

Thick Film Hybrid IC

SANYO

No.4352A

STK6713BMK3**Stepping Motor Fixed-current Driver****Overview**

The STK6713BMK3 is a unipolar fixed-current chopper-type 4-phase stepping motor driver hybrid IC (HIC) which uses a MOSFET power device. The excitation sequence signal is active low.

Applications

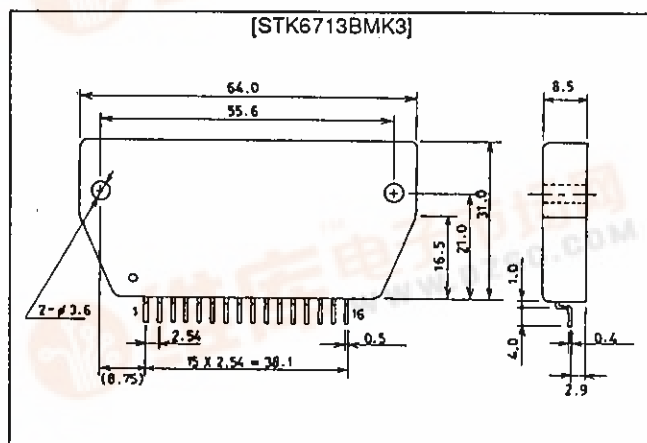
- Serial printer, line printer, PPC, laser beam printer (LBP) paper feed and carriage motor drivers

Features

- Fixed-current driver device which uses MOSFET
- Input signal supporting TTL level (Active Low drive type)
- On-chip current detection resistor

Package Dimensions

unit: mm

4131**Specifications****Maximum Ratings at Ta = 25°C**

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage 1	V _{CC1max}	No input signal	52	V
Maximum supply voltage 2	V _{CC2max}	No input signal	7	V
Maximum phase current	I _{OH max}	per phase, R/L = 5Ω/10mH, 0.5 s 1 pulse, V _{CC} input	3.9	A
Repeated avalanche handling capability	Ear max		42	mJ
Storage temperature	T _{stg}		-40 to +125	°C
Junction temperature	T _{j max}		150	°C
Operating substrate temperature	T _{c max}		105	°C

Allowable Operating Conditions at Ta = 25°C

	min	typ	max	Unit		
Supply voltage 1	V _{CC1}	With input signal	18	42	V	
Supply voltage 2	V _{CC2}	With input signal	4.75	5.0	5.25	V
Phase driver withstand voltage	V _{DSS}		100		V	
Phase current	I _{OH max}	Duty 50%		3.0	A	

