M51723P,FP

FREQUENCY-VOLTAGE (F-V) CONVERTER

DESCRIPTION

The M51723P,FP are semiconductor integrated circuits designed for use in frequency-voltage (F-V) converting.

The devices consist of an FG amplifier, sample and hold circuit, error amplifier and sawteeth-wave generating circuits.

The M51723P,FP constitute frequency-servo motor control system in combination with the brushless motor pre-driver, M51724P,FP or other pre-driver ICs.

FEATURES

- Low power dissipation
- Suitable for both current output (current source or current sink) and voltage output
- Start/stop changeover terminal

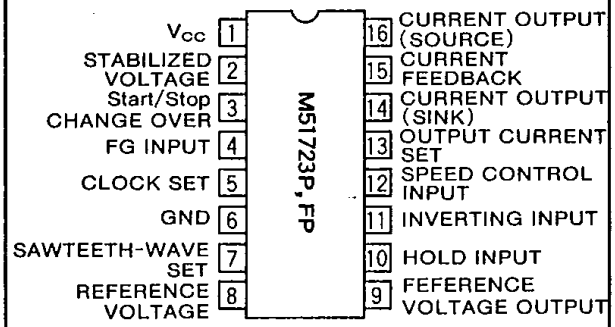
APPLICATION

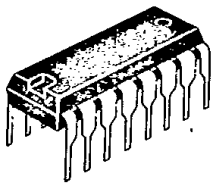
VTR, floppy disk drive, etc.

RECOMMENDED OPERATING CONDITIONS

Supply voltage range ..... 7.2~20V
Rated supply voltage 12V

PIN CONFIGURATION (TOP VIEW)

