

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

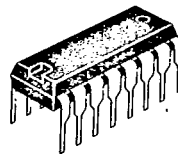
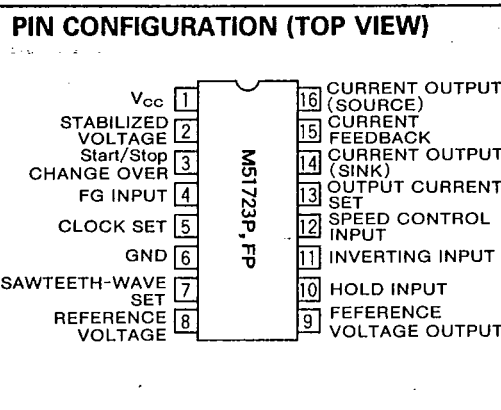
- Low power dissipation
- Suitable for both current output (current source or current sink) and voltage output
- Start/stop changeover terminal

APPLICATION

VTR, floppy disk drive, etc.

RECOMMENDED OPERATING CONDITIONS

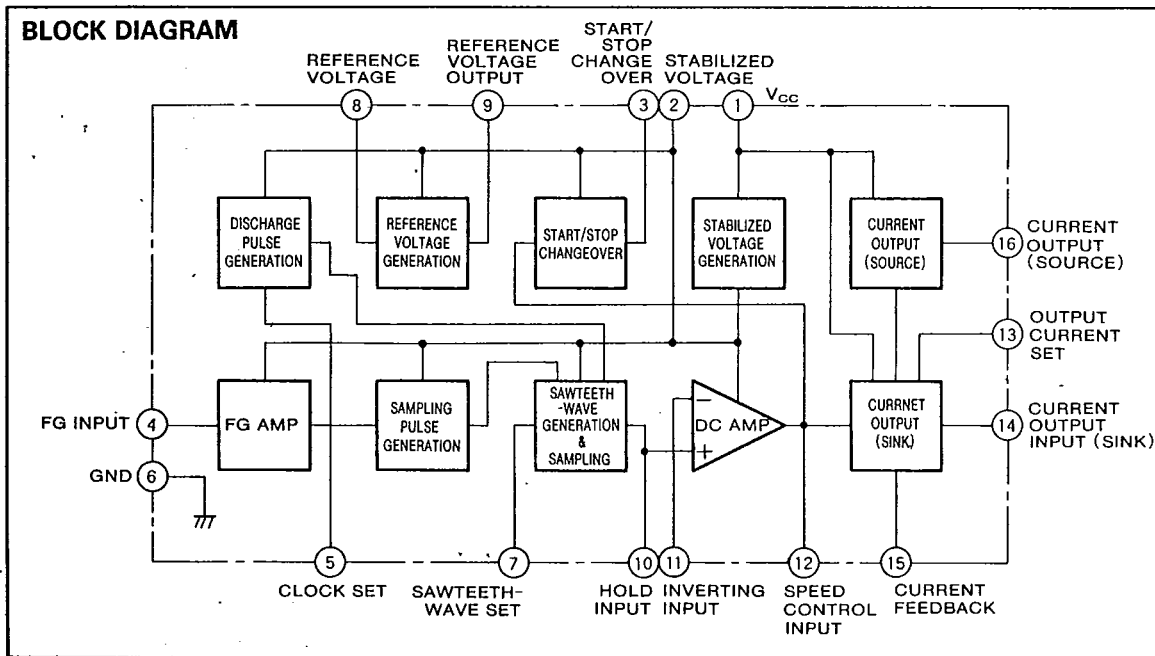
Supply voltage range 7.2~20V
Rated supply voltage 12V



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

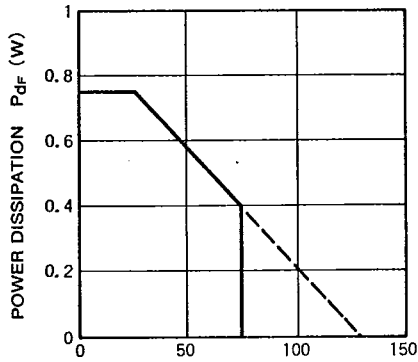
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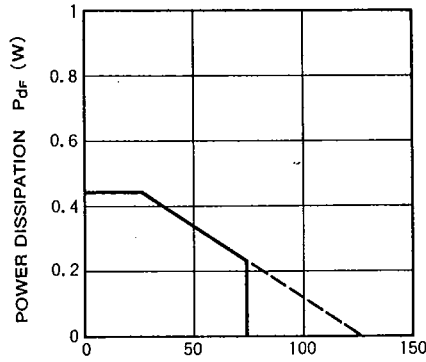
THERMAL DERATING (MAXIMUM RATING) ($T_a=25^\circ\text{C}$, unless otherwise noted)

