



**Hunteck**

恒泰柯半导体

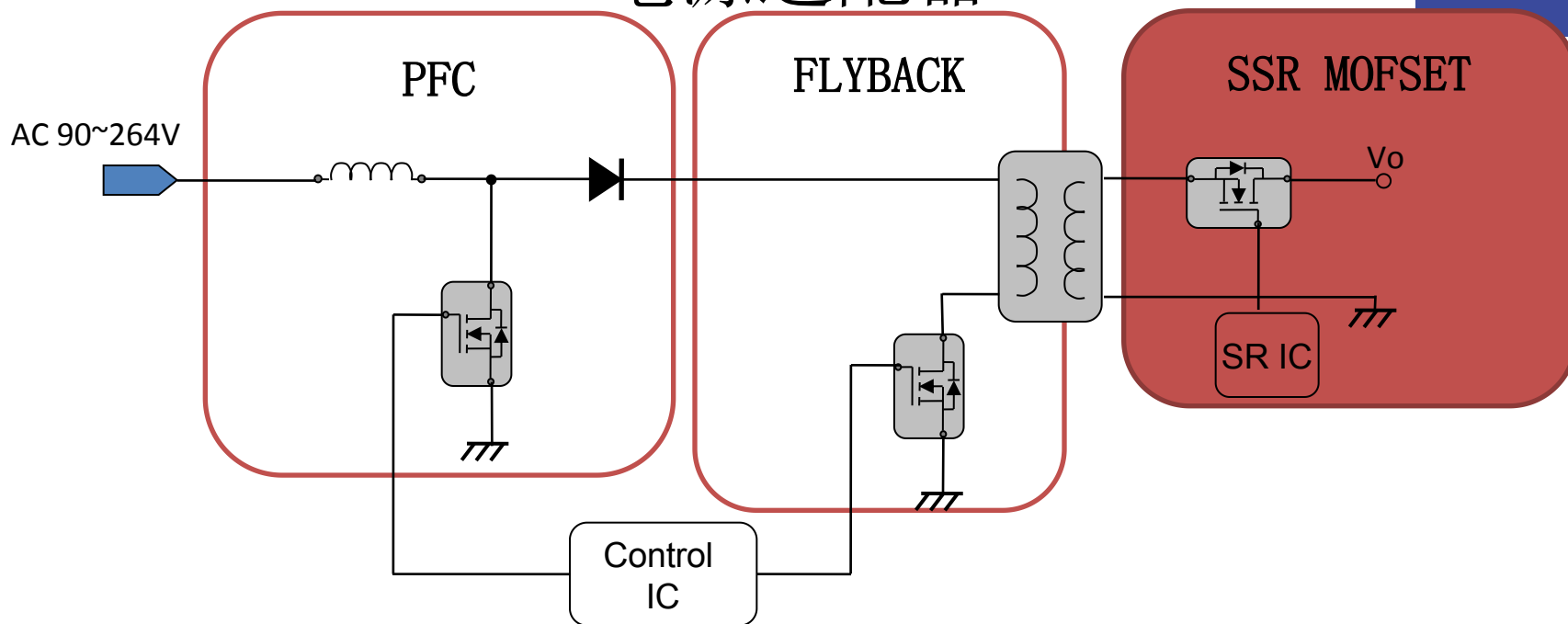
## 场效应管性能比较

3/1/15

# 大纲

- 120Watt 开关电源 → 次级同步整流对比
  - 恒泰柯 HGP037N10S 对比.
    - 仙童 FDP045N10
    - 万代 AOT290
- 50Watt LED 照明电源（反激式）
  - 恒泰柯 HSD60R450 对比.
    - 英飞凌 IPD60R380E6

