

TECNOLOGIA	DISPOSITIVI D'INGRESSO	DISPOSITIVI D'USCITA
Elettronica	Contatti elettronici Circuiti integrati Microprocessori	Relè di potenza Elettrovalvole pneum. Elettrovalvole oleod. Attuatori elettrici Schede elettroniche
Elettrica	Contatti elettrici Relè	Relè di potenza Elettrovalvole pneum. Elettrovalvole oleod. Attuatori elettrici
Pneumatica	Valvole pneumatiche	Valvole pneumatiche Attuatori pneumatici
Oledinamica	Valvole oleodinamiche	Valvole oleodinamiche Attuatori oleodinamici

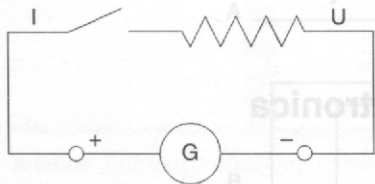


Fig. AL2.24 - Circuito elettrico con resistenza.

Fig. AL2.E

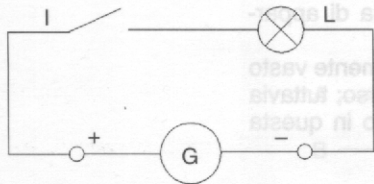


Fig. AL2.25 - Circuito elettrico con lampada.

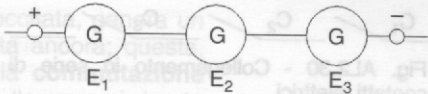


Fig. AL2.26 - Collegamento in serie di generatori.

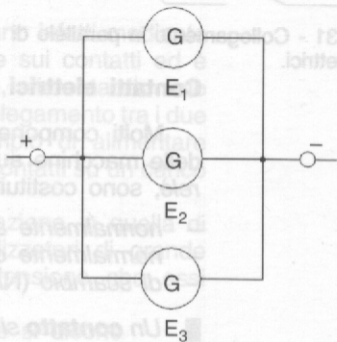


Fig. AL2.27 - Collegamento in parallelo di generatori.

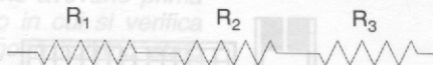


Fig. AL2.28 - Collegamento in serie di resistenze.

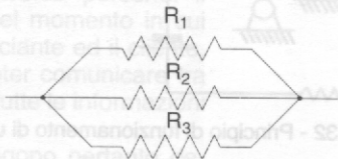


Fig. AL2.29 - Collegamento in parallelo di resistenze.



Fig. AL2.30 - Collegamento in serie di contatti elettrici.

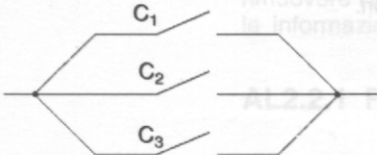


Fig. AL2.31 - Collegamento in parallelo di contatti elettrici.

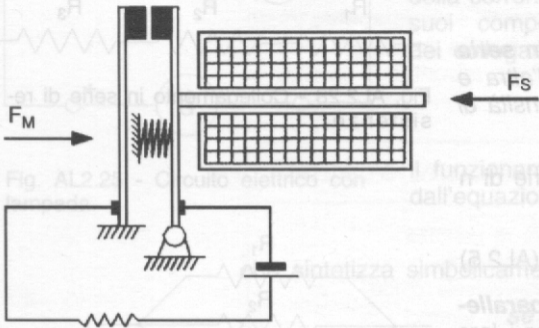


Fig. AL2.32 - Principio di funzionamento di un contatto elettrico.

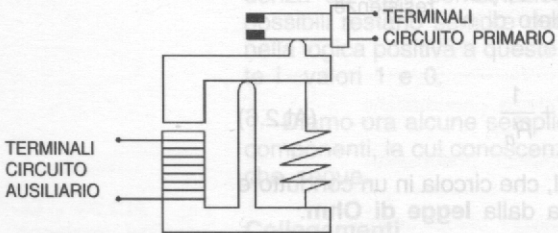


Fig. AL2.33 - Principio di funzionamento di un relè elettromeccanico.