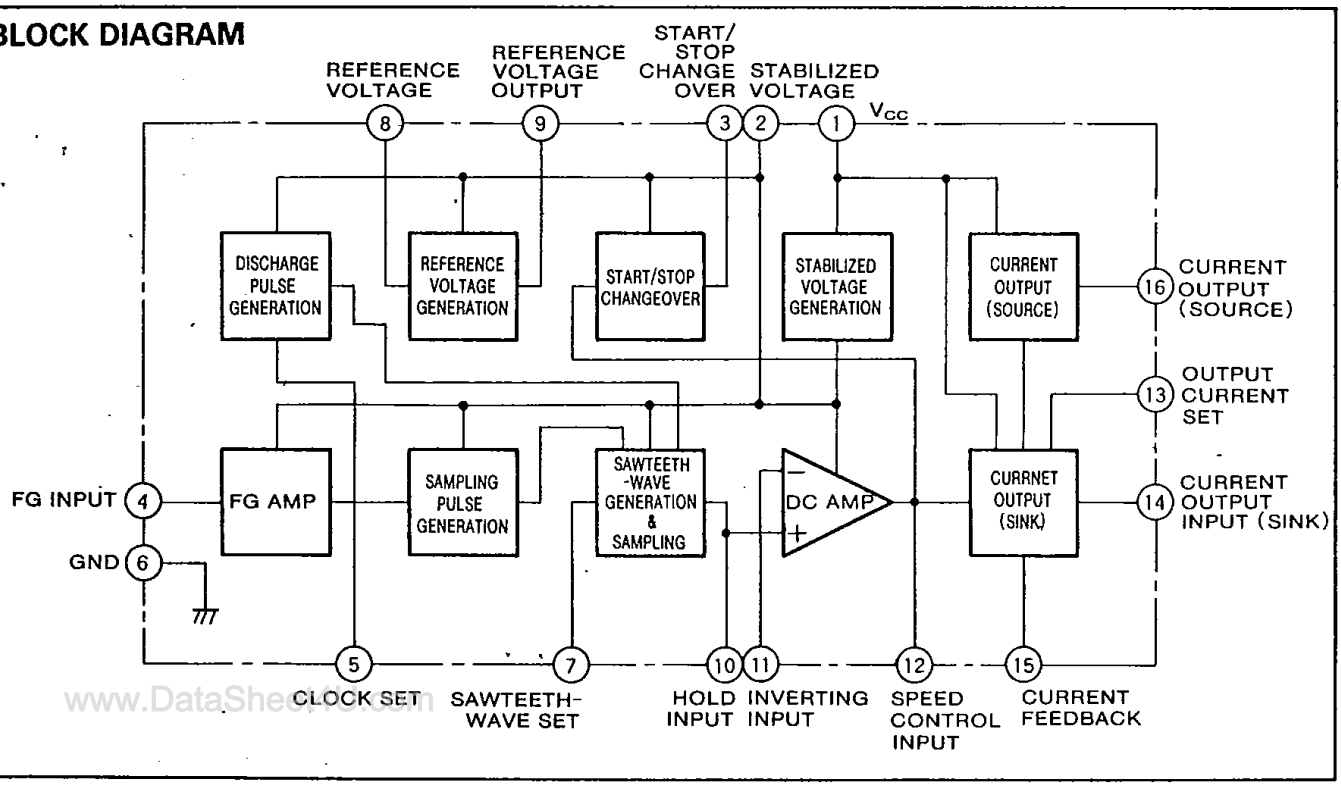




16-pin molded plastic DIP

16-pin molded plastic FLAT (C type)

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (T_a=25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CC}	Supply voltage		20	V
I_{stb}	Pin ② output current		20	mA
$V_{④}$	Pin ④ input voltage		−0.2～V_{stb}	V
$I_{OL⑭}$	Pin ⑭ source current		6	mA
$I_{OL⑯}$	Pin ⑯ sink current		6	mA
P_{dF}	Power dissipation		770(430)	mW
T_{opr}	Operating temperature range		−20～+75	℃
T_{stg}	Storage temperature		−40～+125	℃

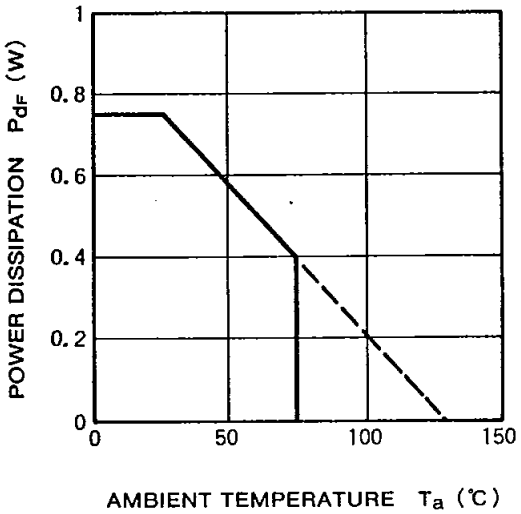
Note: ( )=M51723FP

ELECTRICAL CHARACTERISTICS (T_a=25℃, V_{CC}=12V, unless otherwise noted)

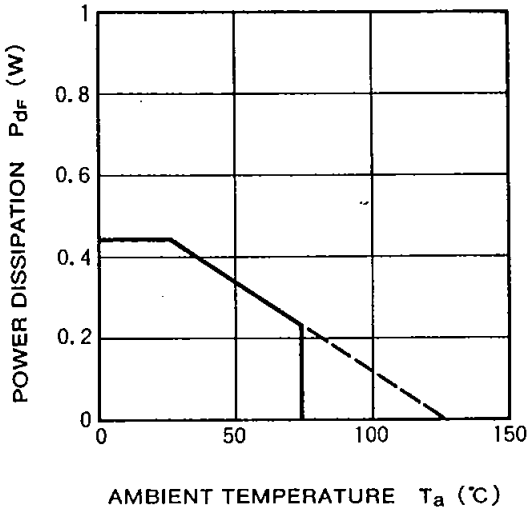
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{CC}	Circuit current		2	3	5	mA
V_{stb}	Stabilized output voltage		5.3	5.8	6.3	V
