

M51567P

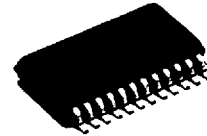
PREAMPLIFIER FOR OPTICAL PICKUP

DESCRIPTION

The M51567P 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, MR, and EFM waveform shaping circuits that output in logic level.

FEATURES

- For 3 laser system
- Combination with M51564P (pickup servo control) offers capability of forming optical pickup servo system operating on 5V single power supply
- Built-in LPF for TE and FE amplifiers to remove unwanted high-frequency components
- E-F balance control pin (pin ⑨)
- Built-in hold capacitor for mirror detection
- External components : 2 chemical capacitors, 2 ceramic capacitors, 1 volume control, and 2 resistors (excluding HF com. section)
- Built-in microminiature 24-pin flat package (0.8mm lead pitch)



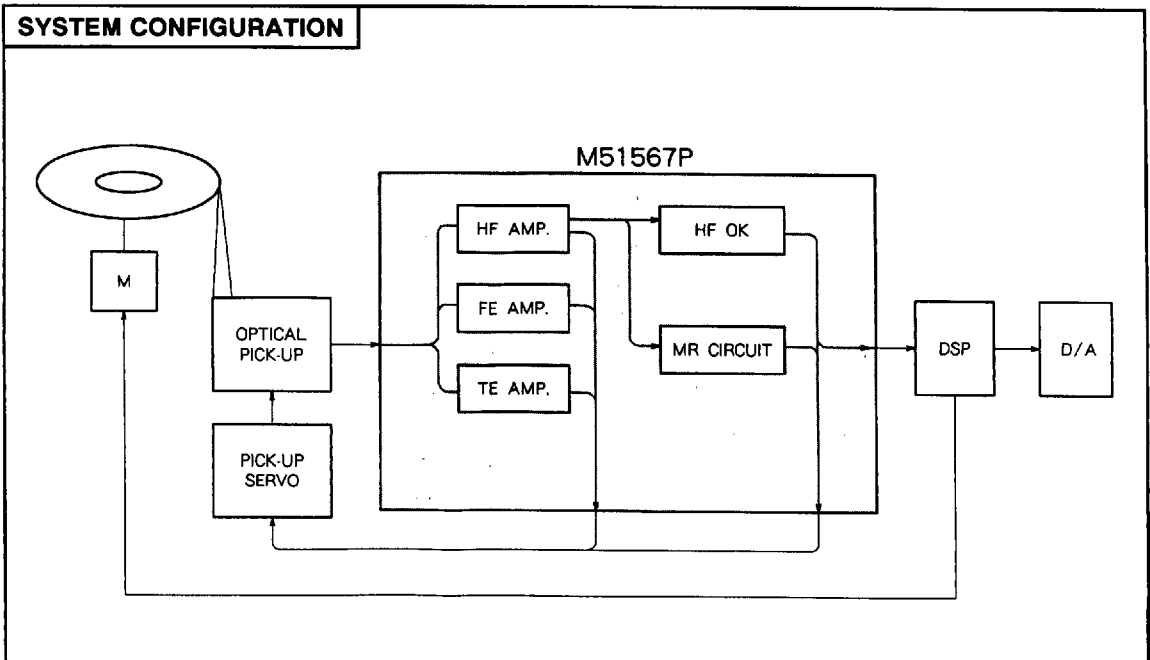
Outline 24P2Q-A

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

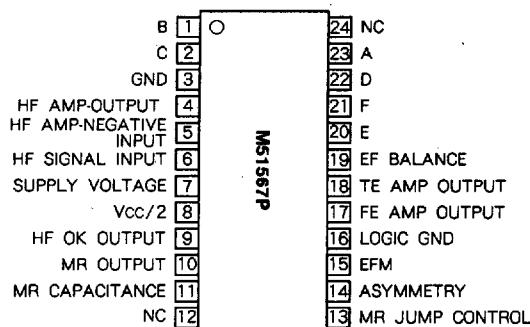
RECOMMENDED OPERATING CONDITIONS

Supply voltage range $V_{CC} = 4.75$ to $5.25V$
 Rated supply voltage $V_{CC} = 5V$
 Rated power dissipation $80mW$