**Simboli IEC di alcuni elementi impiegati nei circuiti elettrici**

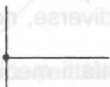
**CONDUTTORE UNIPOLARE**



**RESISTENZA**



**DERIVAZIONE**



**LAMPADA**



**BOBINA**



**MOTORE**



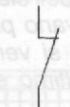
**CONTATTO N. A.**



**PILA**



**CONTATTO N. C.**



**GENERATORE  
(SIMBOLO GENERICO)**



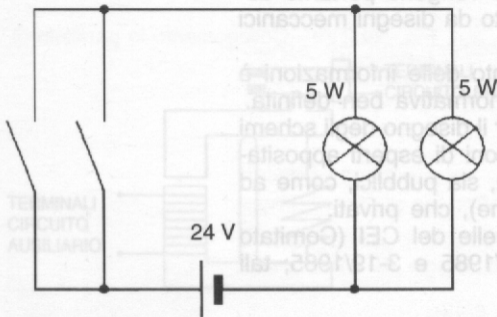
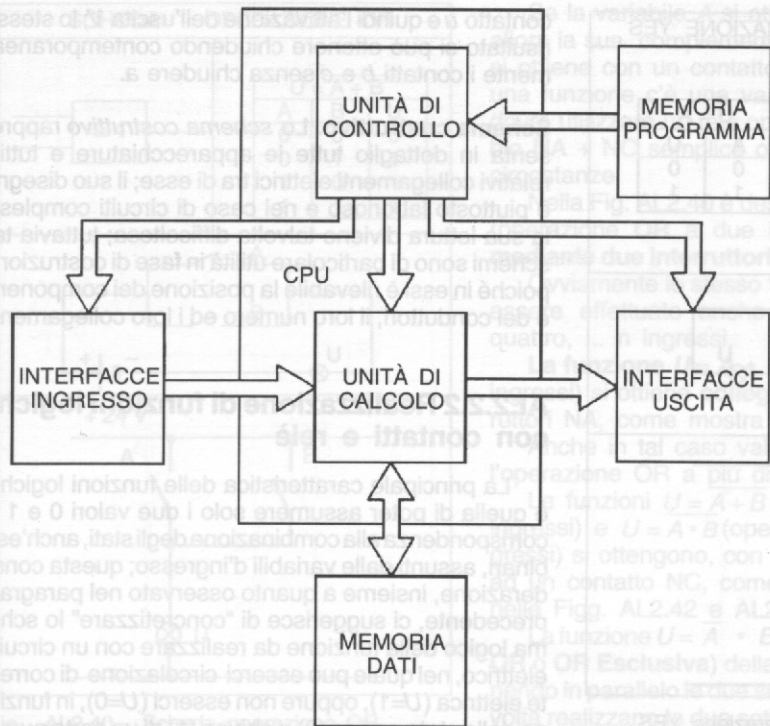


Fig. AL2.35 - Schema di principio.



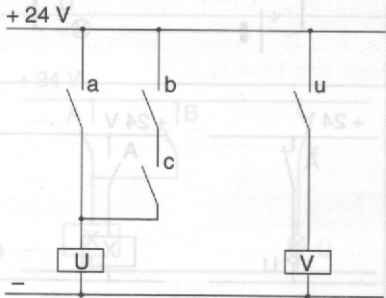
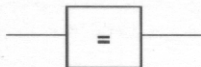


Fig. AL2.37 - Schema funzionale.

SCHEDA

OPERAZIONE YES



U = A	
A	U
0	0
1	1

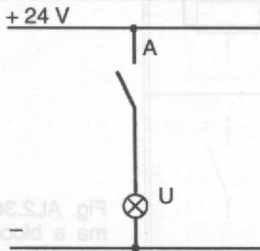
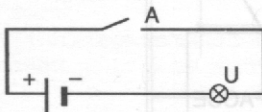
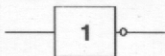


Fig. AL2.38 - Scheda operazione YES.

