

(19) (KR)
(12) (A)

(51) . Int. Cl.7 (11) 10-2004-0018249
H01S 5/183 (43) 2004 03 02

(21) 10-2003-7008908
(22) 2003 06 30
 2003 06 30
(86) PCT/US2001/050214 (87) WO 2002/59938
(86) 2001 12 20 (87) 2002 08 01

(30) 09/751,423 2000 12 29 (US)

(71) 101

(72) 55447 #131 2210

55441. 28 1 2320

(74)

(54)

1

(optoelectronic device), (resonant reflector), (mode control), (optical cavity)

(,)
(spot)

(laser cavity)

10
가 1990 3 Optical Engineering 29 (pp. 210-214) 'Surface-emitting microlaser for photonic switching and interchip connection'
'Top-emitting Surface Emitting Laser Structure' 1992 5 19 Yong H. Lee 5
, 'Integrated Laser Power Monitor' 1995 12 12 Mary K. Hibbs-Br
enner 5,475,701 1990 5 24 Electronic Letters 26 (pp. 710-
711) 'Top-surface-emitting GaAs four-quantum-well laser emitting at $0.85\mu\text{m}$ ').

1 2

, VCSEL
(interleaved)
,

VCSEL
/
가,
(MOVPE) (MBE) VCSEL

VCSEL (dP, Gbits/s) (, 1000m) /

, VCSEL

VCSEL (, transverse) VCSEL VCSEL
, 50 μm 62.5 μm GRIN
(10) (lateral) 가 (2)가

,
VCSEL 5 μm 가
1 μm
가

VCSEL

5,475,701

VCSEL

Hadley

5,475,701

VCSEL

가

가

가

VCSEL

가

가

, 1

1

1

1

2

2

1

1

, 2

2

1
1,2 (

)

2

)

(phase shift)

/4

가

, 1

1

1 2

2

2

가

1

1

1

가

(reflow)

(island)

1

1

2

가

(116) , 9c , (114) (120) 가 .
 (114) (94) (122) , , 1 1 (94)
 2 (96) , 9D 1 (94) , 2 (96) 1 (94) 2 (96) ,
 (102) , (102) (104) , 2 (96) (96) (96)
 9e DBR , , , (106) 2 (96) . . (106)
 10 5a 5d DBR , , , , , , , , , ,
 (110) , , , , , , , , , , , , , ,
 /4 , , 5A (110) 5D , , , , , , , , , ,
 . . (114) (110) (112) , , , , , , , , ,
 . . (112) , , , , , , , , , , , , , ,
 11 5a 5d (116) (110) (112) 10
 , , , , , , , , , , , , , ,
 12 8a 8e
 1 (120) 2 2 (122) 2 2 (122) , , , , , , , ,
 , , (124) (124) , , , , , , , , , , , ,
 1 (120) 1 (120) 1 (120) 1 (120)

가

,

가

,

(57)

1.

(54)

(50)

,

1 가 , , (60) , (60) 2
 2 , , 1 (56); , , , , ,
 1 (56) , , 3 (52)

2.

1 ,

1 2 , 1 2 3

3.
1 ,

(60) (50)

4.
3 ,

(60) (54)

5.

(56) (50) ,

(52) 1 (56) ;

(60) , 1 (56) ;

(60) 1 (56) 2 (58)

6.

(54) (50) ,

(52) ;

(52) (58)

7.

(70) ,

(74) (74) 1 (78) ; 1 ,

(74) (78) 2

8.

(100) (10) (90) ,

2 (10)
(96) , 1 (94) 2 , 1 (96) 1 (94) 2
(98) (92) (100)

9.

8 ,

1 (94) , (100) 가

2 (96) 1 (94)

10.

(10) (90)

1 (94);

1 (94) (110);

(110) ; (110) 가;

1 (94) (110); 1 (94) (110)

1 (94) 2 (96)

11.

(10) (90)

1 (94);

1 (94);

(98), 1 (94) 가;

1 (94) 2 (96)

12.

11 ,

, 2 (96) 2 (96) 가

13.

