

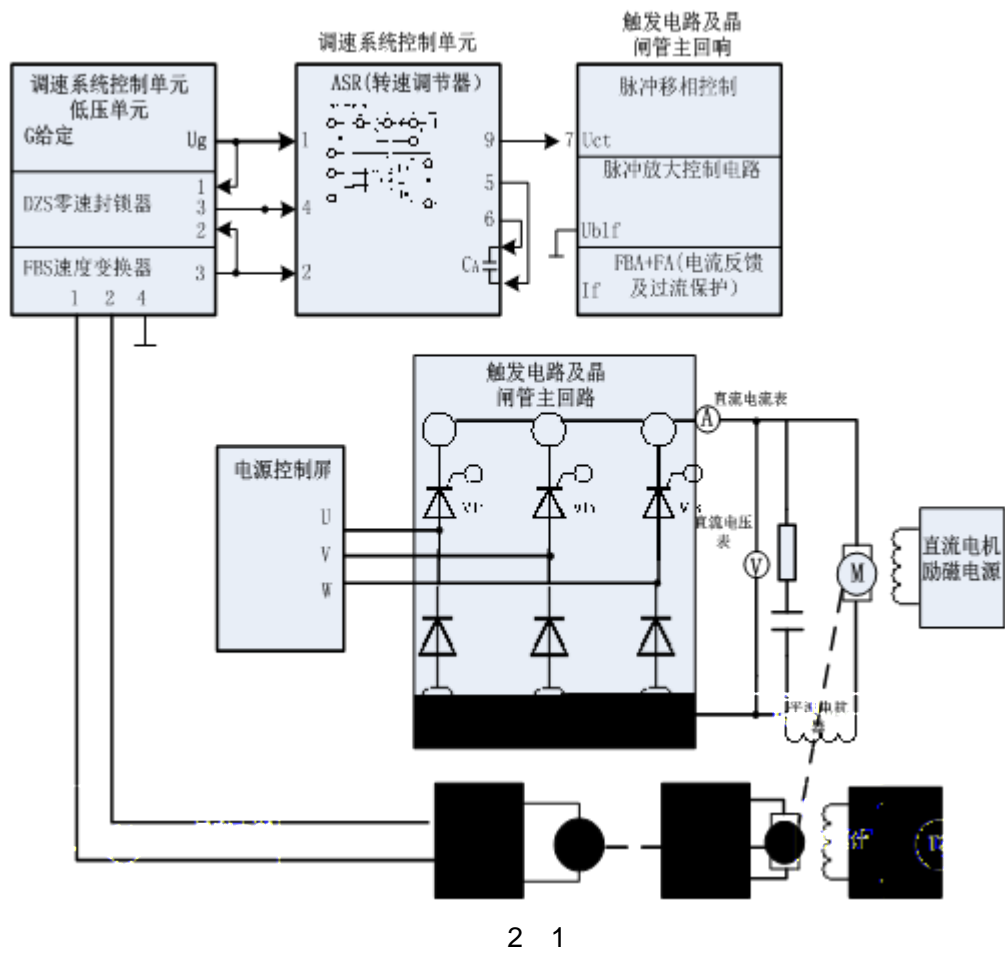
- 1
- 2
- 3

ASR

- 1
- 2

2 1

- 1) NMCL-32/MEL-002T
- 2) **L** NMCL-331
- 3) **Rd** NMEL-



1
3
5
7

2
4
6

1
2
3
4
5
6
7

ASR

ASR

ASR RP3

1A

U_g

1

a 60° 6 " 1V 2V

b $U_g=0$ " U" " 1" a 150° Ub

c ASR DZS S " " ASR " 3" " 5" " 6" 7uF, ASR PI ASR " 2" 1V Ug $\pm 5V$ RP1,PR2, " 3"