SCHEDA

OPERAZIONE NOT



$U = \bar{A}$	
A	U
0	1
1	0

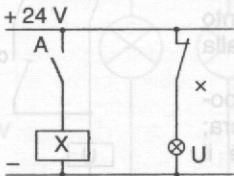
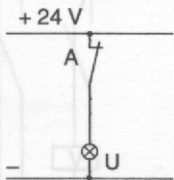
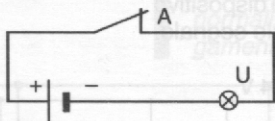
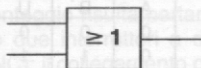


Fig. AL2.39 - Scheda operazione NOT.

SCHEDA OPERAZIONE OR



U = A + B		
A	B	U
0	0	0
0	1	1
1	0	1
1	1	1

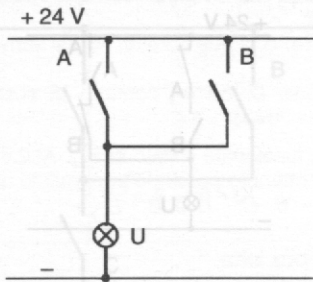
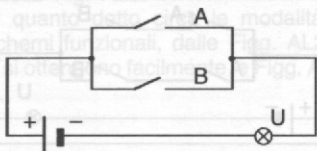
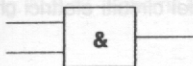


Fig. AL2.40 - Scheda operazione OR.

SCHEDA

OPERAZIONE AND



U = A * B		
A	B	U
0	0	0
0	1	0
1	0	0
1	1	1

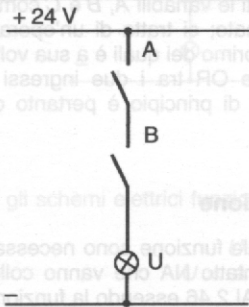
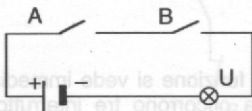
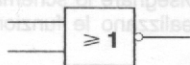


Fig. AL2.41 - Scheda operazione AND.



SCHEDA

OPERAZIONE NOR



$U = \overline{A + B}$		
A	B	U
0	0	1
0	1	0
1	0	0
1	1	0

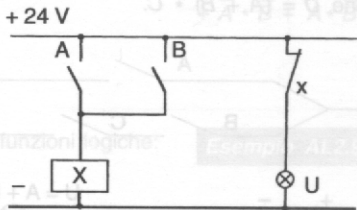
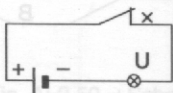
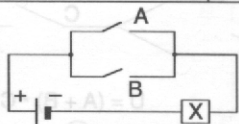
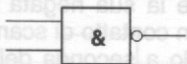


Fig. AL2.42 - Scheda operazione NOR.

SCHEDA

OPERAZIONE NAND



$$U = \overline{A \cdot B}$$

A	B	U
0	0	1
0	1	1
1	0	1
1	1	0

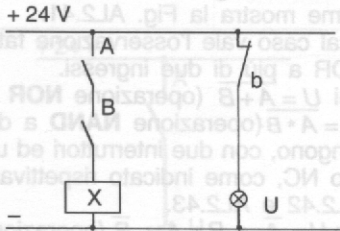
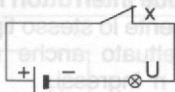
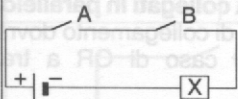
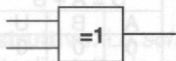


Fig. AL2.43 - Scheda operazione NAND.