(10) (90)

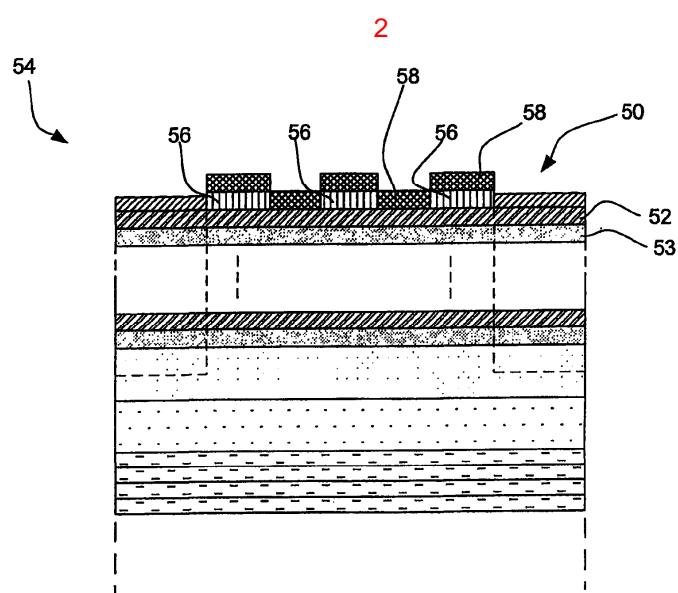
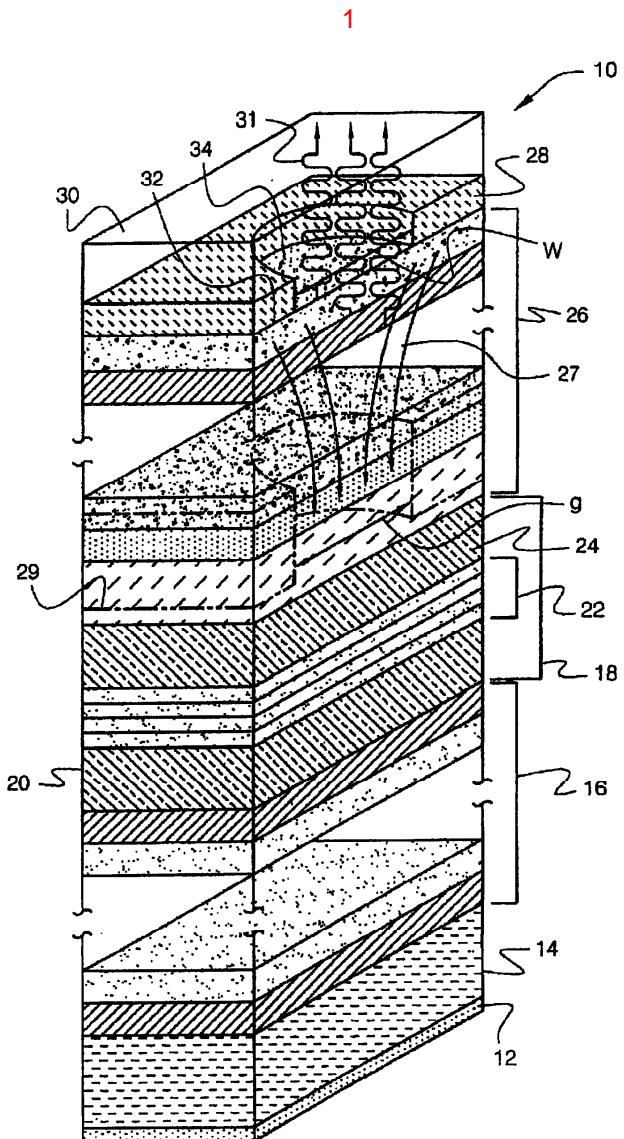
1 (94);

(118) 가 (120); 1 (94);

(118) (114) (120) ; 1 (94) (120) 가

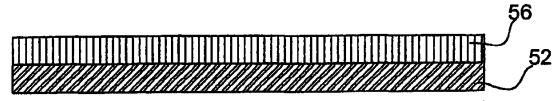
, (94) (120) (114) (120) (120) (120), , , 1 (114)

1 (94) 2 (96)

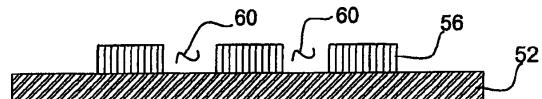


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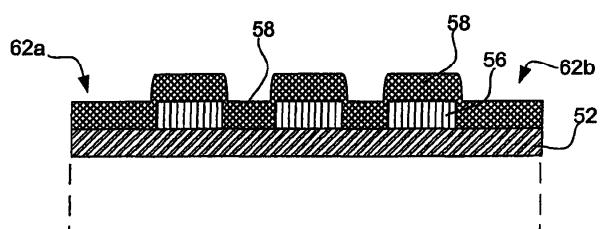
(a)