2

a ASR U_{ct} G U_{ct} U_g

b U V

W $220V$

c U_g $n_0=1500 /$ M01 600 3 5

U_d i_d n

i_d A					
U_d V					
n r/min					

3

a G U_{ct} $n=1500r/m$ FBS FBS 5V G U_{ct} ASR

b U_{ct} ASR

c U_g $n_0=1500 /$ ASR

RP₃ 2 3 5

U_d i_d n

i_d A					
U_d V					
n r/min					

4

a

ASR

ASR

PI

b

U_g

$n_0=1500$ /

2

3 5

i_d A					
U_d V					
n r/min					

1

ASR

2

n_0

U

3

n_0

U_g

4

- 1
- 2
- 3
- 4

- 1
- 2
- 3
- 4
- 5

3-1

ASR,ACR

ASR

ACR

ASR

, ACR

ACR

a_{min}

b_{min}

U_g

ASR

$U_g=U_{fn}$

ASR

1
2
3
4
5

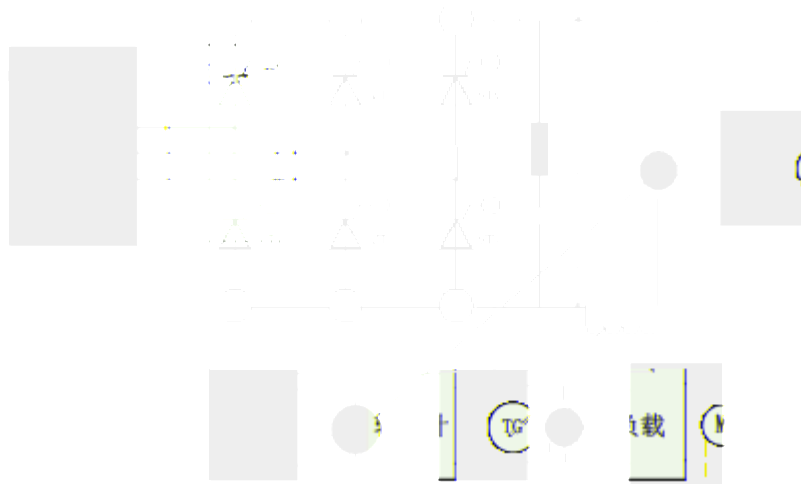
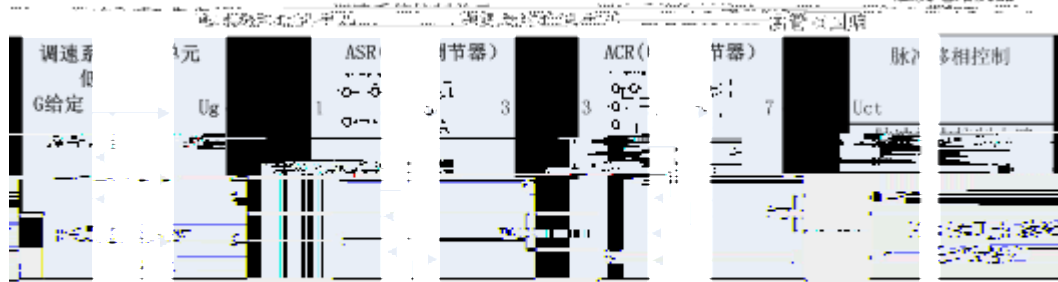
U_g

.

1

- 1) NMCL-32/MEL-002T
- 2) **L** NMCL-331
- 3) **Rd** NMEL-03/4 NMCL-03
- 4) **G** **Ug** NMCL-31 NMCL-31A SMCL-01
- 5) Uct NMCL-33 NMCL-33F
- 6) NMCL-33 NMCL-33F
- 7) ACR ASR NMCL-18
- 8) TG
- 9) NMEL-13A/F/C
- 10) NMCL-32 NMEL-18/2
- 11) M01 NMEL-13A
- 12) M M03

触发电路及晶



3-1

1
2

60°

3

U_{bf}

1V 2V

2

1
2

3

4

3

ASR

1

ASR

PI

G

U_g

ASR

" 1"