SYSTEM CONFIGURATION



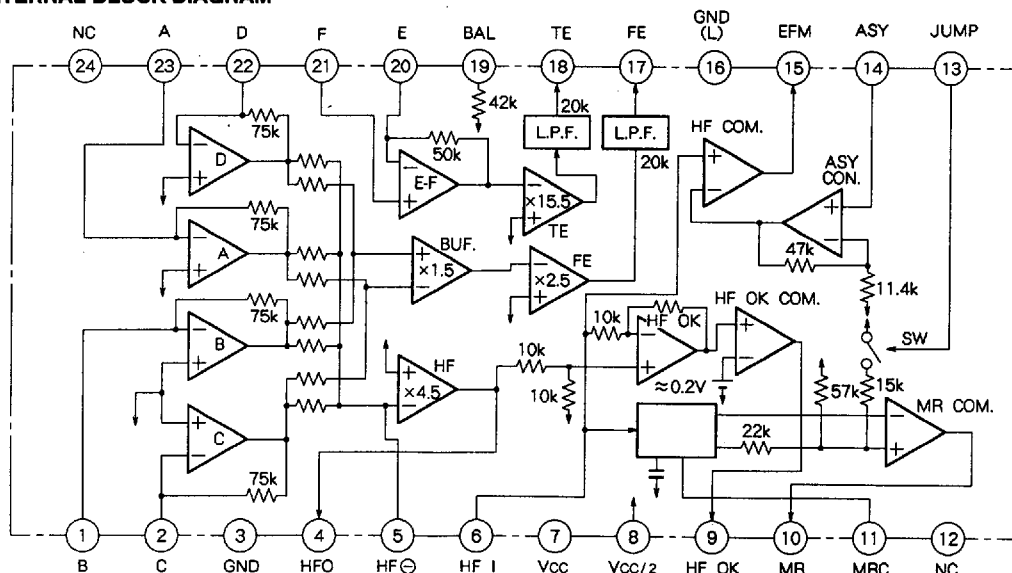
PIN CONFIGURATION (TOP VIEW)



Outline 24P2Q-A

NC: NO CONNECTION

IC INTERNAL BLOCK DIAGRAM



Units Resistance : Ω
Capacitance : F

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$, unless otherwise noted)

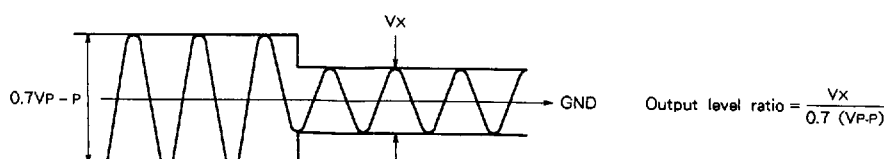
Symbol	Parameter	Ratings	Unit
V_{cc}	Supply voltage	10	V
I_{cc}	Circuit current	40	mA
V_i	Input voltage	0 to V_{cc}	V
V_o	Output voltage	0 to V_{cc}	V
P_d	Power dissipation	540	mW
T_{opr}	Operating temperature	-20 to +75	$^\circ\text{C}$
T_{stg}	Storage temperature	-40 to +125	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$, $V_{cc} = 5\text{V}$)

