

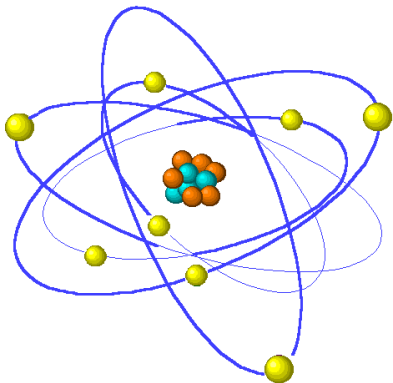


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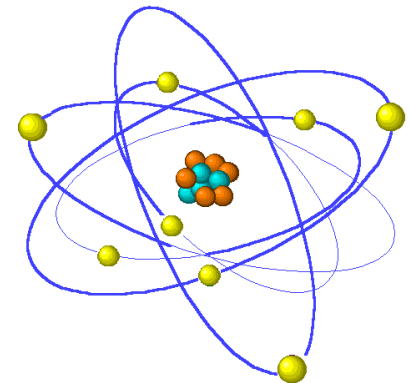


ELECTRONICA GENERAL

SEMICONDUCTORES

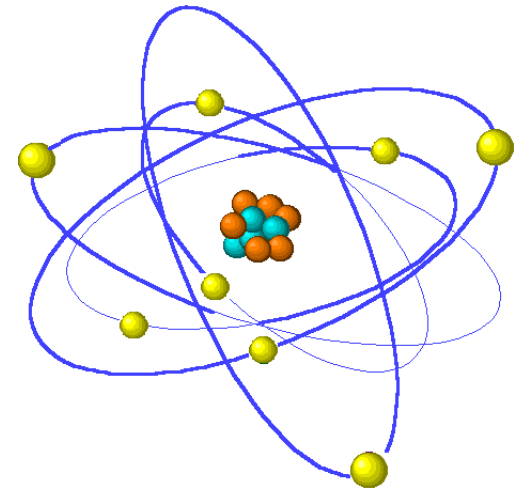
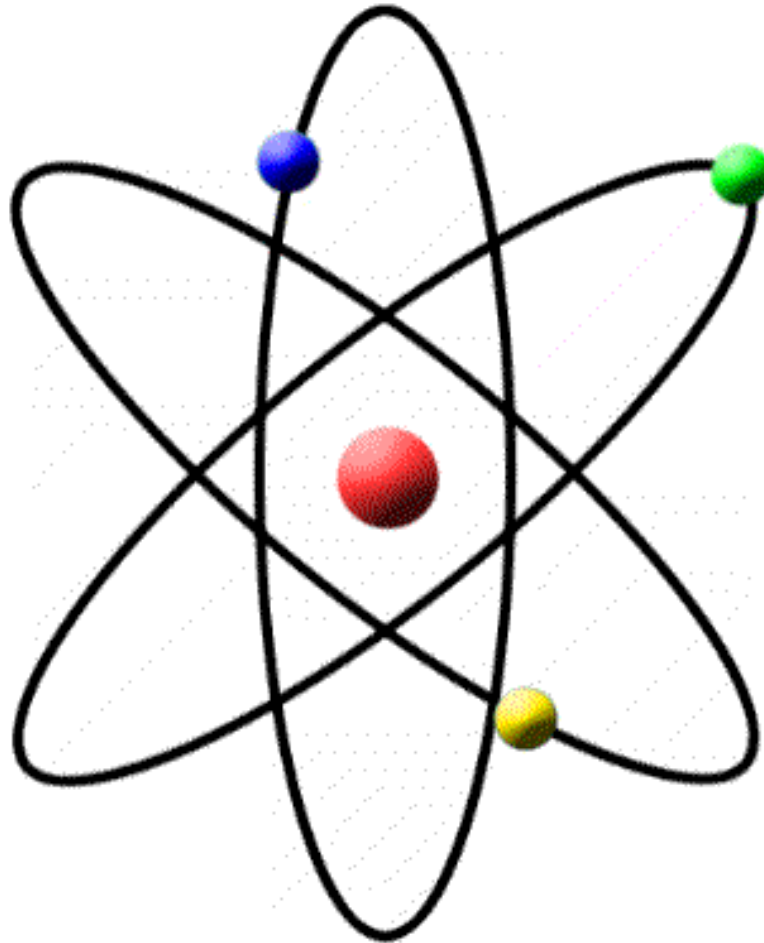


DOPADO

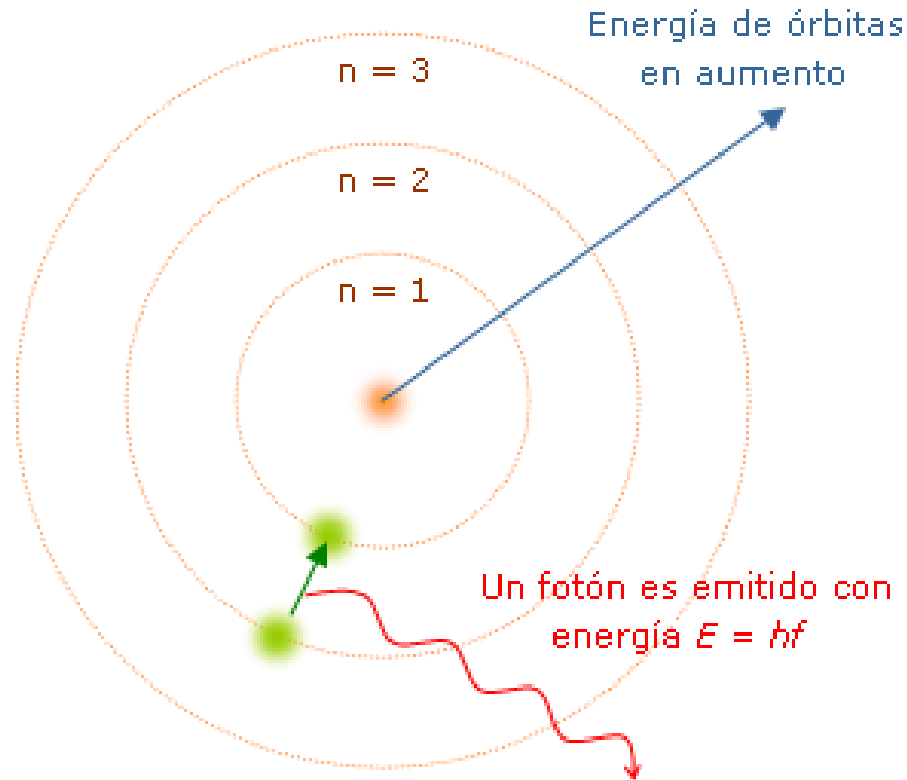


Mgtr. Ing. Victor Hugo Kurtz

MODELO ATÓMICO DE RUTHERFORD



Modelo Atómico de Bohr



Referencia:

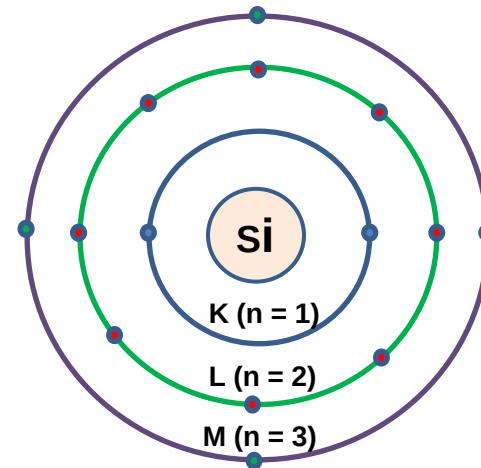
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NUMERO ATOMICO

- El **Número Atómico** en un **ELEMENTO QUIMICO**, es el número total de protones que tiene cada átomo de ese elemento.
- *Para un ATOMO NEUTRO, el numero de **PROTONES** coincide con el número de **ELECTRONES**.*
- Átomo neutro: Nro. **Protones** = Nro. **Electrones**
- Se representa con la letra Z. >

CAPA ELECTRONICA

- Distribución orbital de electrones alrededor del núcleo (Bohr).
- Cada capa u orbita, puede alojar un numero máximo de electrones.
- Las capas se denominan alfabéticamente desde la letra “K”.
- Nro. de Electrones por capa = $2n^2$
Donde n = Capa (nivel).