# 电源适配器



适配器

线路: PFC + QR Flyback + SSR

输出: 120W

输出电压: 20V

输出电流: 6A

同步整流

**MOSFET**

➤ AOT290

➤ HGP037N10

➤ FDP045N10

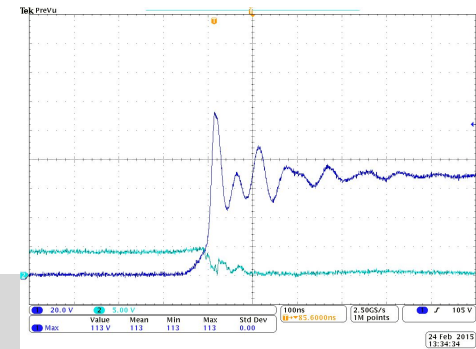
# 参数比较

料号	V <sub>DS</sub> (V)	V <sub>GS</sub> (±V)	R <sub>DS(ON)</sub> (mΩ max) at V <sub>GS</sub> =	V <sub>GS(th)</sub> (max V)	C <sub>iss</sub> (pF)	C <sub>rss</sub> (pF)	Q <sub>g</sub> (nC)	Q <sub>gd</sub> (nC)
			10V					
<a href="#">AOT290L</a>	100	20	3.5	4.1	7180	42	90*	21
<a href="#">HGP037N10</a>	100	20	3.7	4	7300	18	118	21
<a href="#">FDP045N10</a>	100	20	4.5	4	3960	34	57	13

# Vds Spike (尖峰承受力) 比较

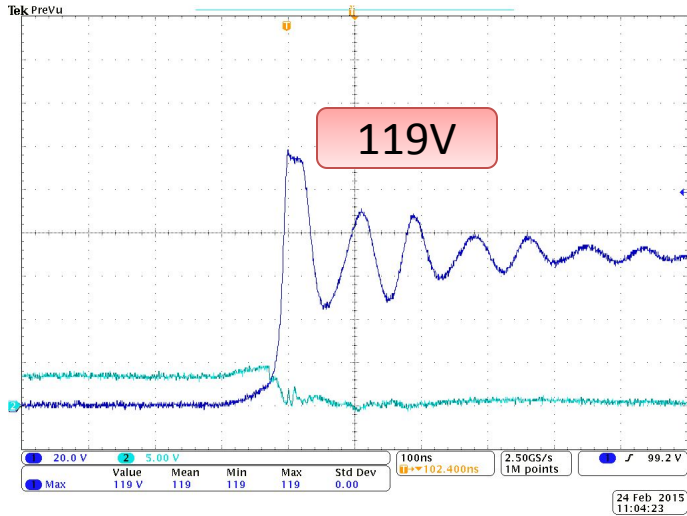
	Start-up @ I=6A (V)	Normal @ I=6A (V)	Output Short → AC ON (V)	AC On → Output Short (V)
FDP045N10	91.6	89.2	76.4	119
HGP037N10	91.6	89.2	77.2	113
AOT290L	96.4	97.2	103	129

	Dynamic (0-6A)	Start-up @ I=6A & Vgs short	Normal @ I=6A & Vgs short
FDP045N10	90	92.4	90.8
HGP037N10	90	92.4	90
AOT290L	108	98	97.2