1V

RP_1

RP_2

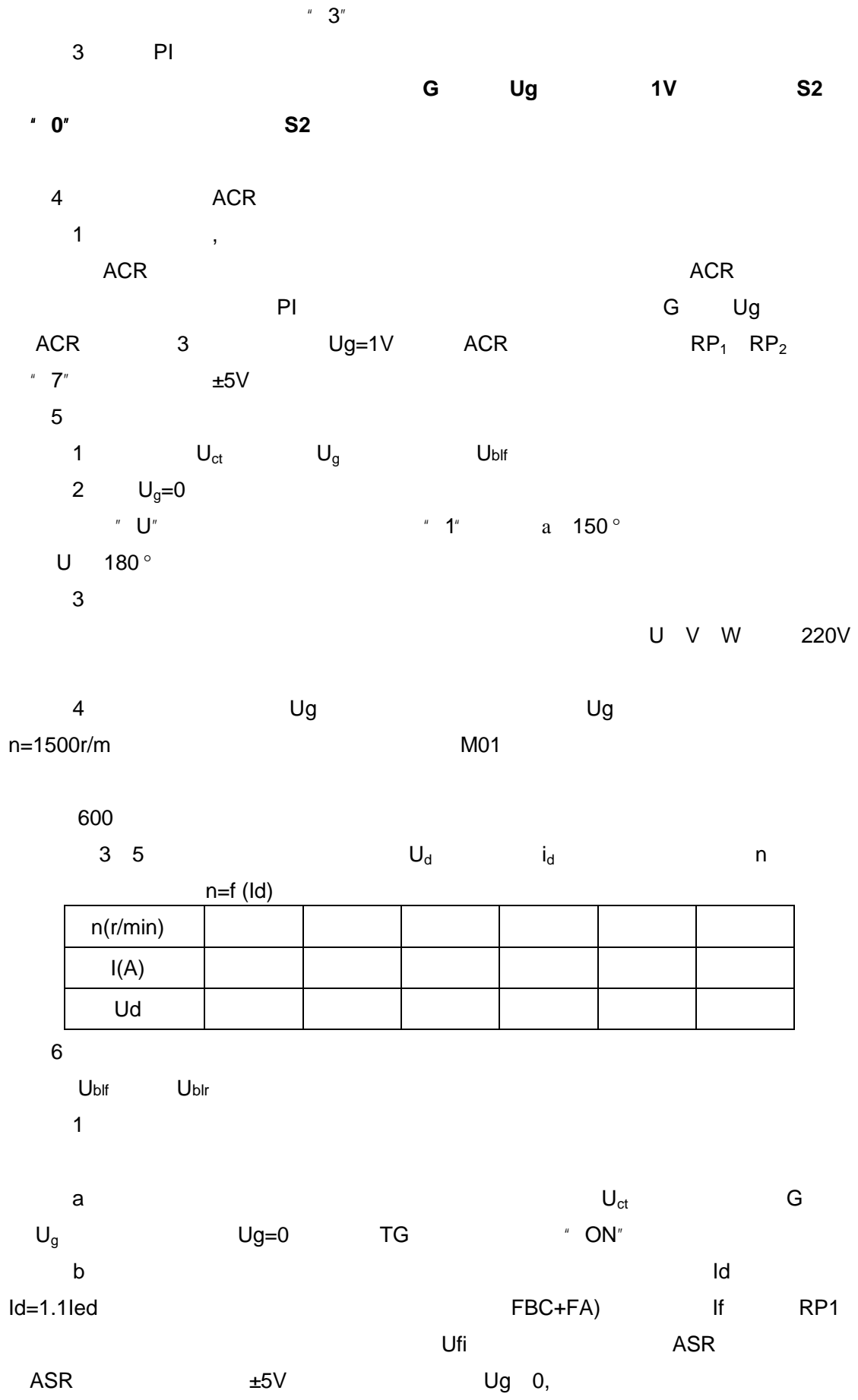
" 3"