DISTRIBUCION DE ELECTRONES

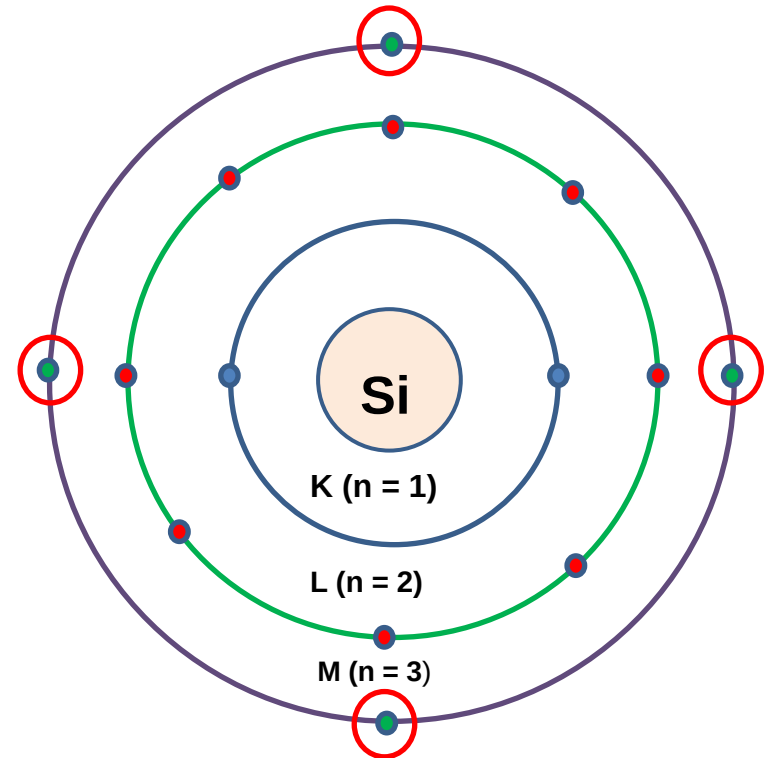
$$2n^2$$

- K ($n = 1$) ; Hasta $2 e^-$
L ($n = 2$) ; Hasta $8 e^-$
M ($n = 3$) ; Hasta $18 e^-$

- Supongamos **Silicio**
Nro. Atómico 14.

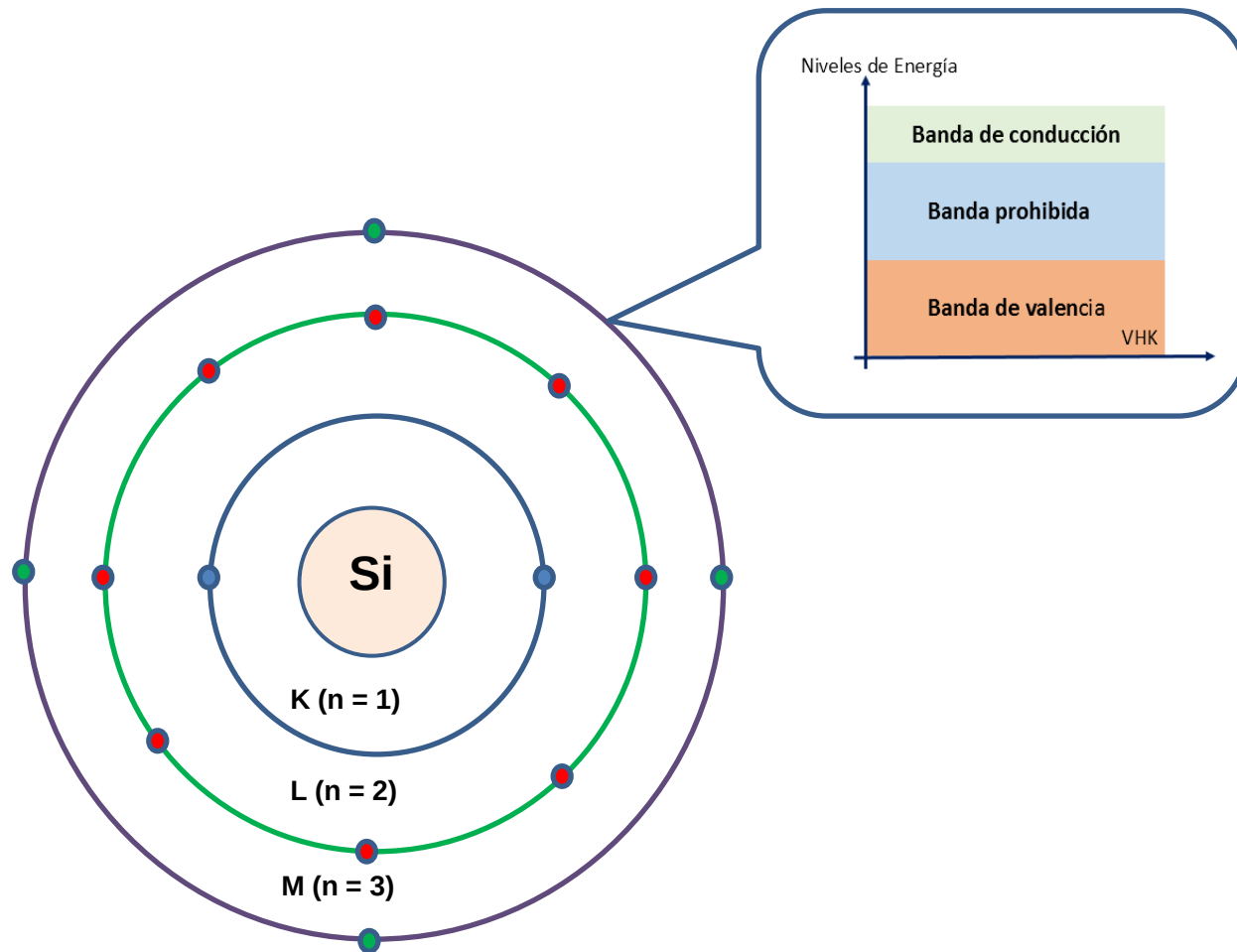
- **K = 2 electrones.**
L = 8 electrones.
M = 4 electrones.

