M62419FP

Sound Controller for Car Stereo

REJ03F0207-0200
Rev.2.00
Sep 14, 2006

Features

- 4-channel source selector with gain setting buffer amplifier by the external resistances
- Volume (balance), loudness, tone (bass and treble) and fader control by serial data from MCU
- Input maximum voltage level; 2.8 Vrms

Application

Car audio, Mini stereo, etc

Recommended Operating Conditions

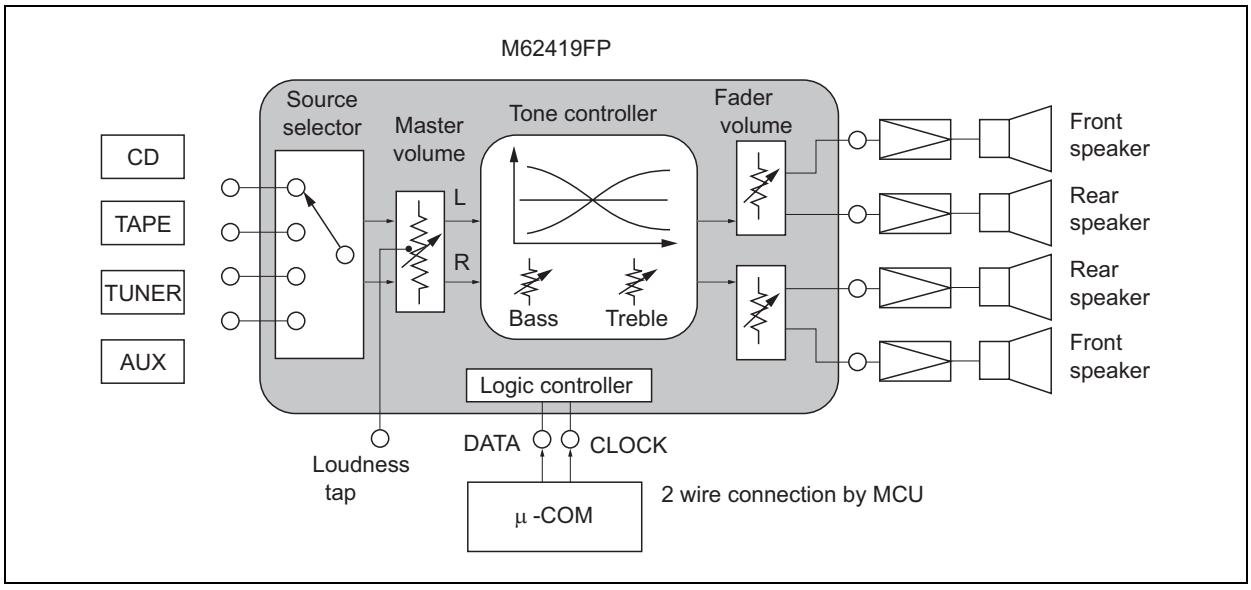
Supply voltage range: V_{CC} = 6 to 9 V

V_{DD} = 4 to 6 V

Rated supply voltage: V_{CC} = 8 V

V_{DD} = 5 V

System Block Diagram



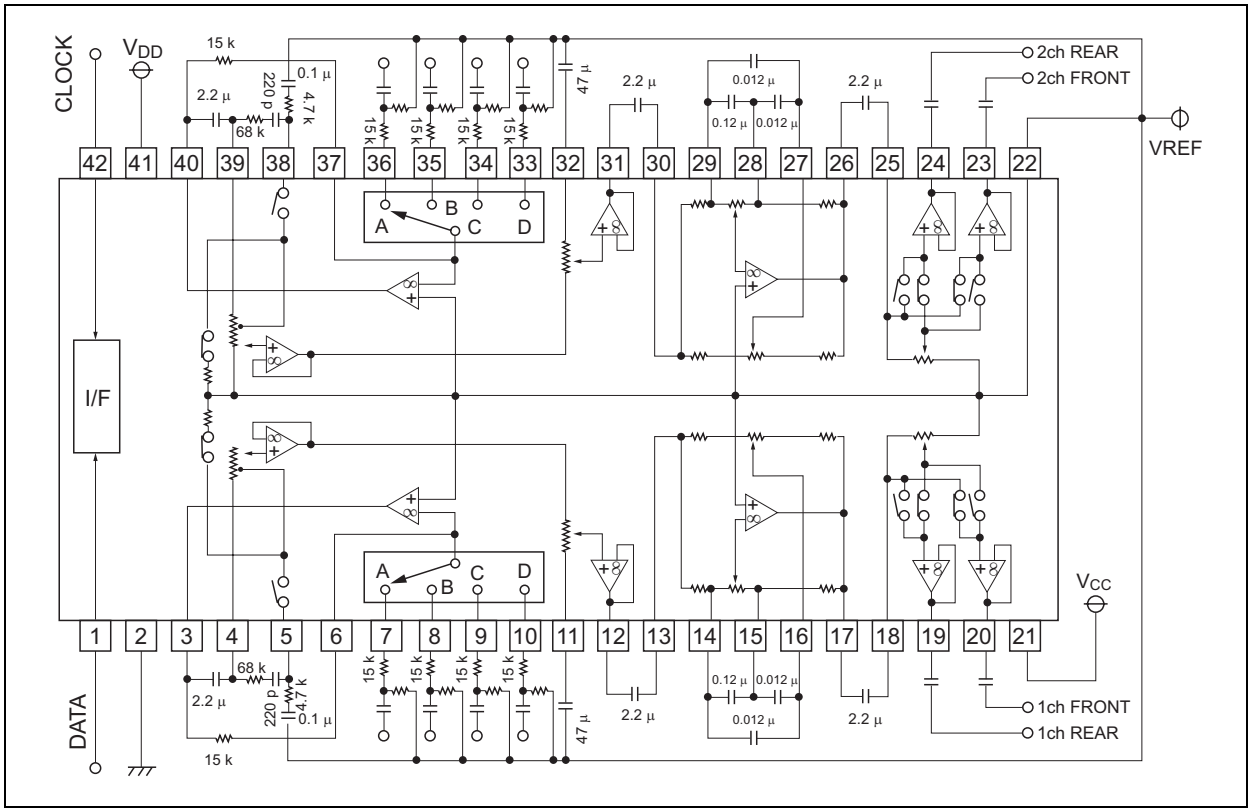
Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage	V_{CC}, V_{DD}	10, 7	V
Power dissipation	Pd	990	mW
Operating temperature	Topr	–30 to +85	°C
Storage temperature	Tstg	–40 to +125	°C

