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)	
	Iout=6A	Iout=12A
SI-8020 (Vout=5V)	STR7001	STR7101
SI-8021 (Vout=12V)	STR7002	STR7102
SI-8022 (Vout=15V)	STR7002	STR7102
SI-8023 (Vout=24V)	STR7003	STR7103

Parts No.	Power section Maximum ratings (Ta=25°C)					Fig. No.
	Power transistor withstand voltage V_{4-1}(V)	Collector current Ic(A)	Allowable loss (Tc=25°C) Pc (W)	Operating temperature (Tc) Top (°C)	Storage temperature Tstg (°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						

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

Combined parts No.	Electrical characteristics (Ta=25°C)					
	DC input voltage range V_{IN} (V)	Output voltage setting Vo (V)	Output curreut Io (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.	Remarps
	DC input voltage V_{IN} (V)	Operating temperature Top (°C)	Storage temperature Tstg (°C)	DC input voltage V_{IN} (V)	Output voltage Vout (V)	Output current Iout (A)	Efficiency η (%)typ	Oscillation freqkency 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			15～55	5.0±0.1	0.02～0.3	63		60max	4	
-8301L	45	−20～+85		8～40	5.1±0.1	1max	73	25typ	45typ	5	
-8811L	35	−10～+70		12～30	5.0±0.25	0.05～0.45	72	50typ	50typ	6	Double outputs type
					−5.0±0.25	0～−0.05			50typ		
-8911L	60	−10～+60		24～55	5.0±0.25	0.02～0.3	65	68typ	50typ		
					−5.0±0.25	0～−0.1			50typ		

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 (Tc=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		85				
2013						19～45	13±0.2							
2015						21～45	15±0.2							
2024	50					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 VDSS(V)	Drain current (single pulse) ID(A)	Voltage between gate and drain VGS(V)	Avalanche energy resistance EAS(mJ)	Out put power Pout(W)	Control power source voltage VIN(V)	Drive terminal source current ISOURCE(A)	Drive terminal sink current ISINK(A)	Operating temperature Top(°C)	Channel section temperature Tch(°C)
STR-S6401 -S6401F	500	±40	±20	500	250	35	0.7	1.5	−20～+125	+150

Thermal resistance θch-F (°C/W)	Electrical characteristics (Ta=25°C)																	
	Starting voltage VIN(ON)(V)			Stopping voltage VIN(OFF)(V)			Circuit current during operation IIN(ON)(mA)	Circuit current non-operation IIN(OFF)(μA)	Oscillation frequency fosc(kHz)			Maximum ON time TON(μs)			Ios terminal threshold voltage VDS(mV)			Ios terminal outflow current Ios(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 3.8	5.7 4.5	6.5 5.2	160	200	240	250	400	550

Amp terminal outflow current IAmp. (mA)	Electrical characteristic (Ta=25°C)										Fig. No.	Remarks
	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 Io(A)	Allowable loss (Tc=25°C) PD(W)	Operating temperature Top(°C)	Storage temperature Tstg(°C)	Input voltage VIN(V)	Output voltage Vo(V) 3000C*	Output voltage Vo(V) 3000CA	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	Low loss type Remote sensing possible Built-in overcurrent, overvoltage, overheating protections
-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					
-3240C	45					25～40	24±0.96	24±0.48		±2.5			

* "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 (Tc=25°C) Pd(W)	Operating temperature Top(°C)	Storage temperature Tstg(°C)	Output voltage Vout(V)	Minimum input/output differential voltage VDIF(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			

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 Tstg(°C)	Voltage doubler startup voltage $V_S(V_{AC})$	Settling switch voltage V_{C1}(V)	Settling switch voltage $V_{C2}(V_{AC})$	OFF voltage I_{DRM}(μA)	ON voltage V_{TH}(V)	
STR80145A	500	5.0	50	−10～+100(Tc)	−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 Vcc(V) min	Power source Vcc(V) typ	Power source Vcc(V) max	Output current Io(A)max	Exciting signal input current Ii(mA)max	V_{CC2} input current I_{CC2}(mA)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}) 4.5(V_{CC2})	30(V_{CC1}) 5(V_{CC2})	45(V_{CC1}) 5.5(V_{CC2})	3.0	1.6	150	14	

