L25  
( $V_{IN}=3.5V$  to  $6.0V$ ,  $I_{OUT}=10mA$ )



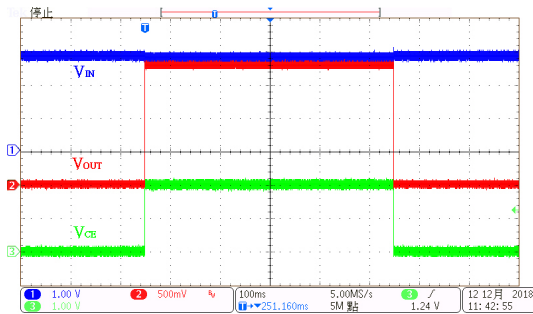
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



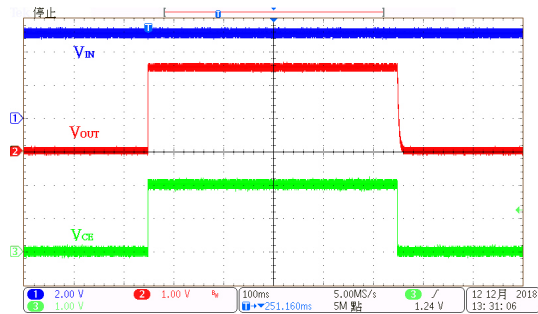
上电 / 掉电响应: HT73L18  
( $V_{IN}=2.8V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )



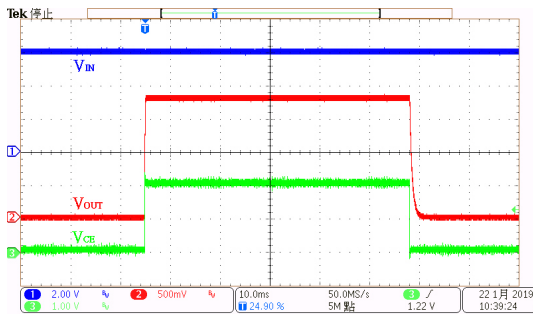
上电 / 掉电响应: HT73L25  
( $V_{IN}=3.5V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )



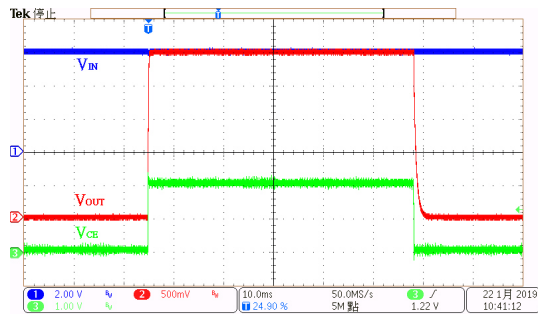
上电 / 掉电响应: HT73L18  
( $V_{IN}=2.8V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )



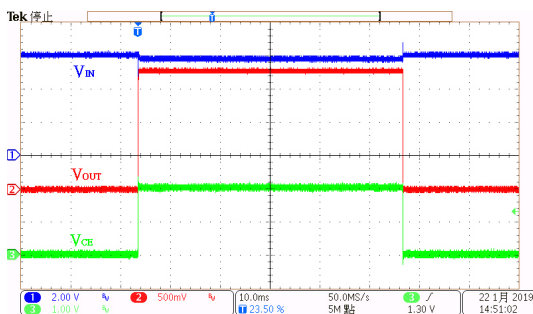
上电 / 掉电响应: HT73L25  
( $V_{IN}=3.5V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )



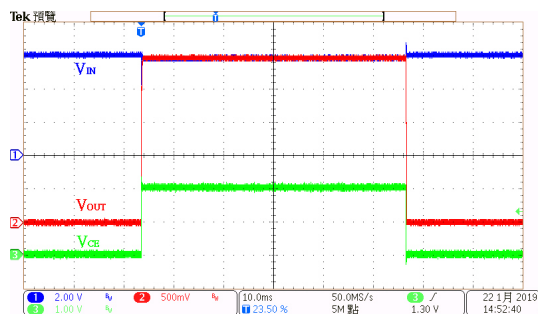
上电 / 掉电响应: HT73L18  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )



上电 / 掉电响应: HT73L25  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )

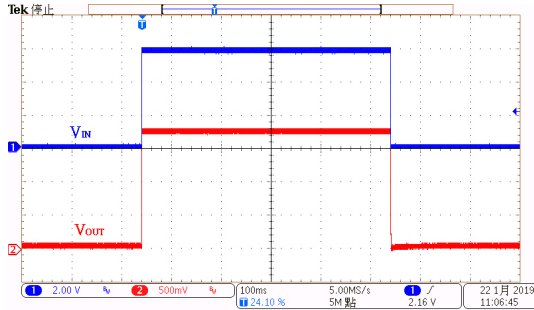


上电 / 掉电响应: HT73L18  
( $V_{IN}=6.0V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )

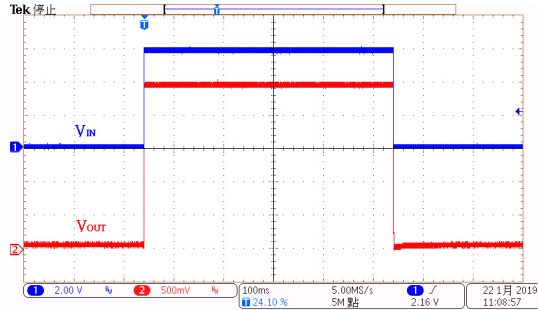


上电 / 掉电响应: HT73L25  
( $V_{IN}=6.0V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )

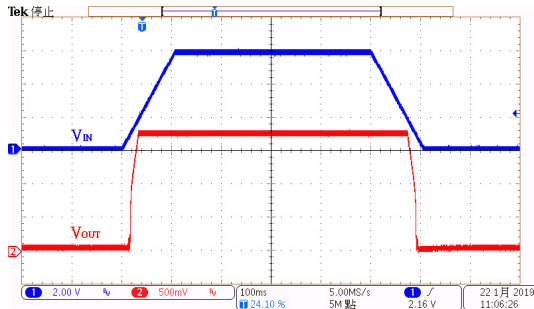
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



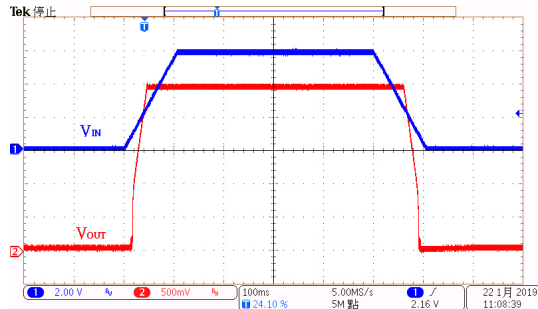
电源上电 / 掉电响应: HT73L18  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=0.1ms$ )



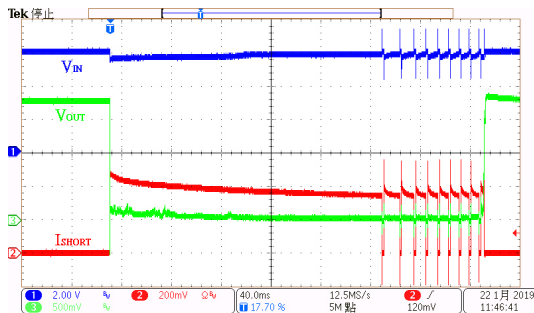
电源上电 / 掉电响应: HT73L25  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=0.1ms$ )



