

M51595FP PREAMPLIFIER FOR OPTICAL PICKUP

DESCRIPTION

The M51595FP is an optical pickup preamplifier for CD players. It has a built-in I-V amplifiers that convert current signals gained by photodetectors into voltage signals and HF (high frequency), FE (focus error), and TE (tracking error) amplifiers, as well as HFOK and MR circuits that output in logic level.

FEATURES

- For 3 laser system
- Capable of being driven by either single or dual power supply
- Built-in LPF ($f_c = 70\text{kHz}$) for TE and FE amplifiers to remove unwanted high-frequency components
- E-F balance control pin
- Built-in auto power controller (APC)
- Built-in microminiature 24-pin flat package (0.8mm lead pitch)

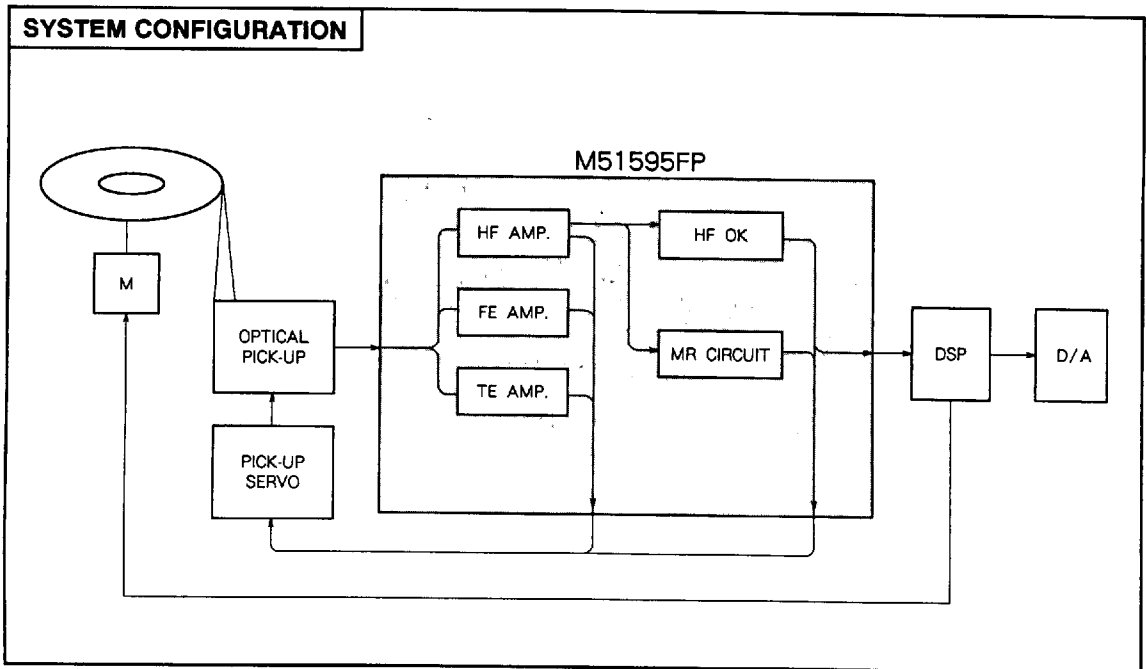


Outline 24P2Q-A

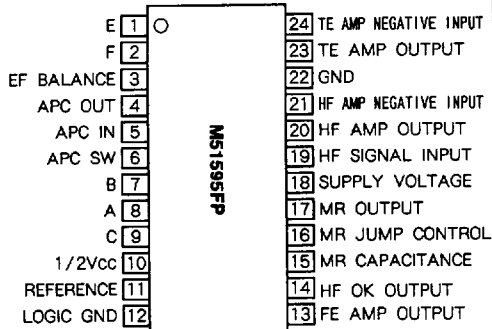
0.8mm pitch 300mil SSOP
(5.3mm × 10.1mm × 1.8mm)

RECOMMENDED OPERATING CONDITIONS

Supply voltage range..... $V_{CC}, V_{EE} = \pm 4.75 \sim \pm 5.25\text{V}$
 Rated supply voltage..... $V_{CC}, V_{EE} = \pm 5\text{V}$
 Rated power dissipation 85mW