$\pm 5V$

2

ASR

P



c Ug Uct Ug ACR If ACR 1
 ACR Uct ACR
 ACR Ug ASR

+5V 1.1I_{ed} I_d
 If U_{fi} I_d < 1.1I_{ed} I_d < I_{ed}
 Ug 0,

2

a Ug Uct Ug Ug 0,
 TG " ON" Ug n=1500r/min
 FBS RP 5V
 Ug=0

b ASR Ug
 ASR 2 ASR 3 Uct Ug Ug
 Ug

4

ASR,ACR PI ACR 7 RP1 RP2

±5V

1 n=f I_d

a Ug 1500 r/min

M01

600

3 5

U_d i_d n n=f

I_d

n(r/min)						
I(A)						

U_g=0

5

ASR,ACR PI ACR 7 RP1 RP2

±5V

ASR " 1" ACR " 1"

1

2

3

Ug 0

1

2

3

4

1

2

PWM

SG3525

3

H

PWM

4

1 PWM

SG3525

2

3

4

5

6

H

PWM

5 1

PWM

IGBT

H

UPW

DLD

GD

MOS

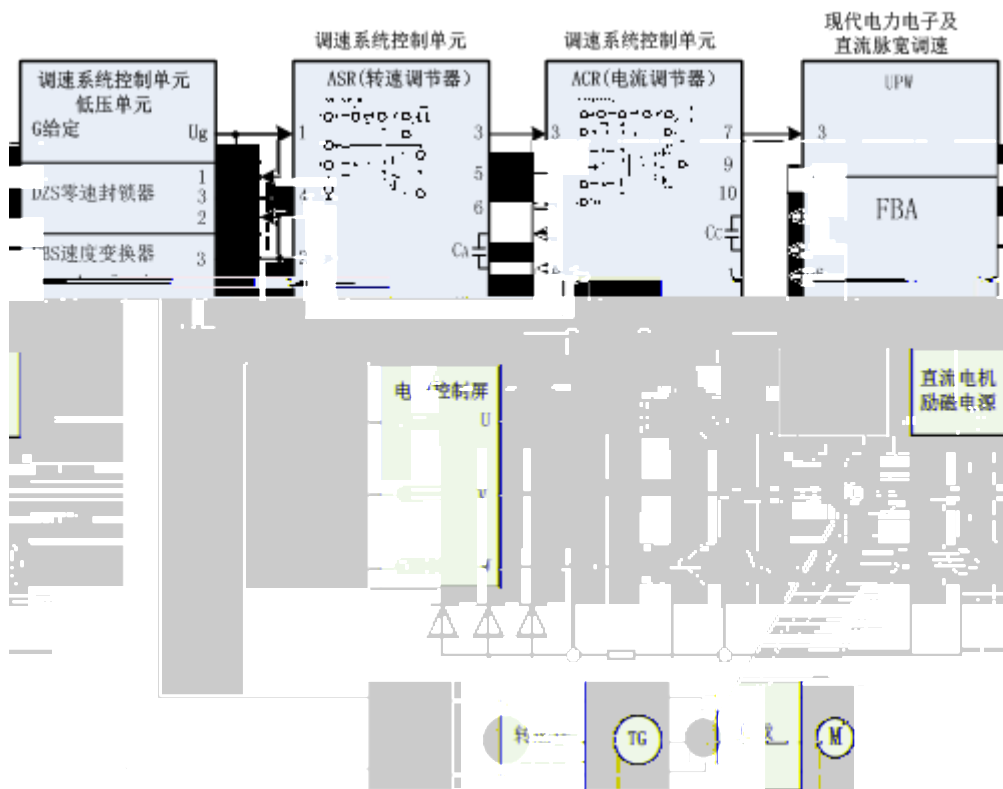
FA
UPW

Silicon General
PWM

SG3525

5 1

- 1) NMCL-32/MEL-002T
- 2) **L** NMCL-331
- 3) **Rd** NMEL-03/4 NMCL-03
- 4) **G Ug** NMCL-31 NMCL-31A SMCL-01
- 5) UPW,FBA NMCL-22
- 6) TG
- 7) NMEL-13A/F/C
- 8) NMCL-32 NMEL-18/2
- 9) M01 NMEL-13A