Electrical Characteristics at Ta = 25°C, V_{CC1} = 36V, V_{CC2} = 5V

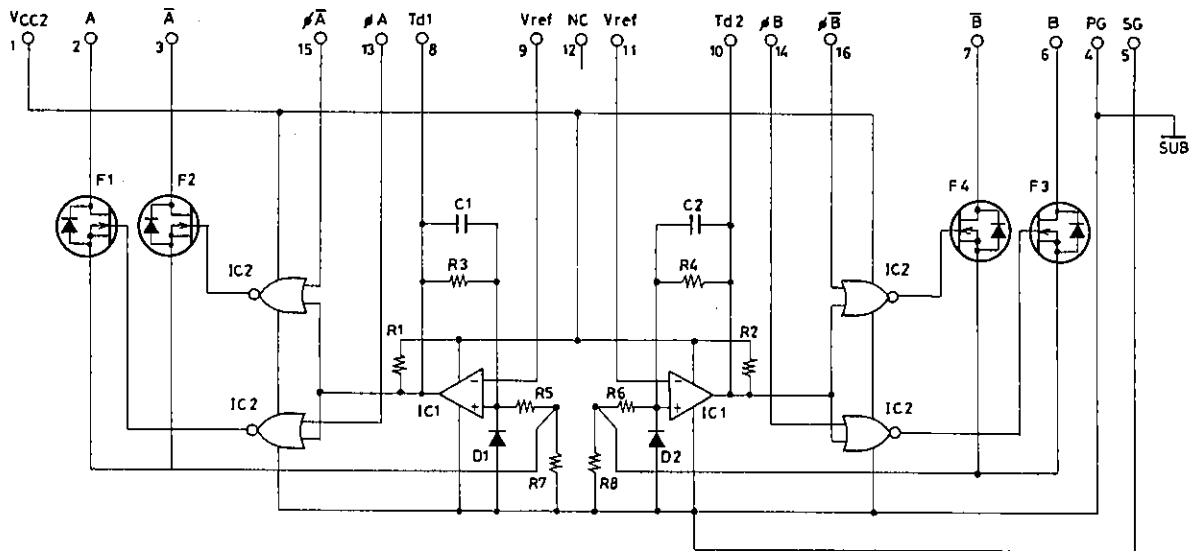
	min	typ	max	Unit		
Output saturation voltage	V _{ST}	R _L =14Ω, V _{IN} =0.8V	1.5	2.1	V	
Output current (average)	I _{o ave}	Load; R/L=3.5Ω/3.8mH, V _{IN} =0.8V per phase	0.477	0.53	0.583	A
Pin 1 current consumption (average)	I _{CC2}	Load; R/L = 3.5Ω/3.8mH, V _{IN} = 0.8V per phase		10	20	mA
FET diode forward voltage	V _{df}	I _F =1.0A		1.2	1.8	V
TTL input ON voltage	V _{IH}	Input voltage when F1, 2, 3, 4 OFF	2.0			V
TTL input OFF voltage	V _{IL}	Input voltage when F1, 2, 3, 4 ON			0.8	V
Switching time	t _{ON}	R _L =24Ω, V _{IN} =0.8V		120		ns
	t _{OFF}	R _L =24Ω, V _{IN} =0.8V		0.2		μs

Note: With regulated voltage power supply.

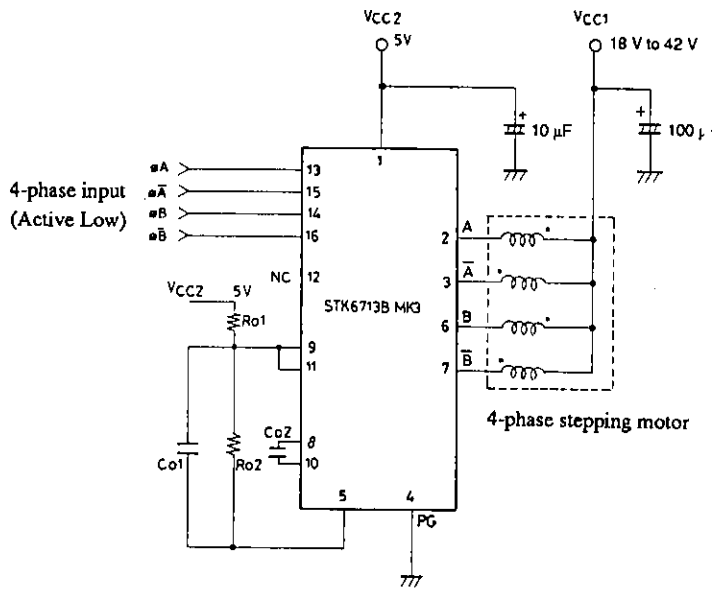


STK6713BMK3

Equivalent Circuit

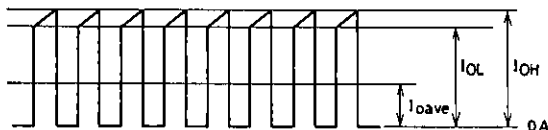


Application Circuit



Note: For reference, when $I_{OH} \approx 1.1A$, $R_{O1} = 6.8k\Omega$ and $R_{O2} = 390\Omega$.

Output current waveform when phases held (locked)



Measure output current values in this state.

$$I_{OH} = K \times \frac{R_{O2}}{R_{O1} + R_{O2}} \times V_{CC2}/R_7$$

$$K \approx 1.3$$

$$R_7 = R_8 = 0.33\Omega \pm 3\%$$

To reduce noise during motor hold, it is possible to mount $C_{O1} \approx 0.01 \mu F$ and $C_{O2} \approx 100$ to 200 pF . Normally these are not required.

Note: Both input signals cannot be L at the same time.

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