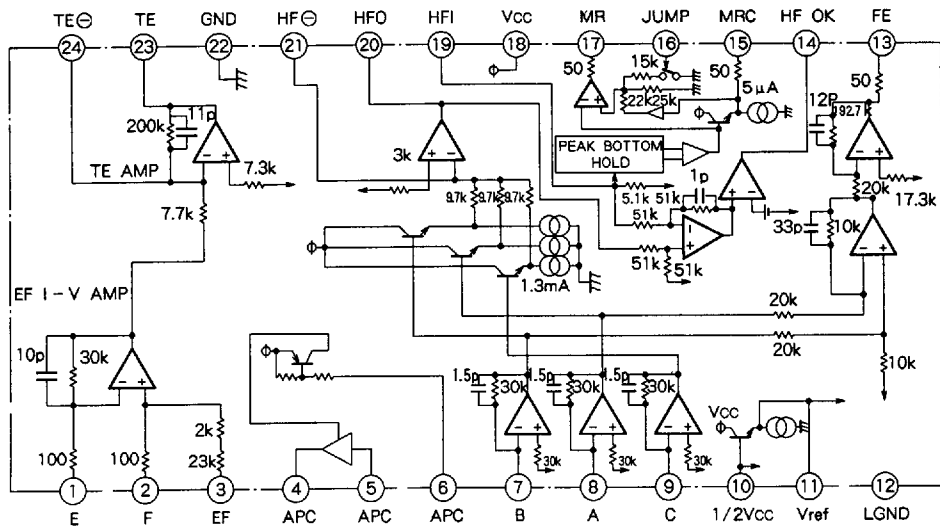


PIN CONFIGURATION



Outline 24P2Q-A

IC INTERNAL BLOCK DIAGRAM



Units Resistance : Ω
Capacitance : F

PREAMPLIFIER FOR OPTICAL PICKUP

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C, unless otherwise noted)

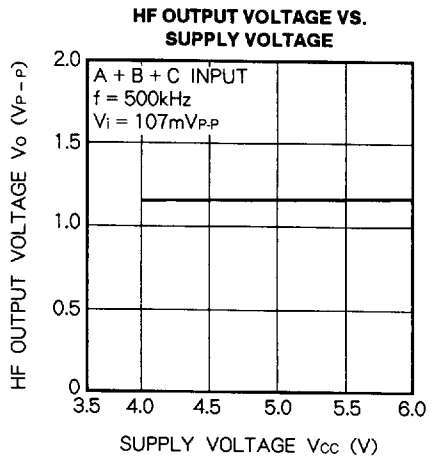
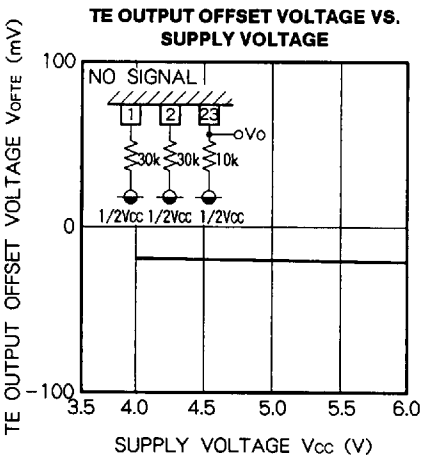
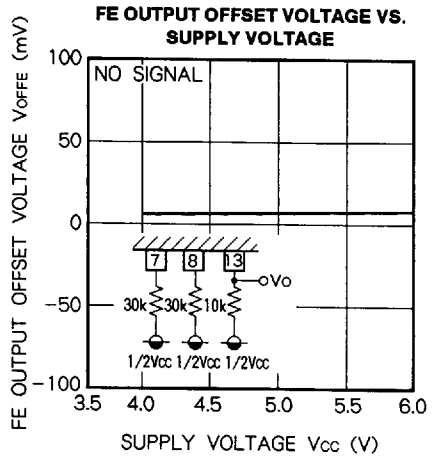
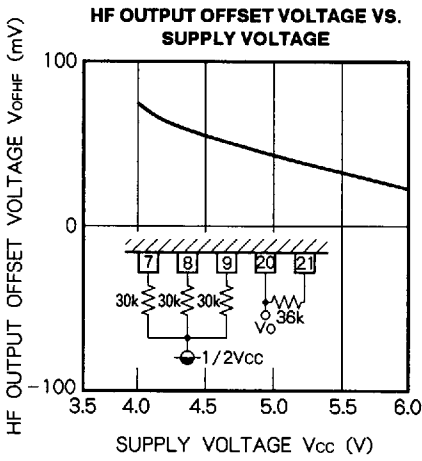
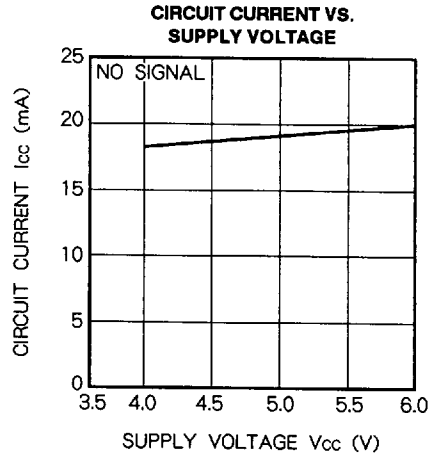
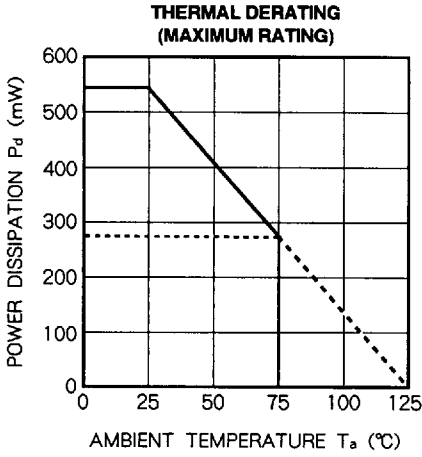
Symbol	Parameter	Ratings	Unit
V _{cc}	Supply voltage	13	V
I _{cc}	Circuit current	60	mA
V _i	Input voltage	V _{cc} - 0.3	V
V _o	Output voltage	V _{cc} - 0.3	V
P _d	Power dissipation	540	mW
T _{opr}	Operating temperature	-20~+75	°C
T _{stg}	Storage temperature	-40~+125	°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C, V_{cc} = 5V)

