MITSUBISHI LINEAR ICs

M51722P,FP

F-V CONVERTER WITH MULTIPLEXER

DESCRIPTION

The M51722P,FP are semiconductor integrated circuits developed for frequency-voltage (F-V) converter.

In combination with predriver ICs, the devices constitute high-accuracy 2-phase, 3-phase, F-servo motor control system.

FEATURES

- Built-in frequency multiplexer controls motors with high accuracy.
- Operates at a low supply voltage (supply voltage range 4.5~10V)
- Built-in FG amplifier circuit enables operation by weak signals
- Large final stage output current (current source and current sink)

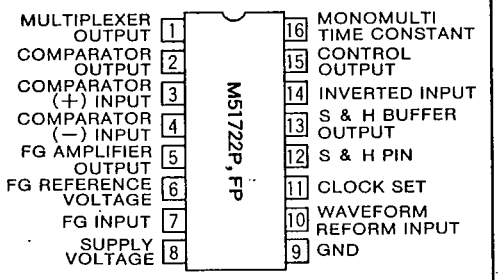
APPLICATION

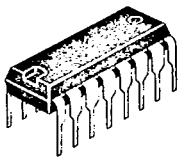
VTRs, floppy-disk drive, etc.

RECOMMENDED OPERATING CONDITIONS

Supply voltage range ..... 4.5~10V
Rated supply voltage 9V

PIN CONFIGURATION (TOP VIEW)

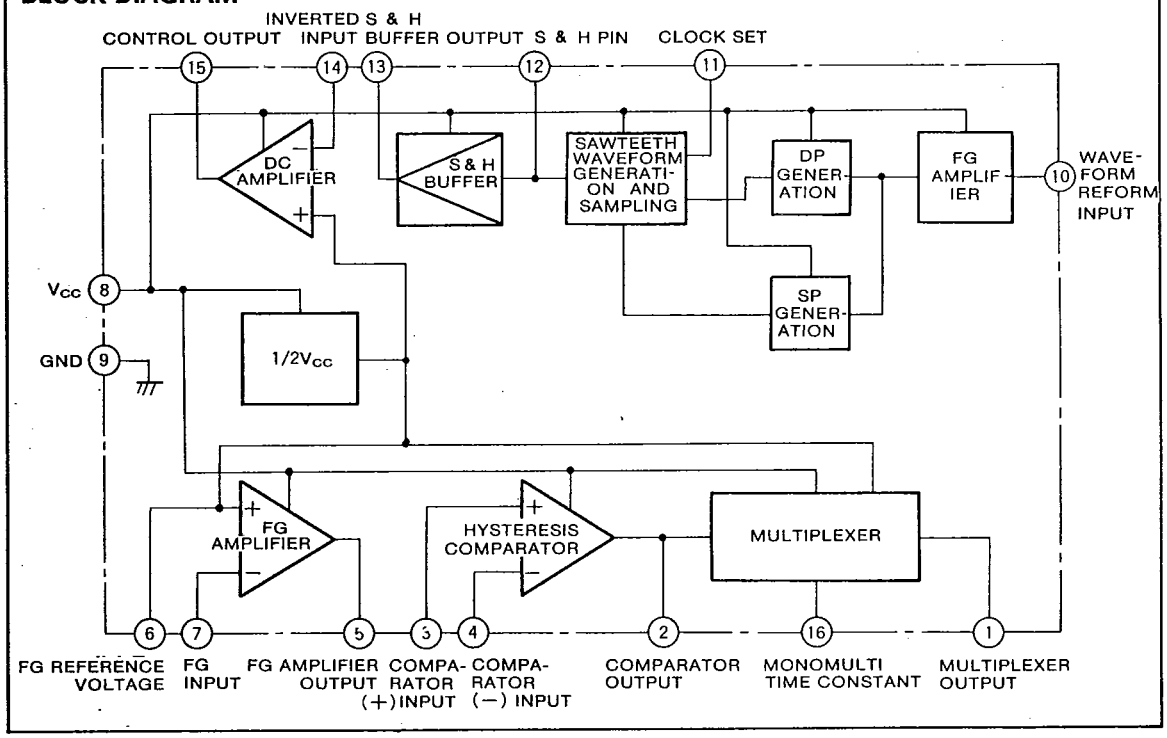




16-pin molded plastic DIP

16-pin molded plastic FLAT (C type)