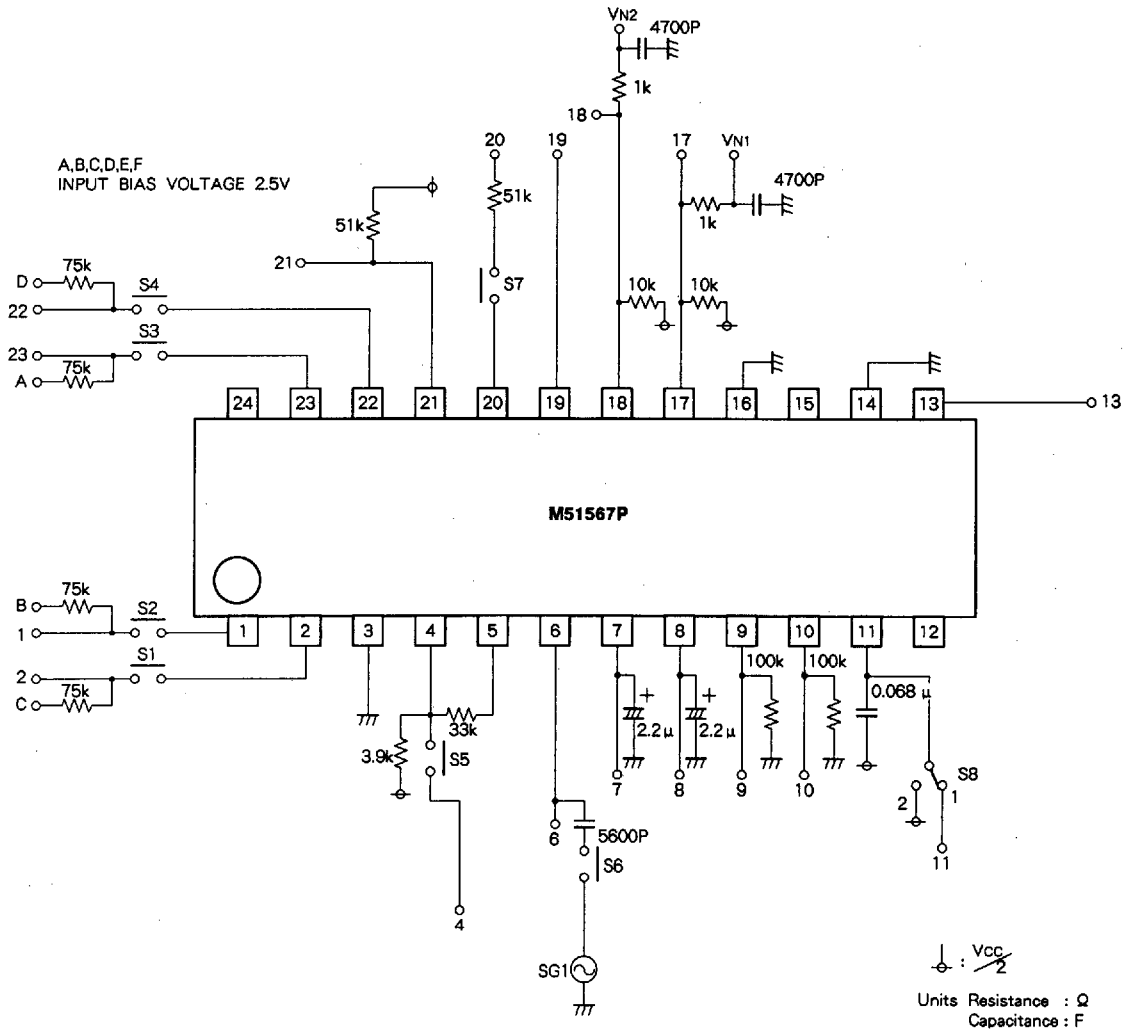
Symbol	Block	Parameter	Test conditions	Limits			Unit
				Min	Typ	Max	
G_{VHF}	H F	HF output voltage	Input $f=1\text{kHz}$, A, B, C, D input $I_i=2\mu\text{A}$ AP-P	-	0.7	-	V_{P-P}
f_{HF}		HF frequency	$V_i=50\text{mVrms}$ input, -3dB frequency	-	3	-	MHz
V_{OLA}		HF Low output voltage		-	0.5	1.2	V
V_{OHA}		HF High output voltage		3.2	3.8	-	V
V_{OHF}		Output offset voltage		-40	0	40	mV
G_{VFE}	F E	FE output voltage	$f=1\text{kHz}$, A, C input $I_i=2\mu\text{A}$ AP-P	-	0.55	-	V_{P-P}
f_{FE}		FE frequency		-	20	-	kHz
V_{LAC}		FE Low output voltage	$R_L=10\text{k}\Omega$	-	0.5	1.2	V
V_{HAC}		FE High output voltage	$R_L=10\text{k}\Omega$	3.6	4	-	V
V_{OFFE}		Output offset voltage		-50	0	50	mV
G_{VTE1}	T E	TE output voltage	$f=1\text{kHz}$, E input, $I_i=2\mu\text{A}$ AP-P	-	1.55	-	V_{P-P}
f_{TE1}		TE frequency		-	20	-	kHz
V_{LE}		TE Low output voltage	$R_L=10\text{k}\Omega$	-	0.5	1.2	V
V_{HE}		TE High output voltage	$R_L=10\text{k}\Omega$	3.6	4	-	V
V_{OTE}		Output offset voltage		-110	0	110	mV
f_{OK}	H F O K	HFOK frequency	pin⑥ input : 200mVrms Voffset = -0.2V	45	-	-	kHz
V_{HHFOK}		High output voltage		3.5	4	-	V
V_{LHFOK}		Low output voltage		-	0	0.4	V
V_{THHFOK}		Threshold voltage	note 1	-	0.2	-	V
V_{HMR}	M R	High output voltage		3.5	4	-	V
V_{LMR}		Low output voltage		-	0	0.4	V
V_{THMR}	M R	Output level ratio	note 2	-	0.4	-	V
V_{THMJ}	M R $\left(\begin{smallmatrix} \text{J} \\ \text{U} \\ \text{M} \\ \text{P} \end{smallmatrix} \right)$	Output level ratio	$V_{\text{③}}=2.5\text{V}$ Same to V_{THMR}	-	0.7	-	V
V_{HEFM}	EFM	High output voltage		3.5	4	-	V
V_{LEFM}		Low output voltage		-	0.2	0.4	V