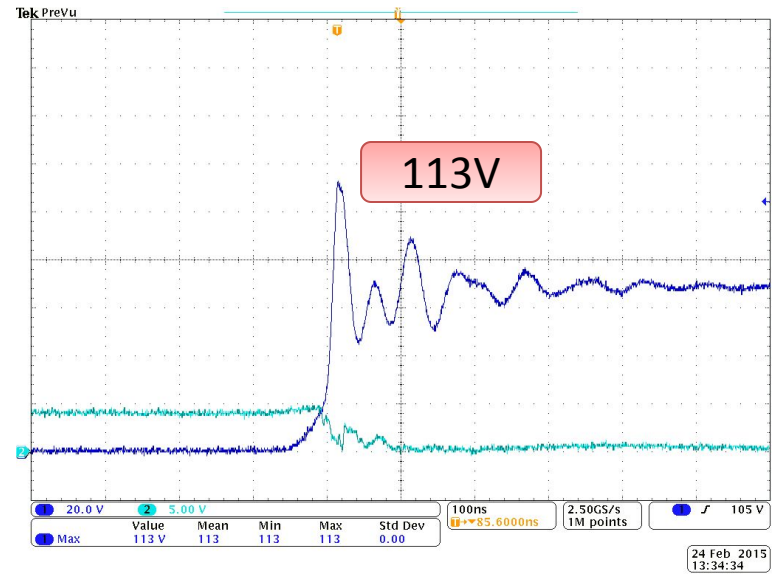


# AC On → 输出短路

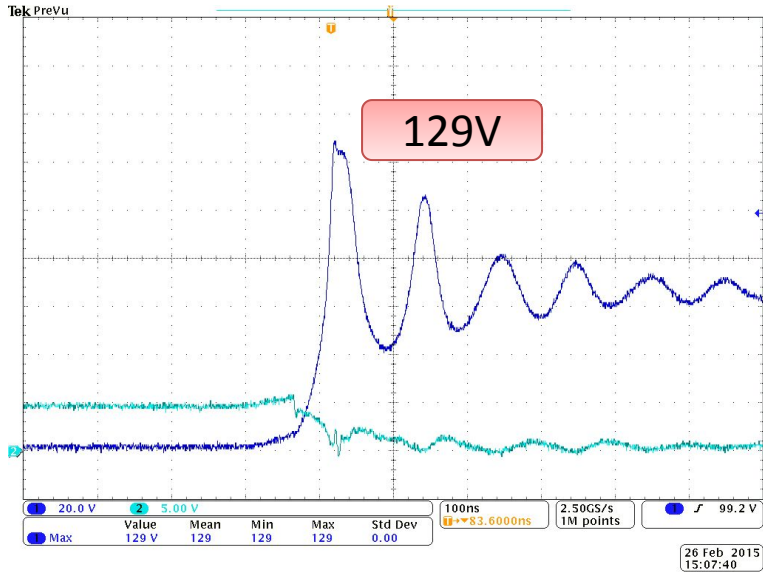
## FDP045N10A



## HGP037N10

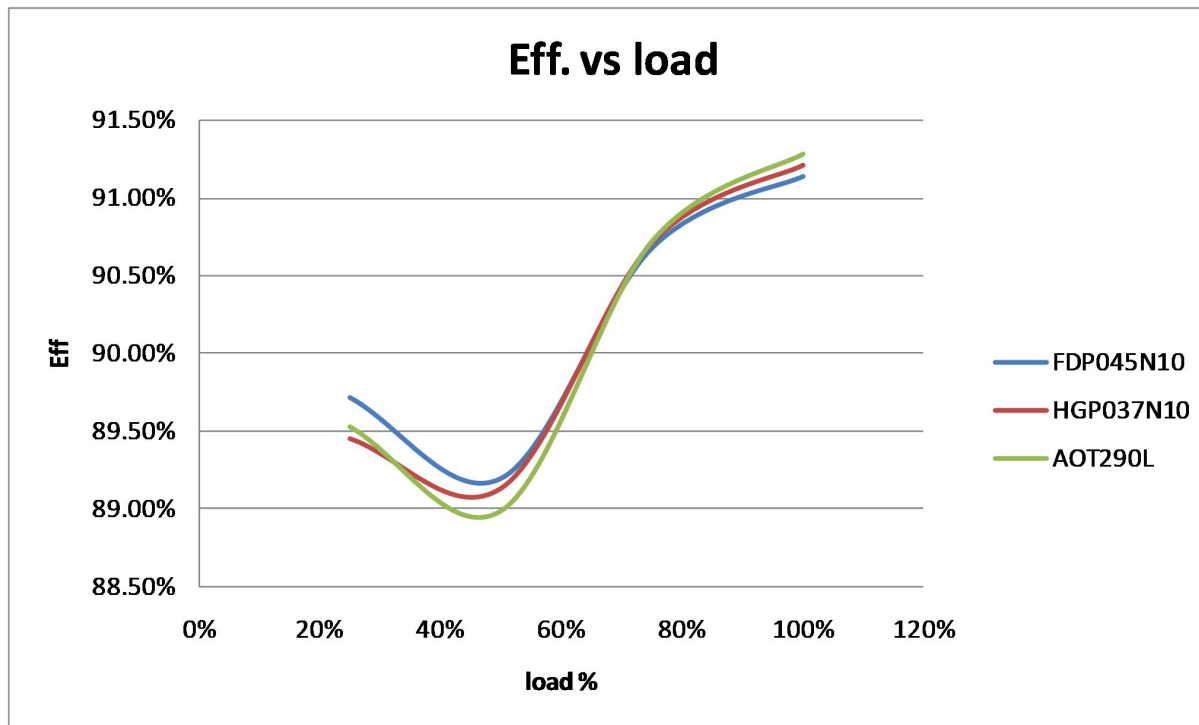


## AOT290L



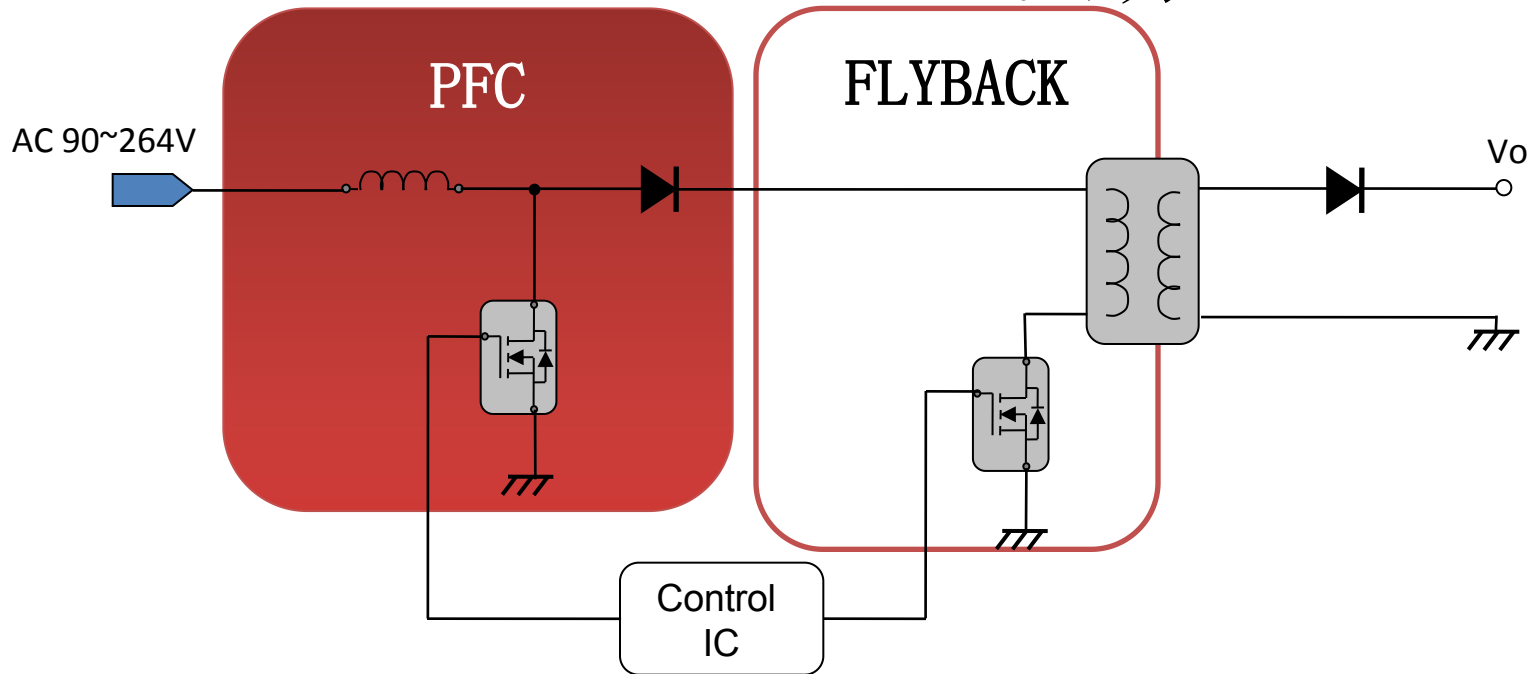
# 效率

	25%	50%	75%	100%	Avg.	100% Temp
FDP045N10	89.72%	89.20%	90.68%	91.14%	90.18%	91.2C
HGP037N10	89.45%	89.13%	90.71%	91.21%	90.13%	91.2C
AOT290L	89.53%	88.99%	90.72%	91.28%	90.13%	90.8C