M51723P



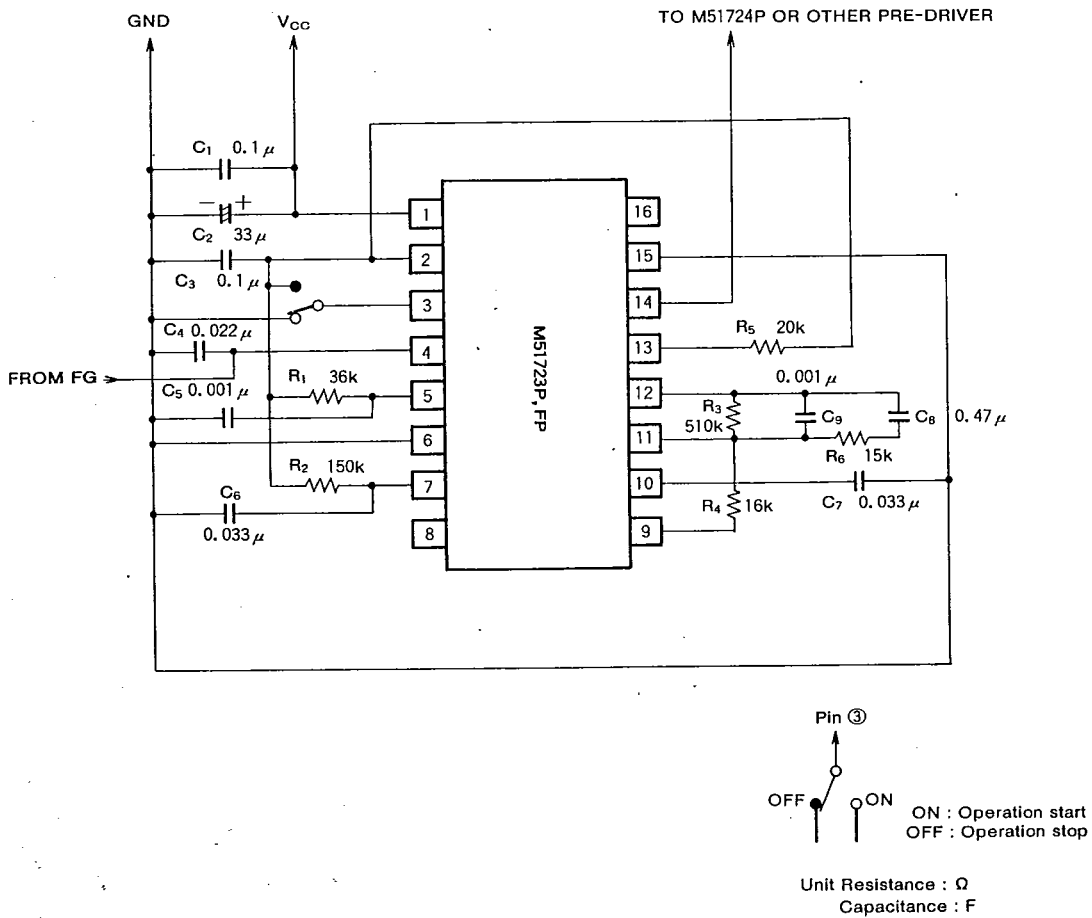
AMBIENT TEMPERATURE T_a (°C)

M51723FP



AMBIENT TEMPERATURE T_a (°C)

APPLICATION EXAMPLE



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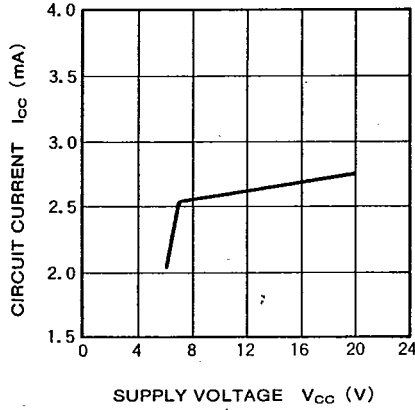
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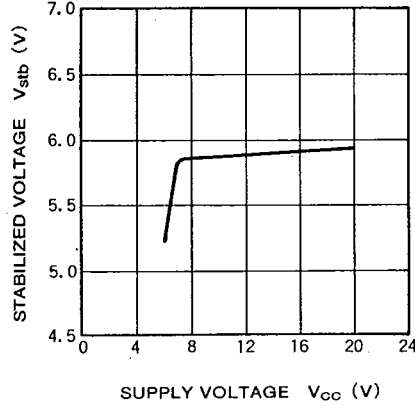
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TYPICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$, unless otherwise noted)