SCHEDA OPERAZIONE EX-OR



$$U = A \oplus B = \bar{A} \cdot B + A \cdot \bar{B}$$

A	B	U
0	0	0
0	1	1
1	0	1
1	1	0

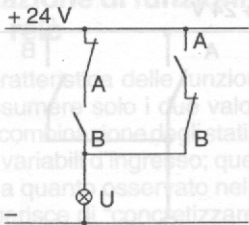
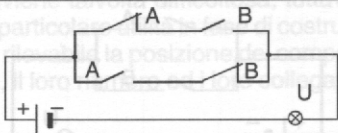


Fig. AL2.44 - Scheda operazione EX-OR.

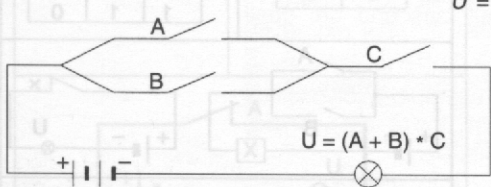


Fig. AL2.45 - Schema elettrico di principio della funzione  $U = (A + B) * C$ .

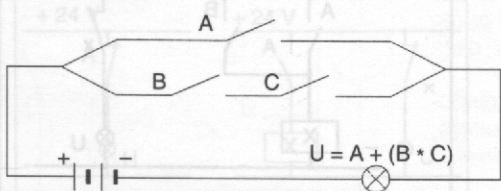
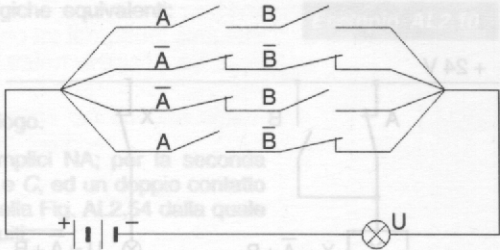


Fig. AL2.46 - Schema elettrico di principio della funzione  $U = A + (B * C)$ .



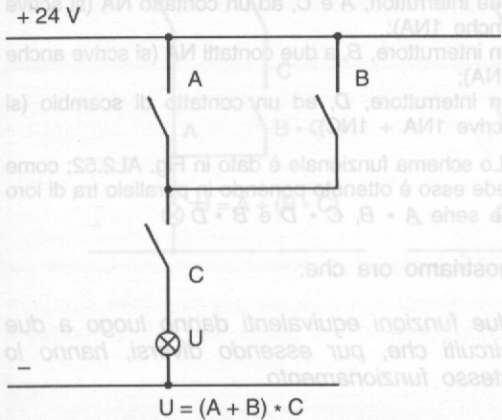


Fig. AL2.48 - Schema funzionale della  $U = (A + B) * C$ .

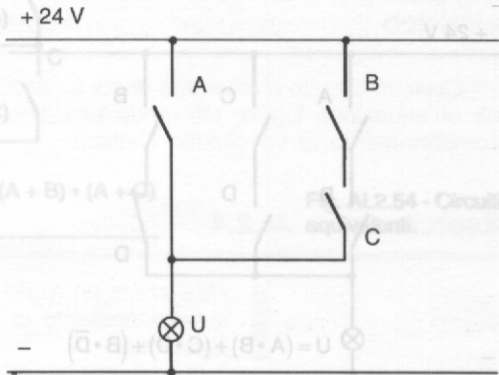
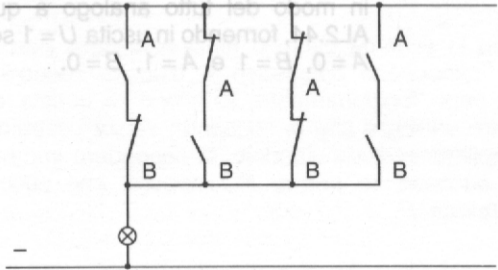


Fig. AL2.49 - Schema funzionale della  $U = A + (B \cdot C)$ .