❶Full view (Unit: mm)

Fig. 1

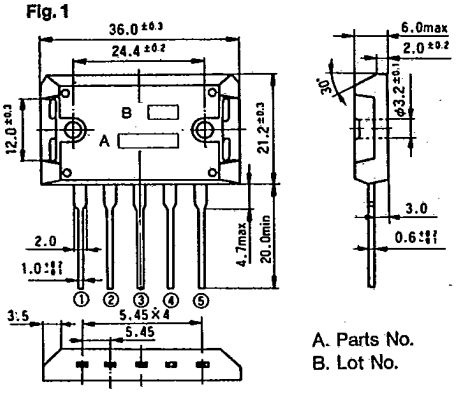


Fig. 2

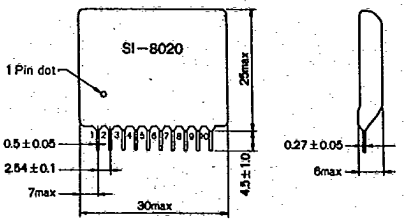


Fig. 3

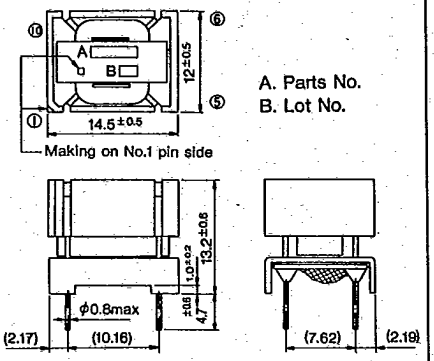


Fig. 4

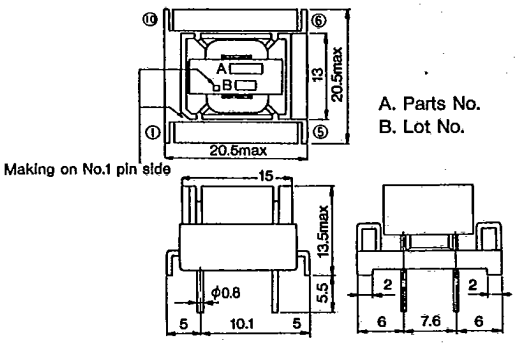


Fig. 5

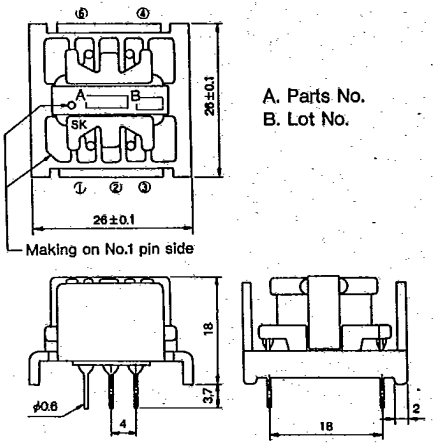


Fig. 6

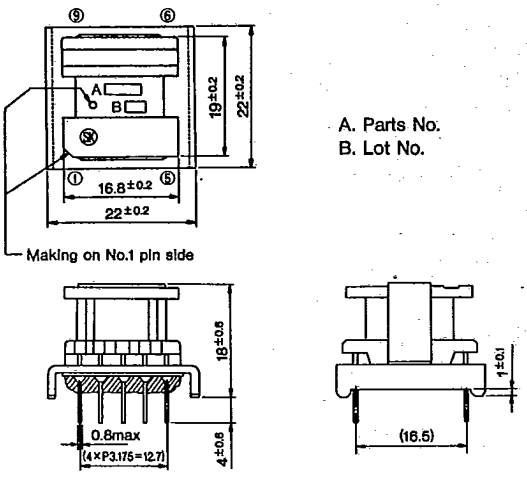


Fig. 7

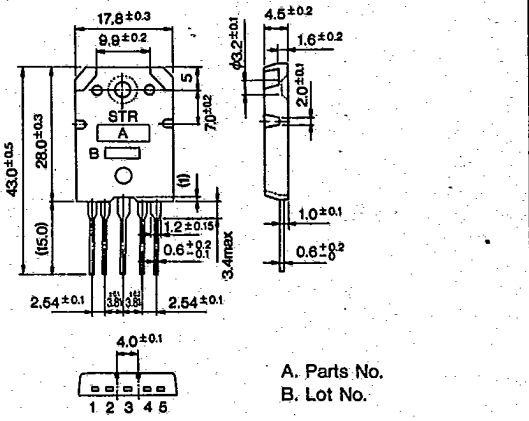


Fig. 8

