

1 HYBRID POWER ICs (Refer to individual specification for measurement requirements of electrical characteristics)

HYBRID IC REGULATORS (SWITCHING TYPE • 2 PACK TYPE)

Combination line-up		
Control section (SI-8020 series)	Power section (STR7000, 7100series)	
	I _{out} =6A	I _{out} =12A
SI-8020 (V _{out} =5V)	STR7001	STR7101
SI-8021 (V _{out} =12V)	STR7002	STR7102
SI-8022 (V _{out} =15V)	STR7002	STR7102
SI-8023 (V _{out} =24V)	STR7003	STR7103

Power section Maximum ratings (Ta=25°C)						Fig. No.
Parts No.	Power transistor with-stand voltage V _{4-r} (V)	Collector current I _c (A)	Allowable loss (T _c =25°C) P _c (W)	Operating temperature (T _c) Top (°C)	Storage temperature T _{stg} (°C)	
STR7001	60	6(Peak7.5)	100	-30~+125	-30~+125	1
7002						
7003						
STR7101	60	12(Peak15)	125	-30~+125	-30~+125	1
7102						
7103						

Control section Maximum ratings (Ta=25°C)					Fig. No.
Parts No.	DC input voltage V _{IN} (V)	Allowable loss P _o (W)	Operating temperature Top (°C)	Storage temperature T _{stg} (°C)	
SI-8020	55	1	-20~+85	-20~+100	2
8021					
8022					
8023					

Electrical characteristics (Ta=25°C)						
Combined parts No.	DC input voltage range V _{IN} (V)	Output voltage setting V _o (V)	Output current I _o (A)	Output voltage regulation (against input voltage) ΔV_{LINE} (mV)/max	Output voltage regulation (against output current) ΔV_{LOAD} (mV)/max	Efficiency η (%)typ
SI-8020 —STR7001	11~40	5.1±0.1	6	80	30	72
SI-8021 —STR7002	18~50	12±0.2		120	40	84
SI-8022 —STR7002	21~50	15±0.2		150	40	86
SI-8023 —STR7003	30~50	24±0.3		200	50	90
SI-8020 —STR7101	11~40	5.1±0.1	12	80	30	70
SI-8021 —STR7102	18~50	12±0.2		120	40	82
SI-8022 —STR7102	21~50	15±0.2		150	40	84
SI-8023 —STR7103	30~50	24±0.3		200	50	87

HYBRID IC REGULATORS (SWITCHING TYPE WITH COIL)

Parts No.	Maximum ratings (Ta=25°C)			Integrated characteristics (Ta=25°C)						Fig. No.	Remarks
	DC input voltage VIN (V)	Operating temperature Top (°C)	Storage temperature Tstg (°C)	DC input voltage VIN (V)	Output voltage Vout (V)	Output current Iout (A)	Efficiency η (%)typ	Oscillation frequency f(kHz)	Switching ripple ΔVr (mVp-p)		
SI -8201L	45	-10~+65	-25~+85	10~40	5.0±0.1	0.02~0.4	73	25min	60max	3	
-8202L				11~40	6.0±0.1	0.02~0.35	74		30typ		
-8203L				16~40	12.0±0.2		79		100max		
-8204L				10~40	5.2±0.1	0.02~0.4	73		30typ		
-8211L	60	-20~+85		15~55	5.0±0.1	0.02~0.3	63	25typ	60max	4	
-8301L	45			8~40	5.1±0.1	1max	73		45typ	5	
-8811L	35	-10~+70		12~30	5.0±0.25	0.05~0.45	72	50typ	50typ	6	Double outputs type
-8911L	60	-10~+60		24~55	-5.0±0.25	0~-0.05			50typ		
					5.0±0.25	0.02~0.3	65	68typ	50typ		
					-5.0±0.25	0~-0.1			60typ		

■ HYBRID POWER IC REGULATORS (SWITCHING TYPE)