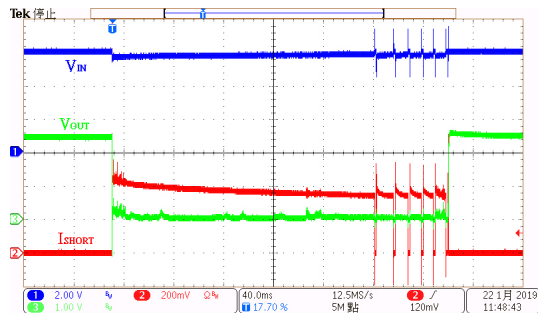
电源上电 / 掉电响应: HT73L18  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=100ms$ )



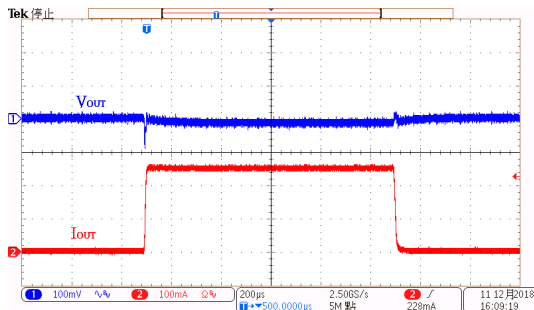
电源上电 / 掉电响应: HT73L25  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=100ms$ )



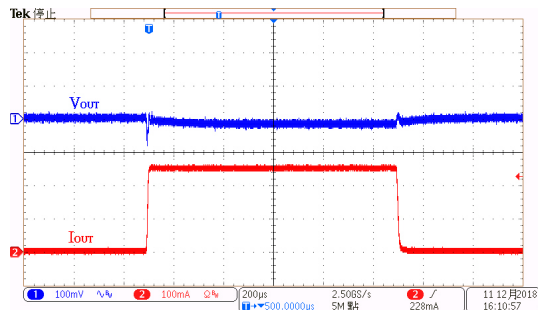
短路保护: HT73L18  
( $V_{IN}=6.0V$ ,  $V_{OUT}$  短路)



短路保护: HT73L25  
( $V_{IN}=6.0V$ ,  $V_{OUT}$  短路)

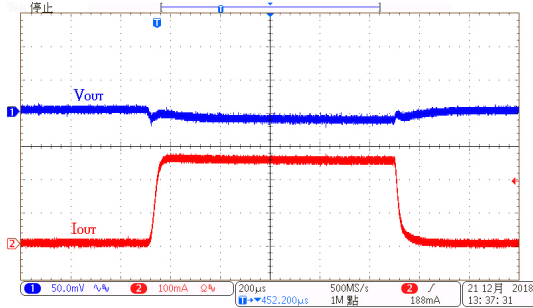


负载瞬态响应: HT73L27  
( $V_{IN}=3.7V$ ,  $I_{OUT}=1mA$  to  $250mA$ )

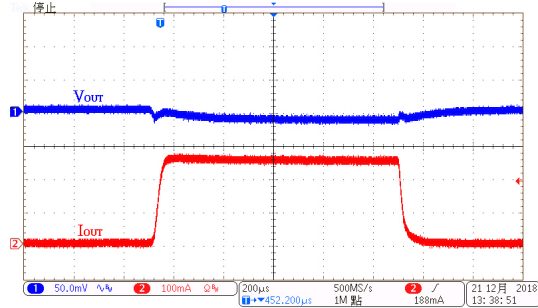


负载瞬态响应: HT73L30  
( $V_{IN}=4.0V$ ,  $I_{OUT}=1mA$  to  $250mA$ )

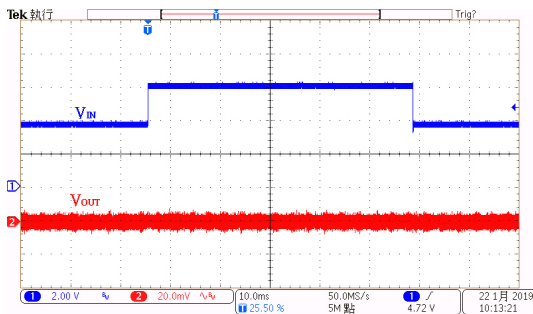
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



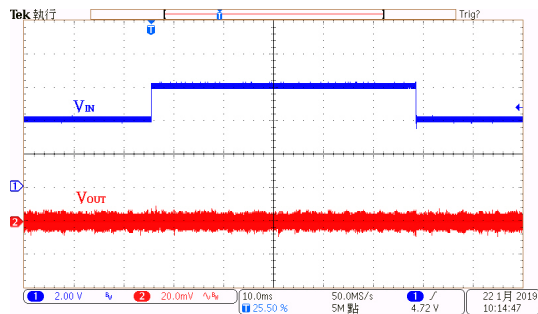
负载瞬态响应: HT73L27  
( $V_{IN}=6.0V$ ,  $I_{OUT}=1mA$  to  $250mA$ )



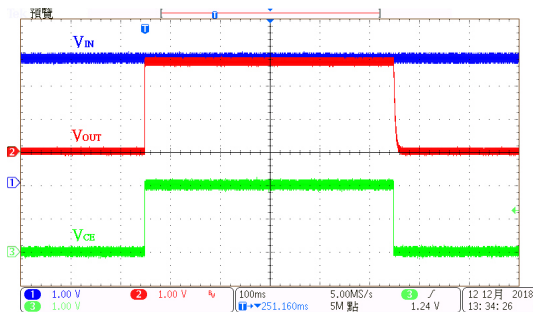
负载瞬态响应: HT73L30  
( $V_{IN}=6.0V$ ,  $I_{OUT}=1mA$  to  $250mA$ )



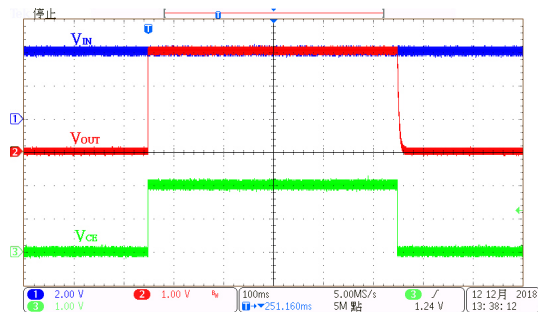
线性瞬态响应: HT73L27  
( $V_{IN}=3.7V$  to  $6.0V$ ,  $I_{OUT}=10mA$ )



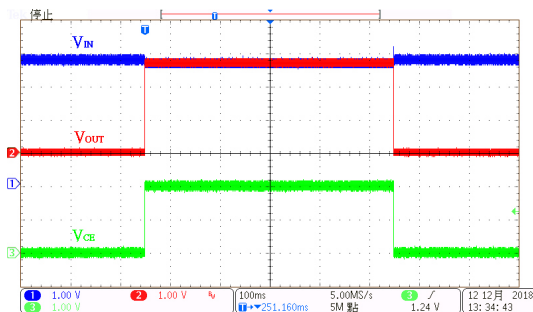
线性瞬态响应: HT73L30  
( $V_{IN}=3.5V$  to  $6.0V$ ,  $I_{OUT}=10mA$ )