- Ultima capa: $14 - 2 - 8 = 4$

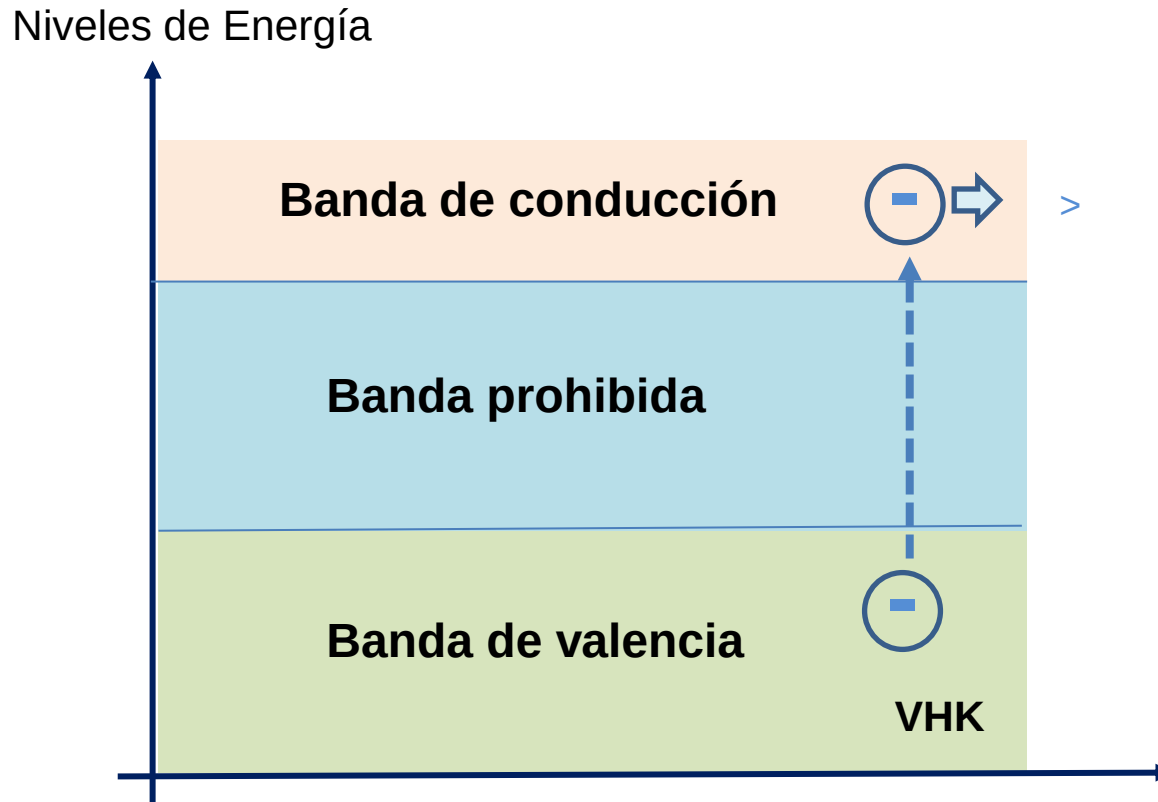


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NIVELES DE ENERGÍA

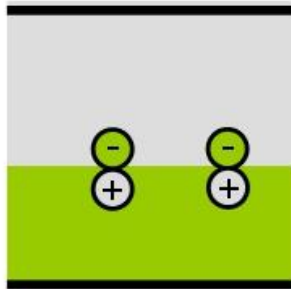


NIVELES DE ENERGÍA

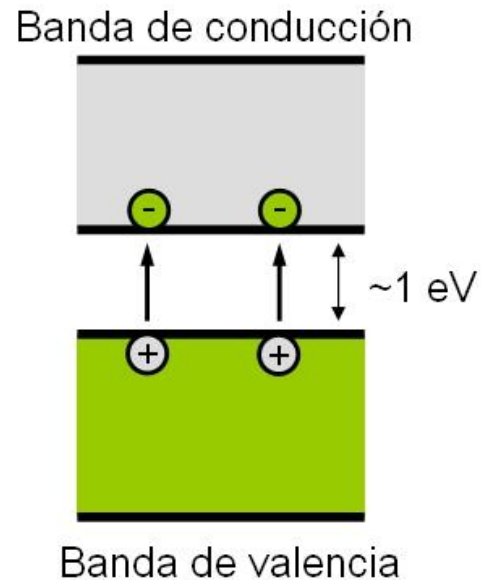


NIVELES DE ENERGÍA

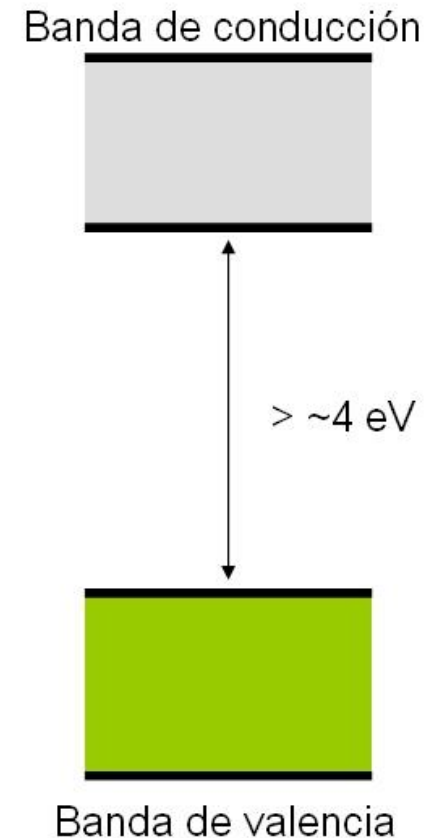
Conductor



Semiconductor



Aislante



Fuente: wix.com

TABLA PERIODICA DE LOS ELEMENTOS

Tabla periódica de los elementos

grupo 1 2 13 14 15 16 17 18

periodo 1 2 3 4 5 6 7

1.00794 1 H Hidrógeno

6.941 3 Li Litio

22.98976 11 Na Sodio

39.0983 19 K Potasio

85.4678 37 Rb Rubidio

132.9054 55 Cs Cesio

(223) 87 Fr Francio

9.012182 4 Be Berilio

24.3050 12 Mg Magnesio

40.078 20 Ca Calcio

87.62 38 Sr Estroncio

137.327 56 Ba Bario

(226) 88 Ra Radio

55.845 26 Fe Hierro

762.5 1.83 26

[Ar] 3d⁶ 4s²

masa atómica o número másico del isótopo más estable

1.ª energía de ionización en kJ/mol

símbolo químico

nombre

configuración electrónica

número atómico

electronegatividad

estados de oxidación más comunes en el compuesto

metales alcalinos

alcalinotérreos

otros metales

metales de transición

lantánidos

actínidos

metalloides

no metales

halógenos

gases nobles

elementos desconocidos

masas de elementos radiactivos entre paréntesis

10.811 5 B Boro

12.0107 6 C Carbono

26.98153 13 Al Aluminio

69.723 31 Ga Galio

114.818 49 In Indio

204.3833 81 Tl Talio

12.0107 6 C Carbono

14.0067 7 N Nitrógeno

30.97396 15 P Fósforo

74.92160 33 As Arsénico

208.9804 83 Bi Bismuto

15.9994 8 O Oxígeno

32.06 16 S Azufre

78.96 34 Se Selenio

(210) 84 Po Polonio

18.998403 9 F Flúor

35.453 17 Cl Cloro

79.904 35 Br Bromo

(210) 85 At Astato

20.1797 10 Ne Neón

39.948 18 Ar Argón

79.904 36 Kr Kriptón

(222) 86 Rn Radón

4.002602 2 He Helio

138.9054 57 La Lantano

140.116 58 Ce Cerio

140.9076 59 Pr Praseodimio

144.242 60 Nd Neodimio

(145) 61 Pm Prometio

150.36 62 Sm Samario

151.964 63 Eu Europio

157.25 64 Gd Gadolinio

158.9253 65 Tb Terbio

162.500 66 Dy Disprosio

164.9303 67 Ho Holmio

167.259 68 Er Eritio

168.9342 69 Tm Tulio

173.054 70 Yb Yterbio

(227) 89 Ac Actinio

232.0376 90 Th Torio

231.0368 91 Pa Protactinio

238.0289 92 U Uranio

(237) 93 Np Neptunio

(244) 94 Pu Plutonio

(243) 95 Am Americio

(247) 96 Cm Curcio

(247) 97 Bk Berkelio

(251) 98 Cf Californio

(252) 99 Es Eisebio

(257) 100 Fm Fermio

(258) 101 Md Mendelevio

(259) 102 No Nobelio

bloques de configuración electrónica

s p d f

notas

- por ahora, los elementos 113, 115, 117 y 118 no tienen nombre oficial designado por la IUPAC.
- 1 kg/mol = 999.999 g/mol
- todos los elementos tienen un estado de oxidación implícito cero.

Fuente: De Attribution: 2012rcEdit (Translation to Spanish) by The Photographer - File:Periodic_table_large-es.svg, CC BY 3.0, <https://commons.wikimedia.org/w/index.php?curid=68732033>

Grupo

13

14

15

VIIa

VIIa

4.22
0.93
31.8
1s

5 10,811 B Boro 3 2.34 2365 4275 0.82 [He]2s ² 2p ¹	6 12,0107 C Carbono 3 -4.24 2.26 4100 5100 0.77 [He]2s ² 2p ²	7 14,00674 N Nitrógeno 3 3.2,3,4,5 2.251 3.15 7.35 0.75 [He]2s ² 2p ³	8 15,9994 O Oxígeno 3 -2 1.429 54.8 90.18 0.73 [He]2s ² 2p ⁴	9 18,998403 F Flúor 3 -1 1.696 53.48 84.95 0.72 [He]2s ² 2p ⁵	10 20,1797 Ne Neón 3 - 0.900 24.55 27.1 0.71 [He]2s ² 2p ⁶
13 26,981538 Al Aluminio 3 2.70 933.5 2793 1.18 [Ne]3s ² 3p ¹	14 28,0855 Si Silicio 4 2.33 1683 3540 1.11 [Ne]3s ² 3p ²	15 30,973761 P Fósforo 3 3.3,4,5 0.82 17.3 50 1.06 [Ne]3s ² 3p ³	16 32,066 S Azufre 3 -2,2,4,6 2.07 388.4 717.8 1.02 [Ne]3s ² 3p ⁴	17 35,4527 Cl Cloro 3 -1,1,3,5,7 3.214 172.2 239.1 0.99 [Ne]3s ² 3p ⁵	18 39,948 Ar Argón 3 - 1.784 83.8 87.3 0.98 [Ne]3s ² 3p ⁶
31 69,723 Ga Galio 3 5.91 302.9 2478 1.26 [Ar]3d ¹⁰ 4s ² 4p ¹	32 72,61 Ge Germanio 4 5.32 1211.5 3107 1.22 [Ar]3d ¹⁰ 4s ² 4p ²	33 74,92160 As Arsénico 4 3.3,5 0.72 090 (3sAtm) 86 (Sublim) 1.20 [Ar]3d ¹⁰ 4s ² 4p ³	34 78,96 Se Selenio 4 -2,4,6 4.79 494 958 1.16 [Ar]3d ¹⁰ 4s ² 4p ⁴	35 79,904 Br Bromo 4 -1,1,5 3.12 265.9 332.2 1.14 [Ar]3d ¹⁰ 4s ² 4p ⁵	36 83,8 Kr Kriptón 4 - 3.7 115.8 119.8 1.12 [Ar]3d ¹⁰ 4s ² 4p ⁶
48 114,818 In Indio 3 7.31 429.8 2346 1.44 [Kr]4d ¹⁰ 5s ² 5p ¹	50 118,71 Sn Estaño 4 2.4 7.31 505.1 2876 1.41 [Kr]4d ¹⁰ 5s ² 5p ²	51 121,760 Sb Antimonio 4 3.3,5 0.69 104 860 1.40 [Kr]4d ¹⁰ 5s ² 5p ³	52 127,60 Te Teluro 4 -2,4,6 6.24 722.7 1261 1.36 [Kr]4d ¹⁰ 5s ² 5p ⁴	53 126,90447 I Yodo 4 -1,1,5,7 4.93 386.7 458.4 1.33 [Kr]4d ¹⁰ 5s ² 5p ⁵	54 131,29 Xe Xenón 4 - 5.9 161.4 165.1 1.31 [Kr]4d ¹⁰ 5s ² 5p ⁶