BLOCK DIAGRAM



MITSUBISHI ELECTRIC

M51722P,FP

F-V CONVERTER WITH MULTIPLEXER

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

Symbol	Parameter	Conditions	Ratings	Unit
V_{CC}	Supply voltage		10	V
$I_{②}$	Pin ② output current		8	mA
$I_{⑤}$	Pin ⑤ output current		2	mA
$I_{①}$	Pin ① source current		8	mA
$I_{⑮}$	Pin ⑮ sink current		12	mA
$I_{⑬}$	Pin ⑬ output current		1	mA
$V_{⑦}$	Pin ⑦ input voltage		1.5~V_{CC}	V
$V_{⑩}$	Pin ⑩ input voltage		0~V_{CC}	V
P_{dF}	Power dissipation		770(430)	mW
K_θ	Thermal derating		7.7(4.3)	mW/℃
T_{opr}	Operating temperature		−20~+75	℃
T_{stg}	Storage temperature		−40~+125	℃

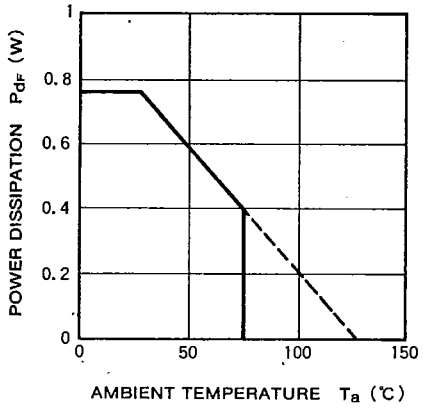
Note: ( )=M51722FP

ELECTRICAL CHARACTERISTICS (T_a=25℃, V_{CC}=9V, unless otherwise noted)

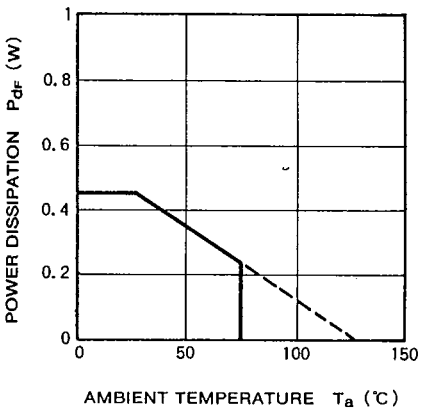
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$I_{CC(1)}$	Circuit current (1)	V_{CC}=4.5V		4.5	9	mA
$I_{CC(2)}$	Circuit current (2)	V_{CC}=10V		4.5	9	mA
$V_{ref(1)}$	Reference voltage of output voltage (1)	Pin ⑥ Open	4.4	4.5	4.6	V
$V_{ref(2)}$	Reference voltage of output voltage (2)	10kΩ between pin ⑥ and GND	4.4	4.5	4.6	V
$V_{OH⑤}$	Pin ⑤ high-level output	3.9kΩ between pin ⑤ and GND	6.0	6.8		V
$V_{OL⑤}$	Pin ⑤ low-level output	3.9kΩ between V_{CC} and pin ⑤		1.0	1.5	V
$V_{OH②}$	Pin ② high-level output	2kΩ between pin ② and GND	7.5	8.0		V
$V_{OL②}$	Pin ② low-level output	2kΩ between V_{CC} and pin ②		1.0	1.5	V
$V_{OH⑮}$	Pin ⑮ high-level output	1.5kΩ between pin ⑮ and GND	6.6	7.5		V
$V_{OL⑮}$	Pin ⑮ low-level output	1.5kΩ between V_{CC} and pin ⑮		1.0	1.5	V
$V_{offset⑥-⑦}$	Pin ⑥ - pin ⑦ offset voltage				±6	mV
$V_{offset③-④}$	Pin ③ - pin ④ offset voltage				±6	mV
$V_{offset⑫-⑬}$	Pin ⑫ - pin ⑬ offset voltage				±6	mV
$T_{①}$	Pin ① pulse width	Pin ⑯ time constant 100kΩ+820pF	45	55	65	μs