Parts No.	Maximum ratings (Ta=25°C)					Electrical characteristics (Ta=25°C)							Fig. No.	Remarks
	Input voltage VIN(V)	Output current Iout(A)	Power consumption (Ta=25°C) Pd(W)	Operating temperature Top(°C)	Storage temperature Tstg(°C)	Input voltage VIN(V)	Output voltage Vout(V)	Output voltage regulation (against input voltage) (mV)/max	Output voltage regulation (against output current) (mV)/max	Efficiency η (%)typ	Oscillation frequency f(kHz) typ	Ripple damping ratio (dB)typ		
STR2005	45	2.0	75	-20~+100	-20~+125	11~40	5.1±0.1	50	100	72	25	45	1	
2012						18~45	12±0.2	60						
2013						19~45	13±0.2							
2016						21~45	15±0.2							
2024						30~50	24±0.3			80				
20005	45		55			8~40	5.1±0.1	50		72	30		7	

■ HYBRID POWER IC REGULATORS (SWITCHING TYPE)

Parts No.	Maximum ratings (Ta=25°C)									
	Voltage between drain and source V _{DS} (V)	Drain current (single pulse) I _D (A)	Voltage between gate and drain V _{GS} (V)	Avalanche energy resistance E _{AS} (mJ)	Out put power P _{OUT} (W)	Control power source voltage V _{IN} (V)	Drive terminal source current I _{SOURCE} (A)	Drive terminal sink current I _{SINK} (A)	Operating temperature Top(°C)	Channel section temperature Tch(°C)
STR-S6401	500	±40	±20	500	250	35	0.7	1.5	-20~+125	+150
-S6401F										

Thermal resistance θch-F (°C/W)	Electrical characteristics (Ta=25°C)																			
	Starting voltage VINON(V)			Stopping voltage VINOFF(V)			Circuit current during operation IINON(mA)	Circuit current non-operation IINOFF(μA)	Oscillation frequency fosc(kHz)			Maximum ON time TON(μs)			los terminal threshold voltage Vos(mV)			los terminal outflow current Ilos(μA)		
	min	typ	max	min	typ	max	typ	max	min	typ	max	min	typ	max	min	typ	max	min	typ	max
0.7	14.4	16	17.6	8.4	9.4	10.4	23	500	93	100	107	5.1	5.7	6.5	160	200	240	250	400	550
												3.8	4.5	5.2						

Electrical characteristic (Ta=25°C)											Fig. No.	Remarks
Amp terminal outflow current Iamp. (mA)	SS terminal threshold voltage Vss(V)	SS terminal outflow current Iss(μA)	Com terminal outflow current Icom. (A)		FET ON resistance RDS(ON)(Ω)		Forward conduction admittance yfs (S)	Source grounding input capacity Ciss(pF)	Switching time ton(ns)	Switching time toff(ns)		
typ	max	typ	typ	max	typ	max	typ	typ	typ	typ		
1.8	0.4	100	1.0	1.5	0.5	0.6	9.2	1800	60	140	8	Built-in MOSFET

■ HYBRID POWER IC REGULATORS (DROPPER TYPE)

Parts No.	Maximum ratings (Ta=25°C)					Electrical characteristics (Ta=25°C)					Fig. No.	Remarks
	Input voltage VIN(V)	Output current Iout(A)	Allowable loss (Ta=25°C) Pd(W)	Operating temperature Top(°C)	Storage temperature Tstg(°C)	Input voltage VIN(V)	Output voltage Vo(V)	Input-output differential voltage Vdif(V)/max	Temperature coefficient (mV/°C)typ	Ripple damping ratio (dB)typ		
SI-3050C	35	1.5	18	-30~+100	-40~+125	6~30	5±0.2	5±0.1	1.0	±0.5	54	9
-3090C						10~30	9±0.36	9±0.18		±1.0		
-3120C						13~30	12±0.48	12±0.24		±1.5		
-3150C						16~30	15±0.6	15±0.3		±2.5		
-3240C						25~40	24±0.96	24±0.48				

* "A" may be stamped at the right of marking.