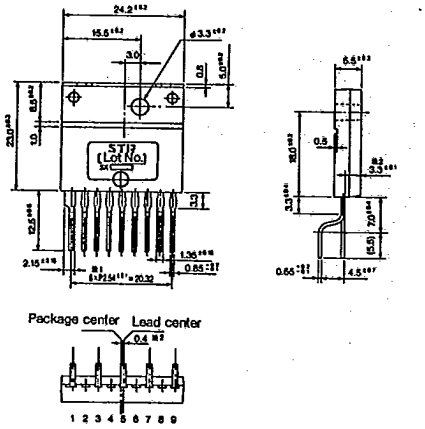


Fig. 9

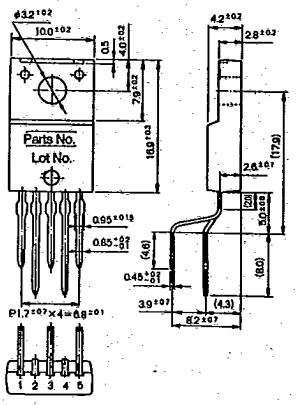
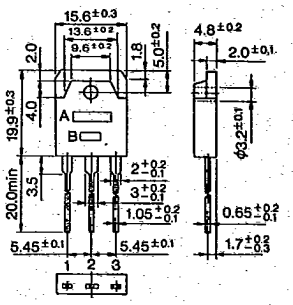


Fig. 10 MT-100(TO-3P)



A. Parts No.
B. Lot No.

Fig. 11

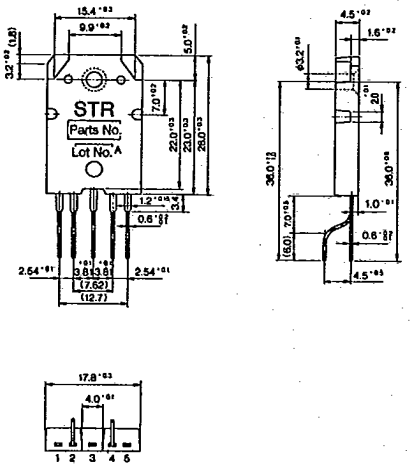
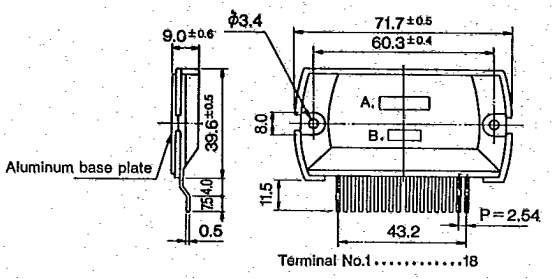
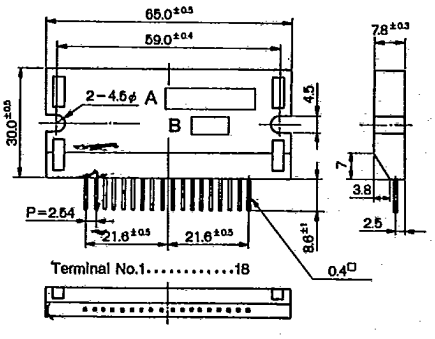


Fig. 12



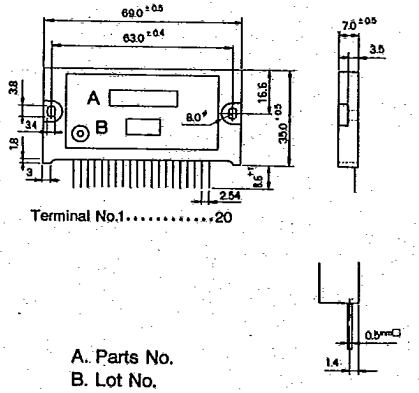
A. Parts No.
B. Lot No.

