

By Category PDF

Category Audio &amp; Video

ICs

# Audio & Video

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# Audio Amplifiers

## Automotive Speaker amplifier

### 1.2W Monaural Class-AB Speaker Amplifier

Part No.	Supply Voltage (V)	Quiescent Current (mA)	Standby Current (μA)	Voltage Gain (dB)	Output Power (W)	Input Impedance $Z_{in}$ (kΩ)	Built-in Amplifier Resistance		Distortion (%)	Output Noise Voltage (μVrms)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
							Ri (kΩ)	Rf (kΩ)					
BD78306EFJ-M	4.0 to 5.5	2.5	0.1	6.0 ( $P_o=0.5W$ )	1.2 (THD+N=1%)	45	90	90	0.05 ( $P_o=1W$ )	15	HTSOP-J8	FSs	YES
☆BD78308EFJ-M	4.0 to 5.5	2.5	0.1	8.0 ( $P_o=0.5W$ )	1.2 (THD+N=1%)	40	80	80	0.05 ( $P_o=1W$ )	16	HTSOP-J8	FSs	YES
BD78310EFJ-M	4.0 to 5.5	2.5	0.1	10.0 ( $P_o=0.5W$ )	1.2 (THD+N=1%)	35	70	110	0.06 ( $P_o=1W$ )	17	HTSOP-J8	FSs	YES
☆BD78312EFJ-M	4.0 to 5.5	2.5	0.1	12.0 ( $P_o=0.5W$ )	1.2 (THD+N=1%)	30	60	120	0.06 ( $P_o=1W$ )	19	HTSOP-J8	FSs	YES
☆BD78314EFJ-M	4.0 to 5.5	2.5	0.1	14.0 ( $P_o=0.5W$ )	1.2 (THD+N=1%)	25	50	130	0.07 ( $P_o=1W$ )	22	HTSOP-J8	FSs	YES
☆BD78316EFJ-M	4.0 to 5.5	2.5	0.1	16.0 ( $P_o=0.5W$ )	1.2 (THD+N=1%)	20	40	140	0.09 ( $P_o=1W$ )	24	HTSOP-J8	FSs	YES
☆BD78318EFJ-M	4.0 to 5.5	2.5	0.1	18.0 ( $P_o=0.5W$ )	1.2 (THD+N=1%)	18	36	144	0.10 ( $P_o=1W$ )	26	HTSOP-J8	FSs	YES
☆BD78320EFJ-M	4.0 to 5.5	2.5	0.1	20.0 ( $P_o=0.5W$ )	1.2 (THD+N=1%)	15	30	150	0.12 ( $P_o=1W$ )	31	HTSOP-J8	FSs	YES
☆BD78322EFJ-M	4.0 to 5.5	2.5	0.1	22.0 ( $P_o=0.5W$ )	1.2 (THD+N=1%)	12	24	156	0.15 ( $P_o=1W$ )	35	HTSOP-J8	FSs	YES
☆BD78324EFJ-M	4.0 to 5.5	2.5	0.1	24.0 ( $P_o=0.5W$ )	1.2 (THD+N=1%)	10	20	160	0.17 ( $P_o=1W$ )	43	HTSOP-J8	FSs	YES
BD78326EFJ-M	4.0 to 5.5	2.5	0.1	26.0 ( $P_o=0.5W$ )	1.2 (THD+N=1%)	8	16	164	0.20 ( $P_o=1W$ )	50	HTSOP-J8	FSs	YES

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☆: Under Development

\*1 For more information about "ComfySIL™ Functional Safety", please refer to the of the cover.

