

4

“ ”

2017

2006-2020

2025

“ ”

2017

“ 2025” “ +”

“ ”

4

35 5

2016 - 2020

2016 4 15

27 2017 4 15

37-74 8.38

1 1

(1.1)

1-2

4

5

5

1

1

“ 1-2 ”

2

2

2

1.

GaN

1.1

GaN

Si

GaN

Si

GaN

GaN

GaN

6 8

Si

GaN

<350 /sq

<3% 100 V

<7 m

<50%

>1 MHz

1 MHz 300 W

96%

6 8

GaN

15

10

1.2

GaN

Si

GaN

Si

GaN

>1200 V

<100 m

<10 μA @600 V

Si GaN

>1200 V

<1.8 V @15 A

<10 μA @600 V

		300 kHz	1 kW
		98%	15
10			
1.3 GaN			
GaN			
			>3 V
>650 V		>600 cm ² /Vs	
<25%		>1500 V	<1.2 V
	1500 V	>5 A	
		10 MHz	
>80%	10 W		20
	15		
2.			
2.1			

p

p GaN $>5 \times 10^{18} \text{ cm}^{-3}$ LED
455±5 nm 80%
LED $>5 \text{ A/cm}^2$ 280 lm/W
LED 100 A/cm^2 160 lm/W

20 20

2.2 LED

LED

LED

160 lm/W

55°C

1500

95% 70°C

3

LED

3000

15

15

2.3

LED

LED

LED

LED

LED

2~3 LED

LED

15%

LED

2

LED

2 LED

50%

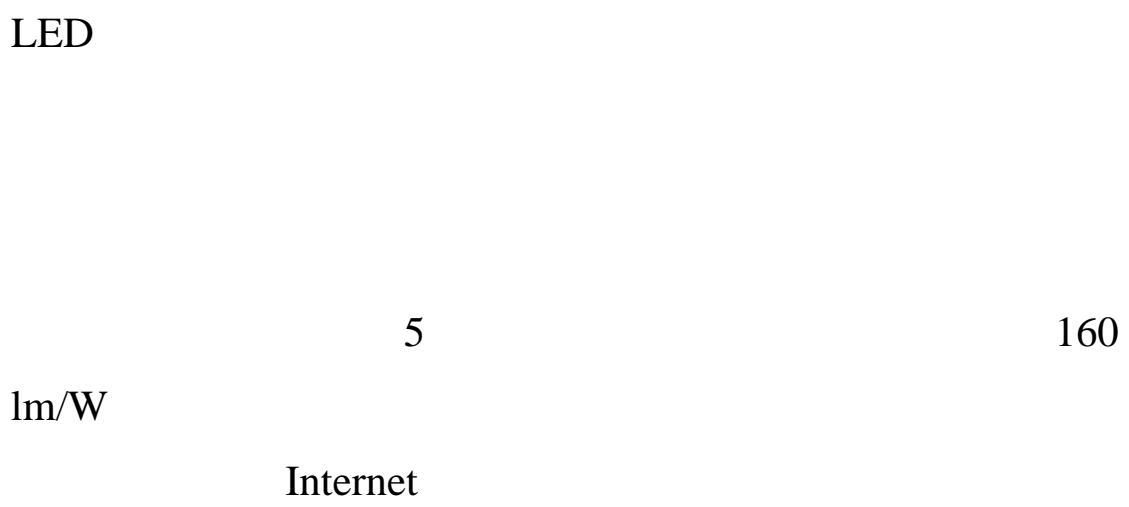
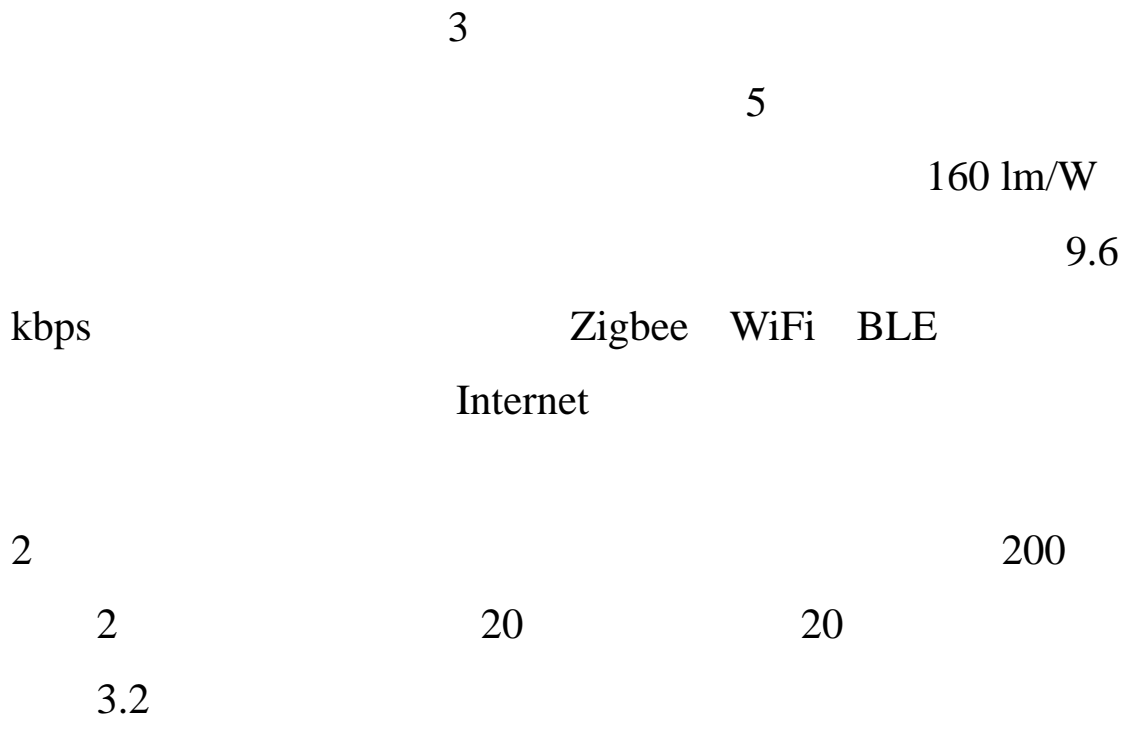
15

15

3.

