

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

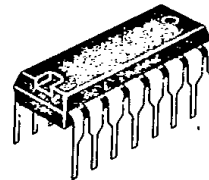
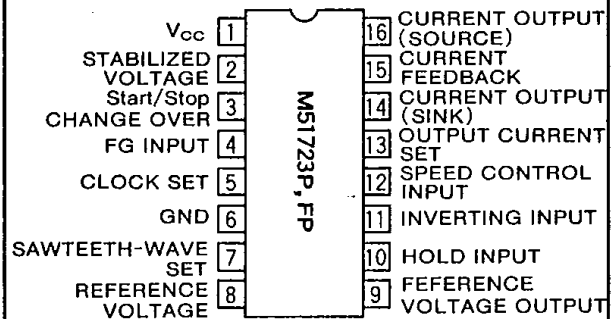
APPLICATION

VTR, floppy disk drive, etc.

RECOMMENDED OPERATING CONDITIONS

Supply voltage range 7.2~20V
Rated supply voltage12V

PIN CONFIGURATION (TOP VIEW)

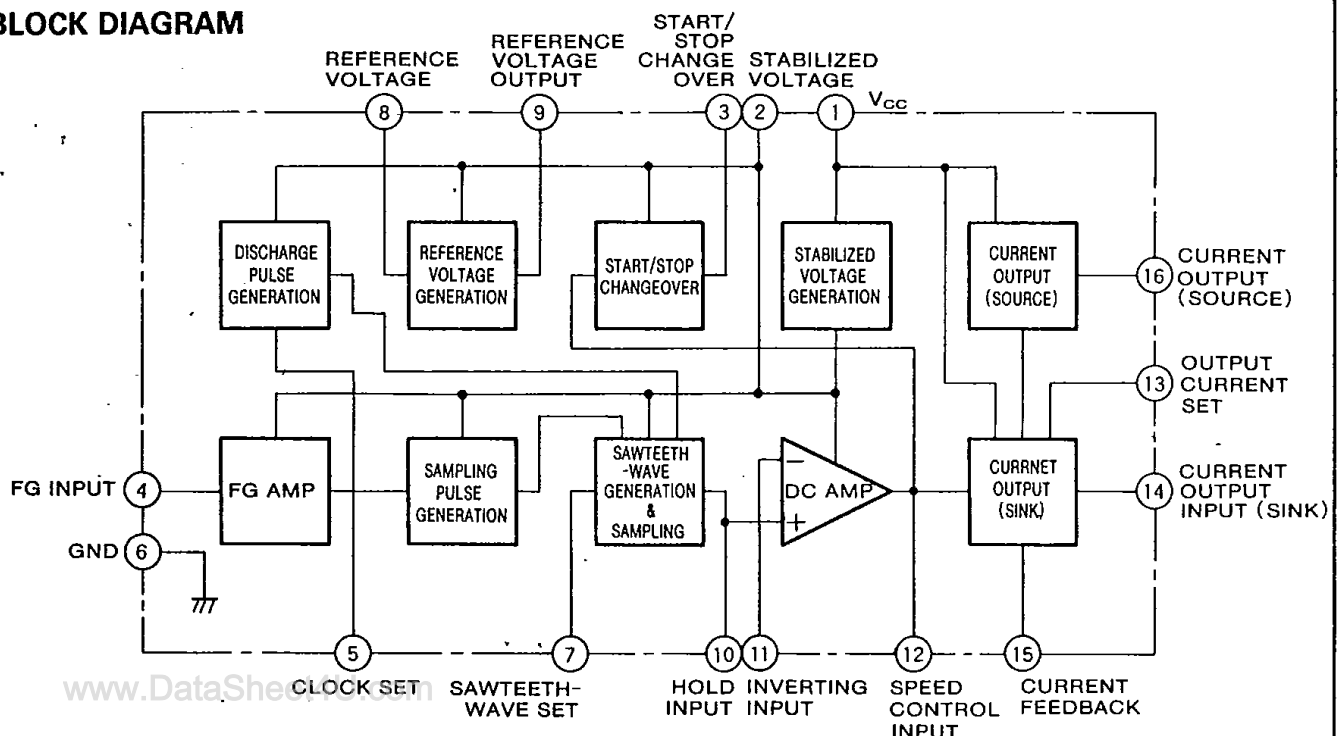


16-pin molded plastic DIP



16-pin molded plastic FLAT (C type)