+ 24 V



-



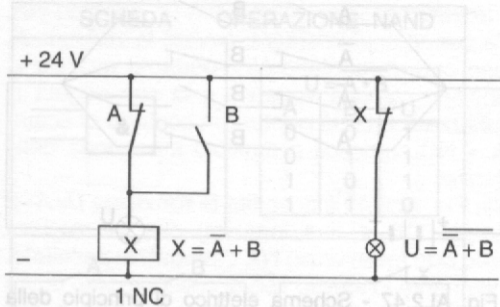
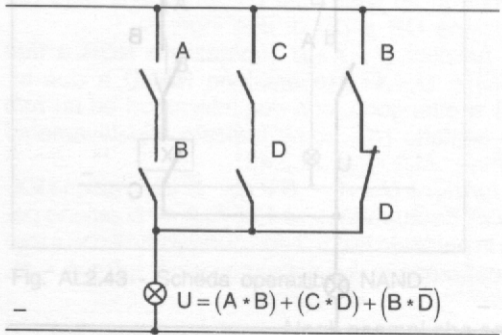


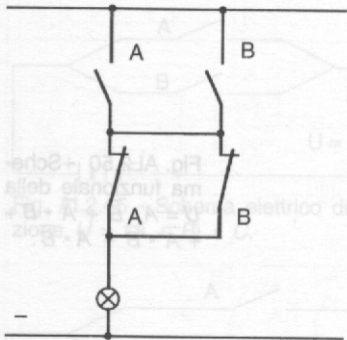
Fig. AL2.51 - Schema funzionale della  $U = \text{NOT}(\overline{A} + B)$ .

+ 24 V

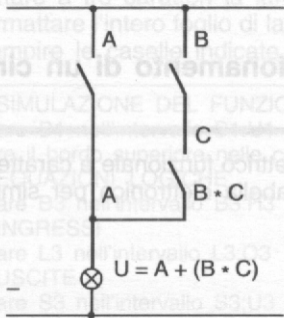


$$U = (A * B) + (C * D) + (B * \bar{D})$$

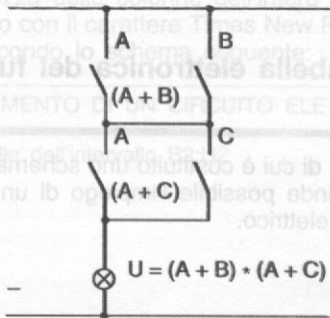
+ 24 V



+ 24 V



+ 24 V



ELETTRONI  
DI VALENZA

LEGAME  
COVALENTE

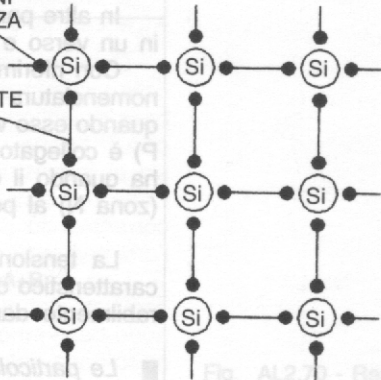
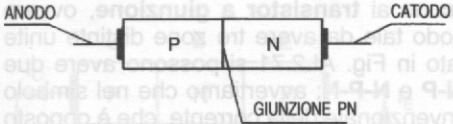


