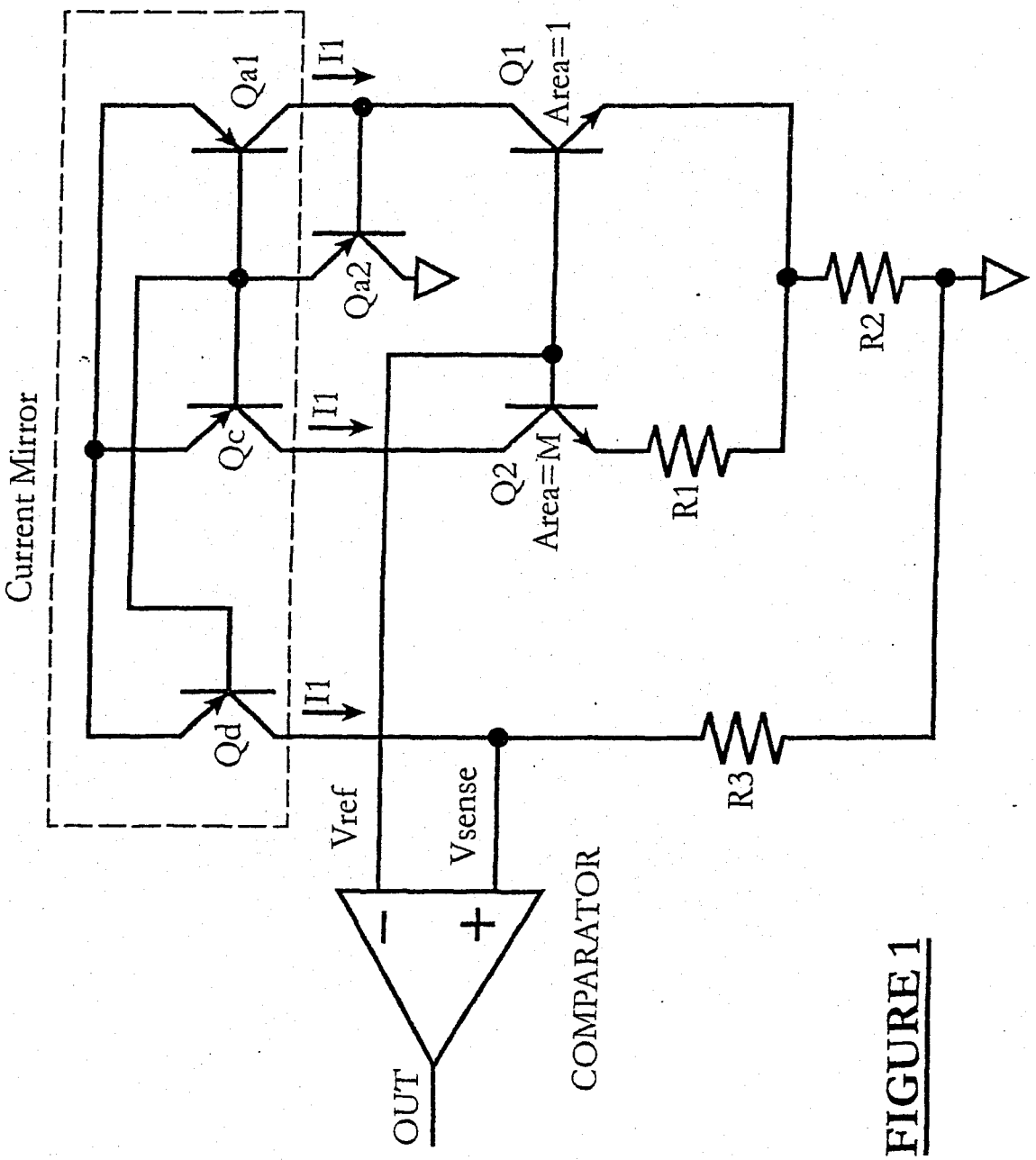
Current Mirror
Qa1
I1
Q1
Area=1
Qa2
Qc
I1
Q2
Area=M
R1
R2
Qd
I1
R3
Vref
Vsense
COMPARATOR
OUT