Grupo 13 14 15

IIIa		IVa		Va		VIa		VIIa		4.22 0.93		31.8 1s	
5	B	6	C	7	N	8	O	9	F	10	Ne		
10,811		12,0107		14,00674		15,9994		18,998403		20,1797			
Boro		Carbono		Nitrógeno		Oxígeno		Flúor		Neón			
3 2.34 2365 4275 0.82		1.026 2.04 801 4.6		-4.2.4 2.26 4100 5100 0.77		0.710 2.55 1087 4.6		-3.2.3.4.5 1.251 63.15 77.35 0.75		1.04 3.04 1402 17.3		[He]2s ² 2p ³	
[He]2s ² 2p ¹		[He]2s ² 2p ²		[He]2s ² 2p ³		[He]2s ² 2p ⁴		[He]2s ² 2p ⁵		[He]2s ² 2p ⁶			
13	Al	14	Si	15	P	16	S	17	Cl	18	Ar		
26,981538		28,0855		30,973761		32,066		35,4527		39,948			
Aluminio		Silicio		Fósforo		Azufre		Cloro		Argón			
3 2.70 933.5 2793 1.18		0.904 1.61 578 10.0		4 2.33 1683 3540 1.11		0.712 1.9 787 12.1		-3.3.4.5 1.82 317.3 550 1.06		0.770 2.19 1012 17.0		[Ne]3s ² 3p ³	
[Ne]3s ² 3p ¹		[Ne]3s ² 3p ²		[Ne]3s ² 3p ³		[Ne]3s ² 3p ⁴		[Ne]3s ² 3p ⁵		[Ne]3s ² 3p ⁶			
31	Ga	32	Ge	33	As	34	Se	35	Br	36	Kr		
69,723		72,61		74,92160		78,96		79,904		83,8			
Galio		Germanio		Arsénico		Selenio		Bromo		Kriptón			
3 5.91 302.9 2478 1.26		0.371 1.81 579 11.8		4 5.32 1211.5 3107 1.22		0.322 2.01 762 13.6		-3.3.5 5.72 1090 (36Atm) 886 (Sublim) 1.20		0.328 2.18 947 13.1		[Ar]3d ¹⁰ 4s ² 4p ³	
[Ar]3d ¹⁰ 4s ² 4p ¹		[Ar]3d ¹⁰ 4s ² 4p ²		[Ar]3d ¹⁰ 4s ² 4p ³		[Ar]3d ¹⁰ 4s ² 4p ⁴		[Ar]3d ¹⁰ 4s ² 4p ⁵		[Ar]3d ¹⁰ 4s ² 4p ⁶			
48	In	50	Sn	51	Sb	52	Te	53	I	54	Xe		
114,818		118,71		121,760		127,60		126,90447		131,29			
Indio		Estaño		Antimonio		Teluro		Yodo		Xenón			
3 7.31 429.8 2346 1.44		0.233 1.78 558 15.7		2.4 7.31 505.1 2876 1.41		0.228 1.96 709 16.3		-3.3.5 6.69 904 1860 1.40		0.207 2.05 834 18.4		[Kr]4d ¹⁰ 5s ² 5p ³	
[Kr]4d ¹⁰ 5s ² 5p ¹		[Kr]4d ¹⁰ 5s ² 5p ²		[Kr]4d ¹⁰ 5s ² 5p ³		[Kr]4d ¹⁰ 5s ² 5p ⁴		[Kr]4d ¹⁰ 5s ² 5p ⁵		[Kr]4d ¹⁰ 5s ² 5p ⁶			

Grupo

13

14

15

IIIa		IVa		Va		VIa		VIIa		4.22 0.93	31.8 1s
5	B	6	C	7	N	8	O	9	F	10	Ne
10,811	Boro	12,0107	Carbono	14,00674	Nitrógeno	15,9994	Oxígeno	18,998403	Flúor	20,1797	Neón
3 2.34 2365 4275 0.82	1.026 2.04 801 4.6	-4.2.4 2.26 4100 5100 0.77	0.710 2.55 1087 4.6	-3.2.3.4.5 1.251 63.15 77.35 0.75	1.04 3.04 1402 17.3	-2 1.429 54.8 90.18 0.73	0.92 3.44 1314 14.0	-1 1.696 53.48 84.95 0.72	0.824 3.98 1681 17.1	- 0.900 24.55 27.1 0.71	1.03 - 2081 16.7
[He]2s ² 2p ¹		[He]2s ² 2p ²		[He]2s ² 2p ³		[He]2s ² 2p ⁴		[He]2s ² 2p ⁵		[He]2s ² 2p ⁶	
13	Al	14	Si	15	P	16	S	17	Cl	18	Ar
26,981538	Aluminio	28,0855	Silicio	30,973761	Fósforo	32,066	Azufre	35,4527	Cloro	39,948	Argón
3 2.70 933.5 2793 1.18	0.904 1.61 578 10.0	4 2.33 1683 3540 1.11	0.712 1.9 787 12.1	-3.3.4.5 1.82 317.3 550 1.06	0.770 2.19 1012 17.0	-2.2.4.6 2.07 388.4 717.8 1.02	0.705 2.58 1000 15.5	-1.1.3.5.7 3.214 172.2 239.1 0.99	0.478 3.16 1251 18.7	- 1.784 83.8 87.3 0.98	0.52 - 1521 24.2
[Ne]3s ² 3p ¹		[Ne]3s ² 3p ²		[Ne]3s ² 3p ³		[Ne]3s ² 3p ⁴		[Ne]3s ² 3p ⁵		[Ne]3s ² 3p ⁶	
31	Ga	32	Ge	33	As	34	Se	35	Br	36	Kr
69,723	Galio	72,61	Germanio	74,92160	Arsénico	78,96	Selenio	79,904	Bromo	83,8	Kriptón
3 5.91 302.9 2478 1.26	0.371 1.81 579 11.8	4 5.32 1211.5 3107 1.22	0.322 2.01 762 13.6	-3.3.5 5.72 1090 (36Atm) 886 (Sublim) 1.20	0.328 2.18 947 13.1	-2.4.6 4.79 494 958 1.16	0.321 2.55 941 16.5	-1.1.5 3.12 265.9 332.2 1.14	0.473 2.96 1140 23.5	- 3.7 115.8 119.8 1.12	0.248 - 1351 32.2
[Ar]3d ¹⁰ 4s ² 4p ¹		[Ar]3d ¹⁰ 4s ² 4p ²		[Ar]3d ¹⁰ 4s ² 4p ³		[Ar]3d ¹⁰ 4s ² 4p ⁴		[Ar]3d ¹⁰ 4s ² 4p ⁵		[Ar]3d ¹⁰ 4s ² 4p ⁶	
48	In	50	Sn	51	Sb	52	Te	53	I	54	Xe
114,818	Indio	118,71	Estaño	121,760	Antimonio	127,60	Teluro	126,90447	Yodo	131,29	Xenón
3 7.31 429.8 2346 1.44	0.233 1.78 558 15.7	2.4 7.31 505.1 2876 1.41	0.228 1.96 709 16.3	-3.3.5 6.69 904 1860 1.40	0.207 2.05 834 18.4	-2.4.6 6.24 722.7 1261 1.36	0.201 2.1 869 20.5	-1.1.5.7 4.93 386.7 458.4 1.33	0.214 2.66 1008 25.7	- 5.9 161.4 165.1 1.31	0.158 2.6 1170 42.9
[Kr]4d ¹⁰ 5s ² 5p ¹		[Kr]4d ¹⁰ 5s ² 5p ²		[Kr]4d ¹⁰ 5s ² 5p ³		[Kr]4d ¹⁰ 5s ² 5p ⁴		[Kr]4d ¹⁰ 5s ² 5p ⁵		[Kr]4d ¹⁰ 5s ² 5p ⁶	