Fig. 13



A. Parts No.
B. Lot No.

Fig. 14

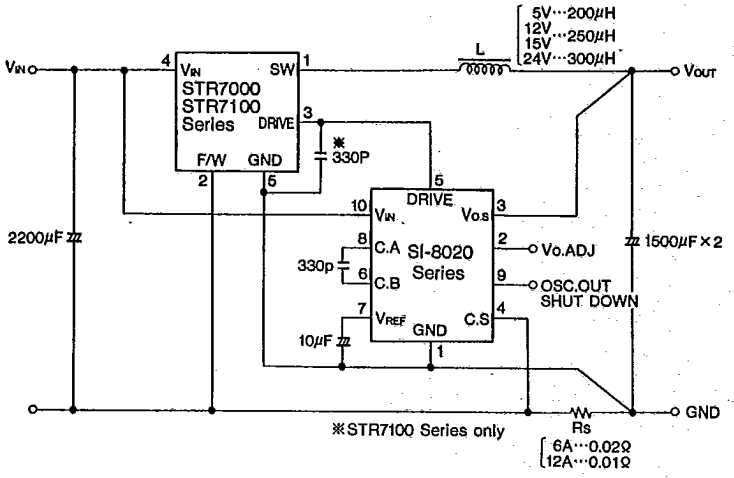


A. Parts No.
B. Lot No.

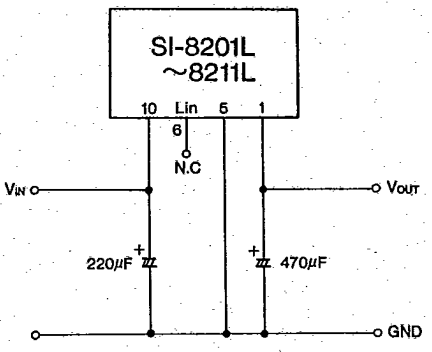
T-58-11-31

❶Standard connection diagram

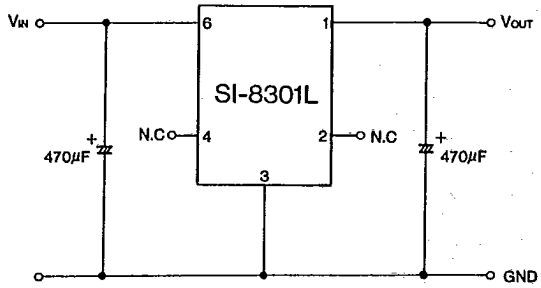
STR7000、7100/SI-8020 Series



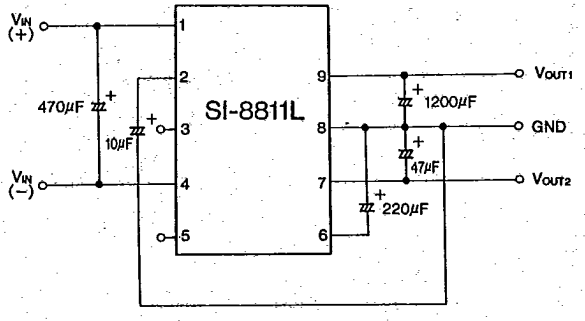
SI-8000L Series



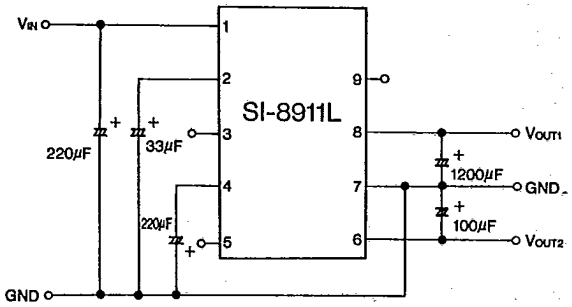
SI-8301L



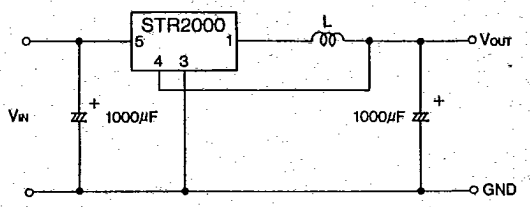
SI-8811L



SI-8911L

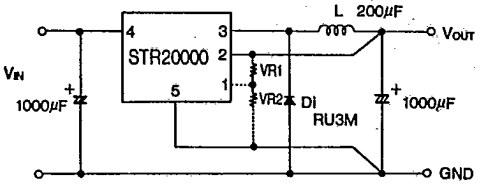


STR2005~2024

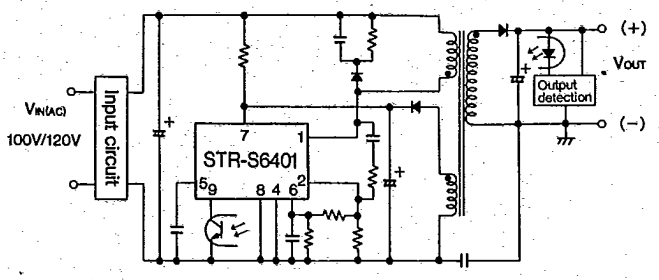


Parts No.	Coil (L) capacity
STR2005	200μH
STR2012	300μH
STR2013	300μH
STR2015	350μH
STR2024	400μH

STR20005



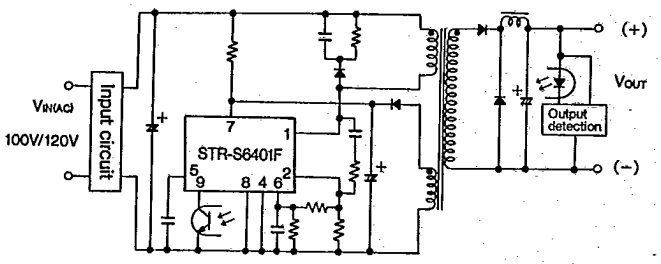
STR-S6401 Example of application circuit



Flyback converter