Parts No.	Maximum ratings (Ta=25°C)					Electrical characteristics (Ta=25°C)						Fig. No.	Remarks
	Input voltage VIN(V)	Output current Iout(A)	Power consumption (Ta=25°C) Pd(W)	Operating temperature Top(°C)	Storage temperature Tstg(°C)	Output voltage Vout(V)	Minimum input/output differential voltage VoIf(V)/max	Temperature coefficient (mV/°C)/typ	Output voltage regulation (against input voltage) (mV)/typ	Output voltage regulation (against output current) (mV)/typ	Ripple damping ratio (dB)/typ		
SI-3052V	25	2.0	50	-20~+100 (Tc)	-30~+125	5±0.1	1.0	±0.5	10	40	54	10	Low loss type Built-in overcurrent protection
-3122V	30					12±0.2		±1.5	20	80			
-3152V						15±0.2							
SI -3052P	45	20	50	-20~+80	-30~+125	5±0.1	3.0	±0.5	2	40	60	10	Built-in overcurrent protection
-3122P						12±0.2		±1.5	10	80			
-3152P						15±0.2							
-3242P						24±0.2		±2.5	25	120			
STR9005	25	4.0	75	-20~+100 (Tc)	-30~+125	5±0.1	1.0	±0.5	10	40	54	1	Low loss type Built-in overcurrent protection Output ON/OFF control Output voltage fine tuning possible
9012	30					12±0.2		±1.5	30	80			
9015	30					15±0.2			50	100			

T-58-11-31

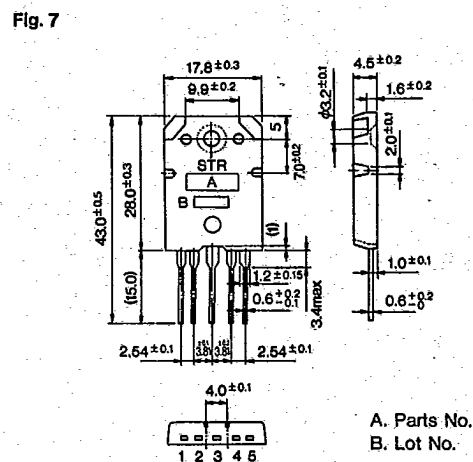
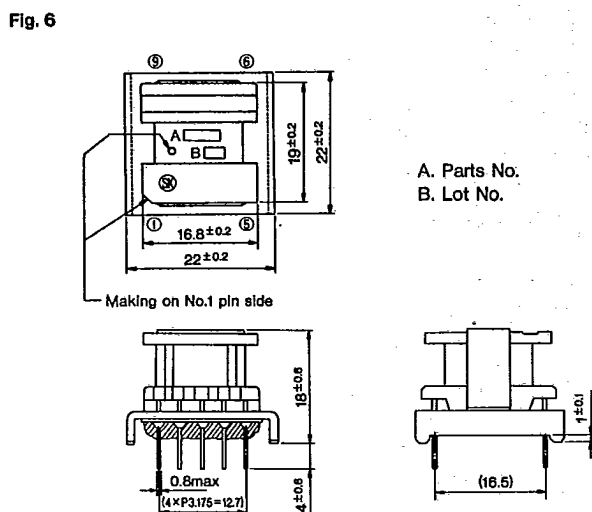
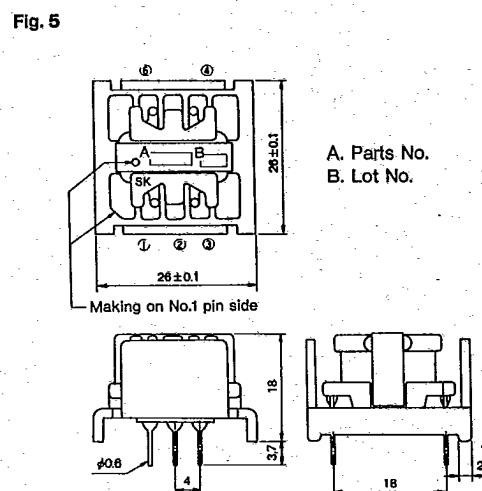
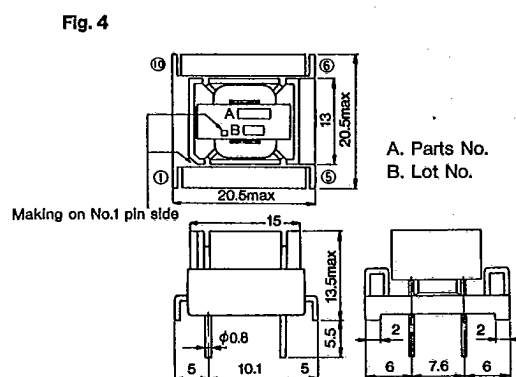
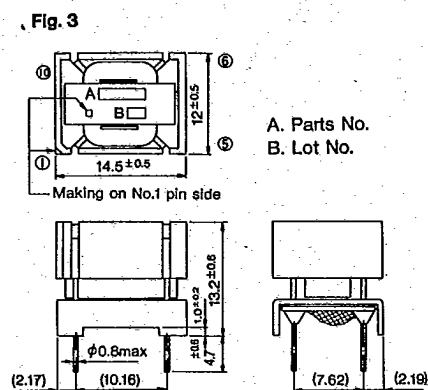
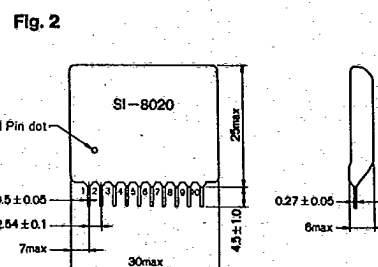
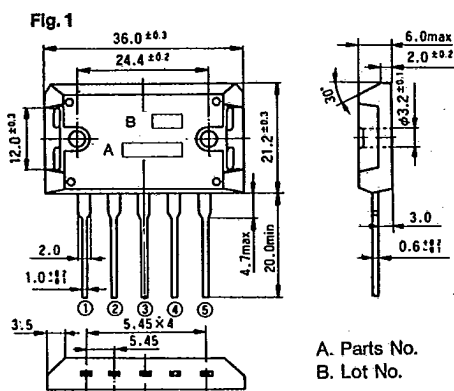
■ VOLTAGE DOUBLER, BRIDGE RECTIFIER AUTOMATIC SWITCHING ICs