V_{ref}	Reference voltage	V_{CC}=V_{stb}=5.6V	2.70	2.81	2.94	V
$V_{TH(1)}$	Clock threshold voltage (1)	V_{CC}=V_{stb}=5.6V	1.78	1.90	2.00	V
$V_{TH(2)}$	Clock threshold voltage (2)	V_{CC}=V_{stb}=5.6V	2.67	2.81	2.95	V
$V_{TH(3)}$	Clock threshold voltage (3)	V_{CC}=V_{stb}=5.6V	3.01	3.17	3.33	V
$V_{TH(4)}$	Clock threshold voltage (4)	V_{CC}=V_{stb}=5.6V	3.95	4.17	4.37	V
V_{STOP}	Stop circuit operating voltage	V_{CC}=V_{stb}=5.6V		2.6	3.0	V
$V_{offset④}$	Pin ④ input offset voltage	V_{CC}=V_{stb}=5.6V		0	±6	mV
$V_{offset⑦-⑩}$	Pin ⑦ - pin ⑩ offset voltage	V_{CC}=V_{stb}=5.6V		0	±10	mV
$V_{offset⑧-⑨}$	Pin ⑧ - pin ⑨ offset voltage	V_{CC}=V_{stb}=5.6V		0	±10	mV
$V_{offset⑩-⑪}$	Pin ⑩ - pin ⑪ offset voltage	V_{CC}=V_{stb}=5.6V		0	±10	mV
$I_{SK⑭}$	Pin ⑭ sink current	20kΩ between V_{CC} and pin ⑬	440	550	660	μA
$I_{SO⑯}$	Pin ⑯ source current	20kΩ between V_{CC} and pin ⑬	570	720	860	μA