## Speaker Amplifiers

### Portable Amplifier 1.9W+1.9W Stereo Speaker Amplifier

Part No.	Supply Voltage (V)	Power Dissipation (W)	Quiescent Current (mA)	Standby Current (μA)	Voltage Gain (dB)	Output Power (W)	Distortion (%)	Output Noise Voltage (μVrms)	Package
BD7836EFV	4.5 to 5.5	1.0	5	0.1	6/10/15.6/21.6	1.9 ( $V_{DD}=5V, 4Ω, THD+N=1%$ )	0.1	16	HTSSOP-B20

### Portable Amplifier 1.1W to 1.5W Monaural Speaker Amplifier

Part No.	Supply Voltage (V)	Power Dissipation (W)	Quiescent Current (mA)	Standby Current (μA)	Voltage Gain (dB)	Output Power ( $R_L=8Ω, THD=10%$ )		Distortion (%)	Output Noise Voltage (dBV)	Package
						$V_{CC}=3.6V$	$V_{CC}=5.0V$			
BD7830NUV	2.4 to 5.5	0.53	3.2	0	0 to 20	0.77W	1.5W	0.1	-100	VSON008V2030

### Portable Amplifiers Analog Input Monaural Class-D Speaker Amplifiers

Part No.	Supply Voltage (V)	Power Dissipation (W)	Quiescent Current (mA)	Voltage Gain (dB)	Output Power (W)		Distortion (%)	Output Noise Voltage (μVrms)	ALC Circuit	Package (mm)
BD5460GUL	2.5 to 5.5	0.69	2.0 ( $V_{DD}=3.6V$ )	6	2.5 ( $V_{DD}=5V, R_L=4Ω, THD+N=10%$ )	0.85 ( $V_{DD}=3.6V, R_L=8Ω, THD+N=10%$ )	0.3 ( $V_{DD}=3.6V$ )	30	—	VCSP50L1 1.6x1.6, H=0.55Max
BD5461GUL	2.5 to 5.5	0.69	2.0 ( $V_{DD}=3.6V$ )	12	2.5 ( $V_{DD}=5V, R_L=4Ω, THD+N=10%$ )	0.85 ( $V_{DD}=3.6V, R_L=8Ω, THD+N=10%$ )	0.3 ( $V_{DD}=3.6V$ )	40	—	VCSP50L1 1.6x1.6, H=0.55Max
BD27400GUL	2.5 to 5.5	0.69	2.9 ( $V_{DD}=3.6V$ )	External Variable	2.5 ( $V_{DD}=5V, R_L=4Ω, THD+N=10%$ )	0.85 ( $V_{DD}=3.6V, R_L=8Ω, THD+N=10%$ )	0.3 ( $V_{DD}=3.6V$ )	40	—	VCSP50L1 1.5x1.5, H=0.55Max
BD5632NUX	2.5 to 5.5	0.52	2.7 ( $V_{DD}=3.6V$ )	6	2.5 ( $V_{DD}=5V, R_L=4Ω, THD+N=10%$ )	0.85 ( $V_{DD}=3.6V, R_L=8Ω, THD+N=10%$ )	0.3 ( $V_{DD}=3.6V$ )	40	—	VSON008X2030
BD5634NUX	2.5 to 5.5	0.52	2.7 ( $V_{DD}=3.6V$ )	12	2.5 ( $V_{DD}=5V, R_L=4Ω, THD+N=10%$ )	0.85 ( $V_{DD}=3.6V, R_L=8Ω, THD+N=10%$ )	0.3 ( $V_{DD}=3.6V$ )	40	—	VSON008X2030
BD5638NUX	2.5 to 5.5	0.52	2.7 ( $V_{DD}=3.6V$ )	18	2.5 ( $V_{DD}=5V, R_L=4Ω, THD+N=10%$ )	0.85 ( $V_{DD}=3.6V, R_L=8Ω, THD+N=10%$ )	0.3 ( $V_{DD}=3.6V$ )	40	—	VSON008X2030
BD5465GUL	2.5 to 5.5	0.69	3.3 ( $V_{DD}=3.6V$ )	12	0.6 ( $V_{DD}=3.4$ to $5.5V, R_L=8Ω, THD+N≤1%$ )		0.3 ( $V_{DD}=3.6V$ )	40	✓	VCSP50L1 1.8x1.8, H=0.55Max
BD5466GUL	2.5 to 5.5	0.69	3.0 ( $V_{DD}=3.6V$ )	18	1.5 ( $V_{DD}=5V, R_L=4Ω, THD+N≤1%$ )	0.5 ( $V_{DD}=3.6V, R_L=8Ω, THD+N≤1%$ )	0.3 ( $V_{DD}=3.6V$ )	40	✓	VCSP50L1 1.7x1.7, H=0.55Max
BD5467GUL	2.5 to 5.5	0.69	3.0 ( $V_{DD}=3.6V$ )	13	1.5 ( $V_{DD}=5V, R_L=4Ω, THD+N≤1%$ )	0.5 ( $V_{DD}=3.6V, R_L=8Ω, THD+N≤1%$ )	0.3 ( $V_{DD}=3.6V$ )	40	✓	VCSP50L1 1.7x1.7, H=0.55Max
BD5468GUL	2.5 to 5.5	0.69	3.0 ( $V_{DD}=3.6V$ )	13	1.5 ( $V_{DD}=5V, R_L=4Ω, THD+N≤1%$ )	0.5 ( $V_{DD}=3.6V, R_L=8Ω, THD+N≤1%$ )	0.3 ( $V_{DD}=3.6V$ )	40	✓	VCSP50L1 1.7x1.7, H=0.55Max
BD5469GUL	2.5 to 5.5	0.69	3.0 ( $V_{DD}=3.6V$ )	13	0.88 ( $V_{DD}=4.2V, R_L=8Ω, THD+N≤1%$ )	0.64 ( $V_{DD}=3.6V, R_L=8Ω, THD+N≤1%$ )	0.3 ( $V_{DD}=3.6V$ )	40	✓	VCSP50L1 1.7x1.7, H=0.55Max