DOPADO **O** **METALIZACION** **de un *SEMICONDUCTOR***



DOPADO

IIIa		IVa		Va		VIa		VIIa		4.22 0.93	31.8 1s
5	B	6	C	7	N	8	O	9	F	10	Ne
10,811	Boro	12,0107	Carbono	14,00674	Nitrógeno	15,9994	Oxígeno	18,998403	Flúor	20,1797	Neón
3 2.34 2365 4275 0.82	1.026 2.04 801 4.6	-4.24 2.26 4100 5100 0.77	0.710 2.55 1087 4.6	-3.2,3.4,5 1.251 63.15 77.35 0.75	1.04 3.04 1402 17.3	-2 1.429 54.8 90.18 0.73	0.92 3.44 1314 14.0	-1 1.696 53.48 84.95 0.72	0.824 3.98 1681 17.1	- 0.900 24.55 27.1 0.71	1.03 - 2081 16.7
[He]2s ² 2p ¹		[He]2s ² 2p ²		[He]2s ² 2p ³		[He]2s ² 2p ⁴		[He]2s ² 2p ⁵		[He]2s ² 2p ⁶	
13	Al	14	Si	15	P	16	S	17	Cl	18	Ar
26,981538	Aluminio	28,0855	Silicio	30,973761	Fósforo	32,066	Azufre	35,4527	Cloro	39,948	Argón
3 2.70 933.5 2793 1.18	0.904 1.61 578 10.0	4 2.33 1683 3540 1.11	0.712 1.9 787 12.1	-3.3,4,5 1.82 317.3 550 1.06	0.770 2.19 1012 17.0	-2,2,4,6 2.07 388.4 717.8 1.02	0.705 2.58 1000 15.5	-1,1,3,5,7 3.214 172.2 239.1 0.99	0.478 3.16 1251 18.7	- 1.784 83.8 87.3 0.98	0.52 - 1521 24.2
[Ne]3s ² 3p ¹		[Ne]3s ² 3p ²		[Ne]3s ² 3p ³		[Ne]3s ² 3p ⁴		[Ne]3s ² 3p ⁵		[Ne]3s ² 3p ⁶	
31	Ga	32	Ge	33	As	34	Se	35	Br	36	Kr
69,723	Galio	72,61	Germanio	74,92160	Arsénico	78,96	Selenio	79,904	Bromo	83,8	Kriptón
3 5.91 302.9 2478 1.26	0.371 1.81 579 11.8	4 5.32 1211.5 3107 1.22	0.322 2.01 762 13.6	-3.3,5 5.72 1090 (3sAtm) 886 (Sublim) 1.20	0.328 2.18 947 13.1	-2,4,6 4.79 494 958 1.16	0.321 2.55 941 16.5	-1,1,5 3.12 265.9 332.2 1.14	0.473 2.96 1140 23.5	- 3.7 115.8 119.8 1.12	0.248 - 1351 32.2
[Ar]3d ¹⁰ 4s ² 4p ¹		[Ar]3d ¹⁰ 4s ² 4p ²		[Ar]3d ¹⁰ 4s ² 4p ³		[Ar]3d ¹⁰ 4s ² 4p ⁴		[Ar]3d ¹⁰ 4s ² 4p ⁵		[Ar]3d ¹⁰ 4s ² 4p ⁶	
49	In	50	Sn	51	Sb	52	Te	53	I	54	Xe
114,818	Indio	118,71	Estaño	121,760	Antimonio	127,60	Teluro	126,90447	Yodo	131,29	Xenón
3 7.31 429.8 2346 1.44	0.233 1.78 558 15.7	2.4 7.31 505.1 2876 1.41	0.228 1.96 709 16.3	-3.3,5 6.69 904 1860 1.40	0.207 2.05 834 18.4	-2,4,6 6.24 722.7 1261 1.36	0.201 2.1 869 20.5	-1,1,5,7 4.93 386.7 458.4 1.33	0.214 2.66 1008 25.7	- 5.9 161.4 165.1 1.31	0.158 2.6 1170 42.9
[Kr]4d ¹⁰ 5s ² 5p ¹		[Kr]4d ¹⁰ 5s ² 5p ²		[Kr]4d ¹⁰ 5s ² 5p ³		[Kr]4d ¹⁰ 5s ² 5p ⁴		[Kr]4d ¹⁰ 5s ² 5p ⁵		[Kr]4d ¹⁰ 5s ² 5p ⁶	