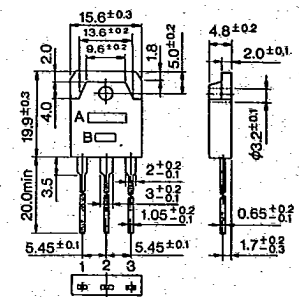
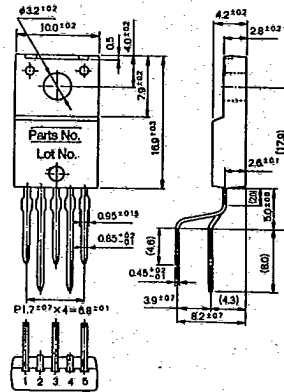
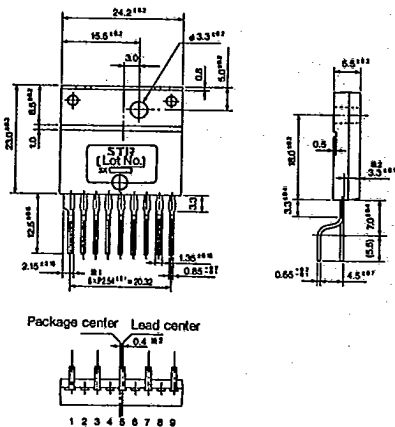
Parts No.	Maximum ratings (Ta=25°C)					Electrical characteristics (Ta=25°C)					Fig. No.
	Peak repeated OFF voltage V _{DRM} (V)	Effective ON current I _T (RMS)(A)	Surge ON current I _{TSM} (A)	Operating temperature T _{OP} (°C)	Storage temperature T _{stg} (°C)	Voltage doubler startup voltage V _S (V _{AC})	Settling switch voltage		OFF voltage I _{DRM} (μA)	ON voltage V _{TH} (V)	
							V _{C1} (V)	V _{C2} (V _{AC})			
STR80145A	500	5.0	50	-10~ +100(T _C)	-30~ +125	80max	196±5	145	100max	1.8max	11
81145A		10.0	100				215±5	159			
81159A											