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$, 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		$-0.2 \sim V_{stb}$	V
$I_{OL(4)}$	Pin ④ source current		6	mA
$I_{OL(6)}$	Pin ⑥ sink current		6	mA
P_{df}	Power dissipation		770(430)	mW
T_{opr}	Operating temperature range		$-20 \sim +75$	$^{\circ}\text{C}$
T_{stg}	Storage temperature		$-40 \sim +125$	$^{\circ}\text{C}$

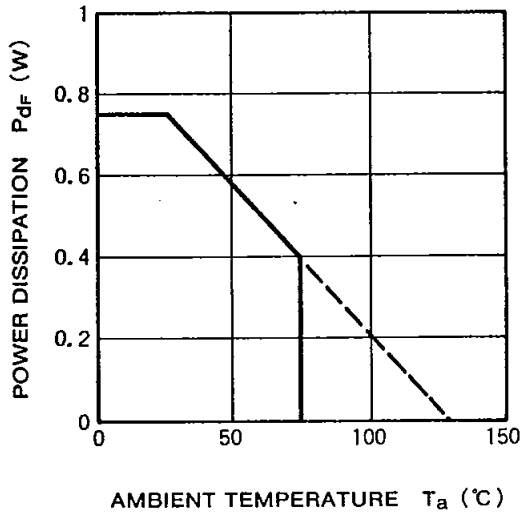
Note: ()=M51723FP

ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$, $V_{CC}=12\text{V}$, unless otherwise noted)

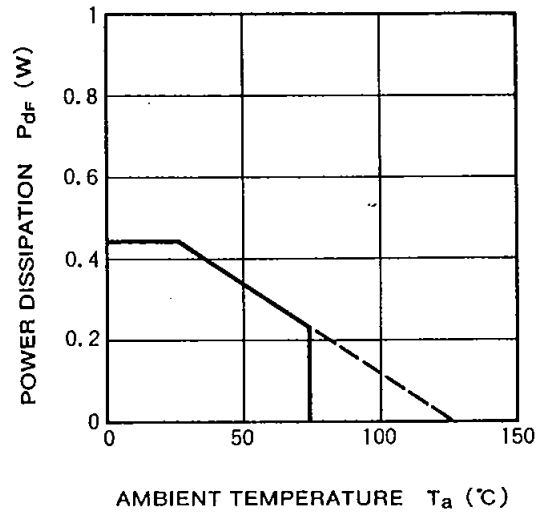
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{CC}	Circuit current		2	3	5	mA
V_{stb}	Stabilized output voltage		5.3	5.8	6.3	V
V_{ref}	Reference voltage	$V_{CC}=V_{stb}=5.6\text{V}$	2.70	2.81	2.94	V
$V_{TH(1)}$	Clock threshold voltage (1)	$V_{CC}=V_{stb}=5.6\text{V}$	1.78	1.90	2.00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

THERMAL DERATING (MAXIMUM RATING) ($T_a=25^{\circ}\text{C}$, unless otherwise noted)