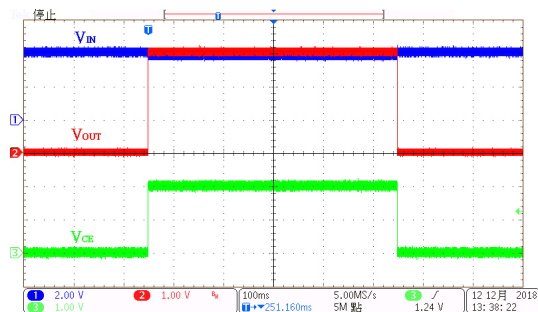
上电 / 掉电响应: HT73L27  
( $V_{IN}=3.7V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )



上电 / 掉电响应: HT73L30  
( $V_{IN}=4.0V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )

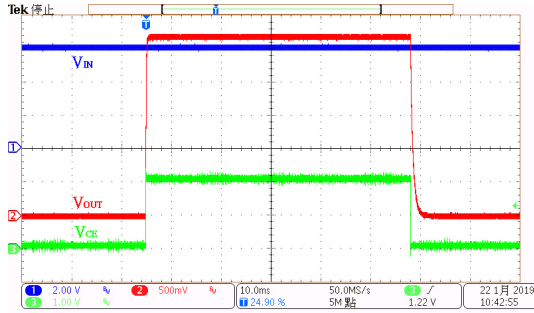


上电 / 掉电响应: HT73L27  
( $V_{IN}=3.7V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )

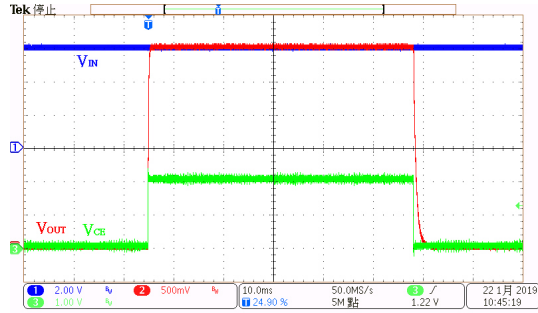


上电 / 掉电响应: HT73L30  
( $V_{IN}=4.0V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )

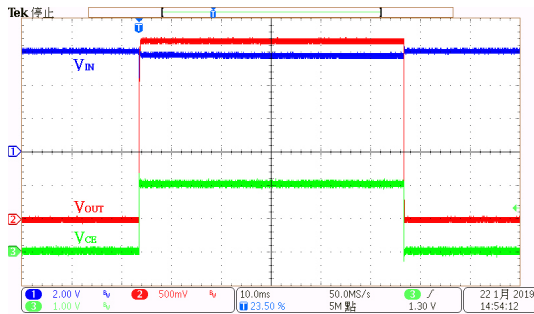
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



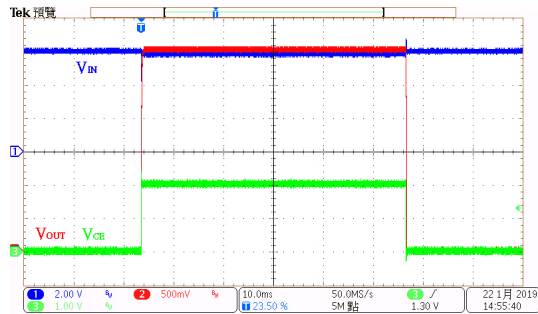
上电 / 掉电响应: HT73L27  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )



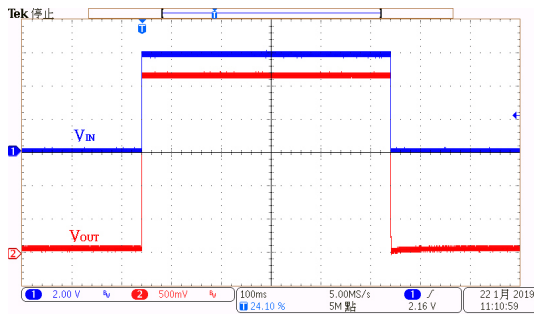
上电 / 掉电响应: HT73L30  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )



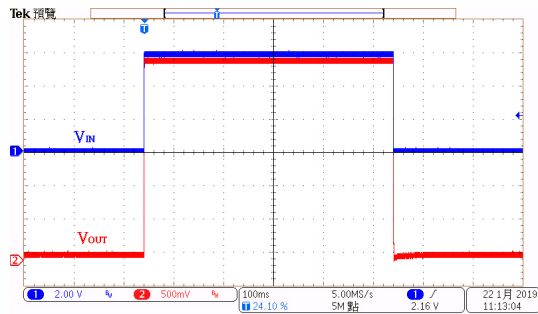
上电 / 掉电响应: HT73L27  
( $V_{IN}=6.0V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )



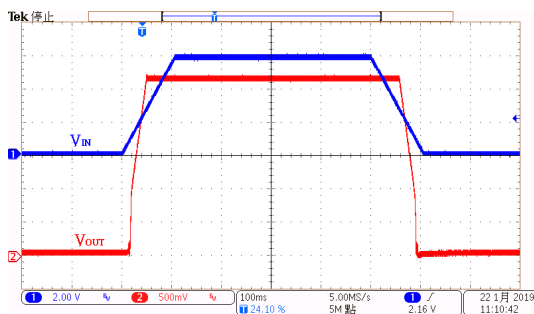
上电 / 掉电响应: HT73L30  
( $V_{IN}=6.0V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )



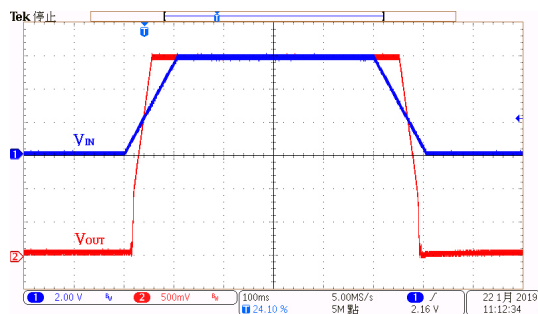
电源上电 / 掉电响应: HT73L27  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=0.1ms$ )



电源上电 / 掉电响应: HT73L30  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=0.1ms$ )

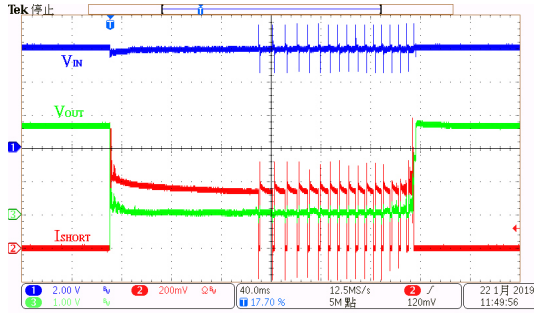


电源上电 / 掉电响应: HT73L27  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=100ms$ )

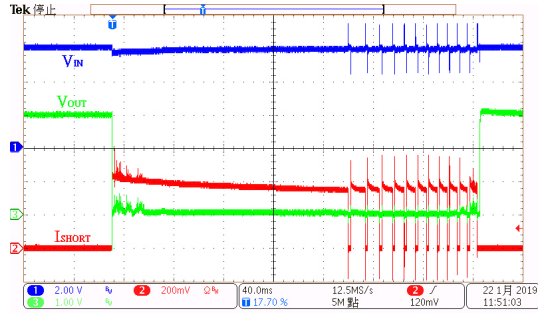


电源上电 / 掉电响应: HT73L30  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=100ms$ )