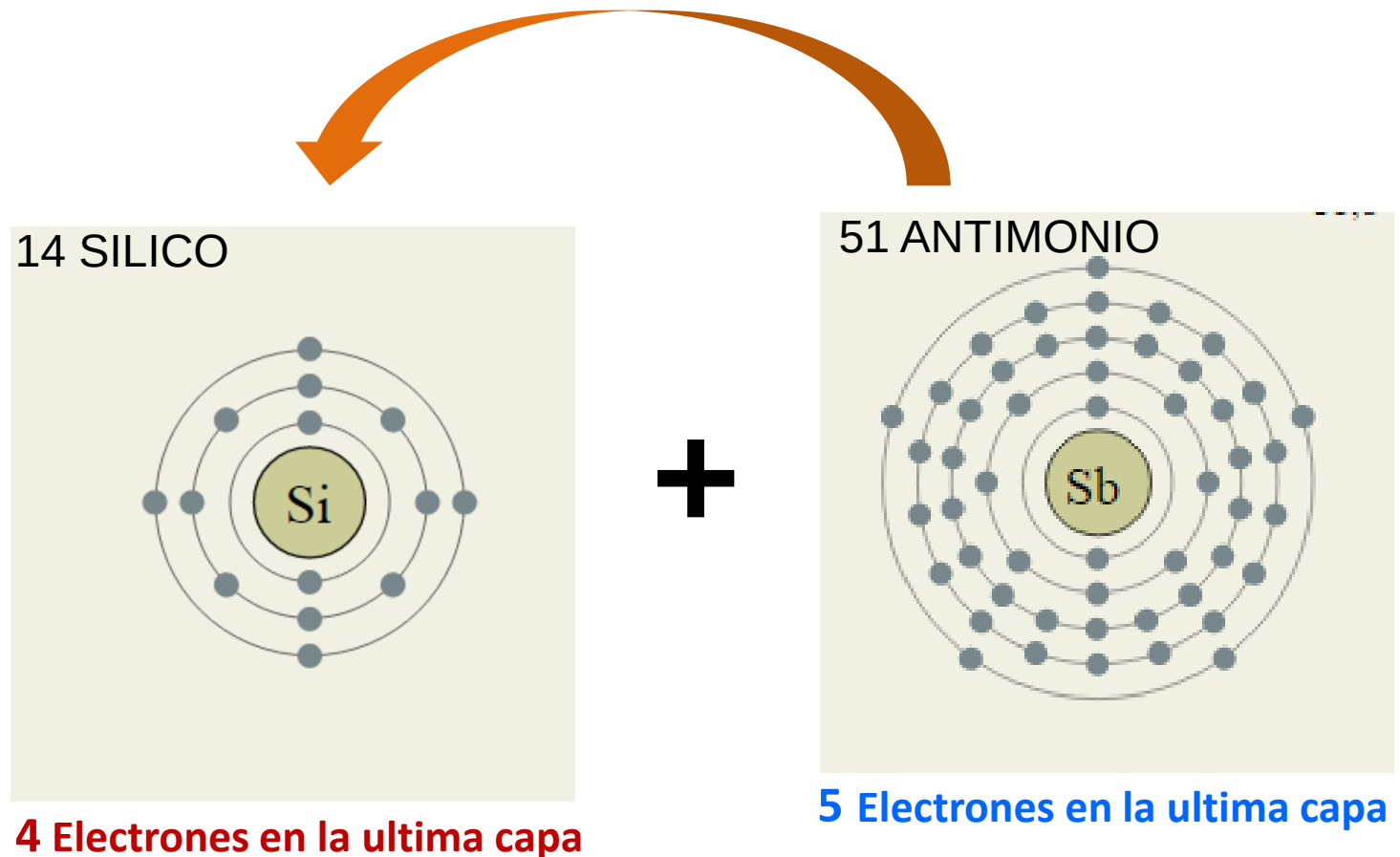
Grupo

13

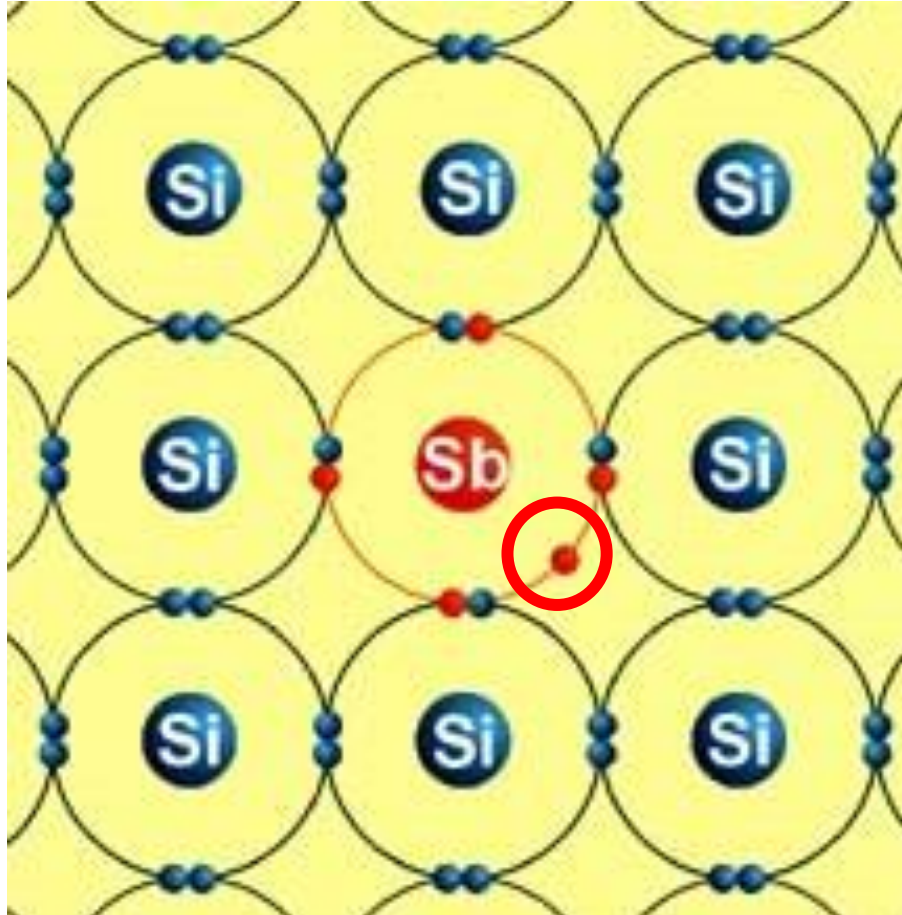
14

15

Dopado o Metalización



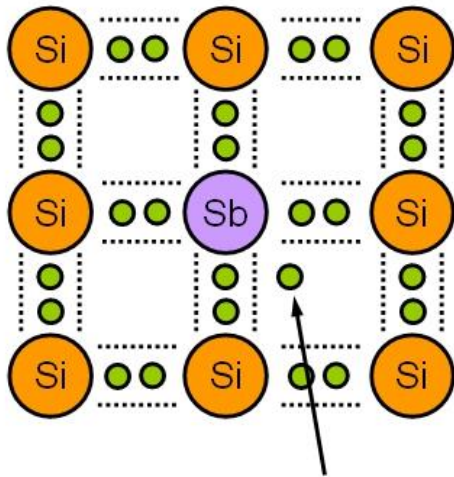
SEMICONDUCTOR Tipo N



Un electrón libre >

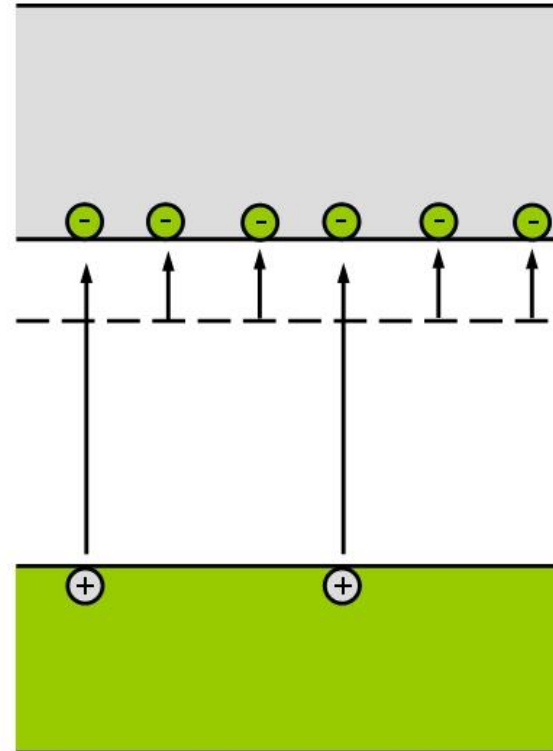
Fuente: www.asifunciona.com

SEMICONDUCTOR Tipo N



Electrón *libre*

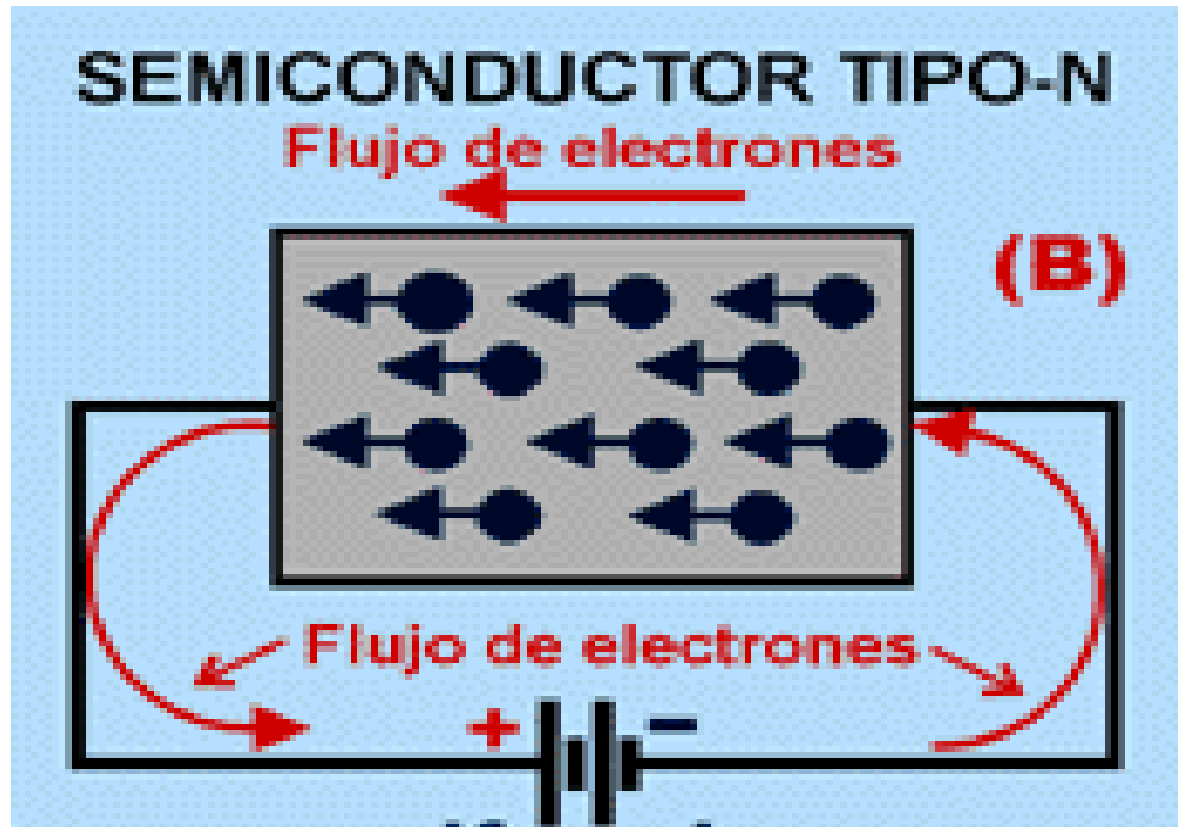
Banda de conducción



Banda de valencia

Fuente: <https://thetuzaro.wordpress.com/>

Semiconductor tipo N

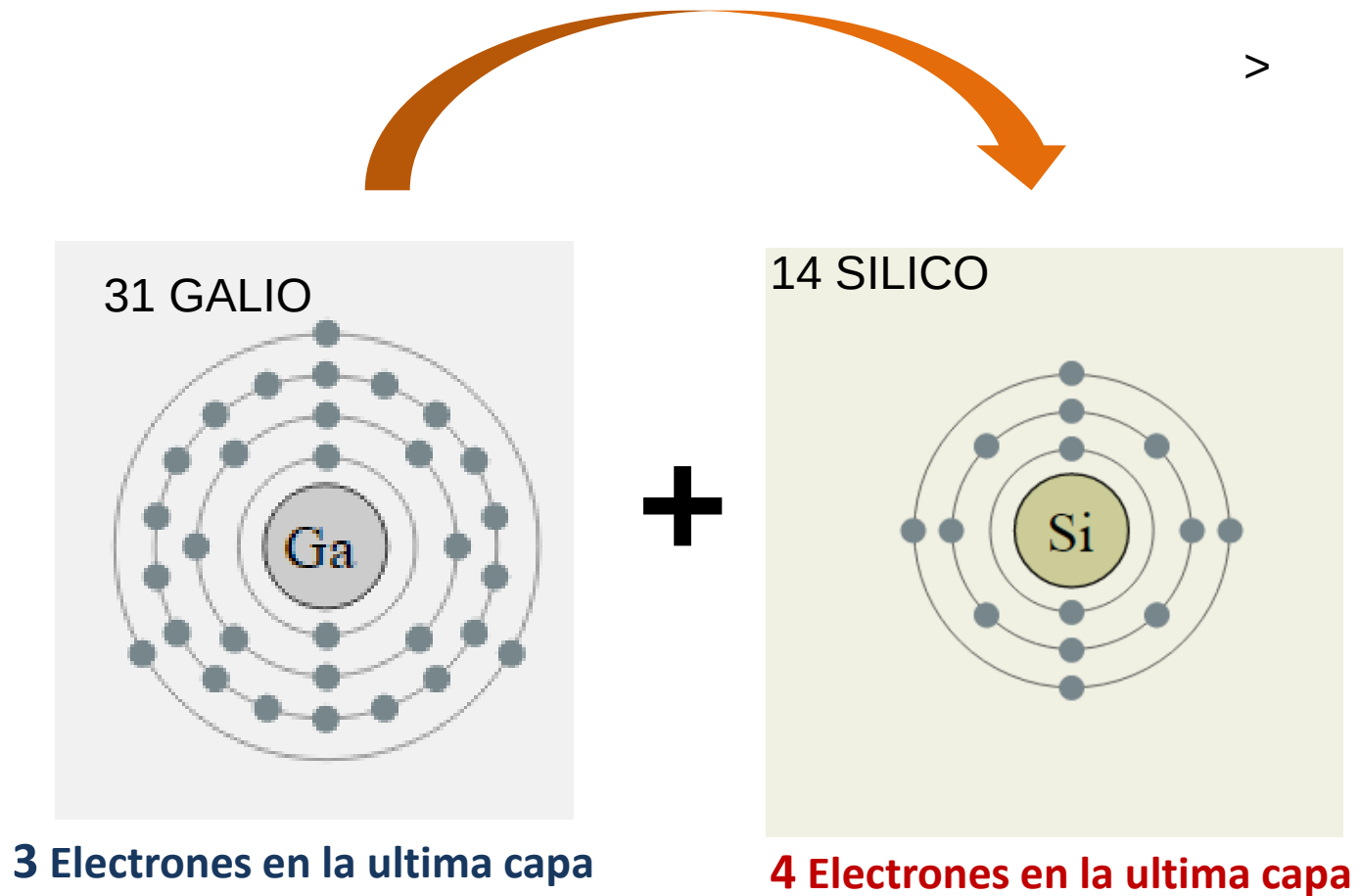


Fuente: www.asifunciona.com

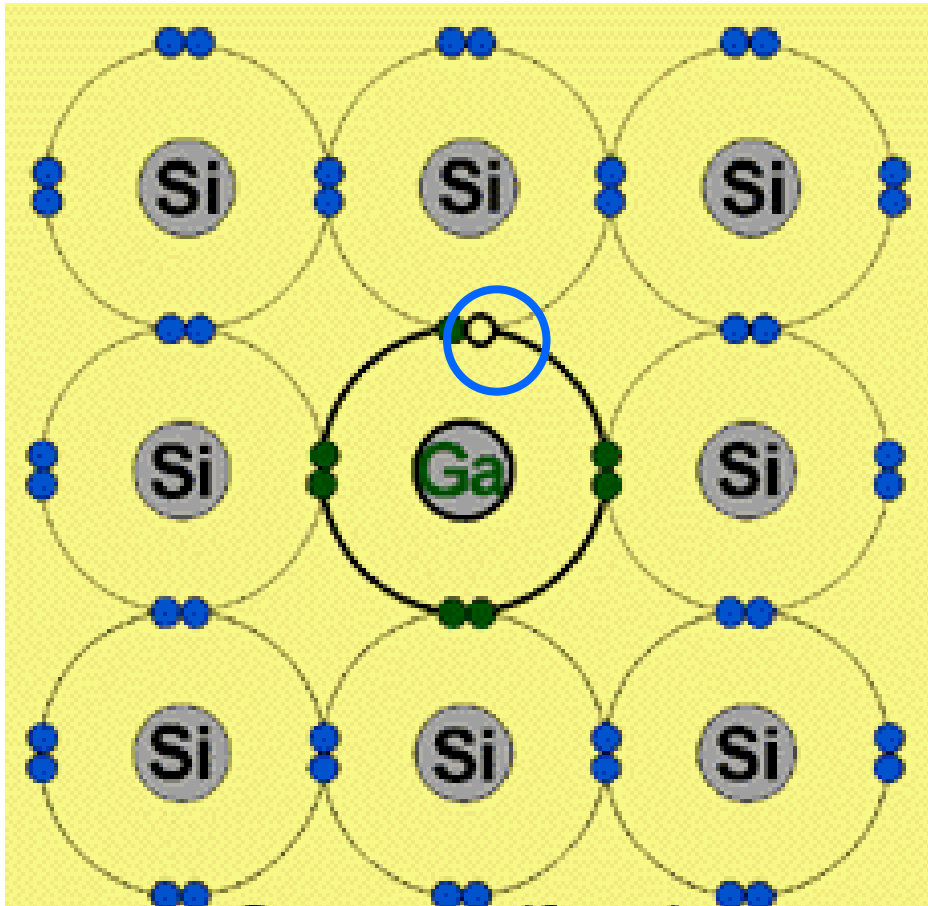
DOPADO

IIIa		IVa		Va		VIa		VIIa		4.22 0.93	31.8 1s
5	B	6	C	7	N	8	O	9	F	10	Ne
10,811	Boro	12,0107	Carbono	14,00674	Nitrógeno	15,9994	Oxígeno	18,998403	Flúor	20,1797	Neón
3 2.34 2365 4275 0.82	1.026 2.04 801 4.6	-4.24 2.26 4100 5100 0.77	0.710 2.55 1087 4.6	-3.2.3.4.5 1.251 63.15 77.35 0.75	1.04 3.04 1402 17.3	-2 1.429 54.8 90.18 0.73	0.92 3.44 1314 14.0	-1 1.696 53.48 84.95 0.72	0.824 3.98 1681 17.1	- 0.900 24.55 27.1 0.71	1.03 - 2081 16.7
[He]2s ² 2p ¹		[He]2s ² 2p ²		[He]2s ² 2p ³		[He]2s ² 2p ⁴		[He]2s ² 2p ⁵		[He]2s ² 2p ⁶	
18	Al	14	Si	15	P	16	S	17	Cl	18	Ar
26,981538	Aluminio	28,0855	Silicio	30,973761	Fósforo	32,066	Azufre	35,4527	Cloro	39,948	Argón