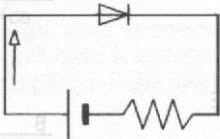
Fig. AL2.70 - Rete

NOMENCLATURA

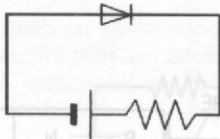
SIMBOLO IEC



POLARIZZAZIONE DIRETTA - CONDUZIONE

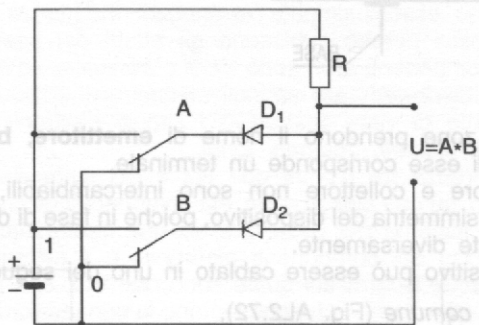


POLARIZZAZIONE INVERSA - INTERDIZIONE

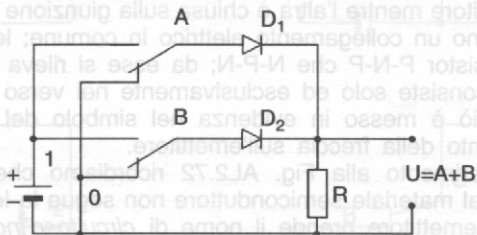


# OPERAZIONI LOGICHE REALIZZATE CON DIODI

## OPERAZIONE AND

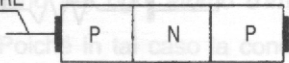


## OPERAZIONE OR



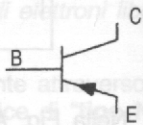


COLLETTORE

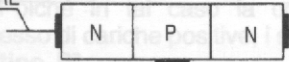


EMETTITORE

BASE

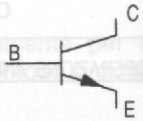


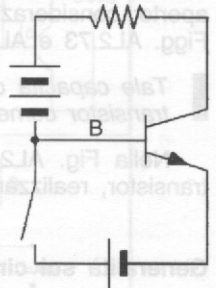
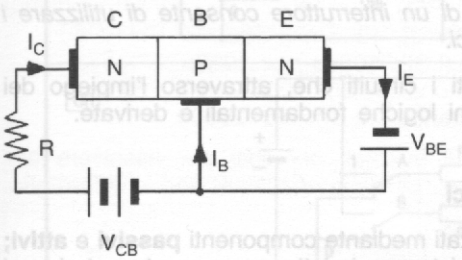
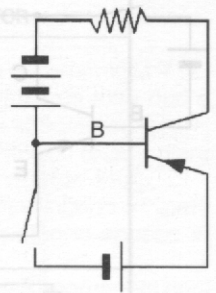
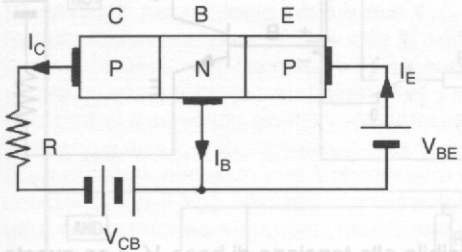
COLLETTORE

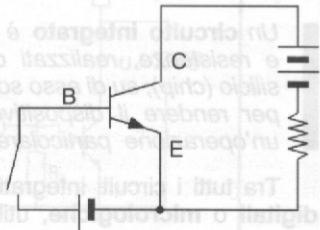
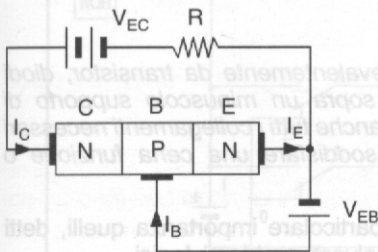
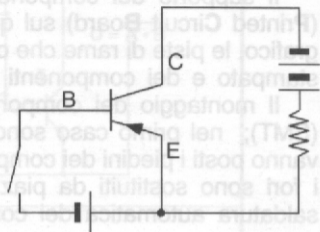
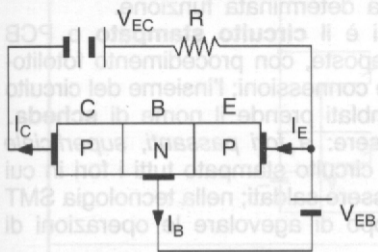