5 1

- 1
- 2
- 3
- 4

5
6
7
8

1
2
3
4
5
6
7

ASR

ASR

ASR RP3

1A

U_g

1 SG3525

" 1

UPW

UPW" 4

$t_{dVT1.VT2} =$

$t_{dVT3.VT4} =$

3

5 1

G

Ug

Ug

UPW " 8"

1

a

b

1000r/min

M01

600

1A

c

2.5V

2

1000r/min

5V

3

1000r/min

3 5

n

i_d

n=1400r/min

n(r/min)							
i_d (A)							

n=800r/min

n=500r/min

n=800r/min

n(r/min)							
i_d (A)							
M(N.m)							

n=500r/min

n(r/min)							
i_d (A)							
M(N.m)							

S₁

4

5 1

ASR ACR

PI

1								
a			RP3					
b								
c	RP ₁	RP ₂		$\pm 2.5V$				
2								
a			RP3					
b					5			
c		G	Ug	S ₂		S ₁		
RP ₁		ACR			ACR		RP ₁	
S ₁							RP ₂	ACR
ACR			RP ₂					
5								

- 1
- 2
- 3
- 4

- 1
- 2
- 3

			(ACR)	(ASR)
(FBC)	(FBS)	(GT)		
2-1				

6 1

- 1) NMCL-32/MEL-002T
- 2) M09/M08
- 3) **Rd** NMEL-03/4 NMCL-03
- 4) **G Ug** NMCL-31 NMCL-31A SMCL-01
- 5) **Uct** NMCL-33 NMCL-33F
- 6) NMCL-33 NMCL-33F
- 7) **ACR ASR** NMCL-18
- 8) **TG**
- 9) NMEL-13A/F/C

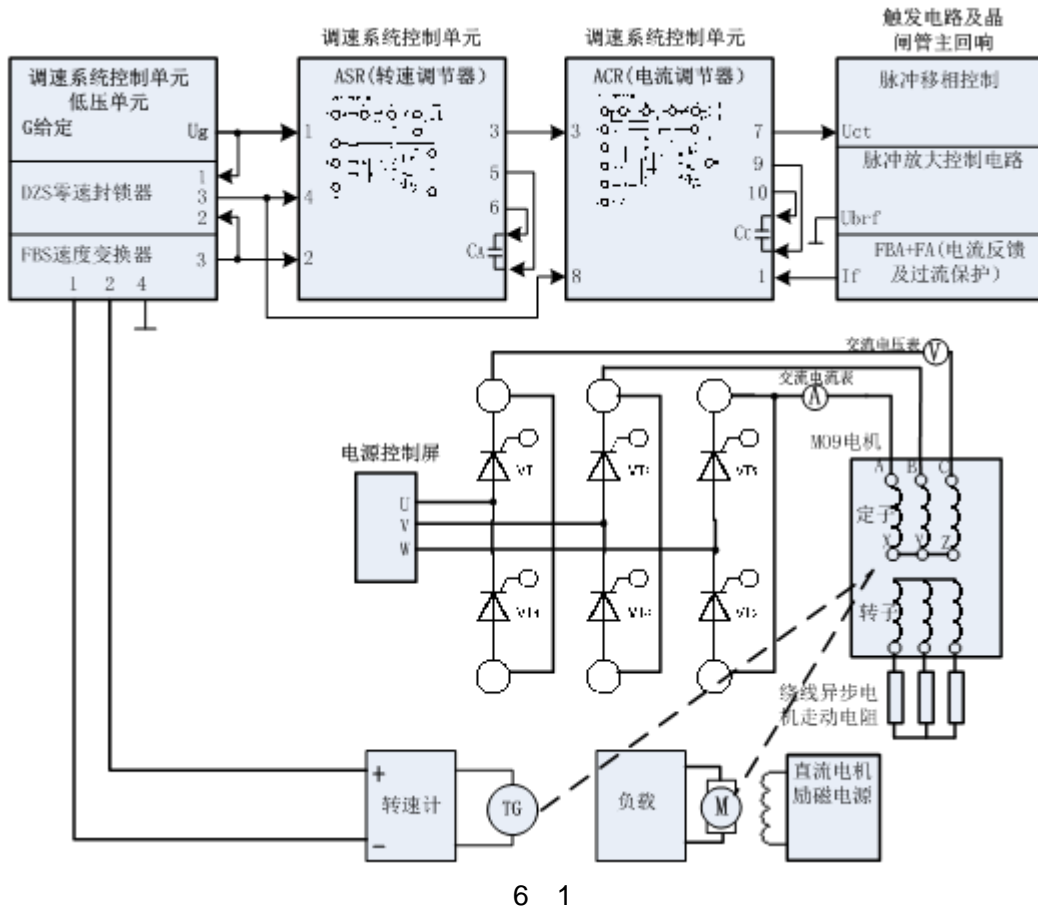
10)