■ STEPPING MOTOR DRIVE ICs

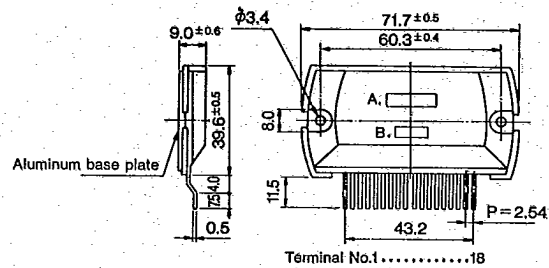
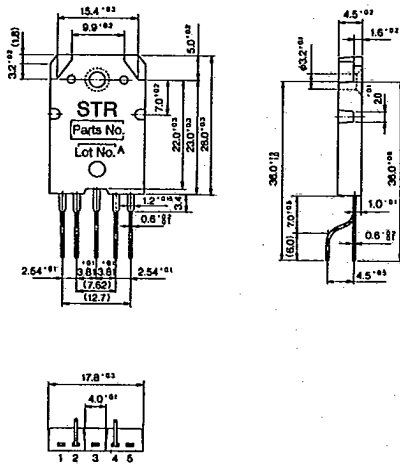
Parts No.	Maximum ratings (T _a =25°C)					Electrical characteristics (T _a =25°C)					Fig. No.	Remarks	
	Power Source voltage V _{cc} (V)	Output current I _o (A)	Junction temperature T _J (°C)	Operating temperature T _{OP} (°C)	Storage temperature T _{stg} (°C)	Power source V _{cc} (V)			Output current I _o (A)max	Exciting signal input current I _i (mA)max			V _{cc2} input current I _{cc2} (mA)max
						min	typ	max					
SI-7115B	40	1.7	+125	-20~ +80	-30~ +100	20	24	30	1.5	5	—	12	For unipolar drive
-7300A	48(V _{cc1}) 7(V _{cc2})	1.7				15(V _{cc1}) 4.5(V _{cc2})	30(V _{cc1}) 5(V _{cc2})	42(V _{cc1}) 5.5(V _{cc2})	1.5	10	45	13	
-7330A	42(V _{cc1}) 7(V _{cc2})	3.2				15(V _{cc1}) 4.5(V _{cc2})	30(V _{cc1}) 5(V _{cc2})	35(V _{cc1}) 5.5(V _{cc2})	3.0	100	45	14	
-7500A	40(V _{cc1}) 8(V _{cc2})	1.2				17(V _{cc1}) 4.5(V _{cc2})	24(V _{cc1}) 5(V _{cc2})	30(V _{cc1}) 5.5(V _{cc2})	1.0	0.21	15	14	
-7200M	50(V _{cc1}) 10(V _{cc2})	1.2				15(V _{cc1}) 4.5(V _{cc2})	30(V _{cc1}) 5(V _{cc2})	40(V _{cc1}) 5.5(V _{cc2})	1.0	1.6	45	13	For bipolar drive
-7230M	50(V _{cc1}) 7(V _{cc2})	3.2				15(V _{cc1}) 5(V _{cc2})	30(V _{cc1}) 5(V _{cc2})	45(V _{cc1}) 5.5(V _{cc2})	3.0	1.6	150	14	

● Full view (Unit: mm)

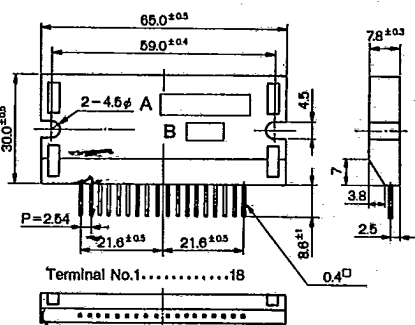




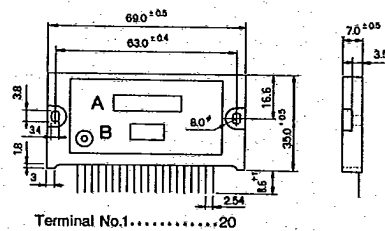
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B. Lot No.