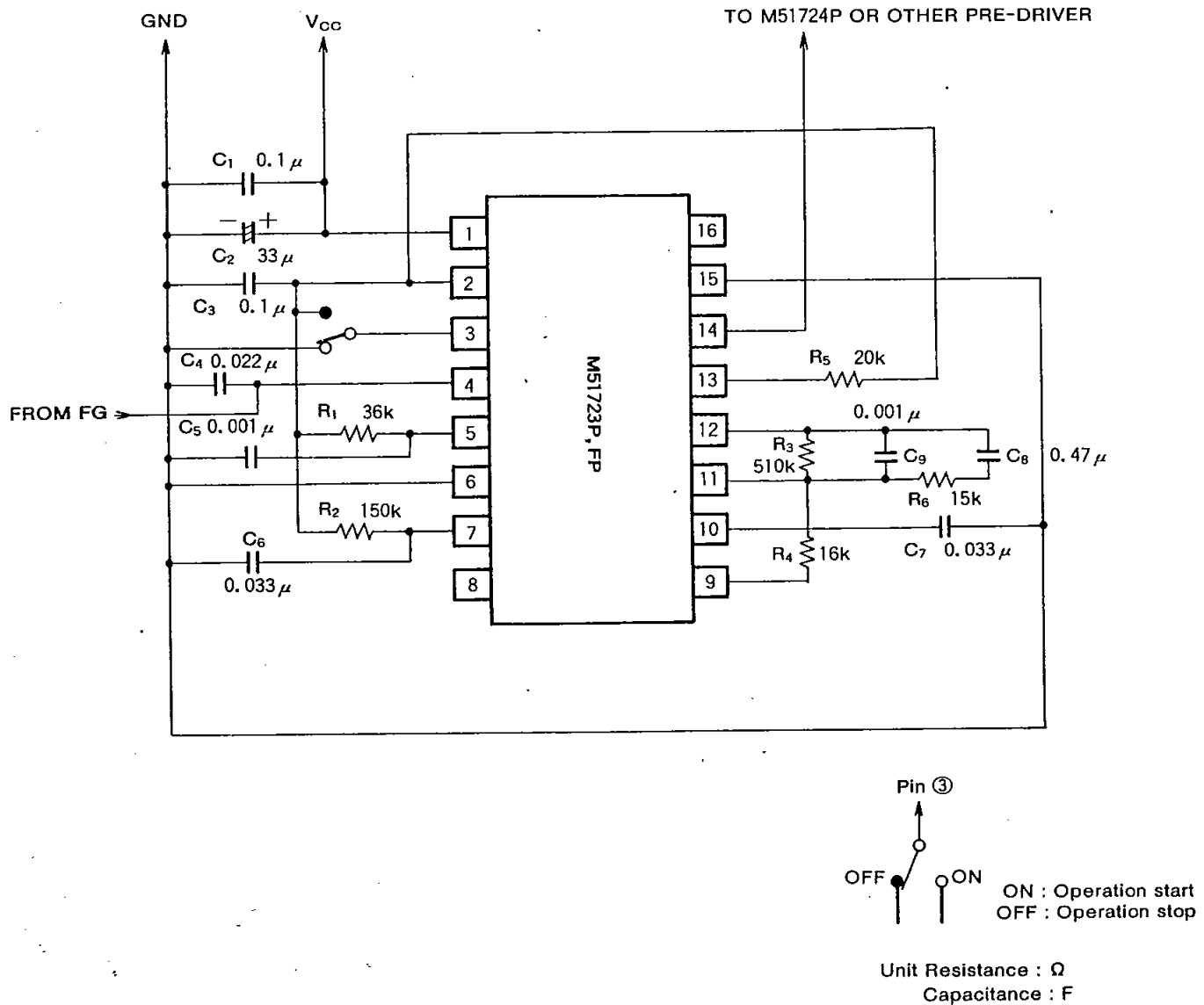
M51723P



M51723FP

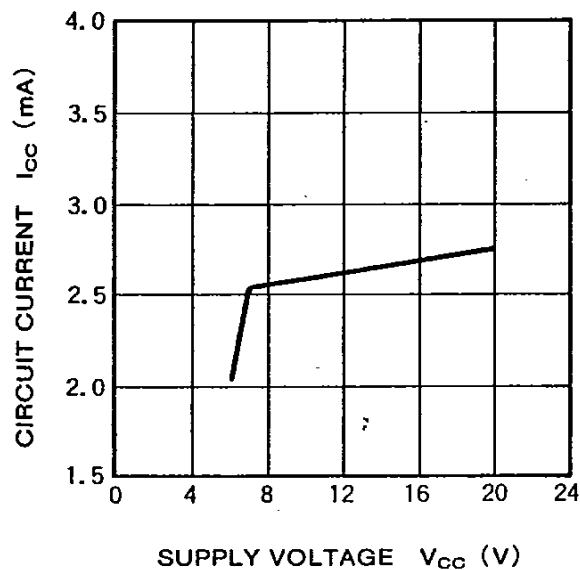


APPLICATION EXAMPLE

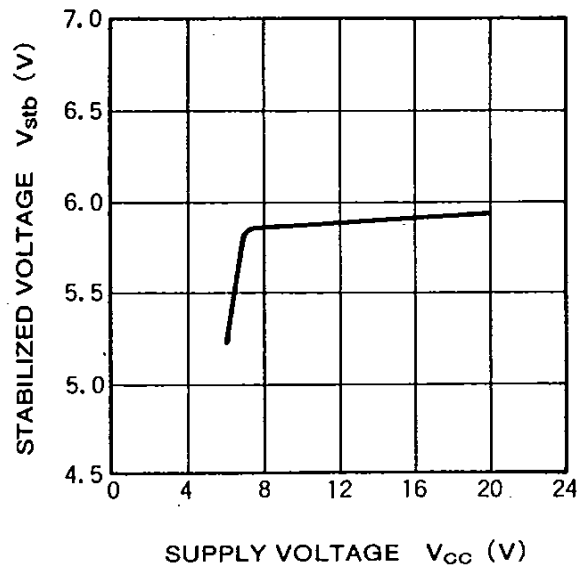


TYPICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$, unless otherwise noted)