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

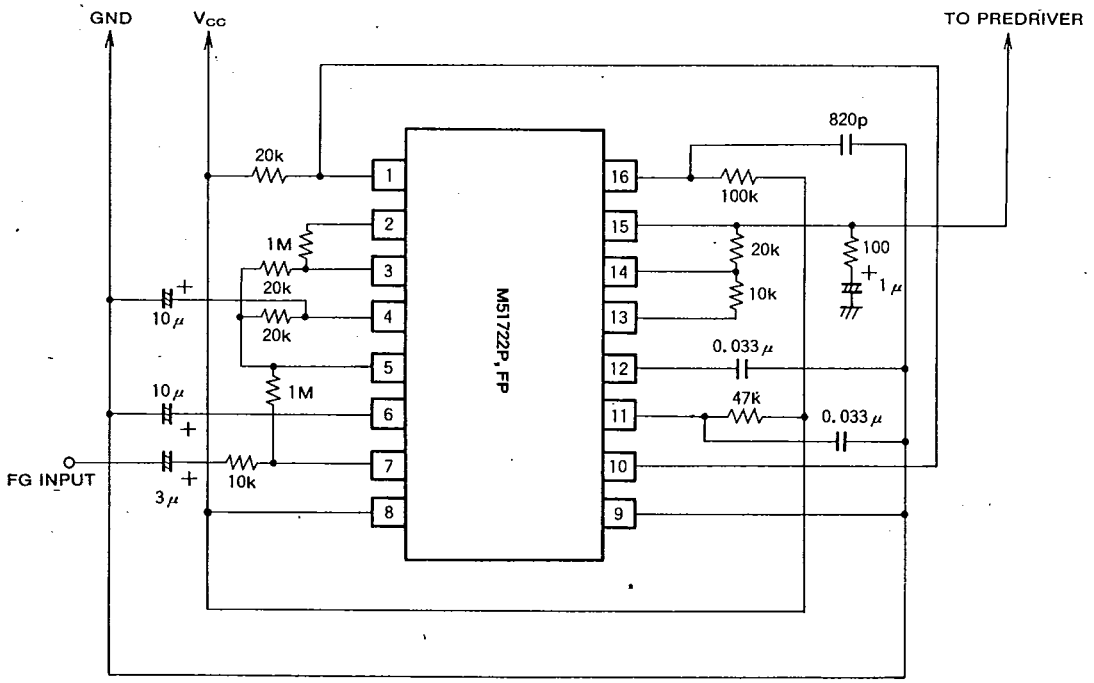
M51722P



M51722FP



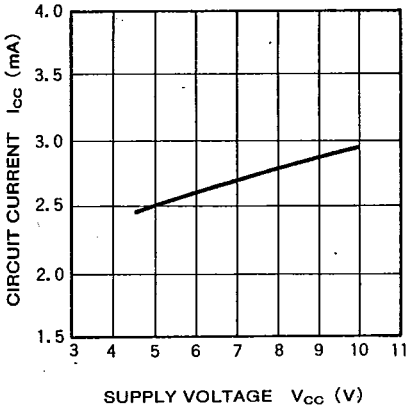
APPLICATION EXAMPLE



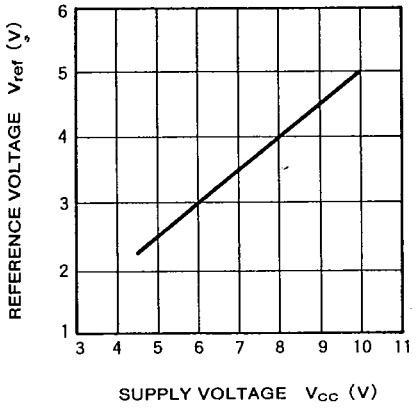
Unit Resistance : Ω
Capacitance : F

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

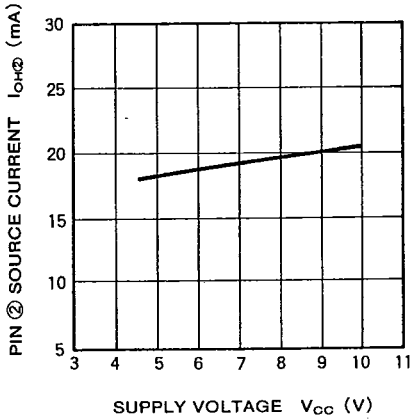
CIRCUIT CURRENT VS. SUPPLY VOLTAGE



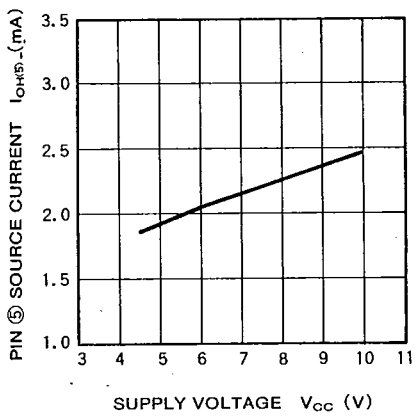
REFERENCE VOLTAGE VS. SUPPLY VOLTAGE