3.1

LED



1 Mbps				
		2		2
	15	15		
3.3				
		LED		
	LED	1		
		LED	1	100
lm/W		50 MHz		
		100 Mbps		
		LED	1	160 MHz
				1 m
		480 Mbps		
	10^{-6}		1	2
15		15		

4.

4.1

LED

10000

1

5

2

LED

10

40

4.2 LED

LED

LED

LED

LED

LED
LED 5 LED 4 LED
2000 LED
5 30 50
4.3 LED
LED
LED
LED
LED
LED 10
 $3 \mu\text{mol m}^{-2} \text{s}^{-1} \text{W}^{-1}$ 40%
>20000 5
LED 10000
5
30 20

4.4 LED

LED

LED

LED

4

LED 4

2% LED

5000 3

LED 4

30 10

5.

5.1

GaN

GaN

GaN

GaN 6 GaN

4 GaN

AIN
MOCVD 2 15
>1400°C 1
30 15
5.3

AIN

2 4 AIN
6N
100 A/cm²
50% 2 3
MSL 1
0.6 W/m·K
>98% >1.7
30 15

6.

6.1 OLED

OLED

OLED / /

@ =T95@1000nits

> 18 cd/A >8000 > 60 cd/A
> 10000 >5 cd/A > 1000

OLED

>20 kg/ 99.5% 1000 /
99.9% : 1000 / 3 15cPs

6.2 8.5 OLED

OLED

8.5 OLED

55 OLED 8.5

OLED

8.5 OLED

OLED	55		3840×2160
>500 cd/m ²		>3	

6.3

					R 28 nm
G 30 nm	@	65°C	95%	1000	
		15% CIE	Δx	Δy	0.01
		Cd<100 ppm	Pb<1000 ppm		
		90%	65 cd/W		
		40	110% NTSC		500
cd/m ²	50	/			

6.4

OLED

	OLED		OLED
		>450°C	1%
>500°C	<5 ppm/K(@	400°C)	
>2 GPa	>100 MPa		OLED
6.5	LED		LED
	3D-LED		
	3D-LED		LED
		0.8mm	
	0.5mm		98%
	0.005xy	120 W/ m ²	@ 400cd/m ²
	10000:1	16 Bit	200~1000 cd/m ²
		10 μm	
20 μm	20		0.8 mm
	1.5	0.8 mm	1 mm
	8.5		

7. LD

7.1 LD

LD

AlGaInP

LD

640 nm

1 W 40°C

35%

5 /W

2

20

2

2

7.2 LD

LD

AlInGaN

p

LD

			450 nm	520 nm	
			1 W	0.5 W	
30%	10%				7
/W	20	/W	2		30
		3		3	
8.					
8.1					

			30 W	1 nm	
M^2	2	2			
			1 kW	20 kHz	100
ns	400 μm				
			400 μm :8mm		

2

50

20

9.

9.1

300 W

300 W 20 ps MHz

100 nJ 50 nm

20 mJ 300 ns

1645 nm Q

100 W 1064 nm

100 kHz 1 MHz

±1%

1.5 5µm

30W@2.1µm 10W@4.3µm

RMS

3% @8

30

10.

10.1

/

1.5 1.8 μm
10 mW
10 nm 2 μm
10 mW 2.8 4.0
 μm >10 mW
>10 nm 4 12 μm
500 mW
1 ppm 100 ppm
10.2

90% 50 μ L 10 3 4
10 ng/ml 9
500 1×10^{-5} RIU Q
6
10.3

/

0.5 dB/km
50 N 10000
700 $^{\circ}$ C
5 kHz
8 km 0.1%
10 ng

-120 dB (re Rad/ μ Pa) 80 km
40 km 8 km
 1×10^{-10}
4000

11.

11.1

/

/

10

3 6

10

10^6

30 ns

1 2

/

50

11.2

300 K
1000 cm²V⁻¹s⁻¹
80% 40%
2 3
2
V 10⁵ Acm⁻²
12.
12.1
/ /
5N ppb

13.

13.1

20 W/mK

0.01 Kcm²/W

-20 100°C

1000

10%

>10

2500 W/mK

>10

10⁻⁶ Kcm²/W

15

30

13.2

			80%
	<1 mm		
	>160		
		50%	
		50%	15
	30		
	13.3		
			10 W/mK
	25 GPa	20 ppm/°C	4.0@5
GHz		800 W/mK	300 GPa
	>350 MPa	5.5 ppm/°C	
	130 W/mK	800 MPa	5
ppm/°C			

1000 W/cm²

40~80°C

20

30

14.

14.1

4G 5G

/

4G 5G

15

90

80 90

0.5

Qf

15000GHz

5 ppm/°C

10

20 nH@2 GHz 5 nH@10 GHz

01005

50

50

15.

15.1

Si

Si

Si

4

95%

5 $\mu\text{A}@3\text{V}$

-40 °C +85 °C

1.8 5 V

5

0

100%

0.1%

10 500ms

$\pm 0.01^{\circ}\text{C}$

-5°C $+450^{\circ}\text{C}$

50

5