FIGURE 1

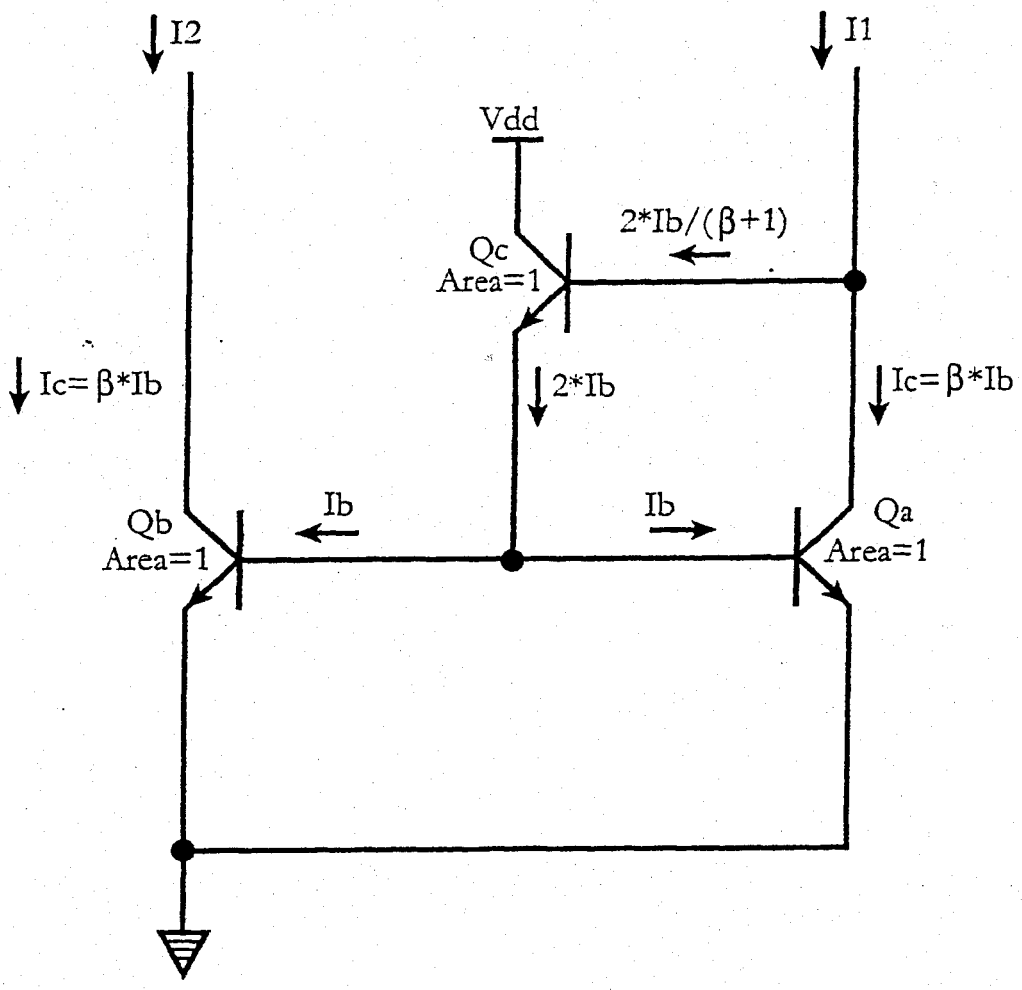
I2
I1
Vdd
2*Ib/(β+1)
Qc
Area=1
Ic=β*Ib
2*Ib
Ic=β*Ib
Ib
Ib
Qb
Area=1
Qa
Area=1