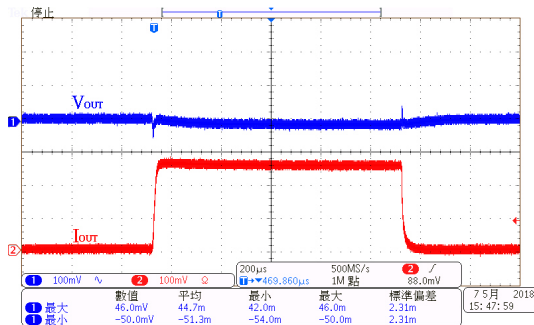
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



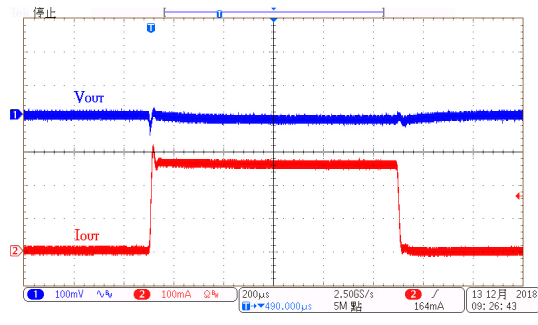
短路保护: HT73L27  
( $V_{IN}=6.0V$ ,  $V_{OUT}$  短路)



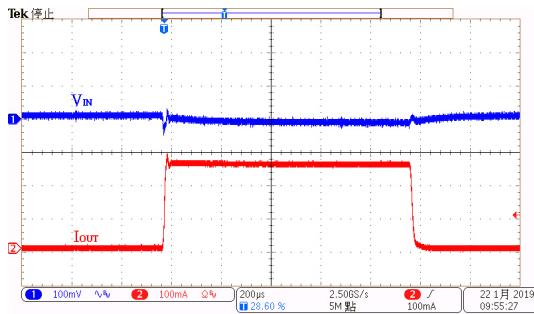
短路保护: HT73L30  
( $V_{IN}=6.0V$ ,  $V_{OUT}$  短路)



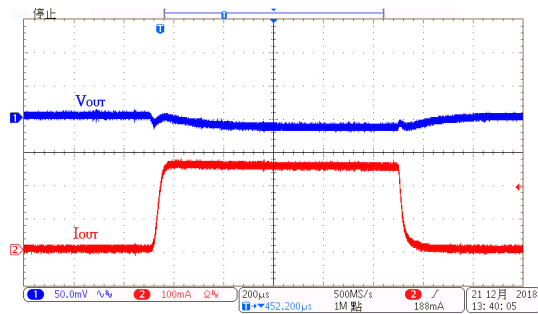
负载瞬态响应: HT73L33  
( $V_{IN}=4.3V$ ,  $I_{OUT}=1mA$  to  $250mA$ )



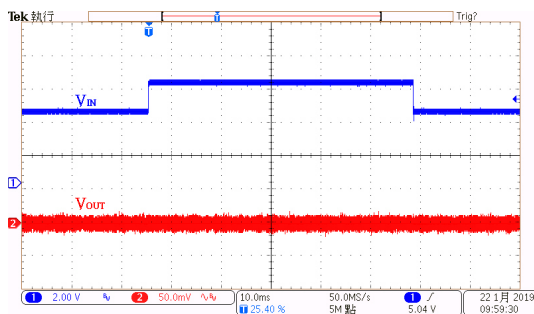
负载瞬态响应: HT73L36  
( $V_{IN}=4.6V$ ,  $I_{OUT}=1mA$  to  $250mA$ )



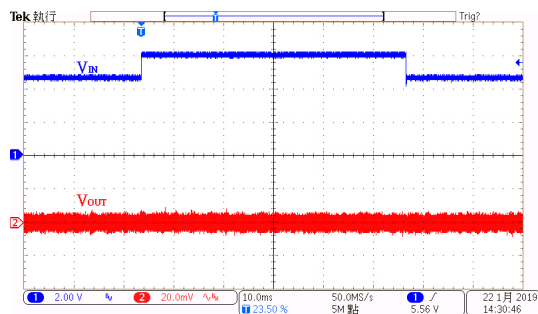
负载瞬态响应: HT73L33  
( $V_{IN}=6.0V$ ,  $I_{OUT}=1mA$  to  $250mA$ )



负载瞬态响应: HT73L36  
( $V_{IN}=6.0V$ ,  $I_{OUT}=1mA$  to  $250mA$ )

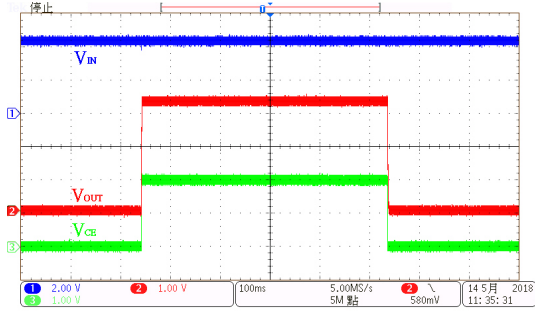


线性瞬态响应: HT73L33  
( $V_{IN}=4.3V$  to  $6.0V$ ,  $I_{OUT}=10mA$ )

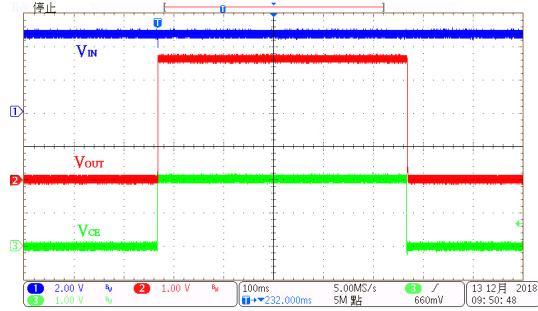


线性瞬态响应: HT73L36  
( $V_{IN}=4.6$  to  $6.0V$ ,  $I_{OUT}=10mA$ )

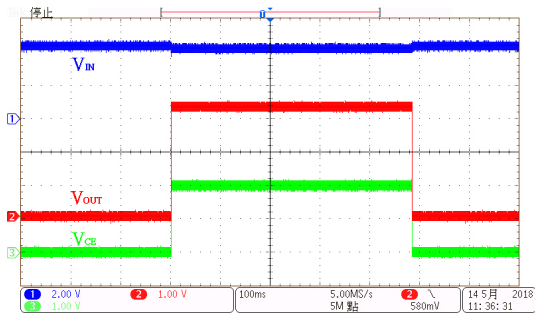
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



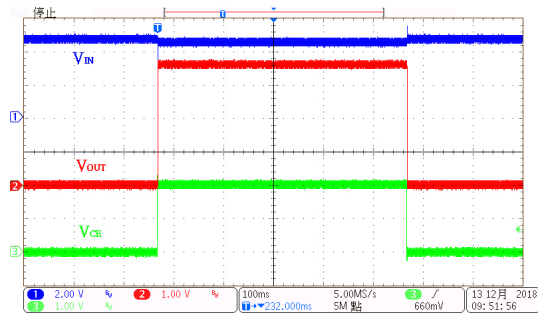
上电 / 掉电响应: HT73L33  
( $V_{IN}=4.3V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )



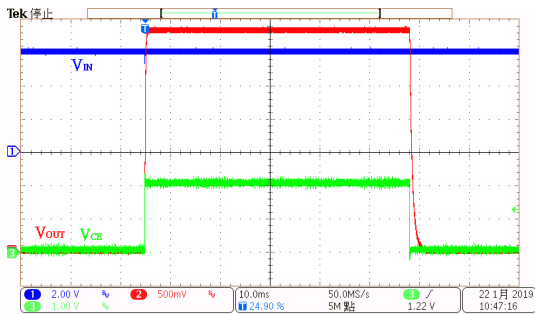
上电 / 掉电响应: HT73L36  
( $V_{IN}=4.6V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )