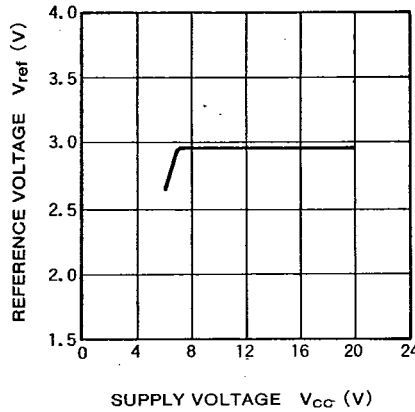
CIRCUIT CURRENT VS. SUPPLY VOLTAGE



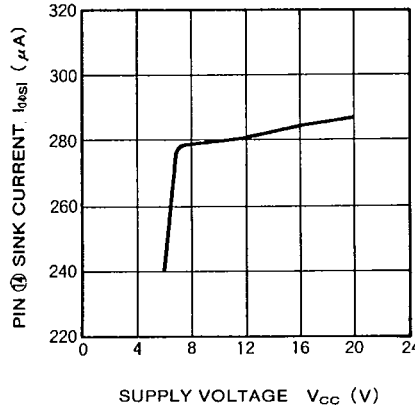
STABILIZED VOLTAGE VS. SUPPLY VOLTAGE



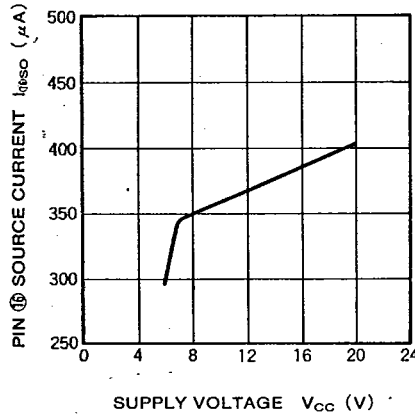
REFERENCE VOLTAGE VS. SUPPLY VOLTAGE



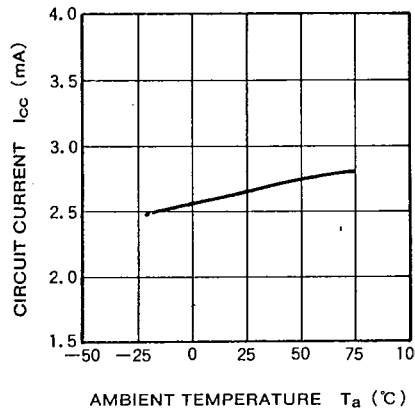
PIN ⑩ SINK CURRENT VS. SUPPLY VOLTAGE



PIN ⑩ SOURCE CURRENT VS. SUPPLY VOLTAGE



CIRCUIT CURRENT VS. AMBIENT TEMPERATURE

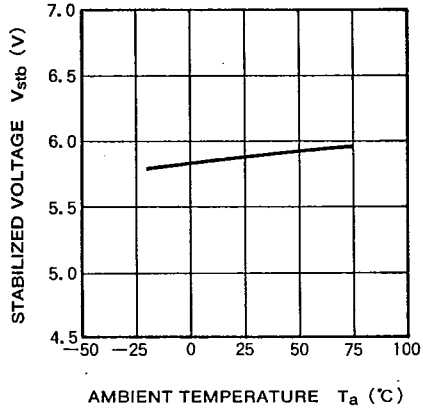


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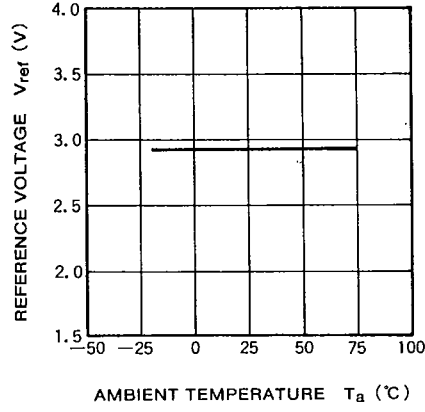
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**STABILIZED VOLTAGE
 VS. AMBIENT TEMPERATURE**



**REFERENCE VOLTAGE
 VS. AMBIENT TEMPERATURE**



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