Portable Amplifier Analog Input Stereo Class-D Speaker Amplifier										
Part No.	Supply Voltage (V)	Power Dissipation (W)	Quiescent Current (mA)	Voltage Gain (dB)	Output Power (W)		Distortion (%)	Output Noise Voltage ( $\mu$ Vrms)	Max LDO Current (mA)	Package
<b>BD28412MUV</b>	4.5 to 13.0	3.20	16 ( $V_{CC}=11V$ )	20/26/ 32/36	$\begin{matrix} 18 \\ (V_{CC}=12V, R_L=4\Omega) \\ (THD+N=10\%, PBTl) \end{matrix}$	$\begin{matrix} 9 \\ (V_{CC}=12V, R_L=8\Omega) \\ (THD+N=10\%) \end{matrix}$	0.03 ( $V_{CC}=11V$ )	100	—	VQFN032V5050

Mid./High-Power Amplifier Class-D Speaker Amplifiers for Digital Input with Built-in DSP													
Part No.	Supply Voltage (V)	Power Dissipation (W)	Quiescent Current (mA)	Output Power (W)		Distortion (%)	Output Noise Voltage ( $\mu$ Vrms)	DSP					Package
				$\begin{matrix} 10 \\ (V_{CC}=13V) \\ R_L=8\Omega \end{matrix}$	$\begin{matrix} 17 \\ (V_{CC}=18V) \\ R_L=8\Omega \end{matrix}$			Volume	DC Cut HPF	Hard Clipper	Parametric EQ	DRC	
<b>BM28723AMUV</b>	10 to 24	4.56 (4-Layer Board)	45 ( $V_{CC}=18V$ )	$\begin{matrix} 10 \\ (V_{CC}=13V) \\ R_L=8\Omega \end{matrix}$	$\begin{matrix} 17 \\ (V_{CC}=18V) \\ R_L=8\Omega \end{matrix}$	0.08	150	✓	✓	✓	✓ (12 Band)	✓ (3 Band)	VQFN032V5050