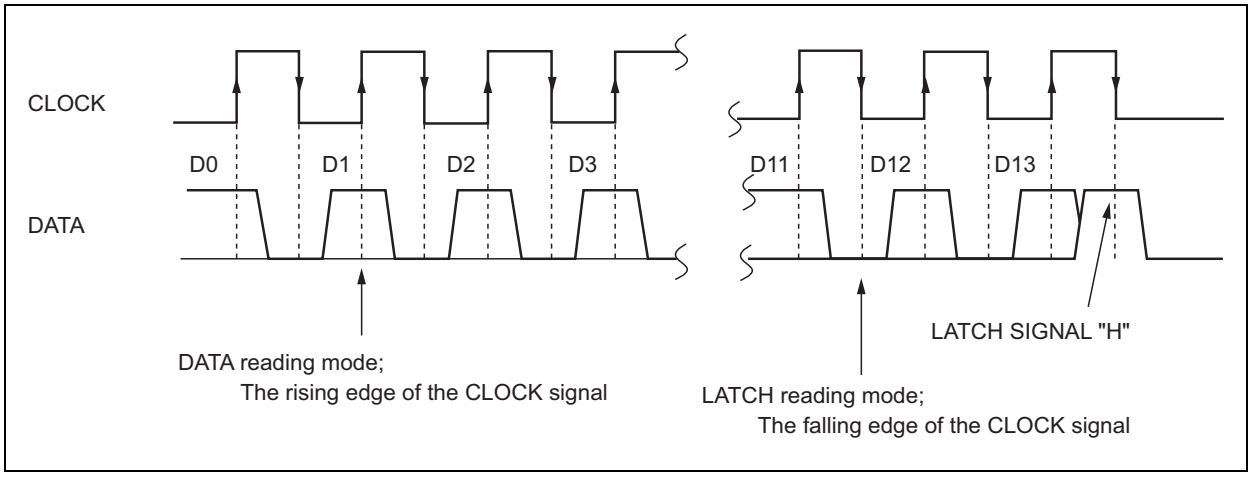
Electrical Characteristics

Item	Symbol	Limits			Unit	Conditions
		Min	Typ	Max		
Circuit current	I_{CC}	—	22	40	mA	
Att maximum	A_{TT} (VOL)	—	–90	–80	dB	A_{TT} (VOL) = –∞
Att error	ΔA_{TT} (VOL)	–2.0	0	2.0	dB	A_{TT} (VOL) = 0
Maximum input voltage	V_{IM}	2.0	2.8	—	Vrms	THD = 1 %
Bass boost	G (Bass) B	9	12	15	dB	f = 100 Hz
Bass cut	G (Bass) C	–15	–12	–9	dB	f = 100 Hz
Treble boost	G (Tre) B	9	12	15	dB	f = 10 kHz
Treble cut	G (Tre) C	–15	–12	–9	dB	f = 10 kHz
Att maximum	A_{TT} (FED)	—	–80	–74	dB	A_{TT} (FED) = –∞
Maximum output voltage	V_{OM}	1.8	2.2	—	Vrms	THD = 1 %
Output noise voltage	$V_{NO}1$	—	9	18	μVrms	A_{TT} (VOL) = 0, A_{TT} (FED) = 0 Rg = 0, DIN-AUDIO
	$V_{NO}2$	—	5.5	11		A_{TT} (VOL) = –∞, A_{TT} (FED) = –∞ Rg = 0, DIN-AUDIO
Total harmonic distortion	THD	—	0.003	0.05	%	f = 1 kHz, Vo = 0.5 Vrms, Loud = OFF, A_{TT} (VOL) = 0, A_{TT} (FED) = 0
Channel separation	CS	—	–90	–80	dB	f = 1 kHz