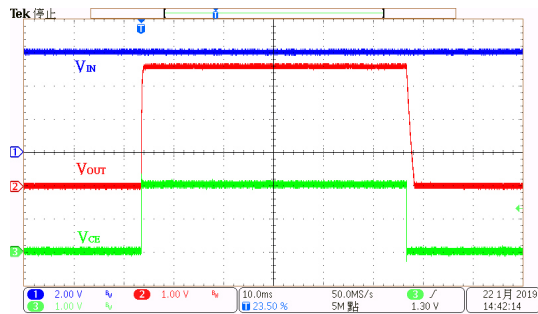
上电 / 掉电响应: HT73L33  
( $V_{IN}=4.3V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )



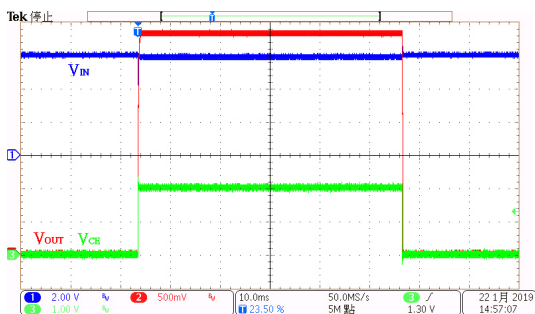
上电 / 掉电响应: HT73L36  
( $V_{IN}=4.6V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )



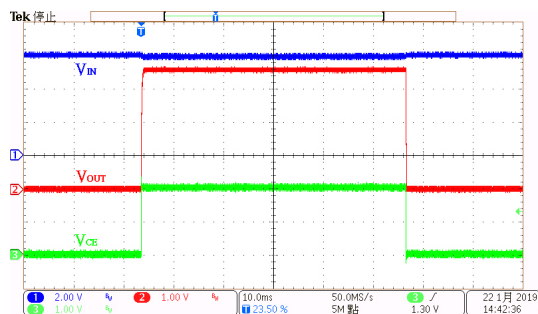
上电 / 掉电响应: HT73L33  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )



上电 / 掉电响应: HT73L36  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $V_{CE}=0V$  to  $2V$ )

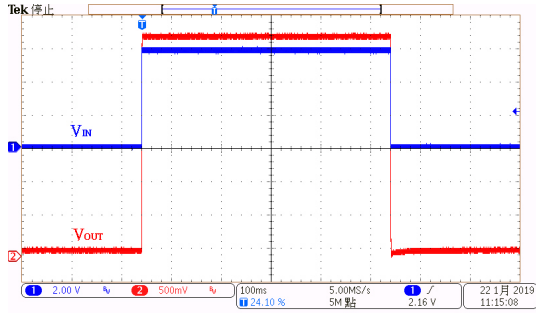


上电 / 掉电响应: HT73L33  
( $V_{IN}=6.0V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )

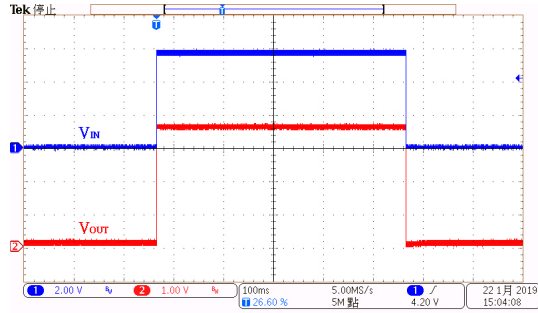


上电 / 掉电响应: HT73L36  
( $V_{IN}=6.0V$ ,  $I_{OUT}=200mA$ ,  $V_{CE}=0V$  to  $2V$ )

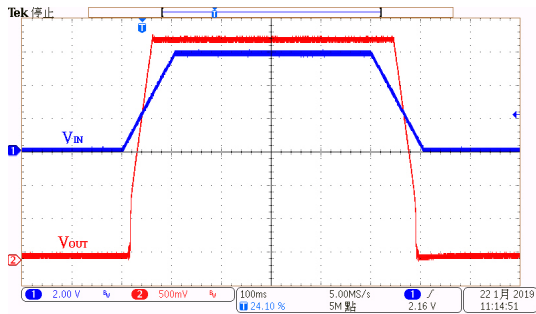
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



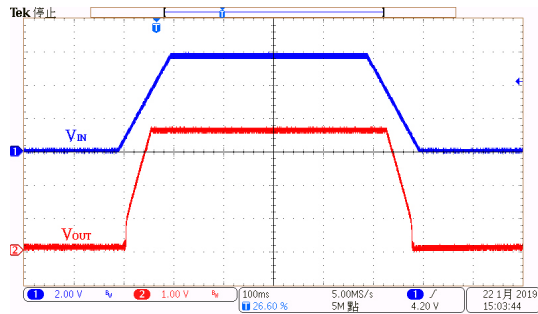
电源上电 / 掉电响应: HT73L33  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=0.1ms$ )



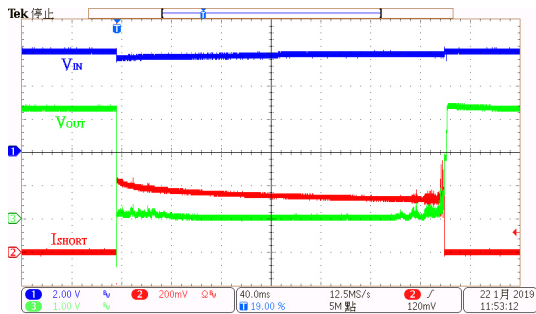
电源上电 / 掉电响应: HT73L36  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=0.1ms$ )



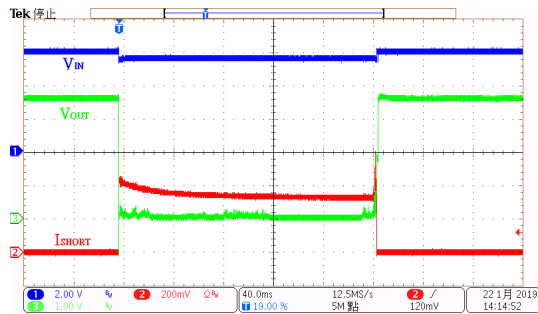
电源上电 / 掉电响应: HT73L33  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=100ms$ )



电源上电 / 掉电响应: HT73L36  
( $V_{IN}=6.0V$ ,  $I_{OUT}=0mA$ ,  $T_{RISE}=T_{FALL}=100ms$ )

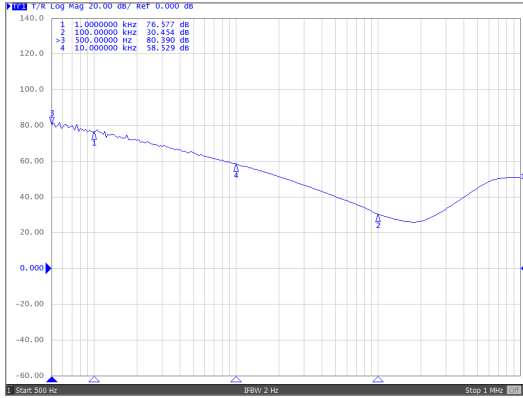


短路保护: HT73L33  
( $V_{IN}=6.0V$ ,  $V_{OUT}$  短路)