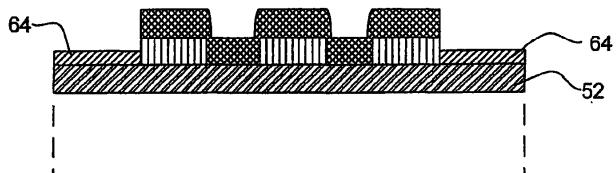
(b)



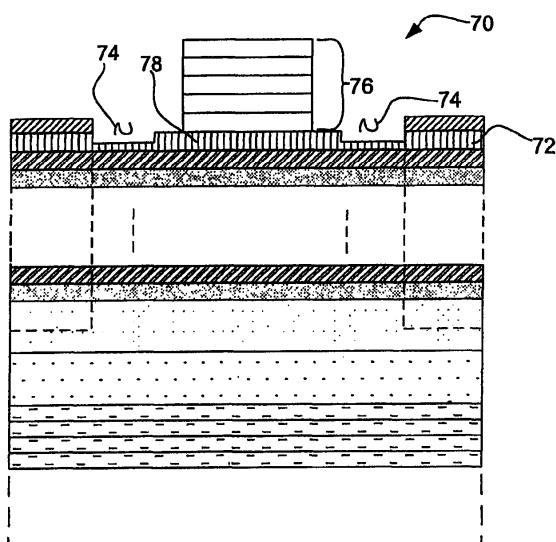
(c)



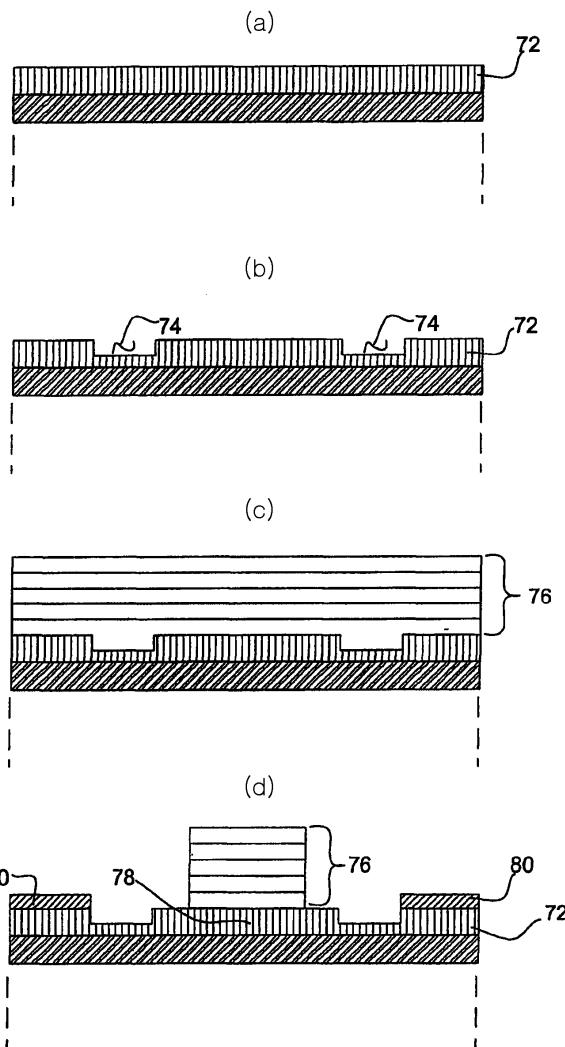
(d)