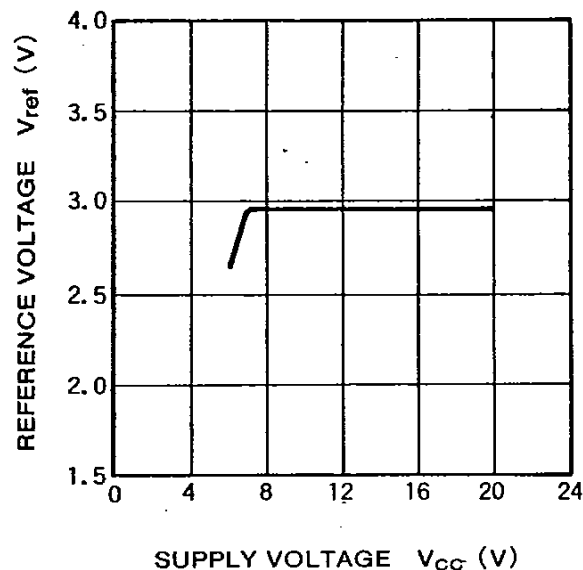
CIRCUIT CURRENT VS. SUPPLY VOLTAGE



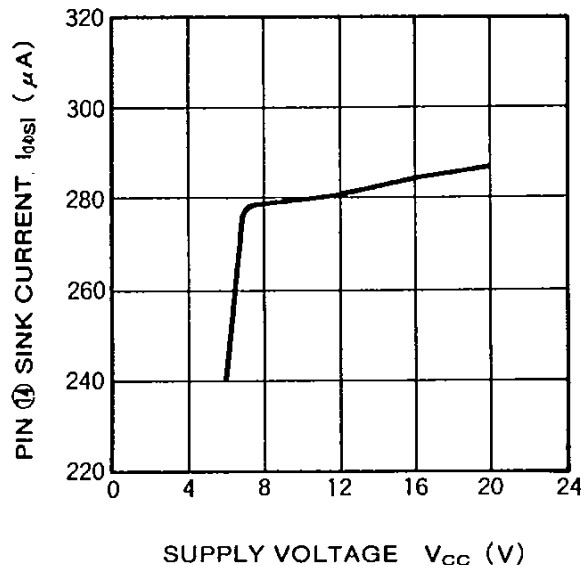
STABILIZED VOLTAGE VS. SUPPLY VOLTAGE



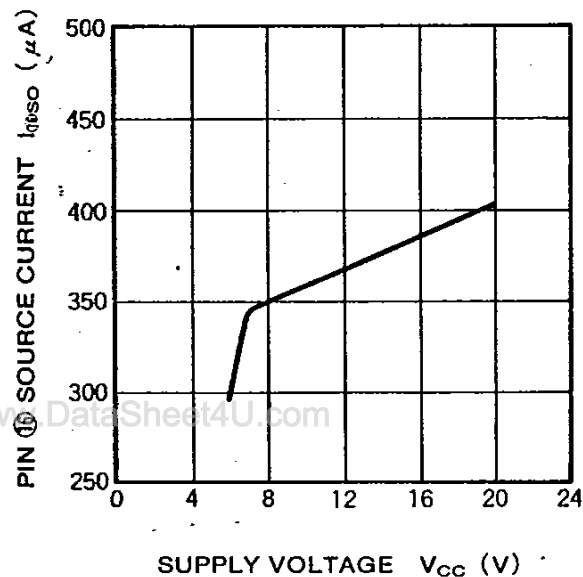
REFERENCE VOLTAGE VS. SUPPLY VOLTAGE



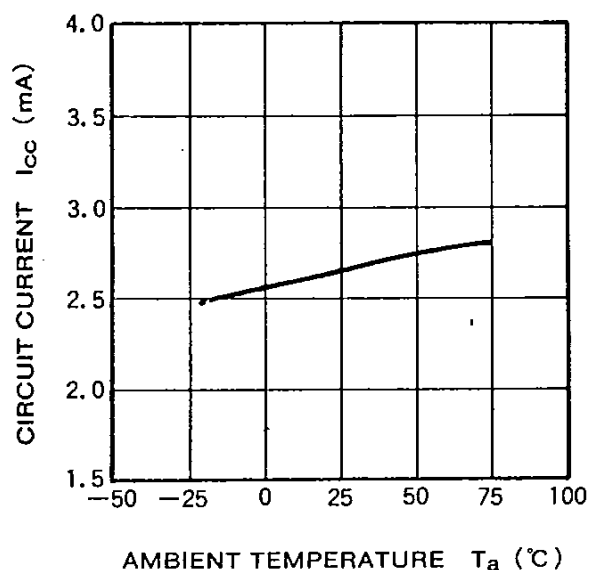