NMCL-32 NMEL-18/2

11)

M01

NMEL-13A



6 1

1
3
5
8

2
4
7

1 ASR

ASR RP3

ASR

2

0.55A

3

4

U_g

5

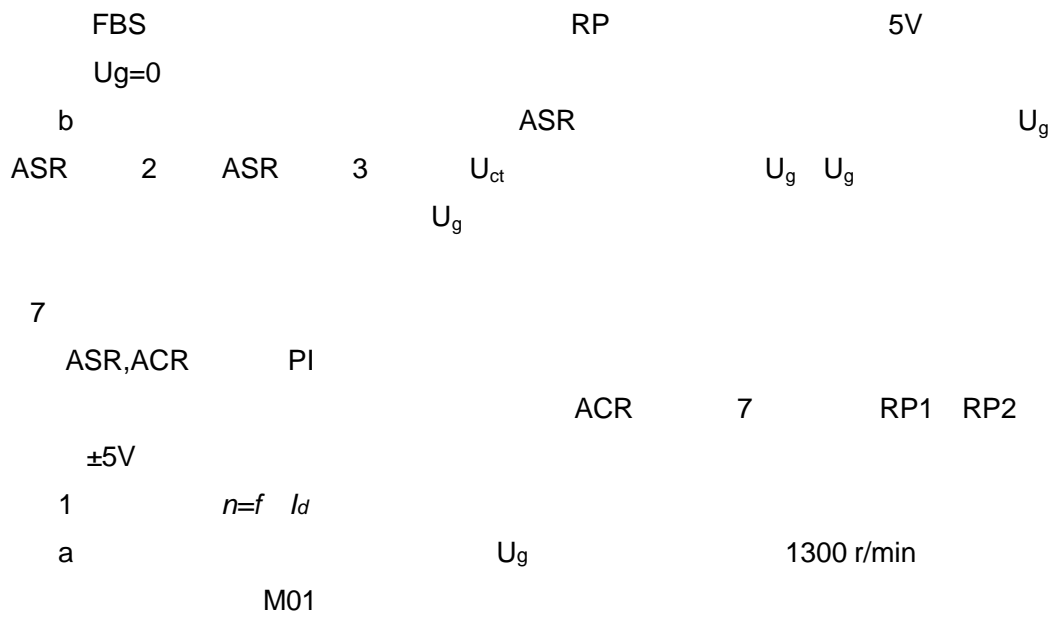
6

" 7" $\pm 5V$
 6
 1 U_{ct} U_g U_{blf}
 2 $U_g=0$
 " U" " 1" a 150°
 U 180°
 3
 U V W 220V
 4 U_g U_g
 $n=1400r/m$ M01