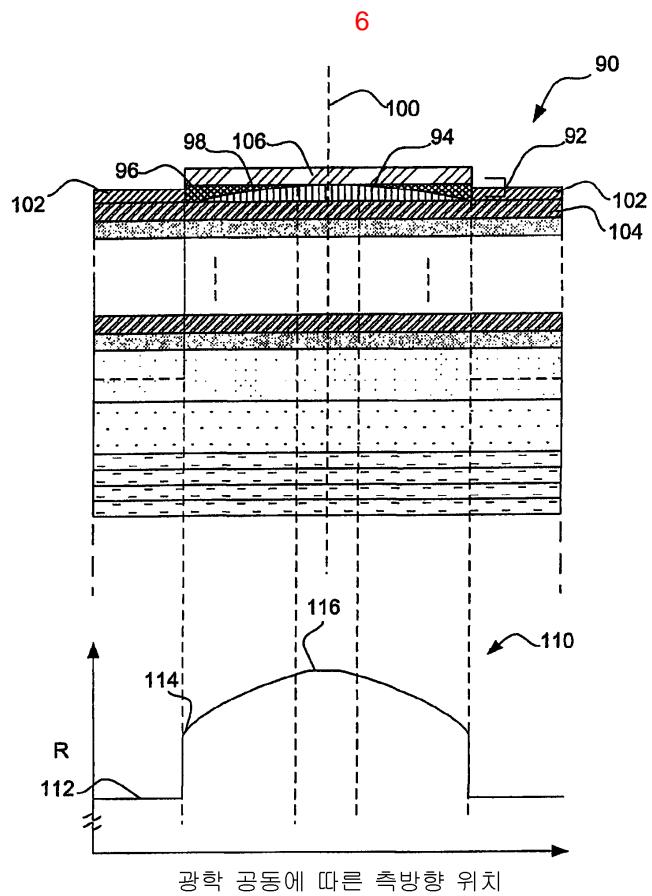


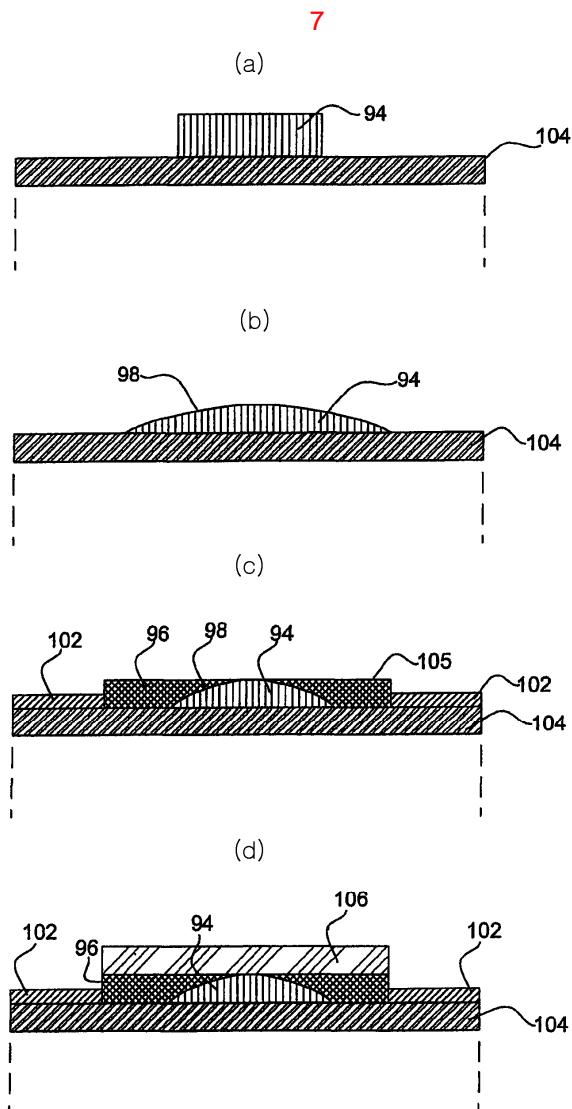
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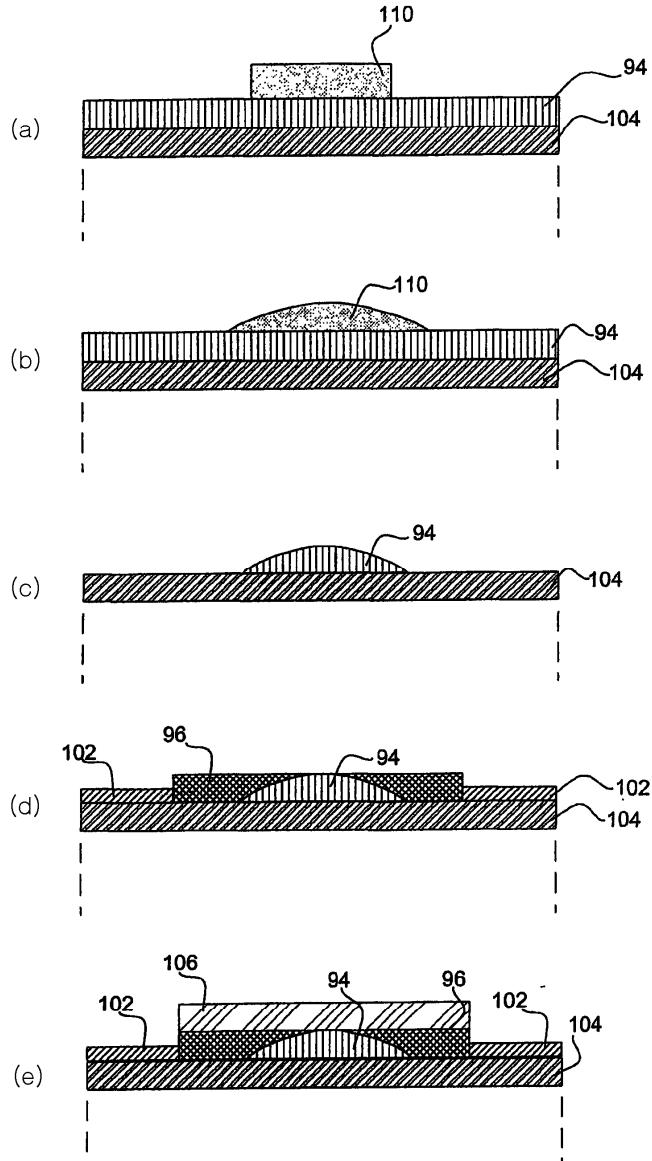
