

MITSUBISHI LINEAR ICs
M51723P,FP

FREQUENCY-VOLTAGE (F-V) CONVERTER

6249826 MITSUBISHI ELEK (LINEAR)

80C 08987 D 7-73-13-03

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

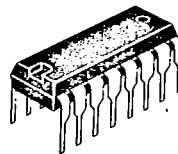
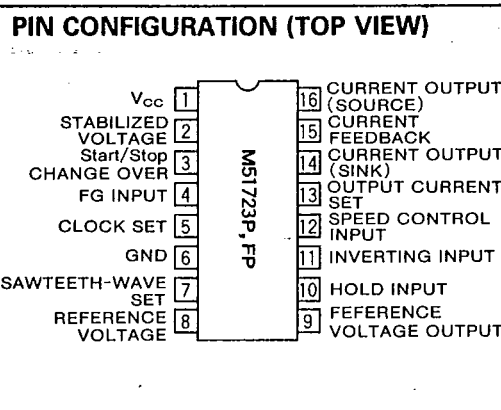
- Low power dissipation
- Suitable for both current output (current source or current sink) and voltage output
- Start/stop changeover terminal

APPLICATION

VTR, floppy disk drive, etc.

RECOMMENDED OPERATING CONDITIONS

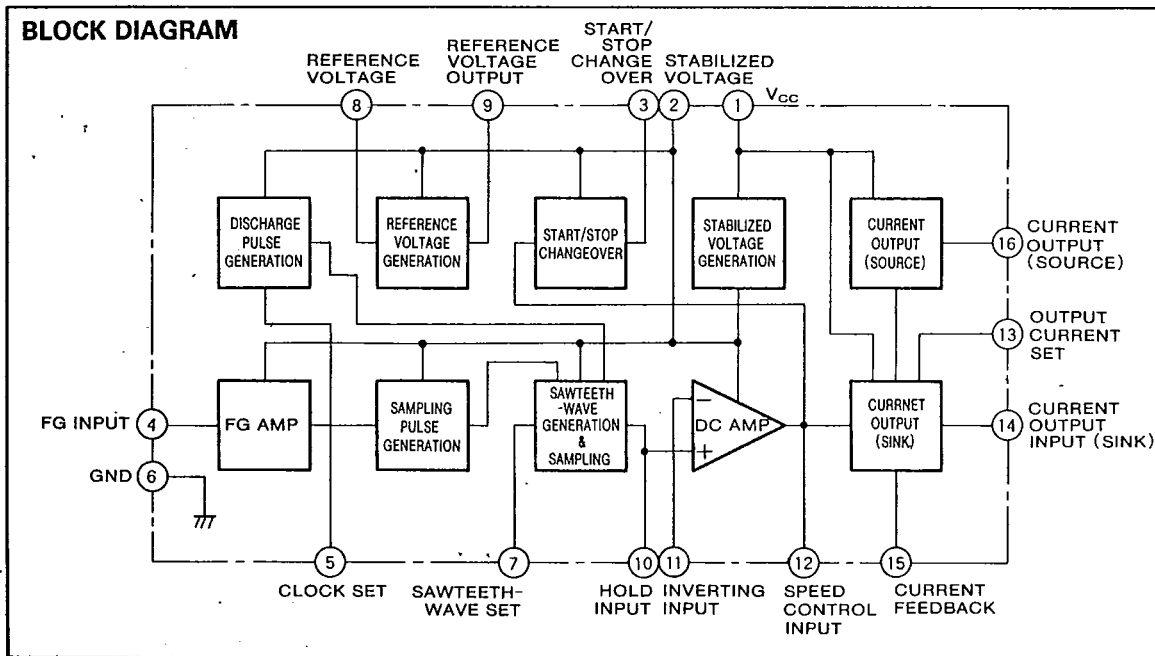
Supply voltage range 7.2~20V
Rated supply voltage 12V



16-pin molded plastic DIP



16-pin molded plastic FLAT (C type)



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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
$V_{(A)}$	Pin ④ input voltage		$-0.2 \sim V_{stb}$	V
$I_{OL(A)}$	Pin ④ source current		6	mA
$I_{OL(B)}$	Pin ⑩ 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
$V_{offset(A)}$	Pin ④ input offset voltage	$V_{CC}=V_{stb}=5.6\text{V}$		0	± 6	mV
$V_{offset7-10}$	Pin ⑦ - pin ⑩ offset voltage	$V_{CC}=V_{stb}=5.6\text{V}$		0	± 10	mV
$V_{offset8-9}$	Pin ⑧ - pin ⑨ offset voltage	$V_{CC}=V_{stb}=5.6\text{V}$		0	± 10	mV
$V_{offset9-11}$	Pin ⑩ - pin ⑪ offset voltage	$V_{CC}=V_{stb}=5.6\text{V}$		0	± 10	mV
I_{sIF}	Pin ④ sink current	$20\text{k}\Omega$ between V_{CC} and pin ④	440	550	660	μA
I_{sOIF}	Pin ⑩ source current	$20\text{k}\Omega$ between V_{CC} and pin ⑩	570	720	860	μA