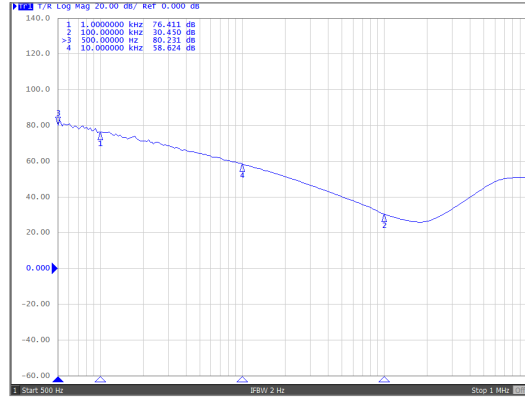


短路保护: HT73L36  
( $V_{IN}=6.0V$ ,  $V_{OUT}$  短路)

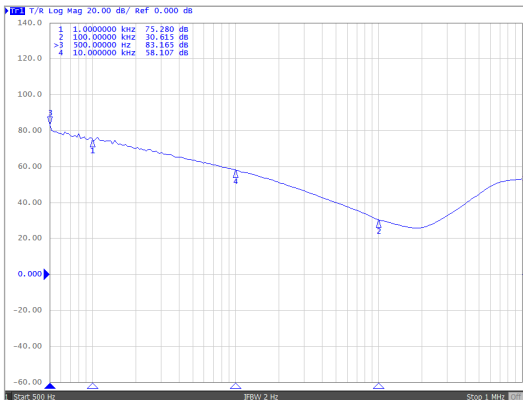
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^\circ C$ , 除非另有说明



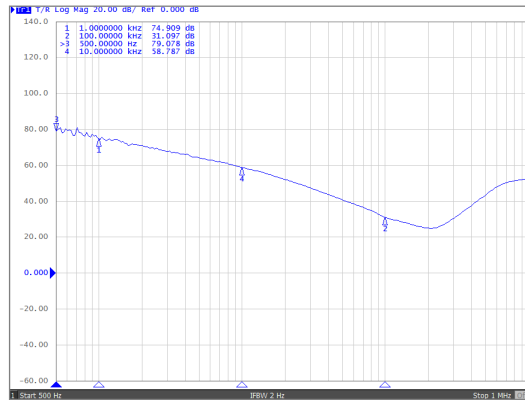
电源电压抑制比 : HT73L09  
( $V_{IN}=6.0V$ ,  $I_{OUT}=50mA$ ,  $f=1kHz@76.5dB$ )



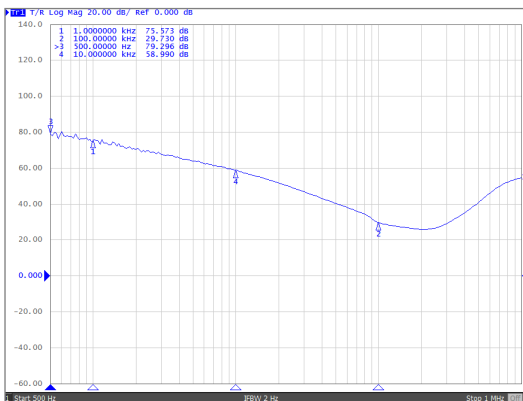
电源电压抑制比 : HT73L10  
( $V_{IN}=6.0V$ ,  $I_{OUT}=50mA$ ,  $f=1kHz@76.4dB$ )



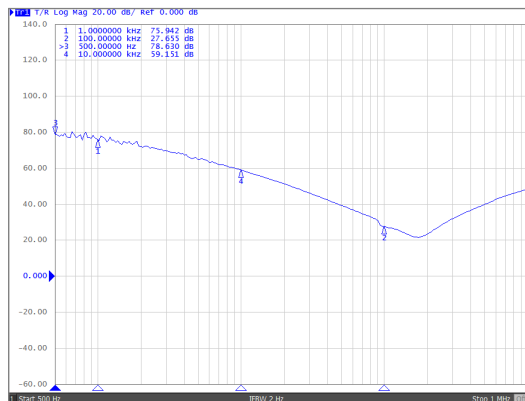
电源电压抑制比 : HT73L12  
( $V_{IN}=6.0V$ ,  $I_{OUT}=50mA$ ,  $f=1kHz@75.2dB$ )



电源电压抑制比 : HT73L15  
( $V_{IN}=6.0V$ ,  $I_{OUT}=50mA$ ,  $f=1kHz@74.9dB$ )



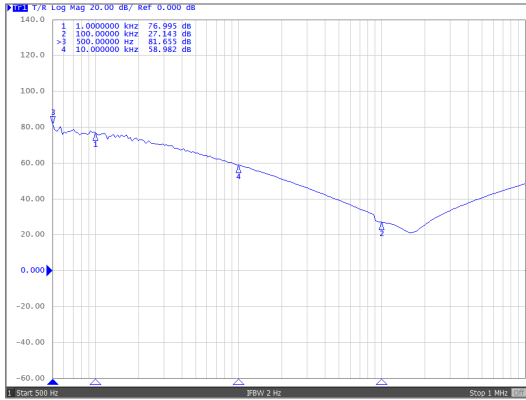
电源电压抑制比 : HT73L18  
( $V_{IN}=6.0V$ ,  $I_{OUT}=50mA$ ,  $f=1kHz@75.5dB$ )



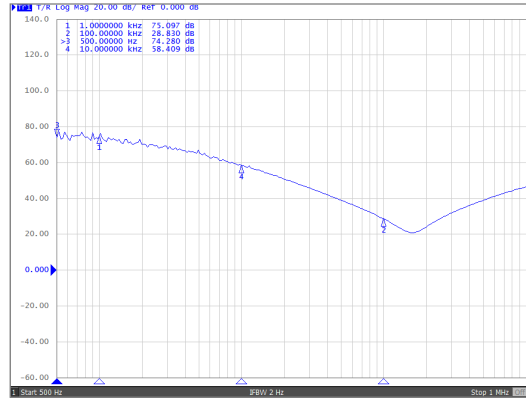
电源电压抑制比 : HT73L25  
( $V_{IN}=6.0V$ ,  $I_{OUT}=50mA$ ,  $f=1kHz@75.9dB$ )



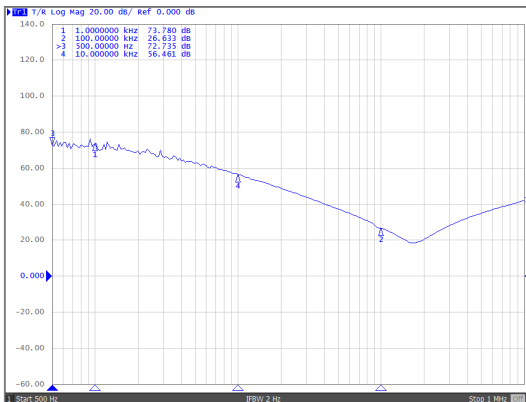
测试条件:  $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $I_{OUT}=10mA$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$  且  $T_a=25^{\circ}C$ , 除非另有说明