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B. Lot No.



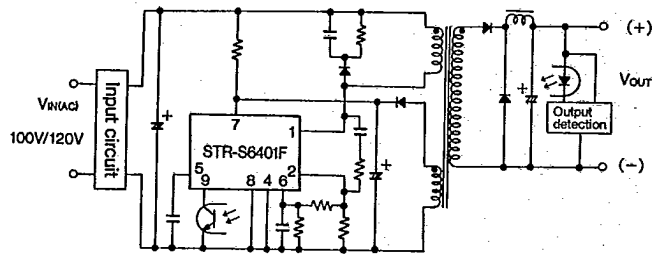
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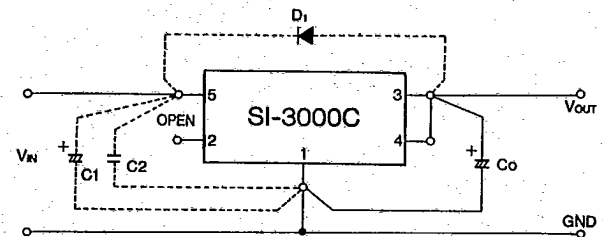
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STR-S6401F Example of application circuit



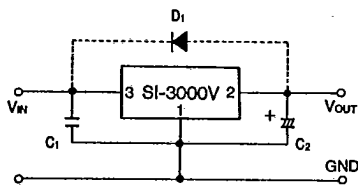
Forward converter

SI-3000C

C₀ : 47~100 μ FC₁ C₂ : Oscillation prevention capacitor (C₁ : Approx. 47 μ F, C₂ : Approx. 0.33 μ F)D₁ : Protection diodes

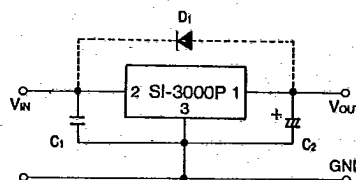
Required in case reversely biased between input and output

SI-3000V

C₁ : Oscillation prevention capacitor (0.33 μ F)C₂ : 47~100 μ FD₁ : Protection diodes

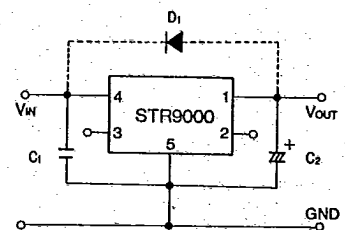
Required in case reversely biased between input and output

SI-3000P

C₁ : Oscillation prevention capacitor (0.33 μ F)C₂ : 47~100 μ FD₁ : Protection diodes

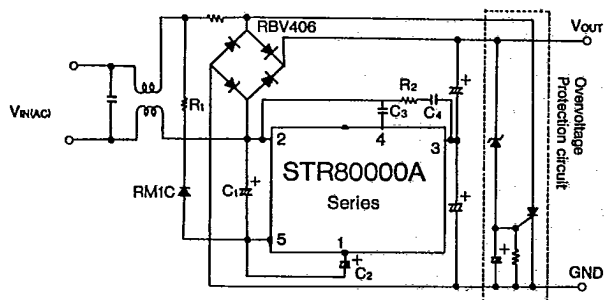
Required in case reversely biased between input and output