Application Example



Relationship between Data and Clock



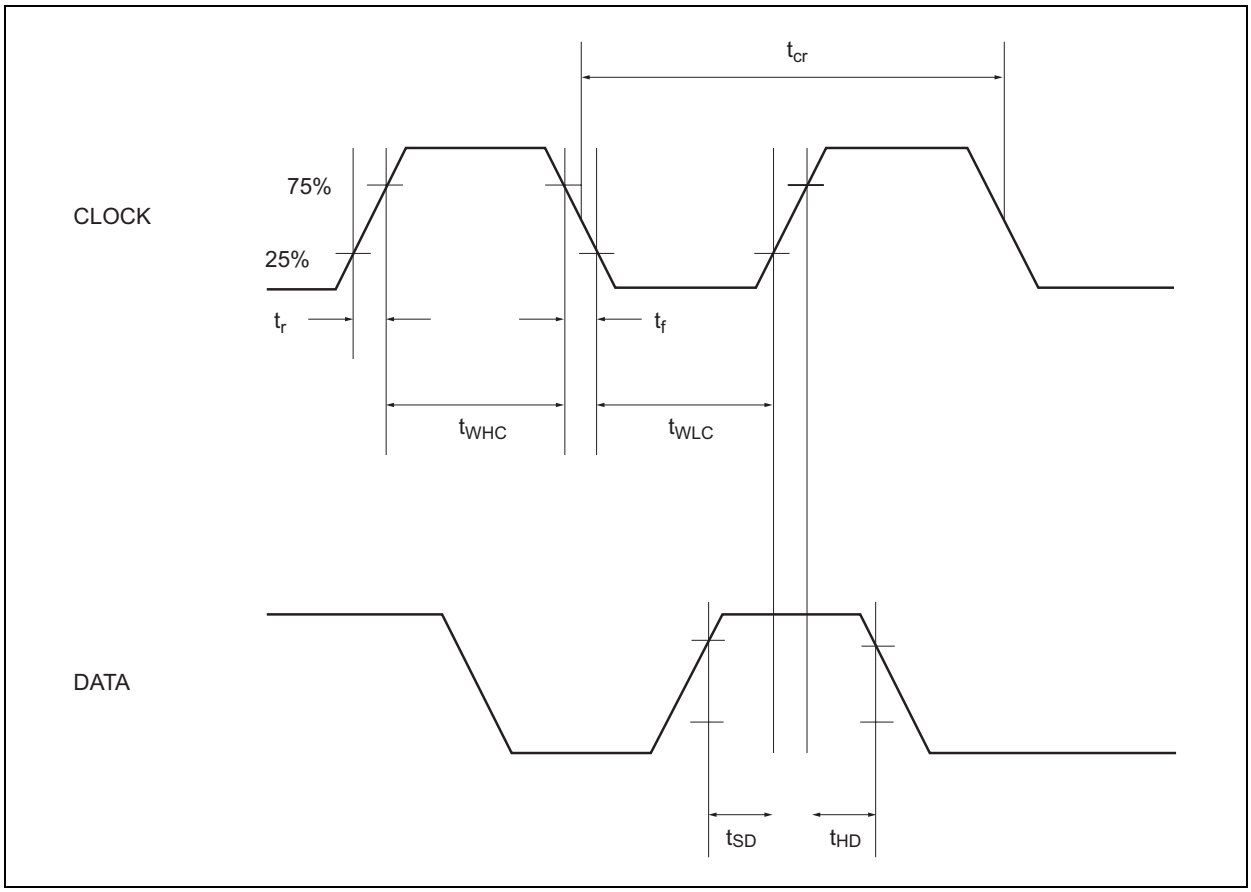
Digital Circuit DC Characteristics

Item	Symbol	Limits			Unit	Test Conditions	
		Min	Typ	Max			
"L" level input voltage	V_{IL}	0	~	0.2 V_{DD}	V	DATA, CLOCK pins	
"H" level input voltage	V_{IH}	0.8 V_{DD}	~	V_{DD}			
"L" level input current	I_{IL}	–10	—	10	µA	Vi = 0	DATA, CLOCK pins
"H" level input current	I_{IH}	—	—	10		Vi = V_{DD}	

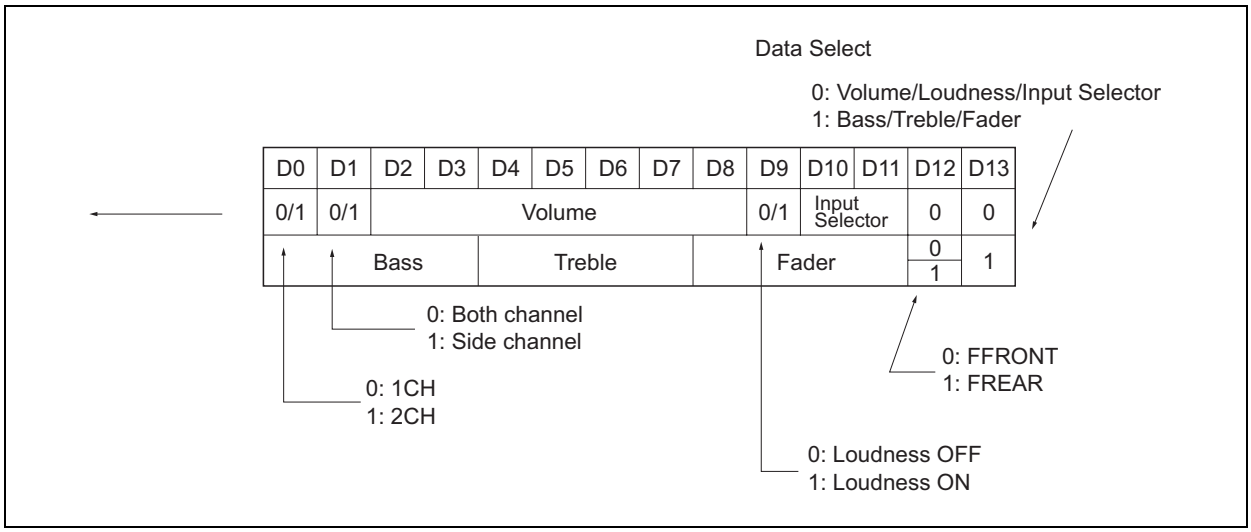
Digital Circuit AC Characteristics

Item	Symbol	Limits			Unit
		Min	Typ	Max	
CLOCK cycle time	t_{cr}	4	—	—	µs
CLOCK pulse width ("H" level)	t_{WHC}	1.6	—	—	