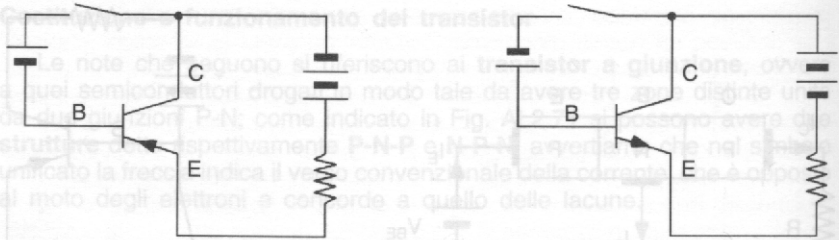
EMETTITORE

BASE



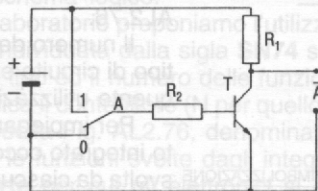




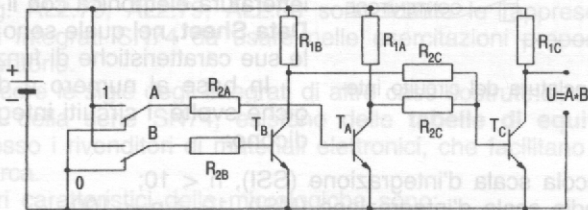


# OPERAZIONI LOGICHE REALIZZATE CON TRANSISTOR

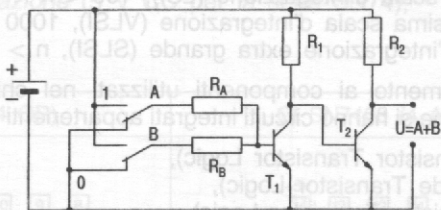
**NOT**



**AND**

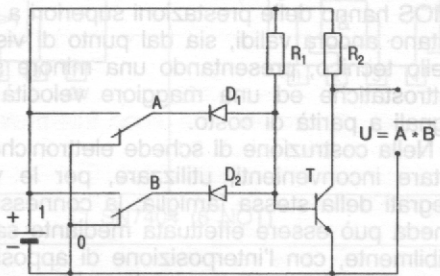


**OR**

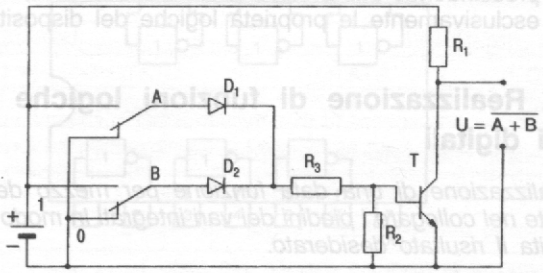


# OPERAZIONI LOGICHE DERIVATE REALIZZATE CON TRANSISTOR

NAND



NOR



RIFERIMENTO PER  
CABLAGGIO

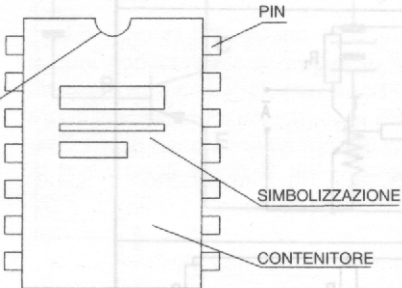


Fig. AL2.74 - Collegamento a collettore comune.

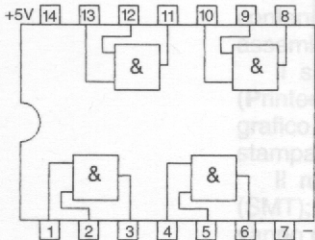
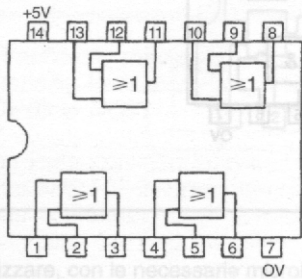


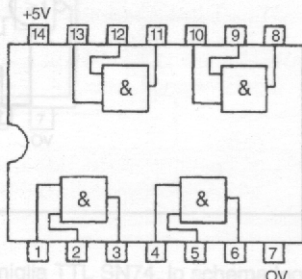
Fig. AL2.77 - Descrizione grafica della funzionalità di un circuito integrato.