Note 1. DC voltage is input to A. Threshold voltage is the pin④ voltage when pin⑥ voltage changes from low to high.

2. Following signal is input to pin⑥. Measure V_x (VPP) when pin⑥ voltage becomes high.

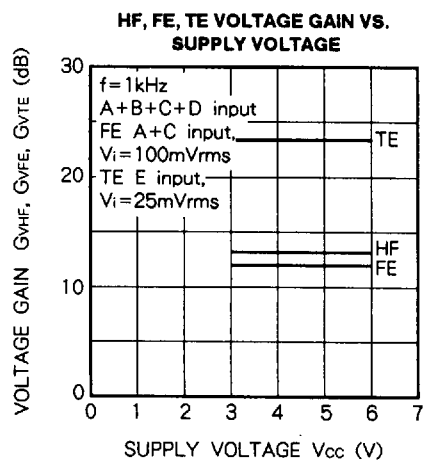
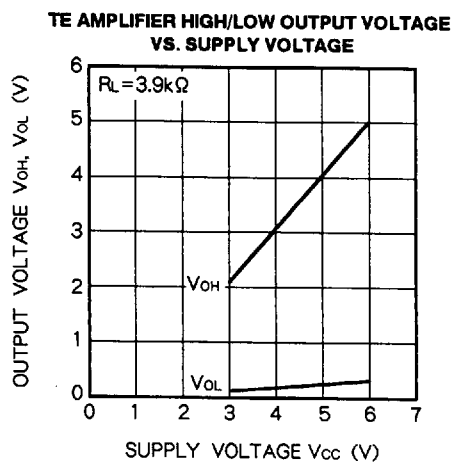
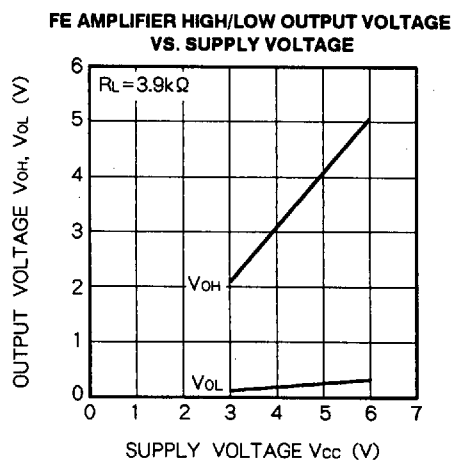
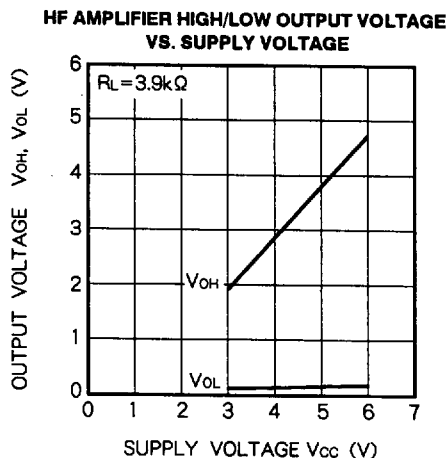
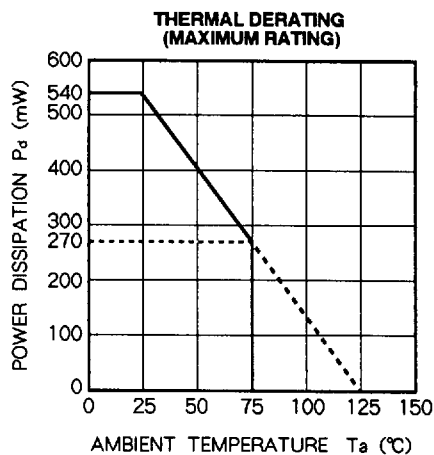