FIGURE 2

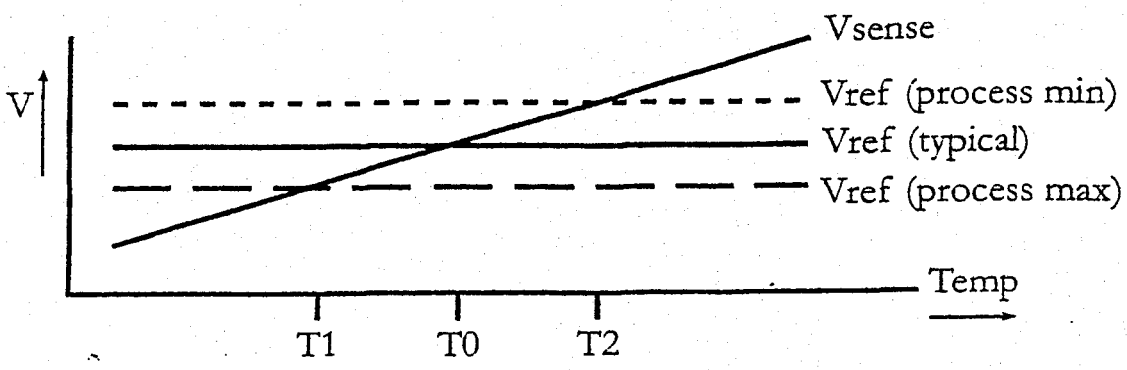

FIGURE 3A

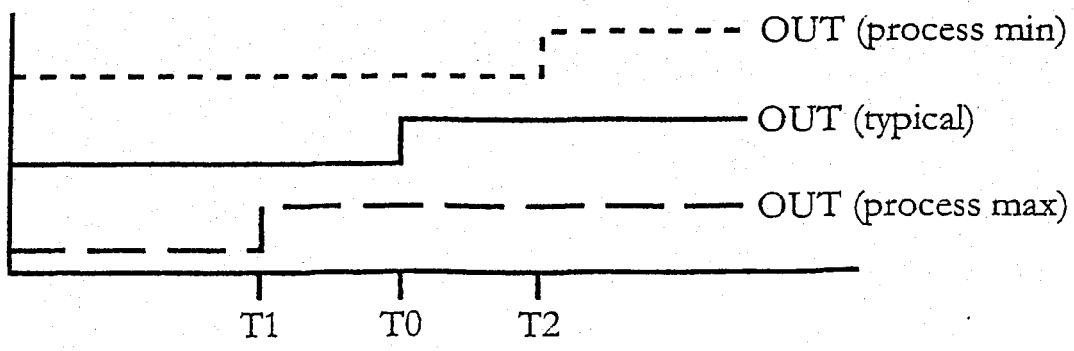

FIGURE 3B

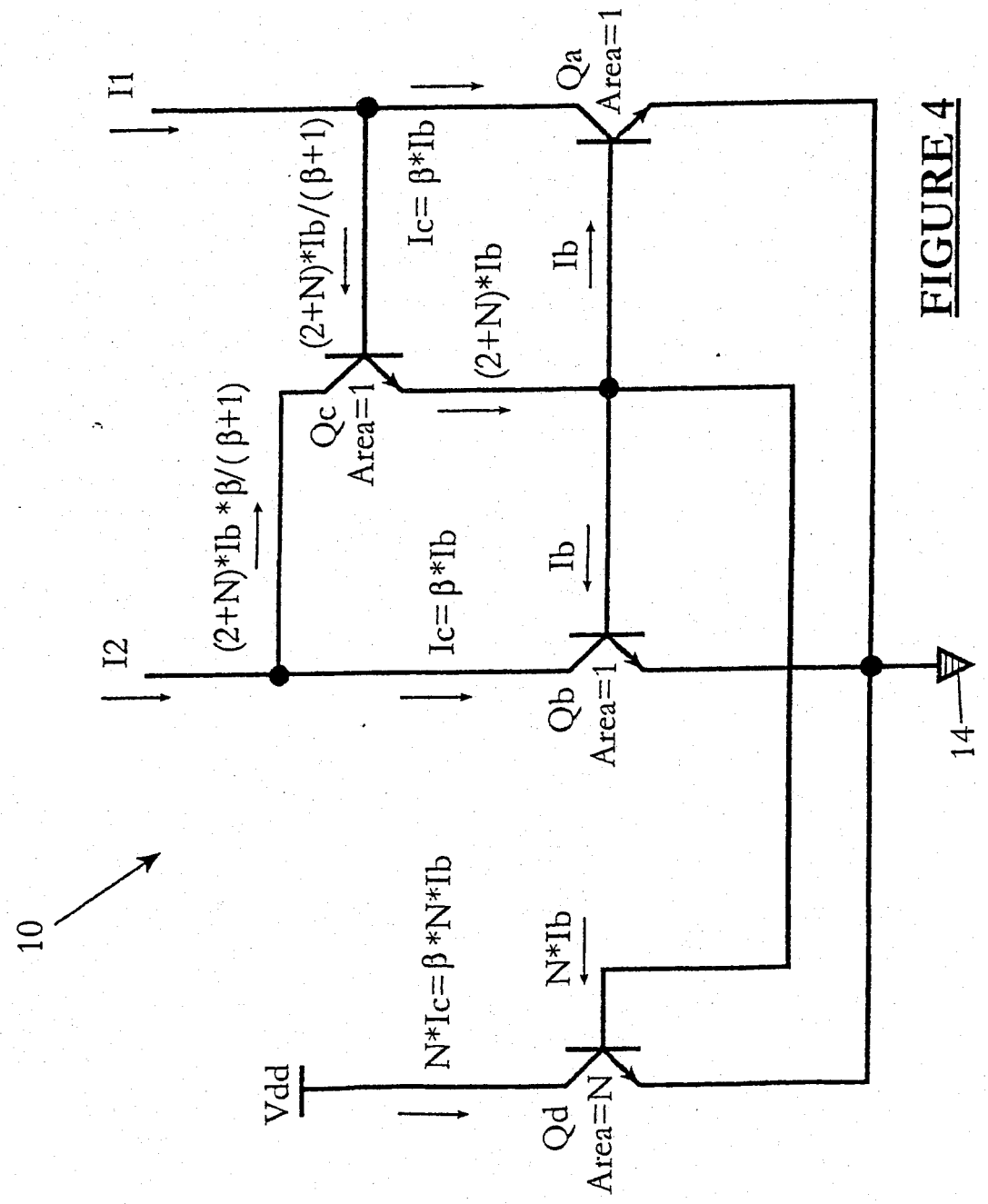
10
I1
I2
Vdd
14
Qa
Area=1
Qb
Area=1
Qc
Area=1
Qd
Area=N
(2+N)*Ib/(β+1)
Ic= β*Ib
(2+N)*Ib
Ib
(2+N)*Ib * β/(β+1)
Ic= β*Ib
Ib
N*Ic= β*N*Ib
N*Ib