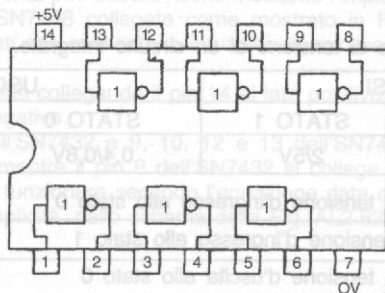
CI SN7432 (4 OR)



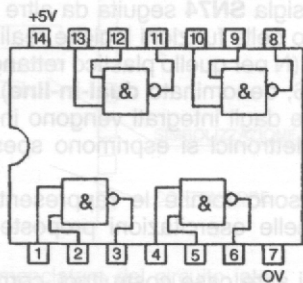
CI SN7408 (4 AND)



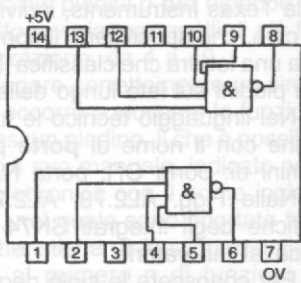
CI SN7404 (6 NOT)



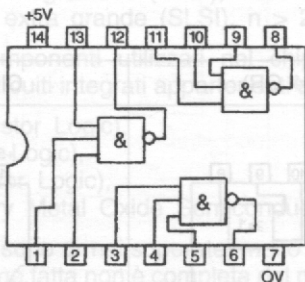
CI SN7400 (4 NAND)



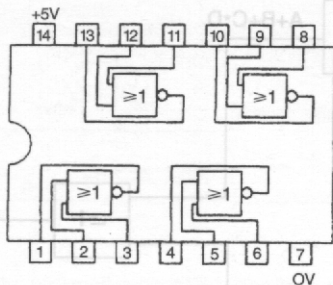
CI SN7440 (2 NAND)



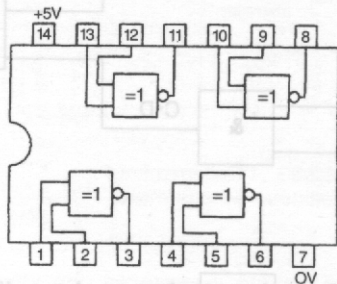
CI SN7410 (3 NAND)



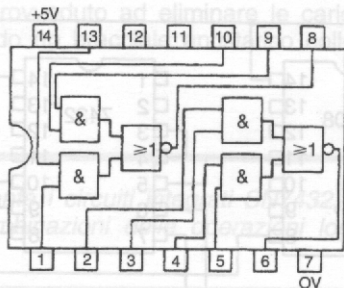
CI SN7402 (4 NOR)

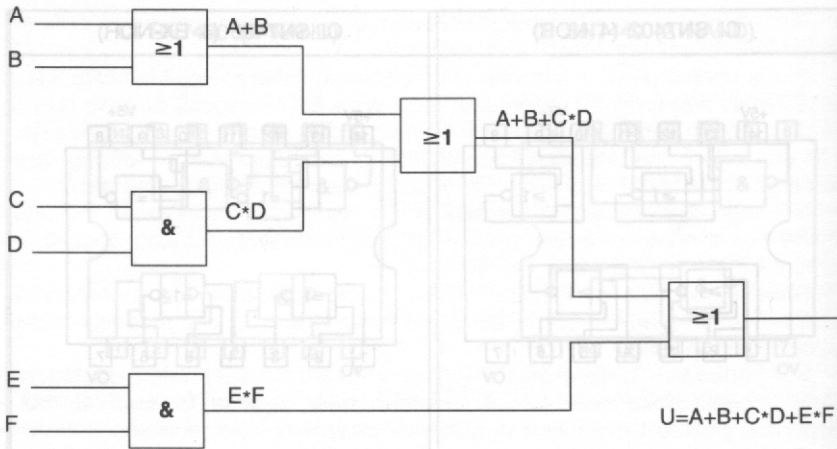


CI SN7486 (4 EX-NOR)



CI SN7450 (2 AND-NOR)





+5V