Test condition:  
Vin=230Vac/50Hz

# 50Watt LED 照明



## 功率因数校正

### MOSFET

- IPD65R380E6
- HSD60R450

Turn on: 220R  
Turn off: 20R

### LED lighting

线路: PFC + Flyabck  
输出功率: 50W  
输出电压: 58V  
输出电流: 0.8A

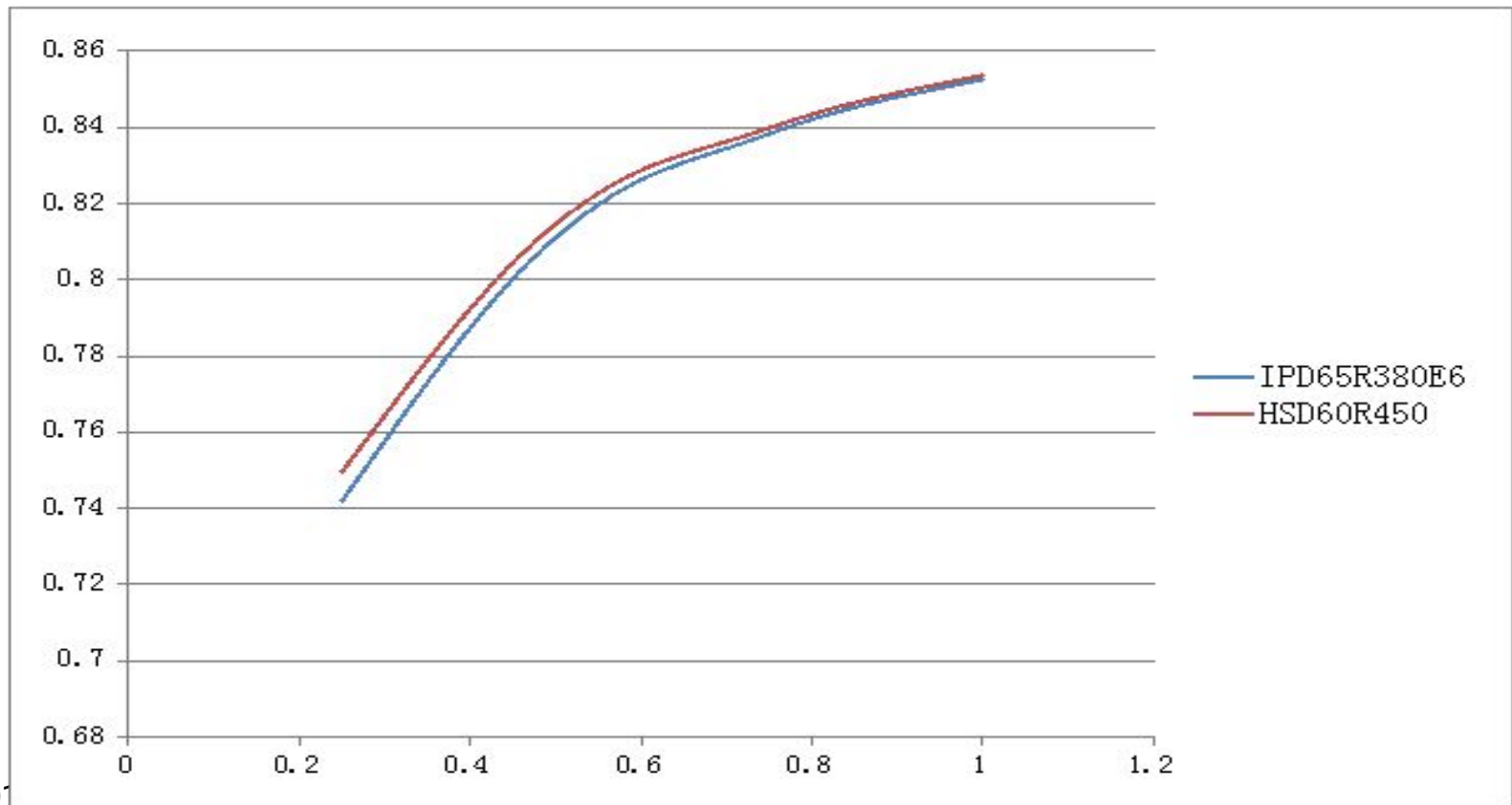


# 参数比较

料号	V <sub>DS</sub> (V)	V <sub>GS</sub> (±V)	R <sub>DS(ON)</sub> (mΩ max) at V <sub>GS</sub> =	V <sub>GS(th)</sub> (max V)	C <sub>iss</sub> @25V (pF)	C <sub>oss</sub> @25V (pF)	Q <sub>g</sub> (nC)	Q <sub>gd</sub> (nC)	R <sub>g</sub> (Ω)
<a href="#">IPD65R380E6</a>	600	30	380	3.5	710	540	39	20	7.5
<a href="#">HSD60R450</a>	600	30	450	4	640	560	11.6	30	2.9