FREQUENCY-VOLTAGE (F-V) CONVERTER

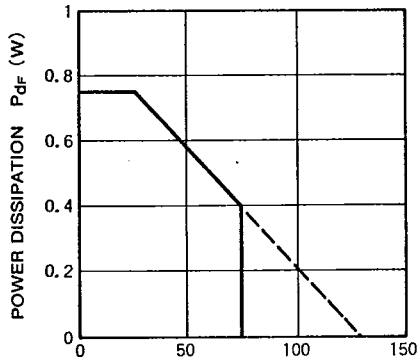
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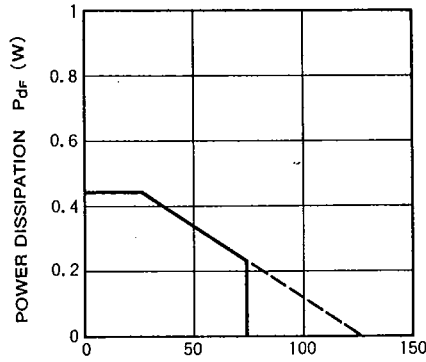
THERMAL DERATING (MAXIMUM RATING) ($T_a=25^\circ\text{C}$, unless otherwise noted)

M51723P



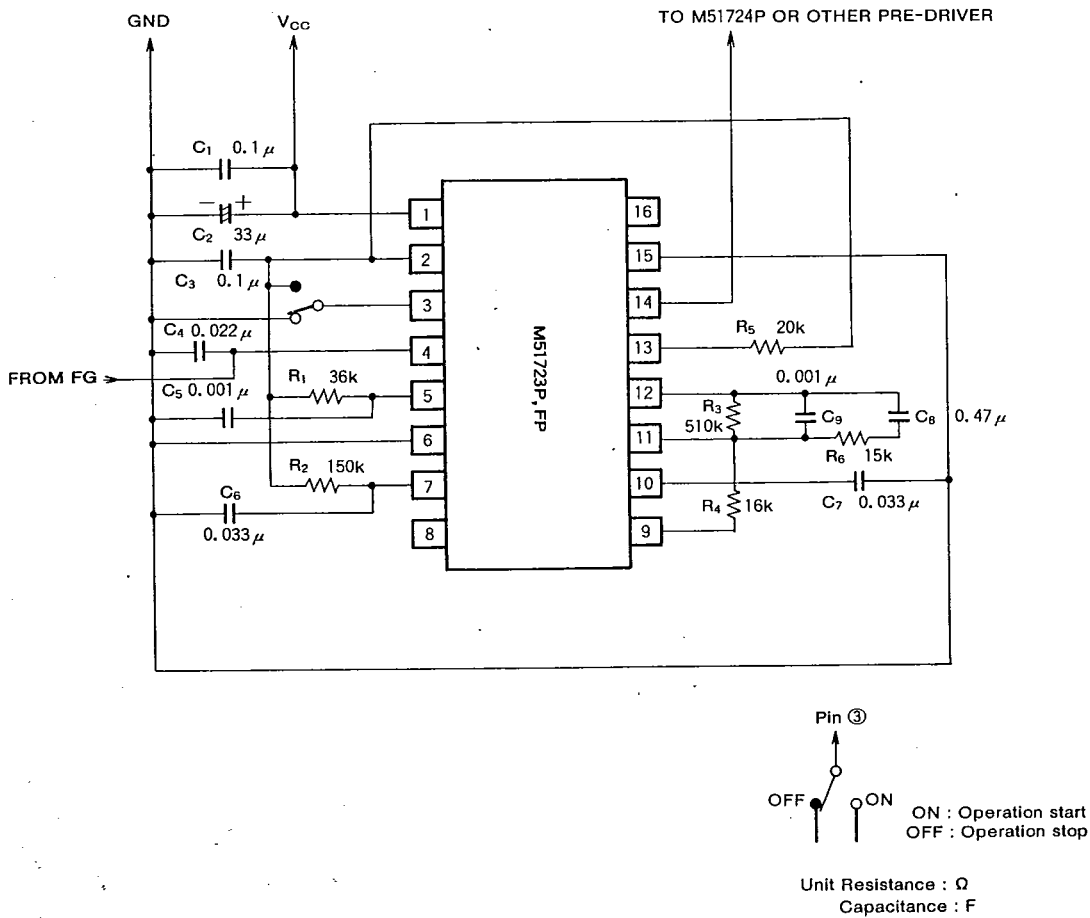
AMBIENT TEMPERATURE T_a (°C)