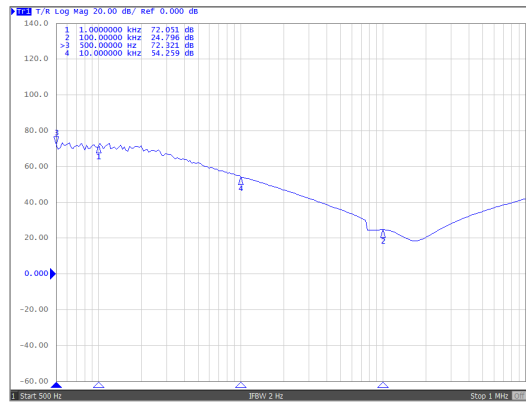
电源电压抑制比 : HT73L27  
( $V_{IN}=6.0V$ ,  $I_{OUT}=50mA$ ,  $f=1kHz@76.9dB$ )



电源电压抑制比 : HT73L30  
( $V_{IN}=6.0V$ ,  $I_{OUT}=50mA$ ,  $f=1kHz@75dB$ )



电源电压抑制比 : HT73L33  
( $V_{IN}=6.0V$ ,  $I_{OUT}=50mA$ ,  $f=1kHz@73.7dB$ )



电源电压抑制比 : HT73L36  
( $V_{IN}=6.0V$ ,  $I_{OUT}=50mA$ ,  $f=1kHz@72dB$ )

## 应用信息

在使用 HT73Lxx 稳压器时，必须严格遵循下列应用要点以实现正确操作。

### 过电流保护和过温度保护特性

HT73Lxx 芯片包括过电流保护和结点过温度保护，即使输出对地短路也可防止 IC 损坏。如果输出对地短路，输出电流将被强制在 300mA，这将导致结点温度上升。一旦结点温度超过 150°C，芯片电源将被关闭以防止热损坏。当结点温度降至 125°C 时，保护功能将被关闭，芯片将恢复正常运行。

### 快速输出放电功能

当 CE 引脚为低时，输出电压将通过内部 500Ω 的电阻迅速降到 0V。当过电流保护或过温度保护功能处于开启时，将不会出现放电通道。

### 输入电容 C<sub>IN</sub> 注意事项

建议选择至少 1μF 电容值的输入电容器。推荐使用陶瓷电容，因为它们有更好的温度系数和更低的 ESR，即等效串联电阻。

### 输出电容 C<sub>OUT</sub> 注意事项

输出电容器在保持输出电压稳定方面起着重要的作用。对于陶瓷类型，应该选择至少 1μF 的输出电容。对于 E-cap 型，应该选择至少 2.2μF 的电容。

### 发热注意事项

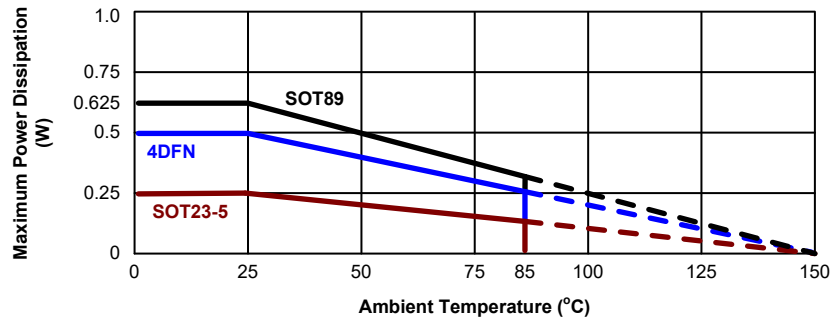
最大功耗取决于封装的热阻、PCB 布局、周围气流速率以及结点与环境温度的温差。通过下列公式计算可得最大功耗：

$$P_{D(MAX)} = (T_{J(MAX)} - T_a) / \theta_{JA}$$

其中， $T_{J(MAX)}$  是结点最大温度， $T_a$  是环境温度， $\theta_{JA}$  是 IC 封装中结点到环境的热阻，单位为 °C/W，下表列出了各种封装类型的  $\theta_{JA}$  值。

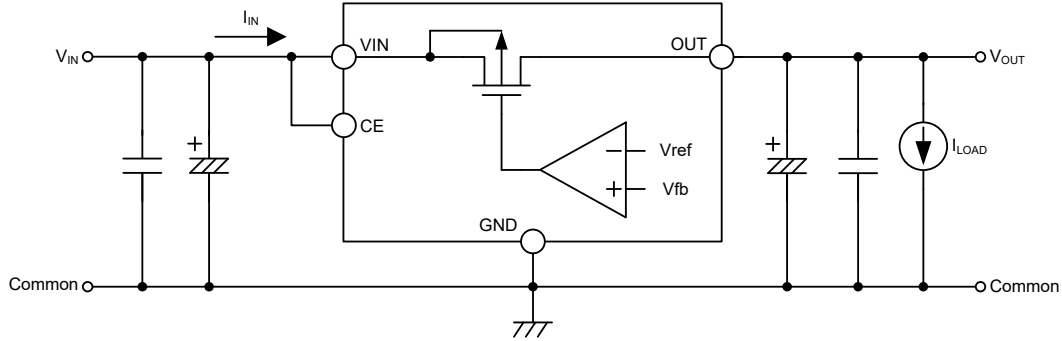
封装类型	$\theta_{JA}$ (°C/W)
4DFN	250°C/W
SOT23-5	500°C/W
SOT89	200°C/W

最大额定操作条件下，最大结点温度为 150°C。但一般建议在正常工作时结点温度最大值不要超过 125°C，从而保证芯片的可靠性。不同封装类型的最大功耗降额曲线如下图所示。

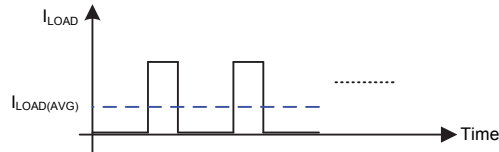


## 功耗估算

为使芯片工作在极限范围内并保持一个稳定的输出电压，芯片的功耗  $P_D$  一定不能超过最大功耗  $P_{D(MAX)}$ ，即  $P_D \leq P_{D(MAX)}$ 。由下图可看出几乎所有功率都是通过传输晶体管产生，这等同于在负载上串联一个可变电阻，从而保持输出电压恒定。它将以热能的形式产生功耗，必须保证芯片不能超过最大结点温度。



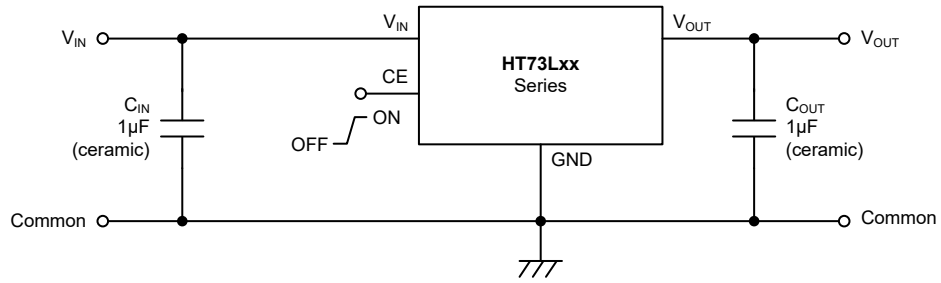
实际应用中，由于负载的瞬态特性，稳压器可能被要求提供稳态电流和瞬态电流。即使芯片在极限参数下可以以稳态电流的形式正常运行，同样须注意的是，瞬态负载和电流将导致芯片结温的上升，但是不允许超过最大结温。芯片发热时，其稳态电流值和瞬态电流值应采用平均值或更准确的均方根值。下图将描述平均电流和瞬态电流的关系。