TEST CIRCUIT



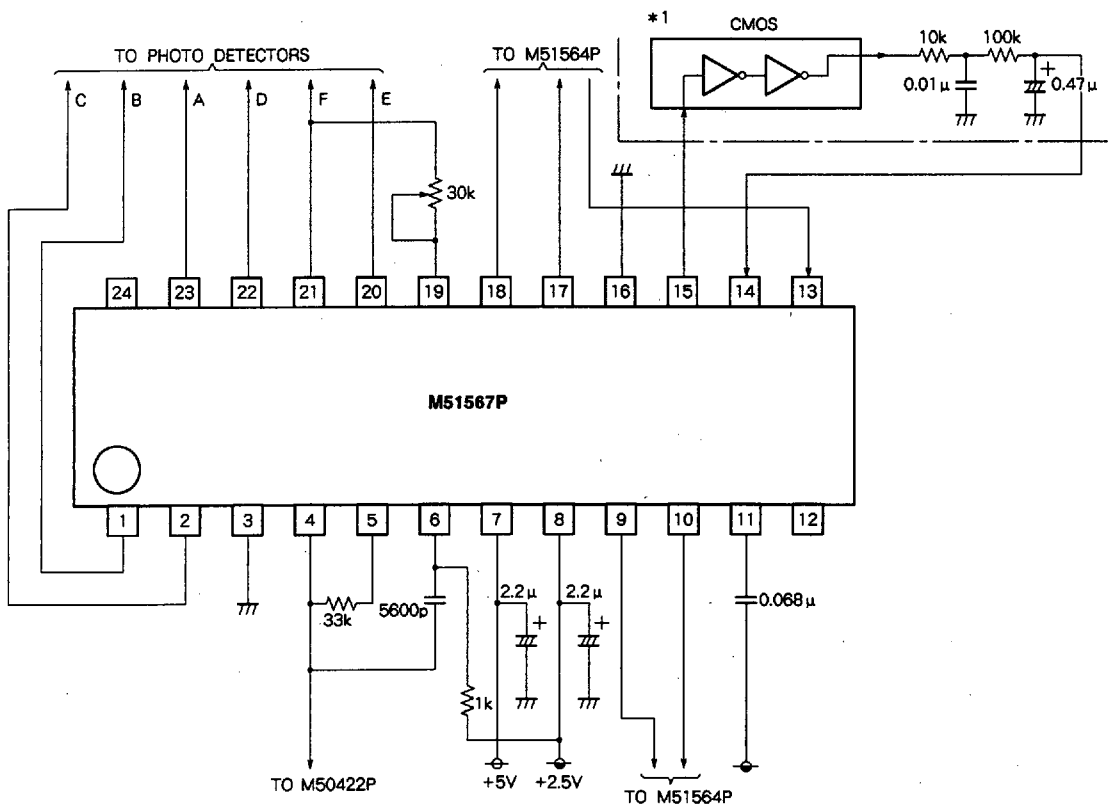
PREAMPLIFIER FOR OPTICAL PICKUP

TYPICAL CHARACTERISTICS



PREAMPLIFIER FOR OPTICAL PICKUP

APPLICAION EXAMPLE



*1 Not used in combination with M50422P (C-MOS digital signal processor). Pin 14 is grounded.

Units Resistance : Ω
Capacitance : F