3 2.70 933.5 2793 1.18	0.904 1.61 578 10.0	4 2.33 1683 3540 1.11	0.712 1.9 787 12.1	-3.3.4.5 1.82 17.3 106	0.770 2.19 1012 17.0	-2.2.4.6 2.07 388.4 717.8 1.02	0.705 2.58 1000 15.5	-1.1.3.5.7 3.214 172.2 239.1 0.99	0.478 3.16 1251 18.7	- 1.784 83.8 87.3 0.98	0.52 - 1521 24.2
[Ne]3s ² 3p ¹		[Ne]3s ² 3p ²		[Ne]3s ² 3p ³		[Ne]3s ² 3p ⁴		[Ne]3s ² 3p ⁵		[Ne]3s ² 3p ⁶	
81	Ga	82	Ge	83	As	84	Se	85	Br	86	Kr
69,723	Galio	72,61	Germanio	74,92160	Arsénico	78,96	Selenio	79,904	Bromo	83,8	Kriptón
3 5.91 302.9 2478 1.26	0.371 1.81 579 11.8	4 5.32 1211.5 3107 1.22	0.322 2.01 762 13.6	-3.3.5 5.72 1090 (36Atm) 886 (Sublim) 1.20	0.328 2.18 947 13.1	-2.4.6 4.79 494 958 1.16	0.321 2.55 941 16.5	-1.1.5 3.12 265.9 332.2 1.14	0.473 2.96 1140 23.5	- 3.7 115.8 119.8 1.12	0.248 - 1351 32.2
[Ar]3d ¹⁰ 4s ² 4p ¹		[Ar]3d ¹⁰ 4s ² 4p ²		[Ar]3d ¹⁰ 4s ² 4p ³		[Ar]3d ¹⁰ 4s ² 4p ⁴		[Ar]3d ¹⁰ 4s ² 4p ⁵		[Ar]3d ¹⁰ 4s ² 4p ⁶	
48	In	50	Sn	51	Sb	52	Te	53	I	54	Xe
114,818	Indio	118,71	Estañó	121,760	Antimonio	127,60	Teluro	126,90447	Yodo	131,29	Xenón
3 7.31 429.8 2346 1.44	0.233 1.78 558 15.7	2.4 7.31 505.1 2876 1.41	0.228 1.96 709 16.3	-3.3.5 6.69 904 1860 1.40	0.207 2.05 834 18.4	-2.4.6 6.24 722.7 1261 1.36	0.201 2.1 869 20.5	-1.1.5.7 4.93 386.7 458.4 1.33	0.214 2.66 1008 25.7	- 5.9 161.4 165.1 1.31	0.158 2.6 1170 42.9
[Kr]4d ¹⁰ 5s ² 5p ¹		[Kr]4d ¹⁰ 5s ² 5p ²		[Kr]4d ¹⁰ 5s ² 5p ³		[Kr]4d ¹⁰ 5s ² 5p ⁴		[Kr]4d ¹⁰ 5s ² 5p ⁵		[Kr]4d ¹⁰ 5s ² 5p ⁶	