THERMAL DERATING (MAXIMUM RATING) (T_a=25℃, unless otherwise noted)

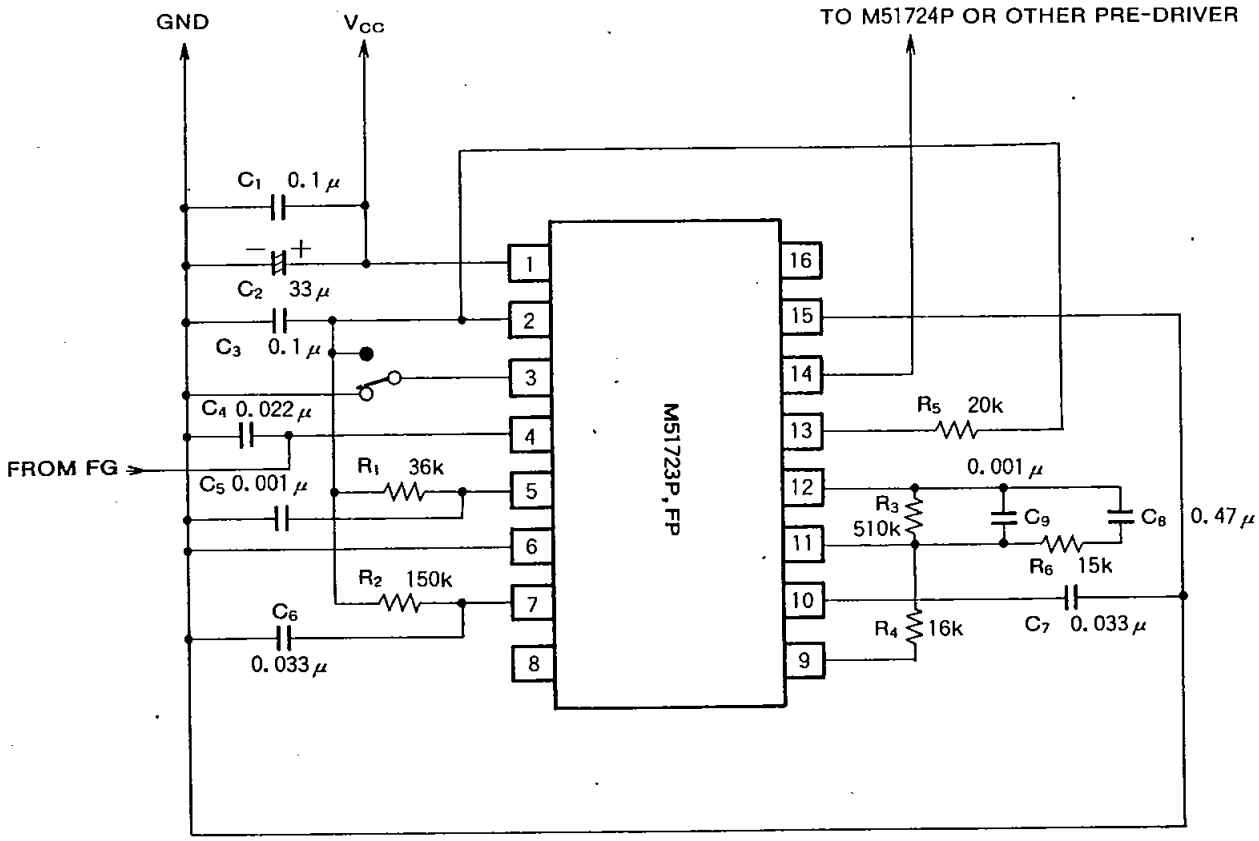
M51723P

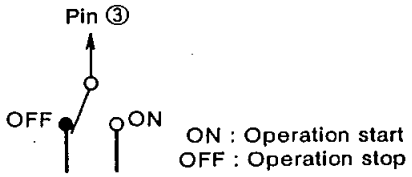


M51723FP



APPLICATION EXAMPLE

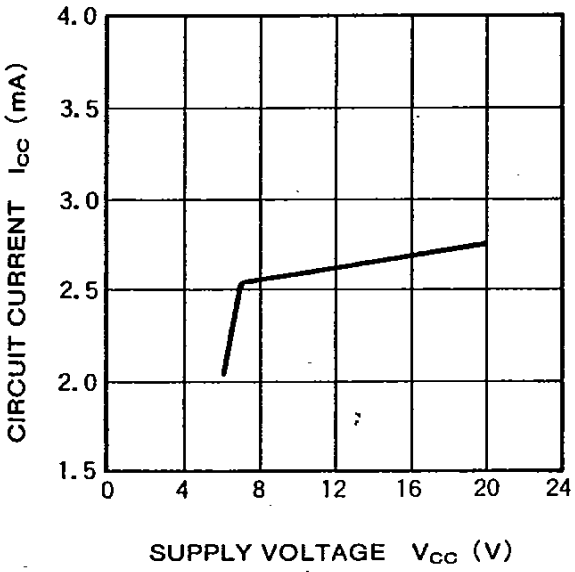




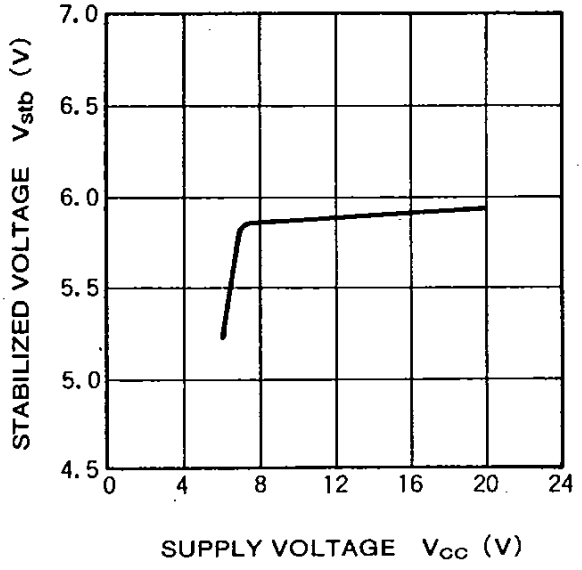
Unit Resistance : Ω
Capacitance : F

TYPICAL CHARACTERISTICS (T_a=25℃, unless otherwise noted)