STR9000

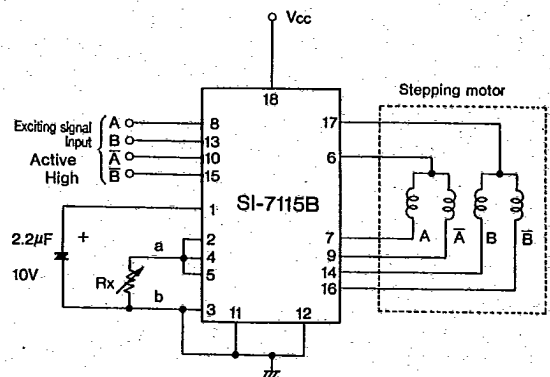
C₁ : Oscillation prevention capacitor (0.33 μ F)C₂ : 47~100 μ FD₁ : Protection diodes

Required in case reversely biased between input and output

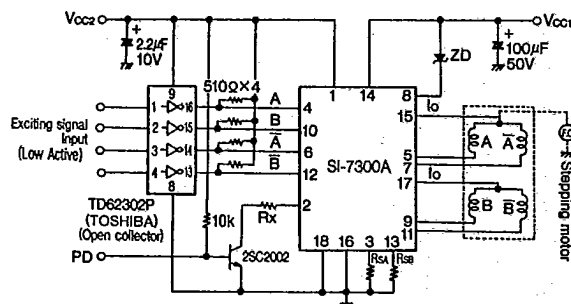
STR80000A Example of application circuit

R₁ : 2.2 Ω R₂ : 4.7 Ω C₁ : 2.2 μ F/400V C₂ : 100 μ F/10V C₃ : 0.1 μ FC₄ : 0.047 μ F