PIN 16 SINK CURRENT VS. SUPPLY VOLTAGE



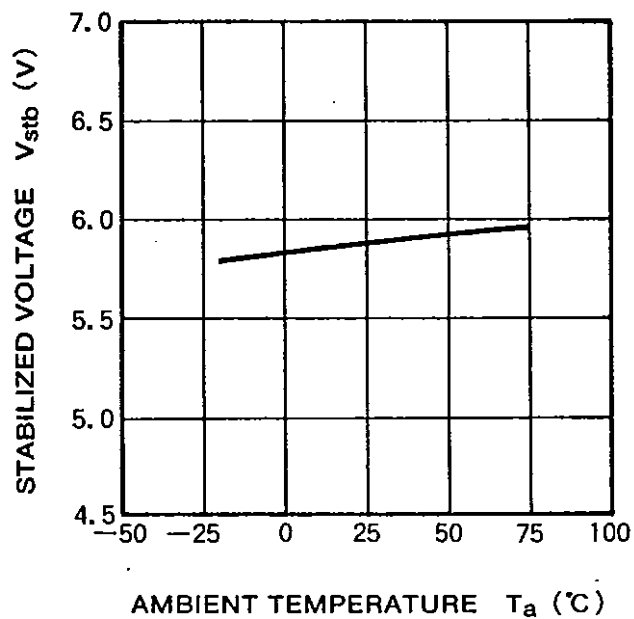
PIN 16 SOURCE CURRENT VS. SUPPLY VOLTAGE



CIRCUIT CURRENT VS. AMBIENT TEMPERATURE



**STABILIZED VOLTAGE
VS. AMBIENT TEMPERATURE**



**REFERENCE VOLTAGE
VS. AMBIENT TEMPERATURE**