# 效率115Vac

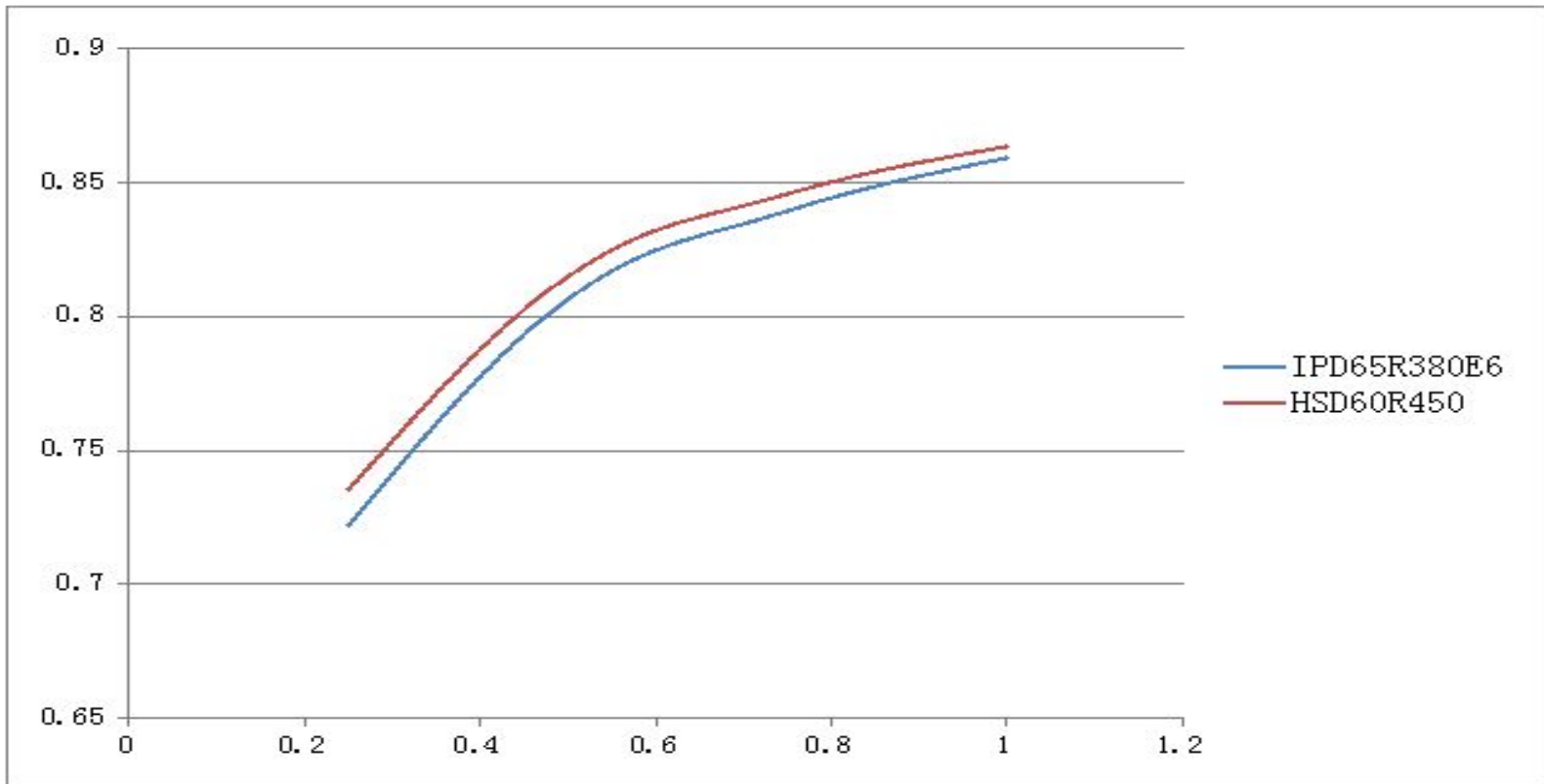
	25%	50%	75%	100%	Avg.
IPD65R380E6	74.22	81.06	83.83	85.26	81.09
HSD60R450	74.98	81.46	84.01	85.38	81.46



n:  
60Hz

# 效率230Vac

	25%	50%	75%	100%	Avg.
IPD65R380E6	72.24	80.64	83.97	85.93	80.69
HSD60R450	73.56	81.46	84.57	86.38	81.49



tion:  
ac/50Hz

# Vds 尖峰Spike& 发热数据

	Start-up 230Vac/I=0.8A (V)	Normal 230Vac/I=0.8A (V)	Thermal 230Vac/I=0.8A (°C)	
HSD60R450	524	500	71.7	
IPD65R380E6	522	494	73.8	