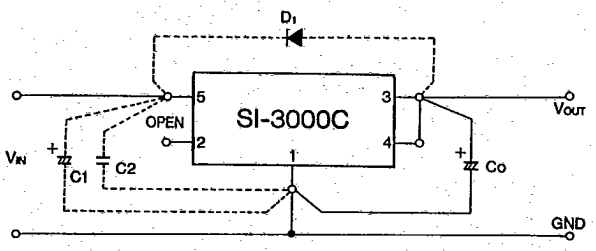
T-58-11-31

STR-S6401F Example of application circuit



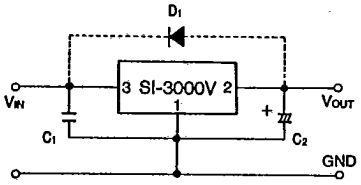
Forward converter

SI-3000C



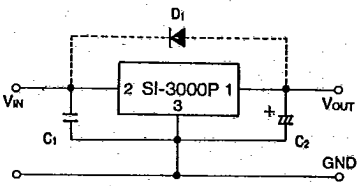
C_0 : 47~100μF
C_1 C_2 : Oscillation prevention capacitor (C_1 : Approx. 47μF, C_2 : Approx. 0.33μF)
D_1 : Protection diodes
Repuired in case reversely biased between input and output

SI-3000V



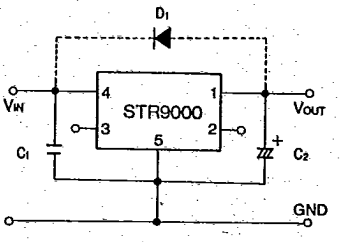
C_1 : Oscillation prevention capacitor (0.33μF)
C_2 : 47~100μF
D_1 : Protection diodes
Requred in case reversely biased between input and output

SI-3000P



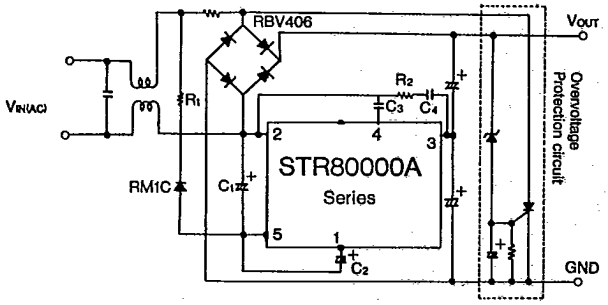
C_1 : Oscillation prevention capacitor (0.33μF)
C_2 : 47~100μF
D_1 : Protection diodes
Required in case reversely biased between input and output