CLOCK pulse width ("L" level)	t_{WLC}	1.6	—	—	
CLOCK rise time	t_r	—	—	0.4	
CLOCK fall time	t_f	—	—	0.4	
DATA setup time	t_{SD}	0.8	—	—	
DATA hold time	t_{HD}	0.8	—	—	

Clock Data Timing



Data Format



Volume Code

ATT1	D2	D3	D4	D5	D6
0 dB	H	L	H	L	H
–4 dB	L	L	H	L	H
–8 dB	H	H	L	L	H
–12 dB	L	H	L	L	H
–16 dB	H	L	L	L	H
–20 dB	L	L	L	L	H
–24 dB	H	H	H	H	L
–28 dB	L	H	H	H	L
–32 dB	H	L	H	H	L
–36 dB	L	L	H	H	L
–40 dB	H	H	L	H	L
–44 dB	L	H	L	H	L
–48 dB	H	L	L	H	L
–52 dB	L	L	L	H	L
–56 dB	H	H	H	L	L
–60 dB	L	H	H	L	L
–64 dB	H	L	H	L	L
–68 dB	L	L	H	L	L
–72 dB	H	H	L	L	L
–76 dB	L	H	L	L	L
–80 dB	H	L	L	L	L
–∞	L	L	L	L	L