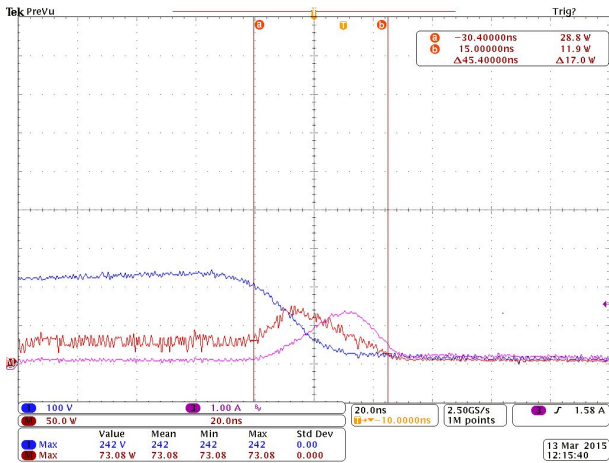


Efficiency

	100%
HSD60R450	86.38
IPD65R380E6	85.93

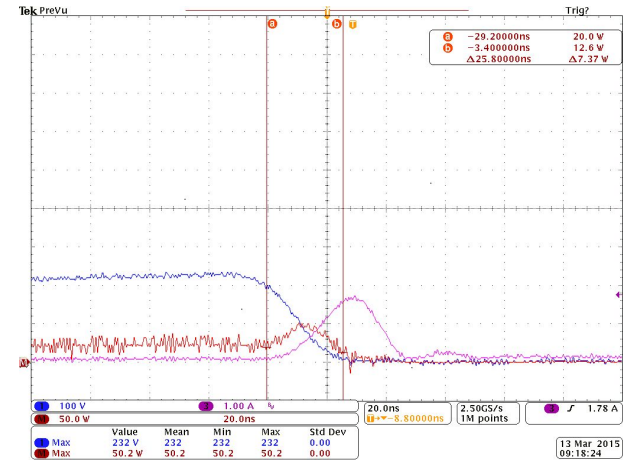
# 打开MOS损耗230Vac/Io=0.8A

## IPD65R380E6



**P<sub>peak</sub>=73W/45ns**

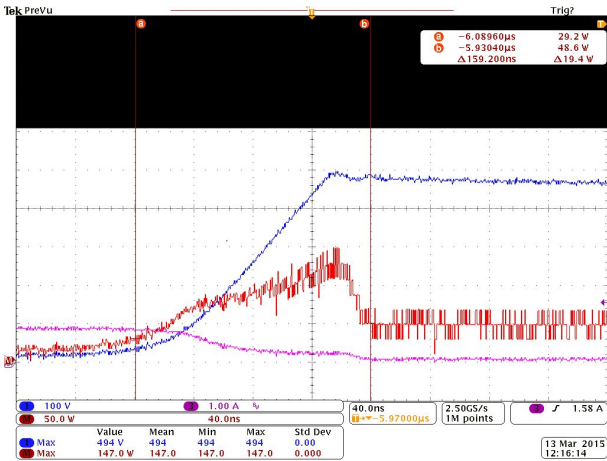
## HSD60R450



**P<sub>peak</sub>=50W/25ns**

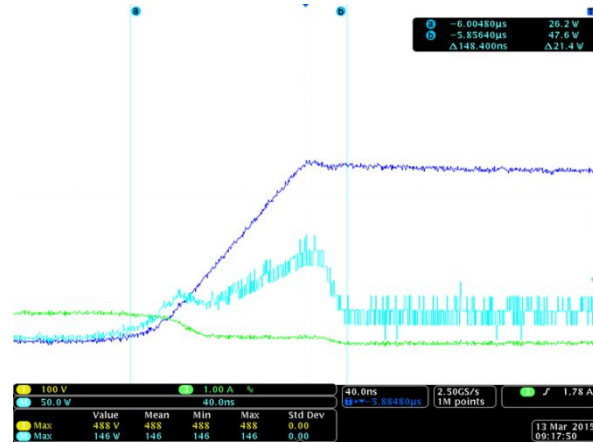
# 关闭MOS损耗230Vac/Io=0.8A

## IPD65R380E6



**P<sub>peak</sub>=147W/159nS**

## HSD60R450



**P<sub>peak</sub>=146W/148nS**

Thanks!

- Thanks