STR9000



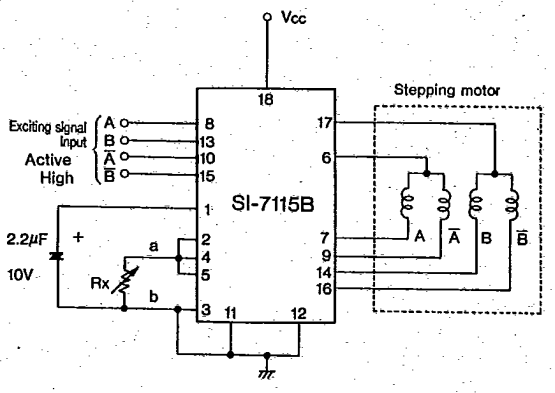
C_1 : Oscillation prevention cspacitor (0.33μF)
C_2 : 47~100μF
D_1 : Protection diodes
Required in case reversely biased between input and output

STR80000A Example of application circuit

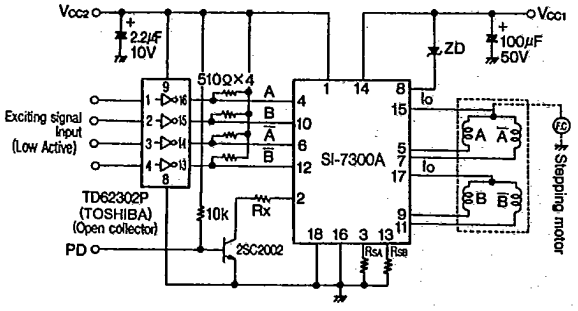


R_1 : 2.2Ω R_2 : 4.7Ω
C_1 : 2.2μF/400V C_2 : 100μF/10V C_3 : 0.1μF
C_4 : 0.047μF

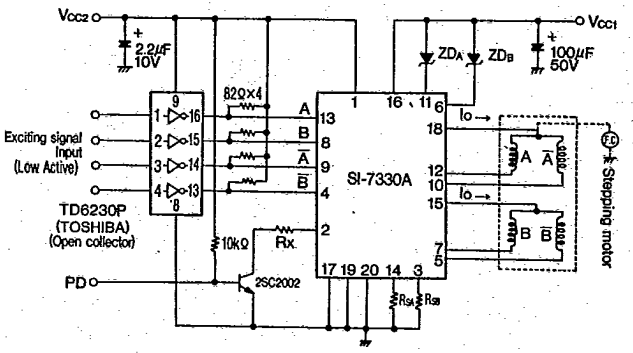
SI-7115B



SI-7300A

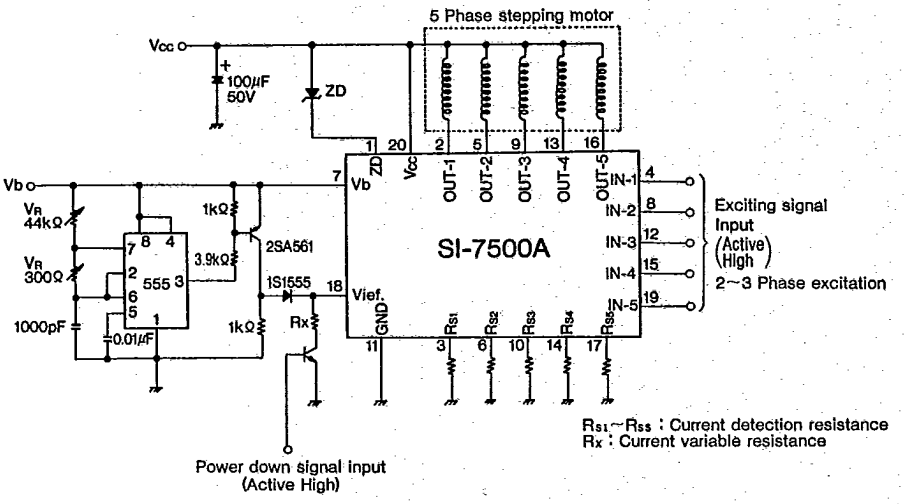


SI-7330A

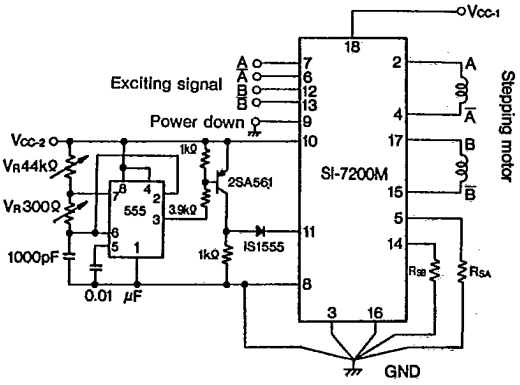


T-58-11-31

SI-7500A

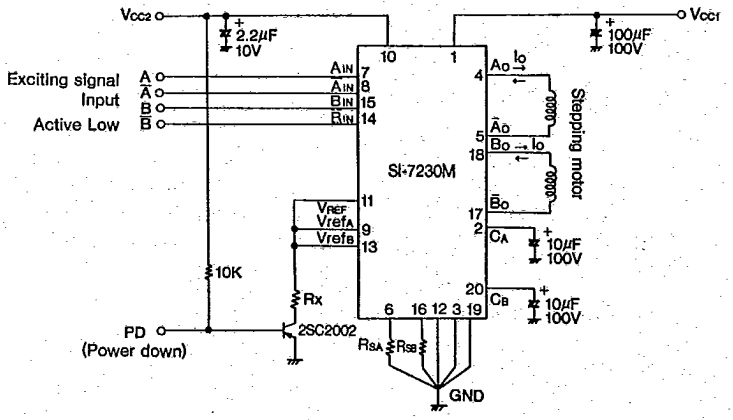