Dopado o Metalización



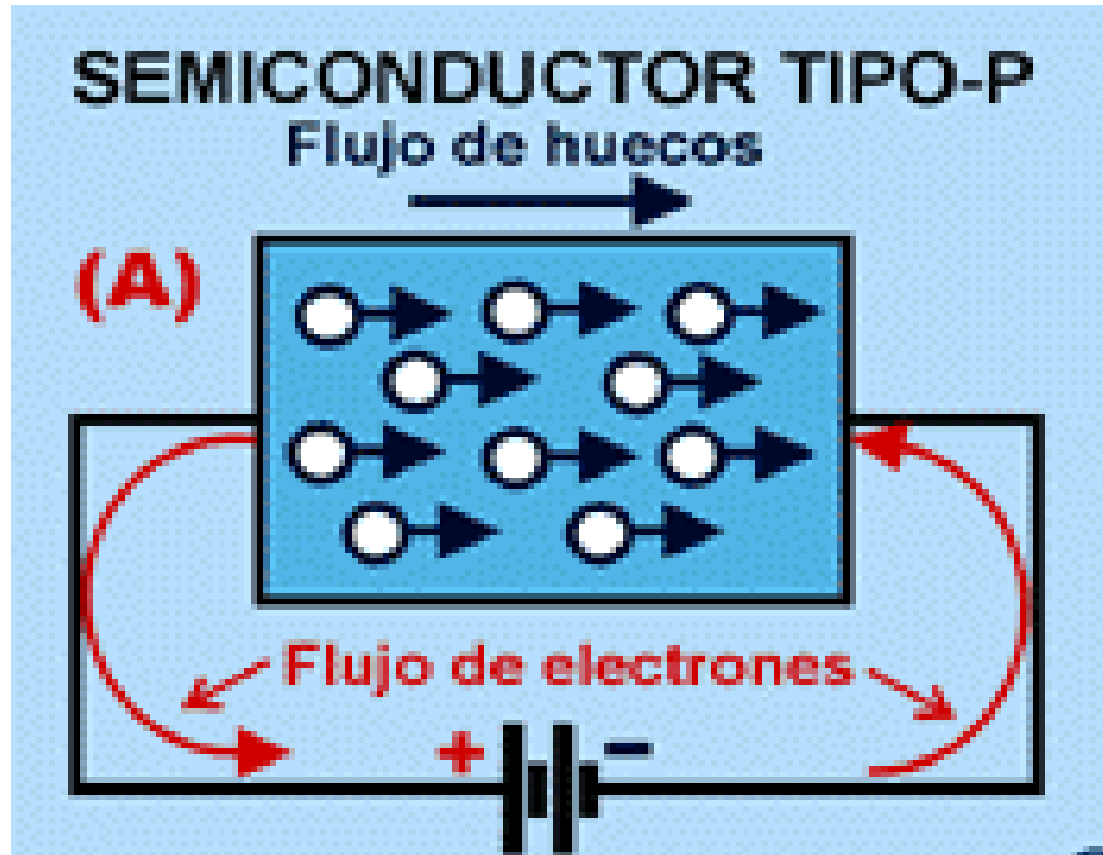
SEMICONDUCTOR Tipo P



Falta un electrón,
hueco (laguna) >

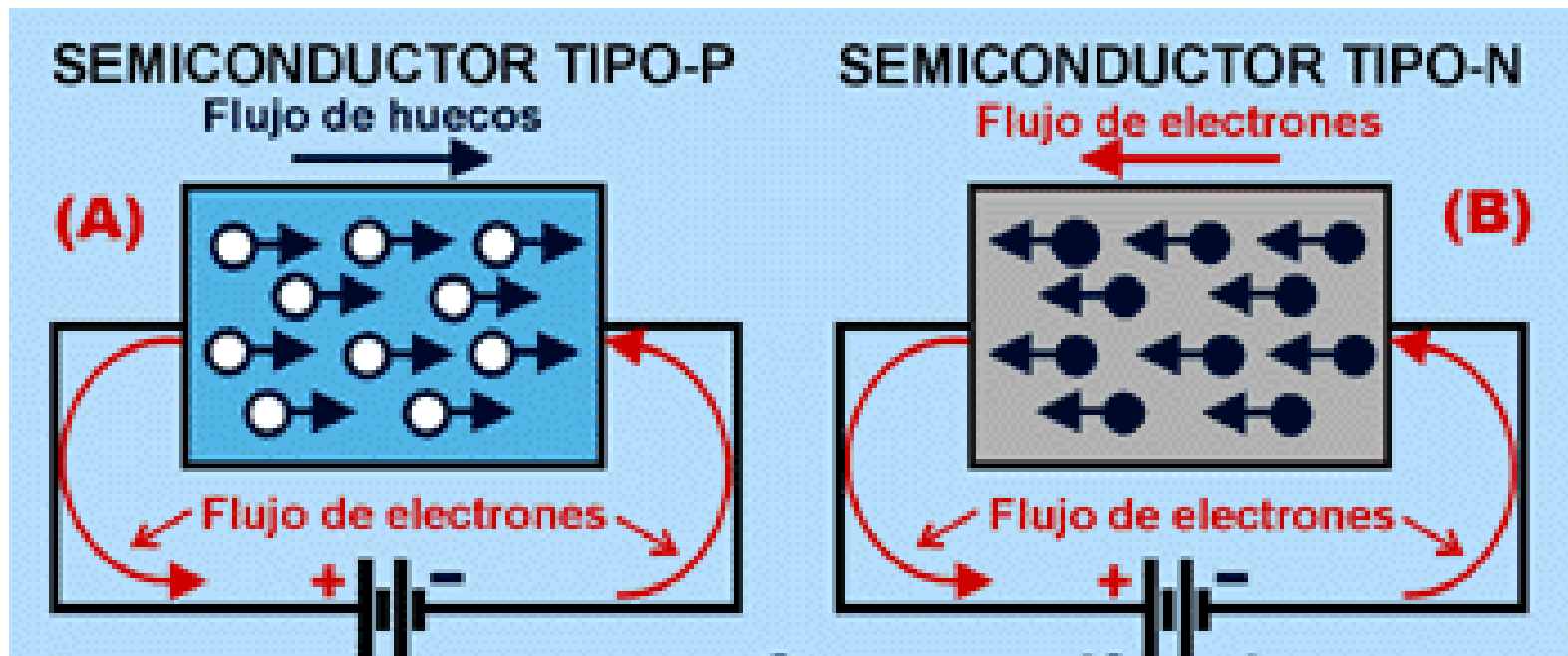
Fuente: www.asifunciona.com

Semiconductor tipo P



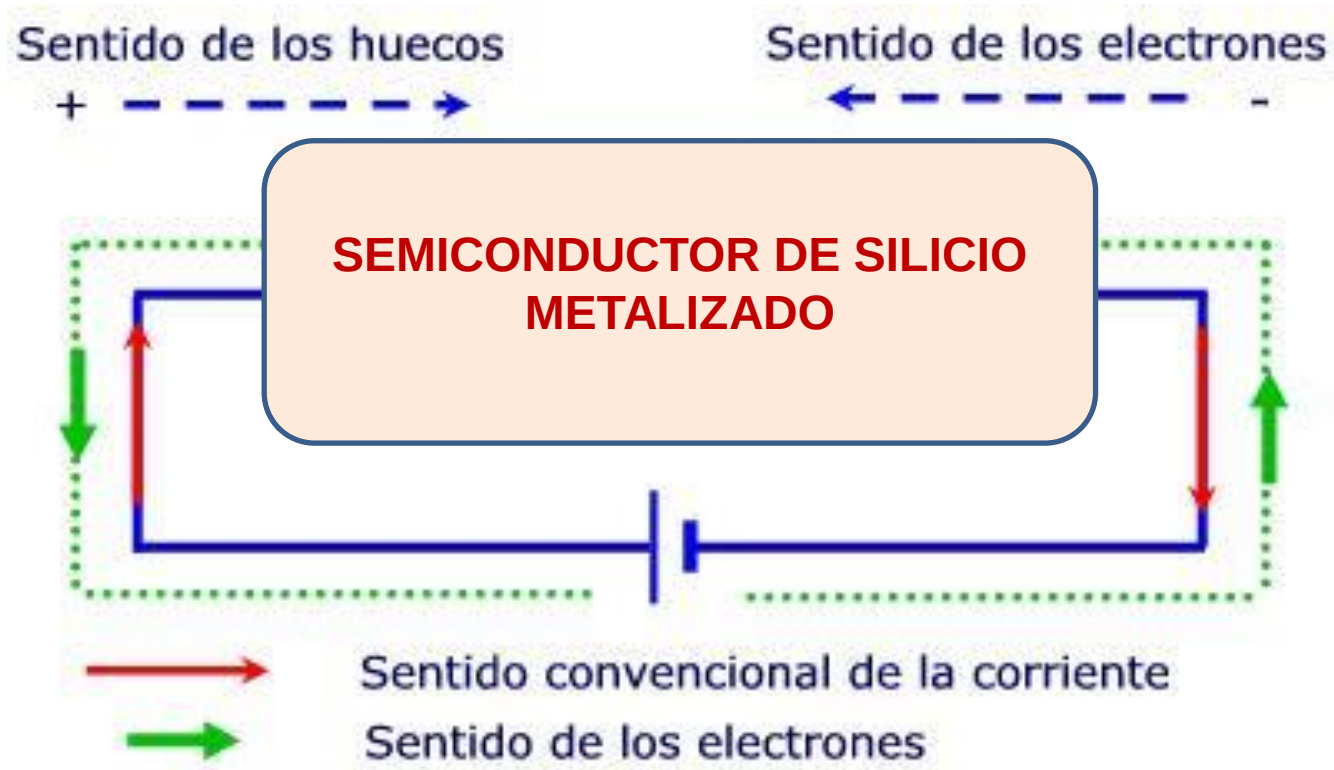
Fuente: www.asifunciona.com

Conducción en Materiales SEMICONDUCTORES *Extrínsecos*



Fuente: www.asifunciona.com

CONDUCCION DE MATERIAL SEMICONDUCTOR EXTRINSECO (Metalizado)



FIN