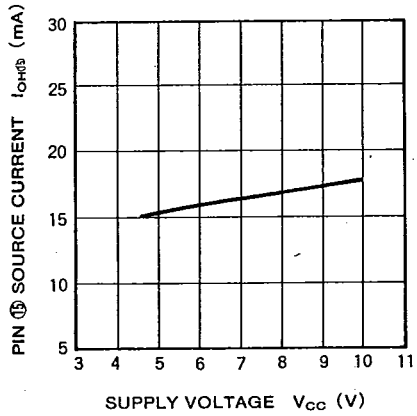
PIN ② SOURCE CURRENT VS. SUPPLY VOLTAGE



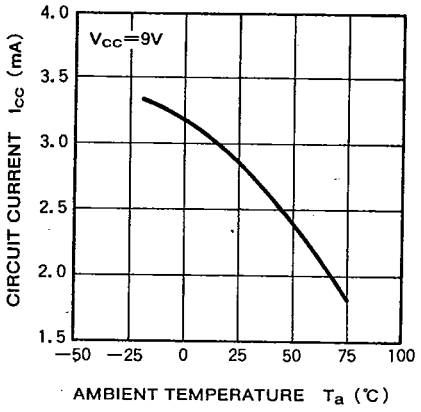
PIN ⑤ SOURCE CURRENT VS. SUPPLY VOLTAGE



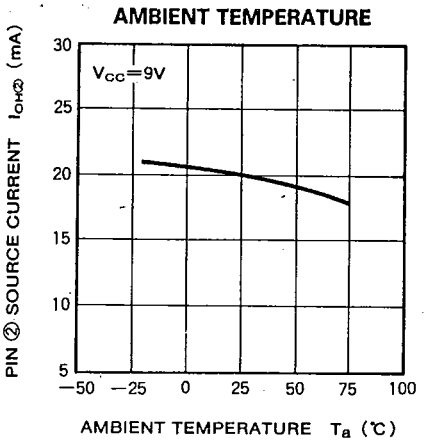
PIN ⑮ SOURCE CURRENT VS. SUPPLY VOLTAGE



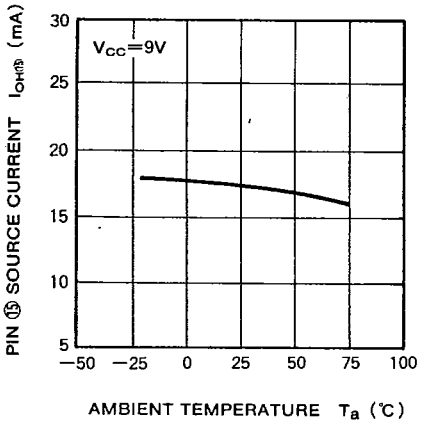
CIRCUIT CURRENT VS. AMBIENT TEMPERATURE



PIN ② SOURCE CURRENT VS. AMBIENT TEMPERATURE



PIN ⑮ SOURCE CURRENT VS. AMBIENT TEMPERATURE



REFERENCE VOLTAGE VS. AMBIENT TEMPERATURE