SI-7200M

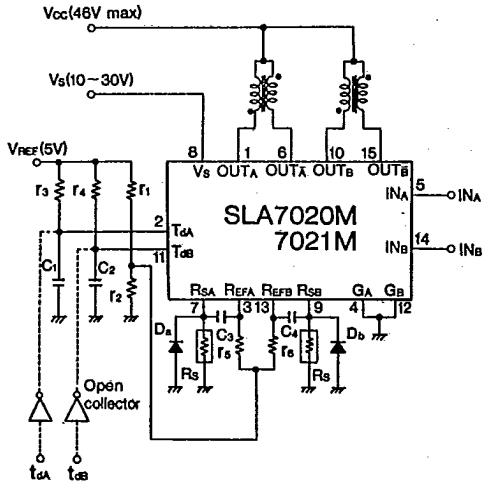


Power down Exciting signal : Active High
Exciting signal Input : Active Low

SI-7230M

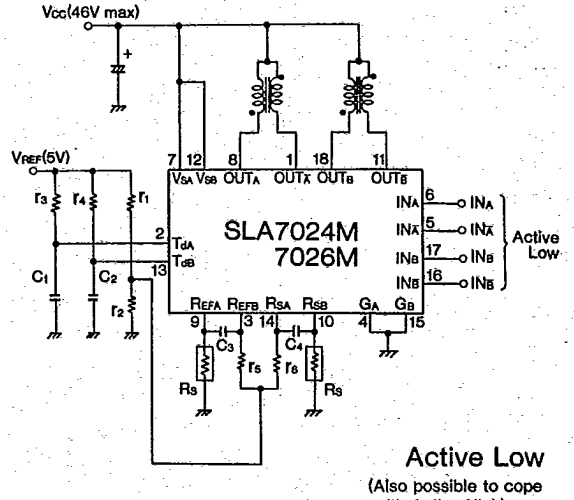


SLA7020M·SLA7021M



r1	510Ω	C1	470PF
r2	100Ω(VR)	C2	470PF
r3	47kΩ	C3	2200PF
r4	47kΩ	C4	2200PF
r5	2.4kΩ	Da,Db	EK03(7020M) RK34(7021M)
r6	2.4kΩ	Rs	1Ω typ(7020M) 0.68Ω typ(7021M)

SLA7024M·SLA7026M



Active Low
(Also possible to cope with Active High)

r1	510Ω	C1	470pF
r2	100Ω(VR)	C2	470pF
r3	47kΩ	C3	220pF
r4	47kΩ	C4	220pF
r5	2.4kΩ	Rs	1Ω(typ)~2W(7024M)
r6	2.4kΩ		0.68Ω(typ)1~2W(7026M)