Mid./High-Power Amplifier Class-D Speaker Amplifier for Digital Input									
Part No.	Supply Voltage (V)	Power Dissipation (W)	Quiescent Current (mA)	Output Power (W)		Distortion (%)	Output Noise Voltage ( $\mu$ Vrms)	Power Limiter Function	Package
<b>BD28623MUV</b>	8.5 to 24.0	$\begin{matrix} 3.56 \\ (4\text{-Layer Board}) \\ 2.21 \\ (2\text{-Layer Board}) \end{matrix}$	40 ( $V_{CC}=18V$ )	—	$\begin{matrix} 15 \\ (V_{CC}=16V, R_L=8\Omega) \end{matrix}$	0.08	150	✓ (GAIN)	VQFN024V4040

Mid./High-Power Amplifiers Analog Input/BTL Output Class-D Speaker Amplifiers										
Part No.	Supply Voltage (V)	Power Dissipation (W)	Quiescent Current (mA)	Voltage Gain (dB)	Output Power (W)		Distortion (%)	Output Noise Voltage ( $\mu$ Vrms)	Power Limiter Function	Package
<b>BD5424EFS</b>	10.0 to 18.0	$\begin{matrix} 4.5 \\ (4\text{-Layer Board}) \\ 2.0 \\ (2\text{-Layer Board}) \end{matrix}$	30 ( $V_{CC}=12V$ )	28	$\begin{matrix} 10 \\ (V_{CC}=12V, R_L=8\Omega) \end{matrix}$	$\begin{matrix} 20 \\ (V_{CC}=17V, R_L=8\Omega) \end{matrix}$	0.1	80	✓ (Power Limiter)	HTSSOP-A44
<b>BD5423AEFS</b>	10.0 to 16.5	$\begin{matrix} 4.5 \\ (4\text{-Layer Board}) \\ 2.0 \\ (2\text{-Layer Board}) \end{matrix}$	25 ( $V_{CC}=12V$ )	28	$\begin{matrix} 10 \\ (V_{CC}=12V, R_L=8\Omega) \end{matrix}$	$\begin{matrix} 17 \\ (V_{CC}=12V, R_L=4\Omega) \end{matrix}$	0.1	80	✓ (Power Limiter)	HTSSOP-A44
<b>BD5426EFS</b>	10.0 to 16.5	$\begin{matrix} 4.5 \\ (4\text{-Layer Board}) \\ 2.0 \\ (2\text{-Layer Board}) \end{matrix}$	25 ( $V_{CC}=12V$ )	28	$\begin{matrix} 9 \\ (V_{CC}=12V, R_L=8\Omega) \end{matrix}$	$\begin{matrix} 10 \\ (V_{CC}=13V, R_L=8\Omega) \end{matrix}$	0.1	80	✓ (Power Limiter)	HTSSOP-A44
<b>BD5413EFV</b>	6.0 to 10.5	$\begin{matrix} 2.8 \\ (4\text{-Layer Board}) \\ 1.1 \\ (2\text{-Layer Board}) \end{matrix}$	12 ( $V_{CC}=9V$ )	30	$\begin{matrix} 4 \\ (V_{CC}=9V, R_L=8\Omega) \end{matrix}$	$\begin{matrix} 5 \\ (V_{CC}=9V, R_L=6\Omega) \end{matrix}$	0.2	90	—	HTSSOP-B24