M51723FP



AMBIENT TEMPERATURE T_a (°C)

APPLICATION EXAMPLE



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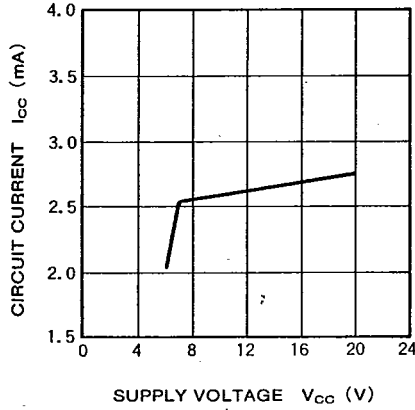
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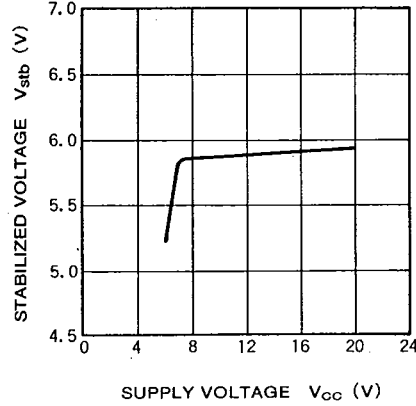
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TYPICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$, unless otherwise noted)

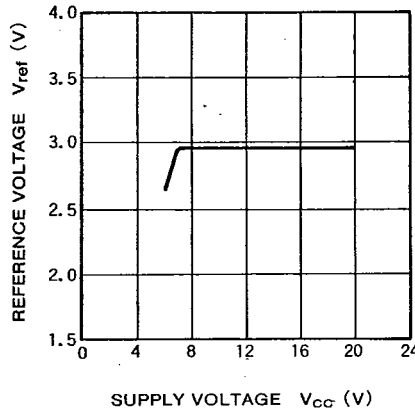
CIRCUIT CURRENT VS. SUPPLY VOLTAGE



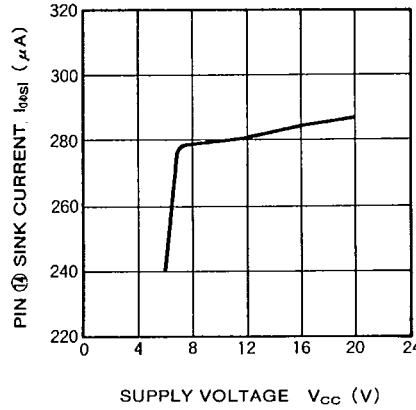
STABILIZED VOLTAGE VS. SUPPLY VOLTAGE



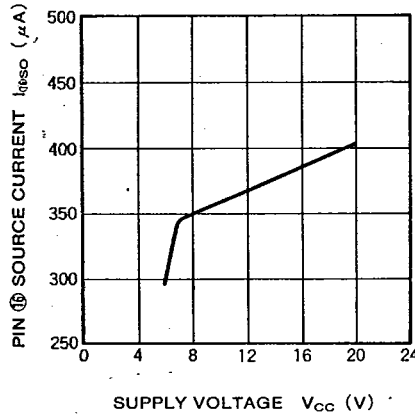
REFERENCE VOLTAGE VS. SUPPLY VOLTAGE



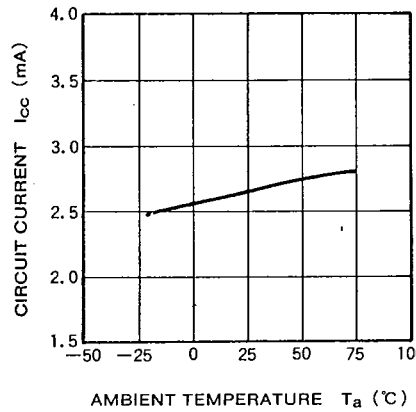
PIN 10 SINK CURRENT VS. SUPPLY VOLTAGE



PIN 16 SOURCE CURRENT VS. SUPPLY VOLTAGE



CIRCUIT CURRENT VS. AMBIENT TEMPERATURE

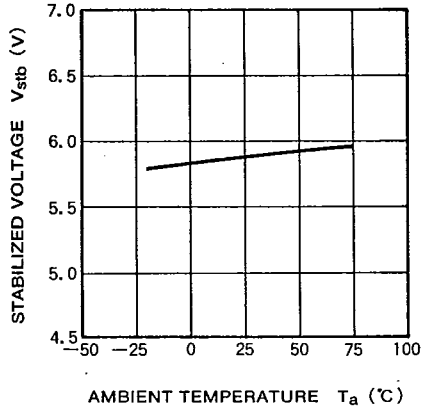


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**STABILIZED VOLTAGE
 VS. AMBIENT TEMPERATURE**



**REFERENCE VOLTAGE
 VS. AMBIENT TEMPERATURE**