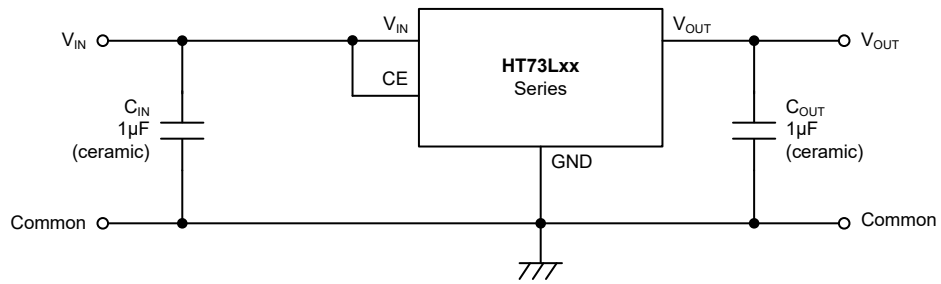
由于芯片的瞬态电流非常小，一般可以忽略，故假设输入电流等于输出电流，则芯片的功耗  $P_D$  可计算为输入电压和输出电压的压差乘以电流，即得公式， $P_D = (V_{IN} - V_{OUT}) \times I_{IN}$ 。因为输入电流也等于负载电流，因此可得公式  $P_D = (V_{IN} - V_{OUT}) \times I_{LOAD}$ 。但由于瞬态负载电流的存在，功耗  $P_D = (V_{IN} - V_{OUT}) \times I_{LOAD(AVG)}$ ，如图所示。

## 应用电路

### 带使能引脚控制



### 无使能引脚控制



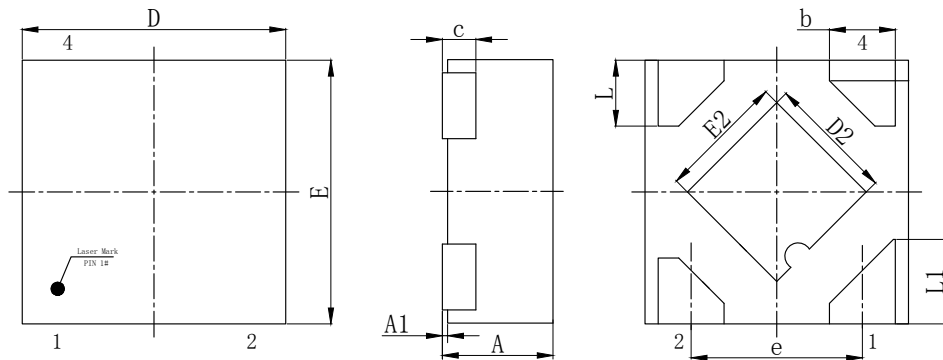
## 封装信息

请注意，这里提供的封装信息仅作为参考。由于这个信息经常更新，提醒用户咨询 [Holtek 网站](#) 以获取最新版本的 [封装信息](#)。

封装信息的相关内容如下所示，点击可链接至 Holtek 网站相关信息页面。

- 封装信息 (包括外形尺寸、包装带和卷轴规格)
- 封装材料信息
- 纸箱信息

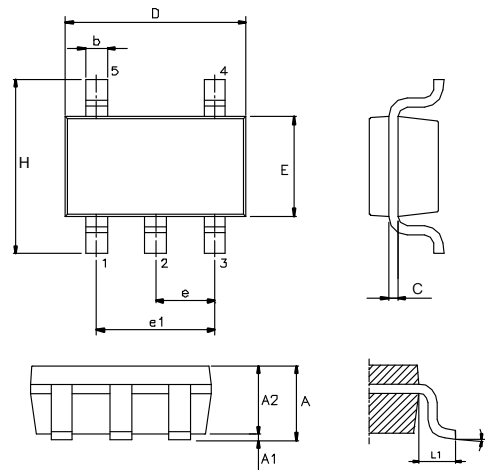
4-pin DFN (1mm×1mm×0.4mm) 外形尺寸



符号	尺寸 (单位: inch)		
	最小值	正常值	最大值
A	0.014	—	0.016
A1	0.000	0.001	0.002
b	0.008	0.010	0.012
D	0.037	0.039	0.041
E	0.037	0.039	0.041
e	—	0.026 BSC	—
D2	0.015	0.019	0.023
E2	0.015	0.019	0.023
L	0.008	0.010	0.012
L1	0.011	0.013	0.015

符号	尺寸 (单位: mm)		
	最小值	正常值	最大值
A	0.35	—	0.40
A1	0.00	0.02	0.05
b	0.20	0.25	0.30
D	0.95	1.00	1.05
E	0.95	1.00	1.05
e	—	0.65 BSC	—
D2	0.38	0.48	0.58
E2	0.38	0.48	0.58
L	0.20	0.25	0.30
L1	0.27	0.32	0.37

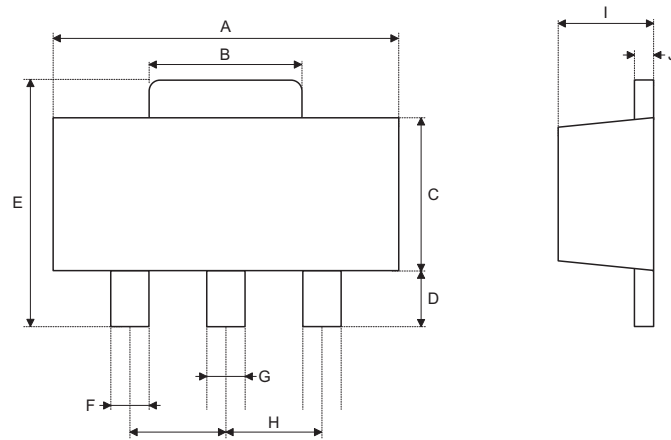
## 5-pin SOT23 外形尺寸



符号	尺寸 (单位: inch)		
	最小值	正常值	最大值
A	—	—	0.057
A1	—	—	0.006
A2	0.035	0.045	0.051
b	0.012	—	0.020
C	0.003	—	0.009
D	—	0.114 BSC	—
E	—	0.063 BSC	—
e	—	0.037 BSC	—
e1	—	0.075 BSC	—
H	—	0.110 BSC	—
L1	—	0.024 BSC	—
$\theta$	0°	—	8°

符号	尺寸 (单位: mm)		
	最小值	正常值	最大值
A	—	—	1.45
A1	—	—	0.15
A2	0.90	1.15	1.30
b	0.30	—	0.50
C	0.08	—	0.22
D	—	2.90 BSC	—
E	—	1.60 BSC	—
e	—	0.95 BSC	—
e1	—	1.90 BSC	—
H	—	2.80 BSC	—
L1	—	0.60 BSC	—
$\theta$	0°	—	8°

3-pin SOT89 外形尺寸



符号	尺寸 (单位: inch)		
	最小值	正常值	最大值
A	0.173	—	0.185
B	0.053	—	0.072
C	0.090	—	0.106
D	0.031	—	0.047
E	0.155	—	0.173
F	0.014	—	0.019
G	0.017	—	0.022
H	—	0.059 BSC	—
I	0.055	—	0.063
J	0.014	—	0.017

符号	尺寸 (单位: mm)		
	最小值	正常值	最大值
A	4.40	—	4.70
B	1.35	—	1.83
C	2.29	—	2.70
D	0.80	—	1.20
E	3.94	—	4.40
F	0.36	—	0.48
G	0.44	—	0.56
H	—	1.50 BSC	—
I	1.40	—	1.60
J	0.35	—	0.44



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