ATT2	D7	D8
0 dB	H	H
–1 dB	L	H
–2 dB	H	L
–3 dB	L	L

Tone Code

Bass	D0	D1	D2	D3
Treble	D4	D5	D6	D7
12 dB	H	H	H	H
10 dB	L	H	H	H
8 dB	H	L	H	H
6 dB	L	L	H	H
4 dB	H	H	L	H
2 dB	L	H	L	H
0 dB	H	L	L	H
–2 dB	L	L	L	H
–4 dB	H	H	H	L
–6 dB	L	H	H	L
–8 dB	H	L	H	L
–10 dB	L	L	H	L
–12 dB	H	H	L	L

Fader Code

Fader	D8	D9	D10	D11
0 dB	H	H	H	H
–1 dB	L	H	H	H
–2 dB	H	L	H	H
–3 dB	L	L	H	H
–4 dB	H	H	L	H
–6 dB	L	H	L	H
–8 dB	H	L	L	H
–10 dB	L	L	L	H
–12 dB	H	H	H	L
–14 dB	L	H	H	L
–16 dB	H	L	H	L
–20 dB	L	L	H	L
–30 dB	H	H	L	L
–45 dB	L	H	L	L
–60 dB	H	L	L	L
–∞	L	L	L	L

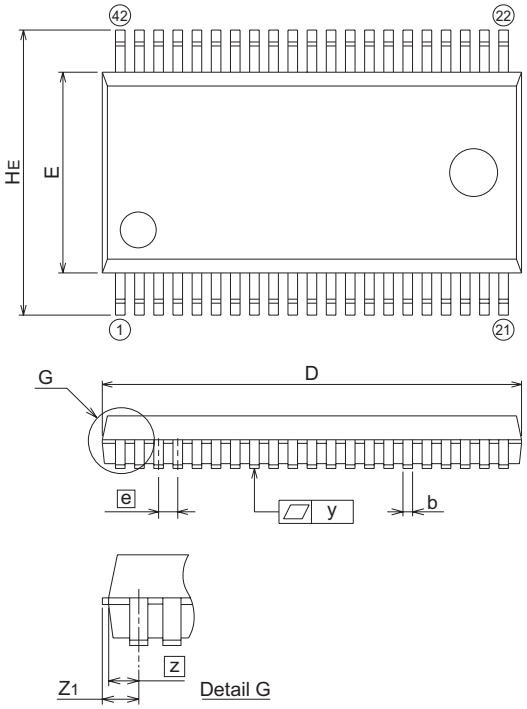
Input Selector Code

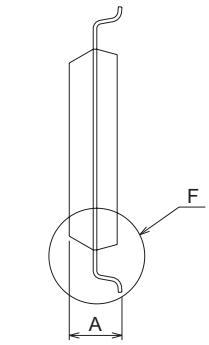
Input Selector	D10	D11
A CH	H	H
B CH	L	H
C CH	H	L
D CH	L	L

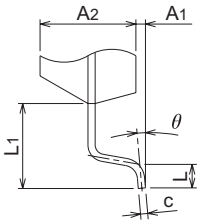
Package Dimensions

42P2R-A (MMP) **Plastic 42pin 450mil SSOP**

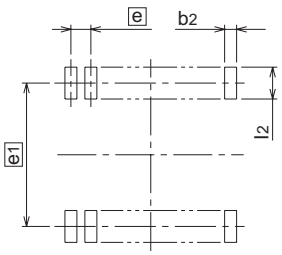
EIAJ Package Code	JEDEC Code	Weight(g)	Lead Material
SSOP42-P-450-0.80	—	0.63	Alloy 42/Cu Alloy







Detail F



Recommended Mount Pad

Symbol	Dimension in Millimeters		
	Min	Nom	Max
A	—	—	2.4
A_1	0.05	—	—
A_2	—	2.0	—
b	0.35	0.4	0.5
c	0.13	0.15	0.2
D	17.3	17.5	17.7
E	8.2	8.4	8.6
e	—	0.8	—
H_E	11.63	11.93	12.23
L	0.3	0.5	0.7
L_1	—	1.765	—
z	—	0.75	—
Z_1	—	—	0.9
y	—	—	0.15
θ	0°	—	10°
b_2	—	0.5	—
e1	—	11.43	—
l_2	1.27	—	—

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