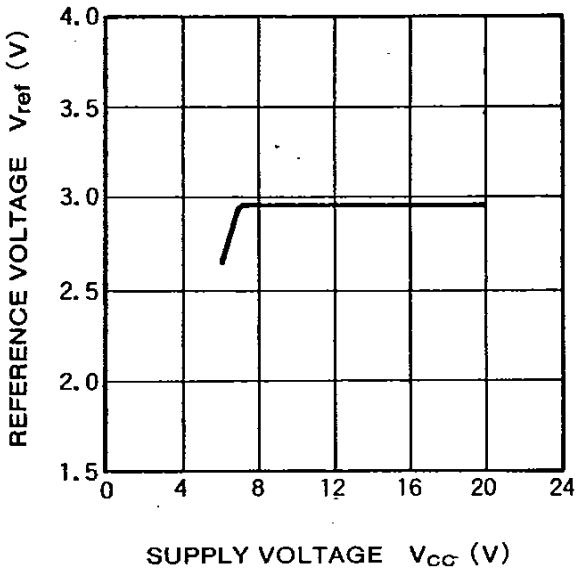
CIRCUIT CURRENT VS. SUPPLY VOLTAGE



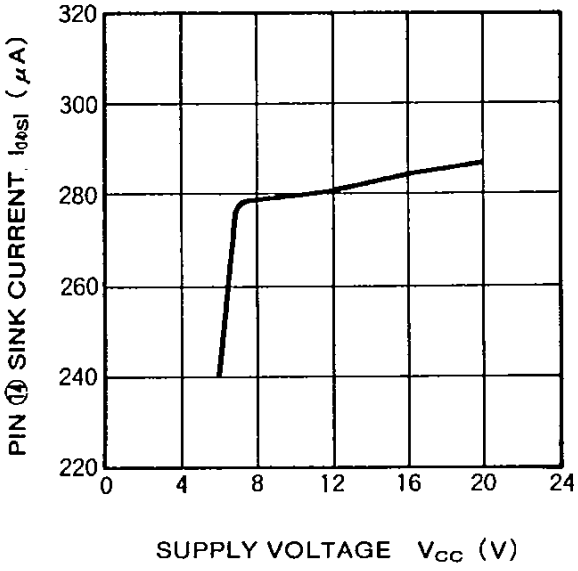
STABILIZED VOLTAGE VS. SUPPLY VOLTAGE



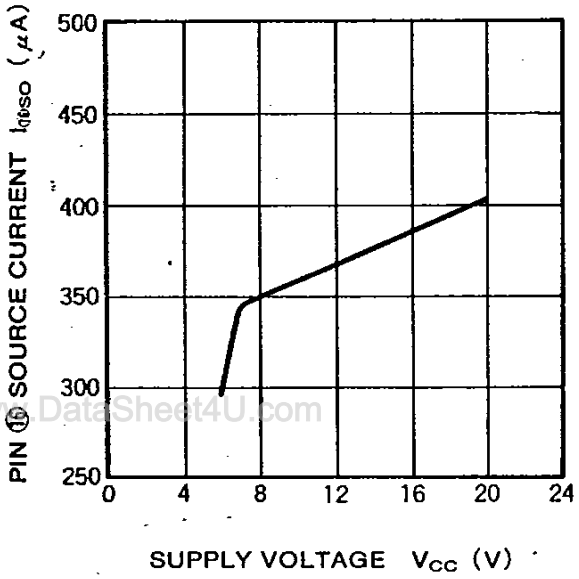
REFERENCE VOLTAGE VS. SUPPLY VOLTAGE



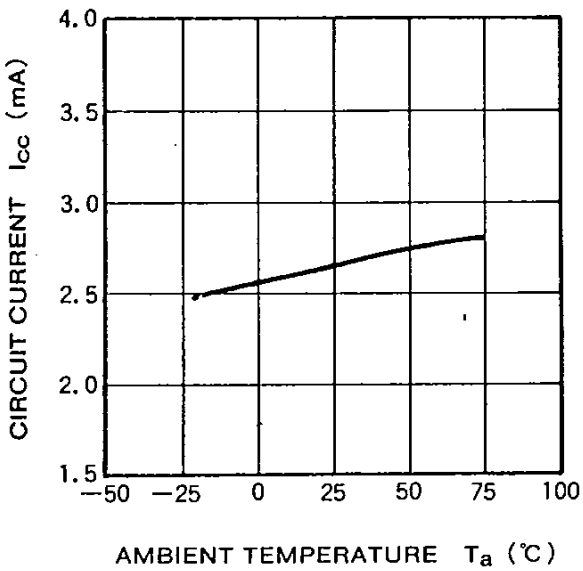
PIN ⑭ SINK CURRENT VS. SUPPLY VOLTAGE



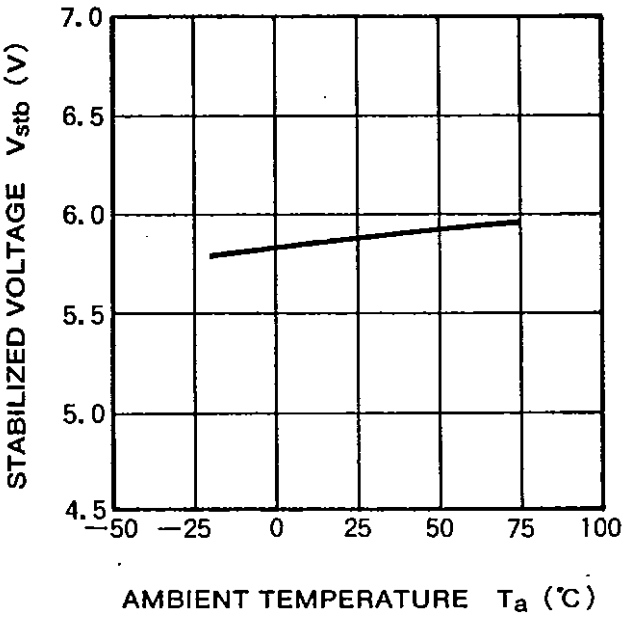
PIN ⑯ SOURCE CURRENT VS. SUPPLY VOLTAGE



CIRCUIT CURRENT VS. AMBIENT TEMPERATURE



STABILIZED VOLTAGE VS. AMBIENT TEMPERATURE



REFERENCE VOLTAGE VS. AMBIENT TEMPERATURE