FIGURE 4

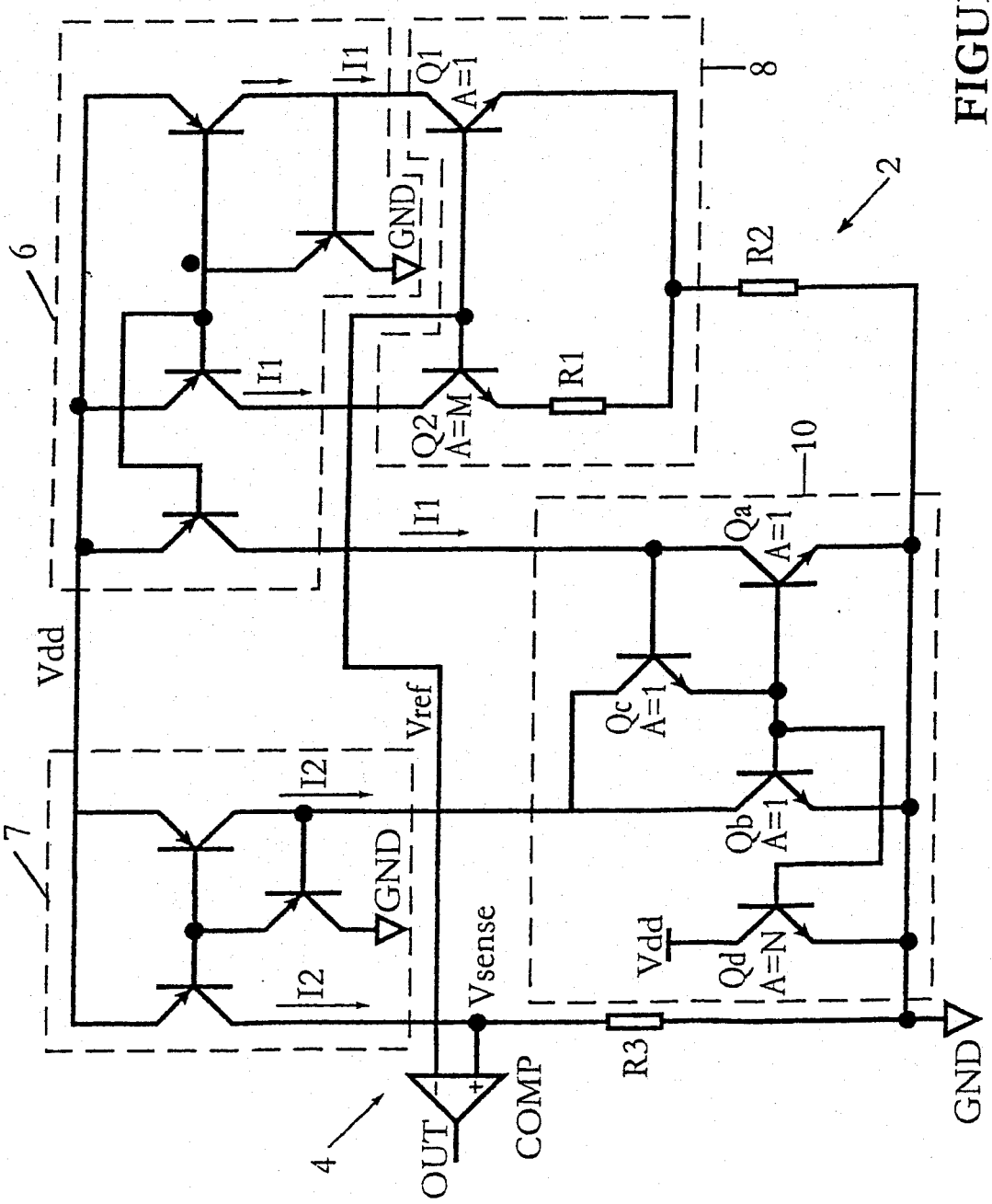
Vdd
6
7
8
10
2
4
I1
I2
Q1
A=1
Q2
A=M
R1
R2
R3
GND
Vref
Vsense
COMP
OUT
Qa
A=1
Qb
A=1
Qc
A=1
Qd
A=N