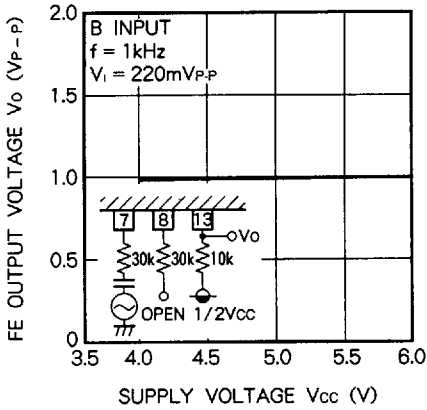
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I _{cc}	Circuit current	No signal	5	17	40	mA
G _{VHF}	HF output voltage	A~C input f = 500kHz, V _i = 100mV _{P-P}	0.9	1.1	1.3	V _{P-P}
f _{HF}	HF frequency	A~C input f = 2MHz, V _i = 100mV _{P-P}	-5	-2	-	dB
V _{HHF}	HF high output voltage		3.5	4.2	-	V
V _{OHF}	HF output offset voltage	Input open	-120	0	+120	mV
G _{VFE}	FE output voltage	A input f = 500kHz, V _i = 146mV _{P-P}	0.5	0.7	0.9	V _{P-P}
V _{HAC}	HF high output voltage	R _L = 10kΩ	3.6	4.1	-	V
V _{LAC}	HF low output voltage	R _L = 10kΩ	-	0.5	1.2	V
V _{OFE}	Output offset voltage	Input open	-50	0	+50	mV
G _{VTE}	TE output voltage	E input f = 1kHz V _i = 38.4mV _{P-P}	0.7	1.0	1.3	V _{P-P}
V _{HTE}	TE high output voltage	R _L = 10kΩ	3.6	4.1	-	V
V _{LE}	TE low output voltage	R _L = 10kΩ	-	0.5	1.2	V
V _{OTE}	Output offset voltage	Input open	-100	0	+100	mV
V _{HOK}	HFOK high output voltage		3.5	4.1	-	V
V _{LOK}	HFOK low output voltage	No signal	-	0	0.4	V
V _{THOK}	Threshold voltage		0.26	0.37	0.48	V
V _{HMR}	MR high output voltage	No signal	3.5	4.1	-	V
V _{LMR}	MR low output voltage		-	0	0.4	V
V _{THN}	Envelope ratio (normal)	f = 500kHz (carrier)	0.26	0.36	0.46	-
V _{THJ}	Envelope ratio (jump)	f = 500kHz (carrier)	0.5	0.6	0.7	-
f _{MRf}	MR frequency	f = 500kHz (carrier) AM mod = 55%	47	60	-	kHz
V _{APC1}	Output voltage 1	Input V _i = 190mV	4.0	-	-	V
V _{APC2}	Output voltage 2	Input V _i = 90mV	-	0.7	1.2	V
V _{APC3}	Output voltage 3	Input V _i = 160mV	-	2.2	-	V
G _{VAPC}	Voltage gain		-	83	-	time

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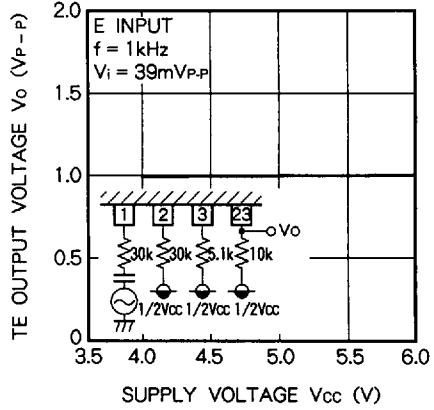
TYPICAL CHARACTERISTICS



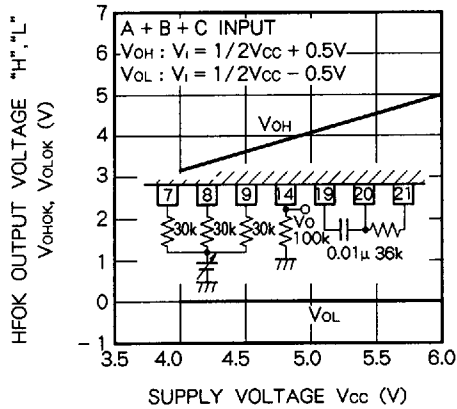
FE OUTPUT VOLTAGE VS. SUPPLY VOLTAGE



TE OUTPUT VOLTAGE VS. SUPPLY VOLTAGE



HFOK OUTPUT VOLTAGE VS. SUPPLY VOLTAGE



MR OUTPUT VOLTAGE VS. SUPPLY VOLTAGE