### Headphone Amplifiers

Ultra-Compact Coupling Capacitorless Headphone Amplifiers									
Part No.	Supply Voltage (V)	Quiescent Current (mA)	Gain (V/V)	Maximum Output Power (mW)	Distortion (%)	Output Noise Voltage ( $\mu$ Vrms)	Ripple Rejection (dB)	Note	Package (mm)
<b>BD88200GUL</b>	2.4 to 5.5	2	Variable Gain with external resistor	80 ( $V_{DD}=3.3V, R_L=16\Omega$ )	0.006 ( $V_{DD}=3.3V, R_L=16\Omega$ )	10	-80 ( $f=217Hz$ )	Virtual ground based	VCSP50L2 2.1x2.1
<b>BD88210GUL</b>	2.4 to 5.5	2	-1.0	80 ( $V_{DD}=3.3V, R_L=16\Omega$ )	0.006 ( $V_{DD}=3.3V, R_L=16\Omega$ )	10	-80 ( $f=217Hz$ )	Virtual ground based	VCSP50L2 2.1x2.1
<b>BD88215GUL</b>	2.4 to 5.5	2	-1.5	80 ( $V_{DD}=3.3V, R_L=16\Omega$ )	0.006 ( $V_{DD}=3.3V, R_L=16\Omega$ )	10	-80 ( $f=217Hz$ )	Virtual ground based	VCSP50L2 2.1x2.1
<b>BD88220GUL</b>	2.4 to 5.5	2	-2.0	80 ( $V_{DD}=3.3V, R_L=16\Omega$ )	0.006 ( $V_{DD}=3.3V, R_L=16\Omega$ )	10	-80 ( $f=217Hz$ )	Virtual ground based	VCSP50L2 2.1x2.1
<b>BD88400GUL</b>	2.4 to 5.5	2	Variable Gain with external resistor	80 ( $V_{DD}=3.3V, R_L=16\Omega$ )	0.006 ( $V_{DD}=3.3V, R_L=16\Omega$ )	10	-80 ( $f=217Hz$ )	Ground based	VCSP50L2 2.1x2.1
<b>BD88400FJ</b>	2.4 to 5.5	2	Variable Gain with external resistor	80 ( $V_{DD}=3.3V, R_L=16\Omega$ )	0.006 ( $V_{DD}=3.3V, R_L=16\Omega$ )	10	-80 ( $f=217Hz$ )	Ground based	SOP-J14
<b>BD88410GUL</b>	2.4 to 5.5	2	-1.0	80 ( $V_{DD}=3.3V, R_L=16\Omega$ )	0.006 ( $V_{DD}=3.3V, R_L=16\Omega$ )	10	-80 ( $f=217Hz$ )	Ground based	VCSP50L2 2.1x2.1
<b>BD88415GUL</b>	2.4 to 5.5	2	-1.5	80 ( $V_{DD}=3.3V, R_L=16\Omega$ )	0.006 ( $V_{DD}=3.3V, R_L=16\Omega$ )	10	-80 ( $f=217Hz$ )	Ground based	VCSP50L2 2.1x2.1
<b>BD88420GUL</b>	2.4 to 5.5	2	-2.0	80 ( $V_{DD}=3.3V, R_L=16\Omega$ )	0.006 ( $V_{DD}=3.3V, R_L=16\Omega$ )	10	-80 ( $f=217Hz$ )	Ground based	VCSP50L2 2.1x2.1

Headphone Amplifier Designed for 0.93V Low Voltage Operation									
Part No.	Supply Voltage (V)	Quiescent Current (mA)	Maximum Output Power (mW)		Distortion (%)		Output Noise Voltage ( $\mu$ Vrms)	Package	
			Single-ended (16 $\Omega$ )	BTL (8 $\Omega$ )	Single-ended (16 $\Omega$ )	BTL (8 $\Omega$ )			
<b>BU7150NUV</b>	0.93 to 3.50 ( $T_s=0^\circ C$ or more)	1	14 ( $V_{DD}=1.5V$ )	85 ( $V_{DD}=1.5V$ )	0.1 ( $P_O=5mW$ )	0.2 ( $P_O=25mW$ )	10	VSON010V3030	

Standard Headphone Amplifiers							
Part No.	Supply Voltage (V)	Quiescent Current (mA)	Voltage Gain (dB)	Maximum Output Power (mW) $R_L=16\Omega$	Distortion (%)	Ripple Rejection (dB)	Package
<b>BH3544F</b>	2.8 to 6.5	7.0	6	62	0.02	57	SOP8
<b>BH3547F</b>	4.5 to 6.5	3.7	6	77	0.05	57	SOP8
<b>BH3548F</b>	4.0 to 5.5	6.5	6	62 (120@ $R_L=8\Omega$ )	0.02	57	SOP8