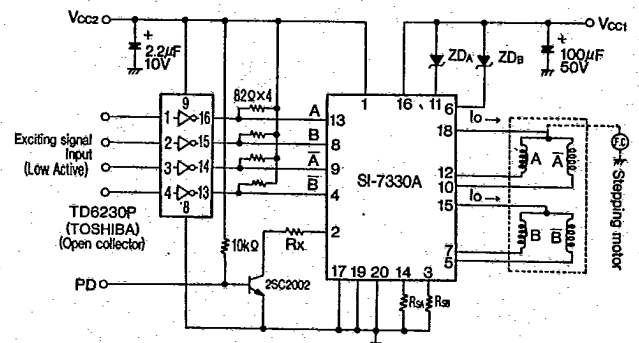
SI-7115B



SI-7300A

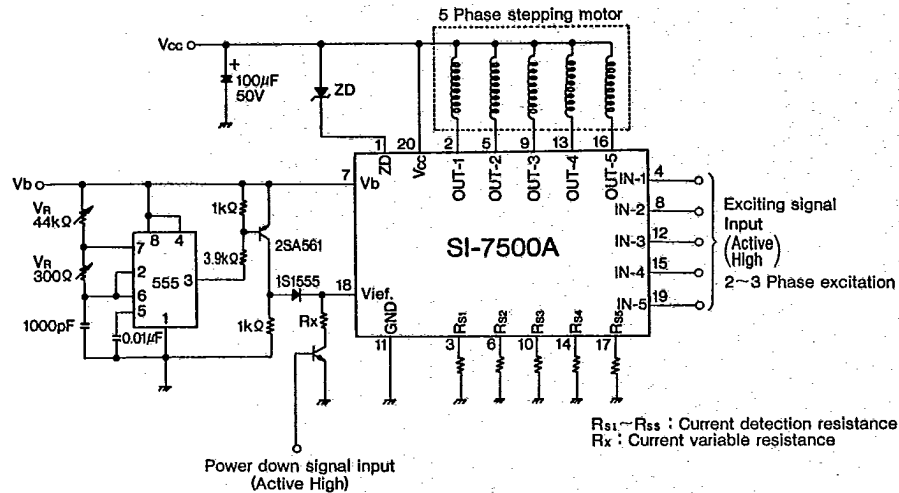


SI-7330A

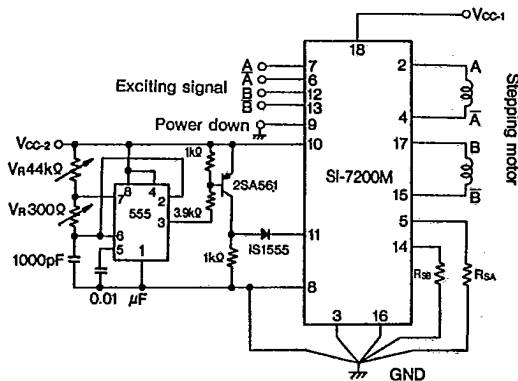


T-58-11-31

SI-7500A

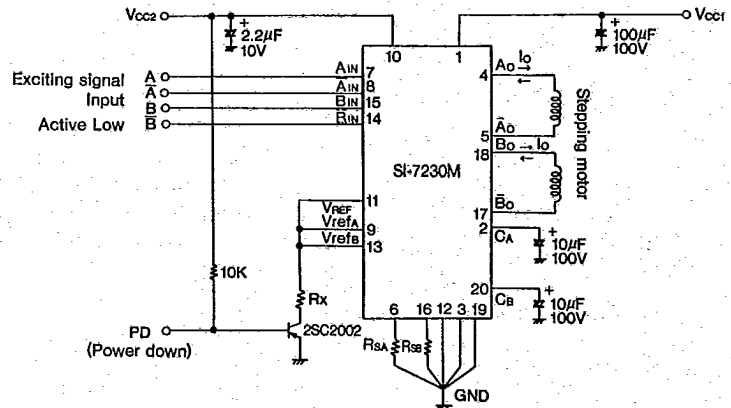


SI-7200M

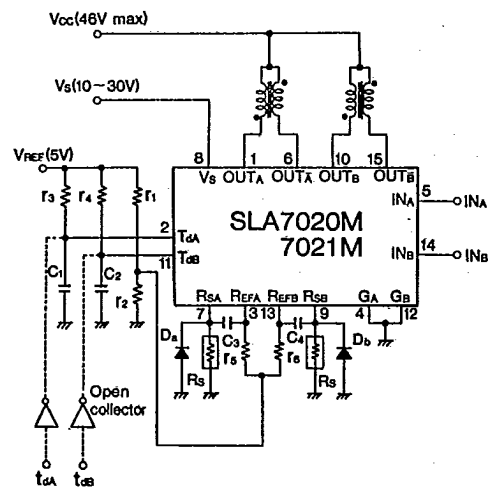


Power down Exciting signal : Active High
 Exciting signal Input : Active Low

SI-7230M

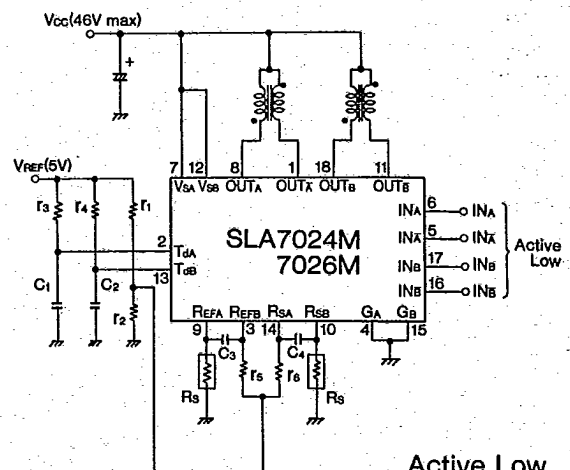


SLA7020M • SLA7021M



R_1 510 Ω C_1 470PF
 R_2 100 Ω (VR) C_2 470PF
 R_3 47k Ω C_3 2200PF
 R_4 47k Ω C_4 2200PF
 R_5 2.4k Ω D_A, D_B EK03(7020M) RK34(7021M)
 R_6 2.4k Ω R_S 1 Ω typ(7020M) 0.68 Ω typ(7021M)

SLA7024M • SLA7026M



R_1 510 Ω C_1 470PF
 R_2 100 Ω (VR) C_2 470pF
 R_3 47k Ω C_3 220pF
 R_4 47k Ω C_4 220pF
 R_5 2.4k Ω R_S 1 Ω (typ)~2W(7024M) 0.68 Ω (typ)1~2W(7026M)
 R_6 2.4k Ω