600
 3 5 U_d i_d n
 $n=f(I_d)$

n(r/min)						
I(A)						
U_d						

6
 U_{blf} U_{blr}
 1
 a U_{ct} G
 U_g $U_g=0$ TG " ON"
 b I_d
 $I_d=1.1I_{ed}$ FBC+FA) I_f RP1
 U_{fi} ASR
 ASR $\pm 5V$ U_g 0,
 c U_g U_{ct} U_g ACR I_f ACR 1
 ACR U_{ct} PI ACR
 ACR U_g ASR
 +5V $1.1I_{ed}$ I_d
 I_f U_{fi} $I_d < 1.1I_{ed}$ $I_d < I_{ed}$
 U_g 0,
 2
 a U_g U_{ct} U_g U_g 0,
 TG " ON" U_g $n=1400r/min$



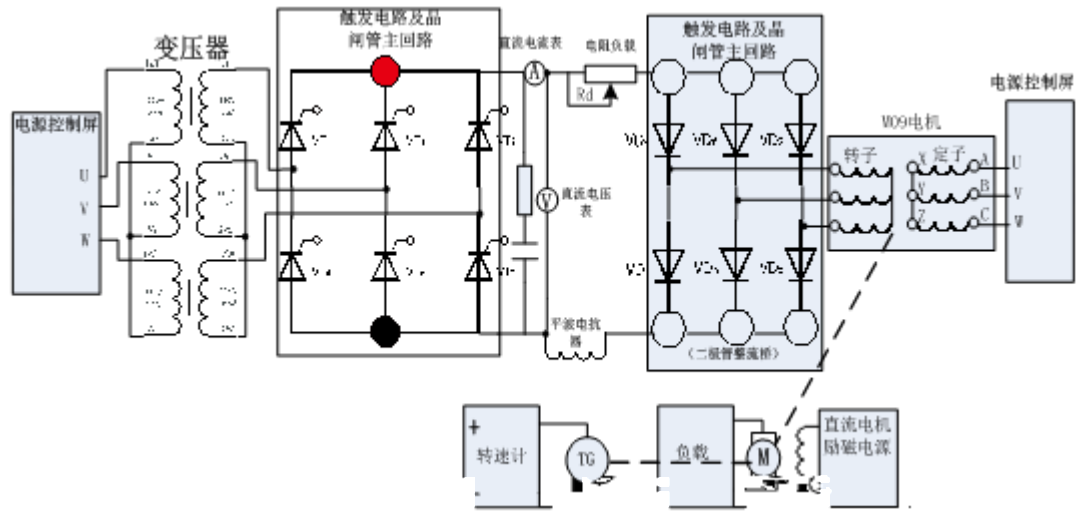
1
2
3

1
2
3

1
2
3
4

ACR	GT	MF	FBS	ASR
	5-1		7 1	FBC

- 1) NMCL-32/MEL-002T
- 2) M09/M08
- 3) **Rd** NMEL-03/4 NMCL-03
- 4) **G Ug** NMCL-31 NMCL-31A SMCL-01
- 5) **Uct** NMCL-33 NMCL-33F
- 6) NMCL-33 NMCL-33F
- 7) **ACR ASR** NMCL-18
- 8) **TG**
- 9) NMEL-13A/F/C
- 10) NMCL-32 NMEL-18/2
- 11) **M01** NMEL-13A



7 1

- | | |
|---|---|
| 1 | 2 |
| 3 | 4 |
| 5 | 6 |
| 7 | 8 |

- | | | | | |
|----|-----|-----|-------|---------|
| 1 | | | | |
| | min | | | |
| 2 | | 90° | 150° | 90° |
| 3 | | 4 | 1 | |
| 4 | ASR | | | ASR RP3 |
| | | ASR | | |
| 5 | | | 0.55A | |
| 6 | | | | |
| 7 | | | U_g | |
| 8 | | | | |
| 9 | | | | |
| 10 | Y | | | |

1

a

b

c

2

3

U_{brf}

1V 2V

U_b

$U_{ct}=0$

a

150°

ASR

ASR

0V

$a=150^\circ$

ASR

RP1

$a=90^\circ$