## Others

Line Amplifiers (Output Coupling Capacitor-less)											
Part No.	Supply Voltage (V)	Circuit Current (mA)	ch	Voltage Gain (dB)	Maximum Output Voltage (Vrms)	Distortion (%)	Output Noise Voltage ( $\mu$ Vrms)	Channel Separation (dB)	Ripple Rejection (dB)	Charge Pump	Package
BD8876FV	3.0 to 5.5	3.2	2	6 or 9	3.5	0.003	8	80	65	✓	SSOP-B14
BD8878FV	3.0 to 5.5	3.2	2	6.7	3.0	0.003	10	65	65	✓	SSOP-B14

Isolation Amplifiers													
Part No.	Supply Voltage (V)	Operating Temperature (°C)	Circuit	Circuit Current (mA)	Voltage Gain (dB)	CMRR (dB)	Common-mode Input Voltage Range (V) $V_{CC}=8V$	THD (%)	Output Noise Voltage ( $\mu$ Vrms)	Channel Separation (dB)	Slew Rate (V/ $\mu$ s)	Input Resistance (k $\Omega$ )	Package
BA3121F	4.0 to 18.0	-30 to +85	2	9.0	-0.04	57	3.75	0.002	3.5	82	2.0	55	SOP8
BA3123F	4.0 to 18.0	-40 to +85	2	9.0	-0.04	57	3.75	0.002	3.5	82	2.0	55	SOP8

# Power Supply ICs for Audio

## Power Supply ICs for High Fidelity Audio

\*The following products are belonging to ICs. (Refer P.42) Please ensure that minimum Input Voltage always exceeds the sum of Output Voltage and drop out voltage for the device.

Power Supply ICs for High Fidelity Audio											
Part No.	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Reference Voltage Accuracy (%)	Dropout Voltage (mV)	Noise Level ( $\mu$ Vrms)	PSRR (dB)	Over Current Protection	Thermal Protection	Package	
<b>MUS-IC</b> BD37201NUX	0.5	2.7 to 5.5	Variable 1.0 to 4.5	$\pm 1$	200	3.3	90 (f=1kHz) 55 (f=1MHz)	✓	✓	VSON008X2030	

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It is the masterpiece of ROHM audio IC which pursues both the numerical values and sound quality performance required in an audio device.

# Audio Processors

## Analog Audio Processors

6ch/8ch Sound Processors with Built-in Micro-step Volume												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Output Noise Voltage ( $\mu$ Vrms)	Distortion (%)	Selector	Main Volume (dB)		Zone Volume (dB)		Tone Control	Serial Control	Package
							ch		ch			
<b>MUS-IC</b> BD34704KS2	$\pm 6.5$ to $\pm 7.5$	$\pm 32$	1.2	0.0004	18	+32 to -95 0.5/Step	8	+7.5 to -91.5 0.5/Step	2	-	2Wire	SQFP-T80C
<b>MUS-IC</b> BD34705KS2	$\pm 6.5$ to $\pm 7.5$	$\pm 32$	1.2	0.0004	12	+32 to -95 0.5/Step	8	+6 to -16 1/Step, -16 to -56 2/Step	2	-	2Wire	SQFP-T64
BD34701KS2	$\pm 6.5$ to $\pm 7.5$	$\pm 22$	1.5	0.0004	8	+32 to -95 0.5/Step	8	-	-	-	2Wire	SQFP-T52
BD3471KS2	$\pm 6.5$ to $\pm 7.5$	$\pm 30$	1.5	0.0004	12	+24 to -95 0.5/Step	8	-	-	-	2Wire	SQFP-T80C
BD3473KS2	$\pm 6.5$ to $\pm 7.5$	$\pm 30$	1.5	0.0004	12	+24 to -95 0.5/Step	8	-	-	Bass, Treble	2Wire	SQFP-T80C
BD3474KS2	$\pm 6.5$ to $\pm 7.5$	$\pm 30$	1.5	0.0004	12	+32 to -95 0.5/Step	6	-	-	Bass, Treble	2Wire	SQFP-T80C