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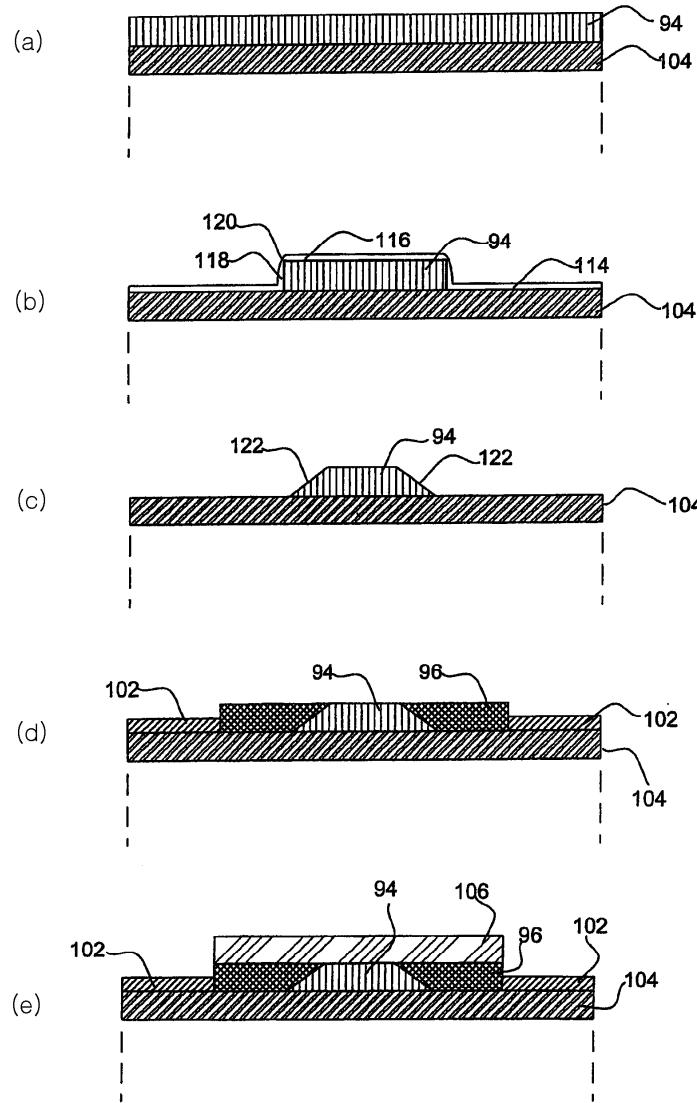




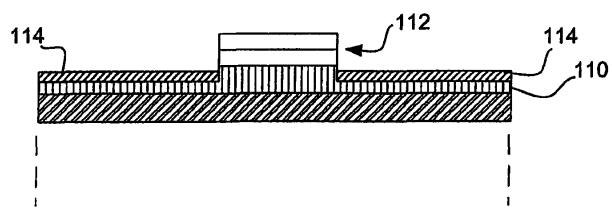
8



9



10



11