FIGURE 5

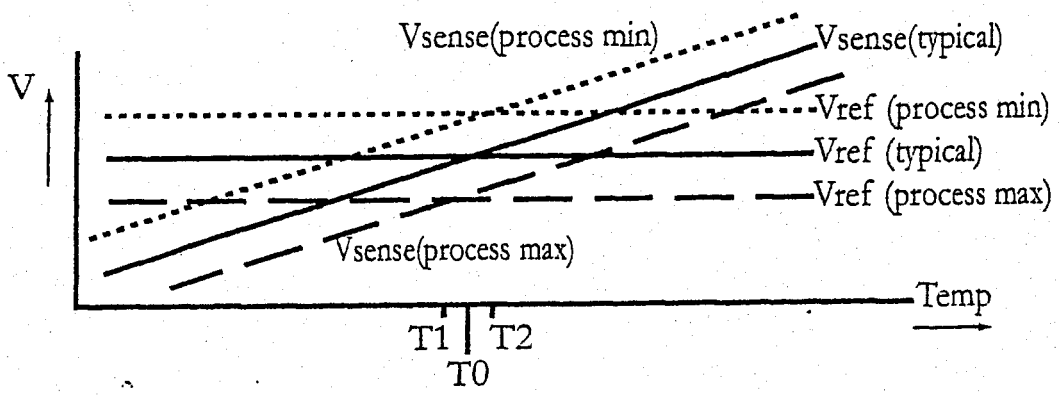

FIGURE 6A

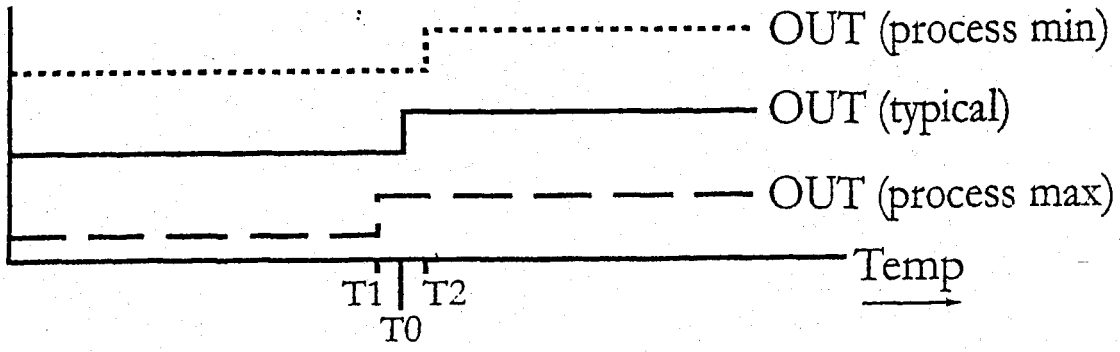

FIGURE 6B

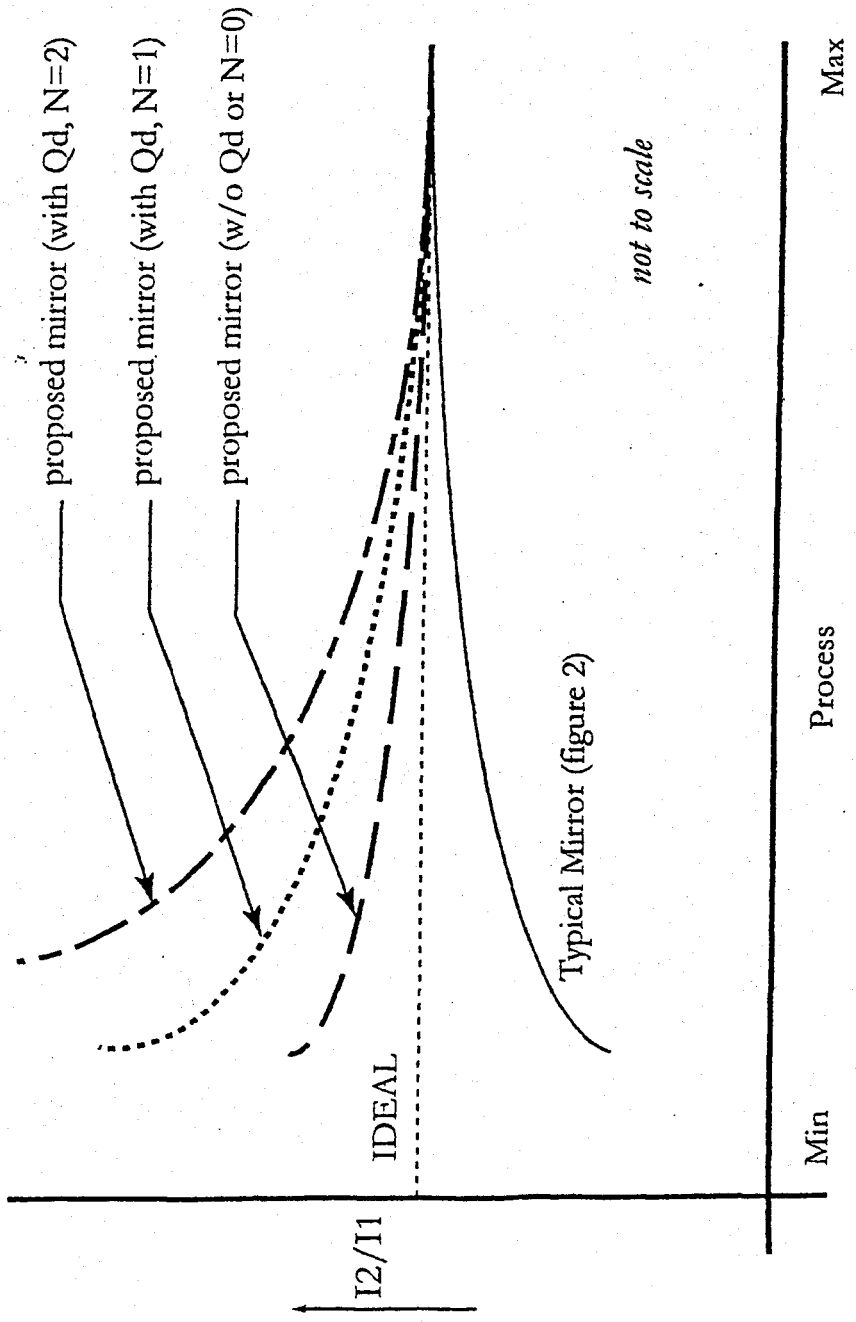
proposed mirror (with Qd, N=2)
proposed mirror (with Qd, N=1)
proposed mirror (w/o Qd or N=0)
IDEAL
Typical Mirror (figure 2)
not to scale
I2/I1
Min
Process
Max

FIGURE 7