2ch/4ch/6ch Sound Processors												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Output Noise Voltage ( $\mu$ Vrms)	Distortion (%)	Selector	Main Volume (dB)	ch	Zone Volume (dB)	ch	Tone Control	Serial Control	Package
BD34700FV	$\pm 6.5$ to $\pm 7.5$	$\pm 22$	1.5	0.0004	-	+32 to -95 0.5/Step	4	-	-	-	2Wire	SSOP-B40
BD3812F	$\pm 5.0$ to $\pm 7.3$	$\pm 2$	1.2	0.0050	-	0,6 to 18 2/Step, 0 to -103 1/Step	2	-	-	-	2Wire	SOP14
BD3814FV	$\pm 5.0$ to $\pm 7.3$	$\pm 7$	1.0	0.001	-	0 to -95 1/Step	6	-	-	Bass, Treble	2Wire	SSOP-B40

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6ch/9ch Stereo Input Selector ICs Maximum Input Voltage: 4.2V							
Part No.	Supply Voltage (V)	Current Consumption (mA)	Output Noise Voltage ( $\mu$ Vrms)	Distortion (%)	Selector	Serial Control	Package
BD3843FS	$\pm 4.0$ to $\pm 7.3$	$\pm 3$	1.0	0.004	6	2Wire	SSOP-A24
BD3841FS	$\pm 5.0$ to $\pm 7.3$	$\pm 3$	1.0	0.004	9	2Wire	SSOP-A32

Sound Processors with Built-in 2-band Equalizer																
Part No.	Supply Voltage (V)	Current Consumption (mA)	Selector		Input Gain (dB)	Volume (dB)	Fader		Parametric EQ	Loudness	LPF for Sub Woofer	Option	Serial Control	Output Noise Voltage ( $\mu$ Vrms)	Distortion (%)	Package
			Single	Diff.			(dB)	Output								
BD37503FV	7.0 to 9.5	20	3	1	0 to +20	0 to -36, - $\infty$	0 to -63, - $\infty$	4	-	✓*	-	Anti-aliasing Filter*	I <sup>2</sup> C BUS	5.8	0.001	SSOP-B20
BD37511FS	7.0 to 9.5	15	3	-	0 to +20	0 to -40	0 to -62, - $\infty$	4	-	-	-	-	I <sup>2</sup> C BUS	6.0	0.005	SSOP-A20
BD37512FS	7.0 to 9.5	15	3	1	0 to +20	0 to -40	0 to -62, - $\infty$	4	-	-	-	-	I <sup>2</sup> C BUS	6.0	0.005	SSOP-A20
BD37513FS	7.0 to 9.5	38	3	1	0 to +20	+15 to -79, - $\infty$	0 to -79, - $\infty$	4	-	✓	-	-	I <sup>2</sup> C BUS	3.8	0.001	SSOP-A20
BD37514FS	7.0 to 9.5	38	3	1	0 to +20	+15 to -79, - $\infty$	0 to -79, - $\infty$	5	✓	✓	-	-	I <sup>2</sup> C BUS	3.8	0.001	SSOP-A20
BD37515FS	7.0 to 9.5	38	3	1	0 to +20	+15 to -79, - $\infty$	+15 to -79, - $\infty$	5	✓	✓	✓	-	I <sup>2</sup> C BUS	3.8	0.001	SSOP-A20
BD37521FS	7.0 to 9.5	38	3	1	0 to +20	+15 to -79, - $\infty$	0 to -79, - $\infty$	4	-	EXT	-	-	I <sup>2</sup> C BUS	3.8	0.001	SSOP-A24
BD37522FS	7.0 to 9.5	38	4	1	0 to +20	+15 to -79, - $\infty$	0 to -79, - $\infty$	4	✓	✓	-	-	I <sup>2</sup> C BUS	3.8	0.001	SSOP-A24
BD37523FS	7.0 to 9.5	38	4	1	0 to +20	+15 to -79, - $\infty$	+15 to -79, - $\infty$	5	✓	✓	✓	-	I <sup>2</sup> C BUS	3.8	0.001	SSOP-A24
BD3870FS	4.5 to 9.5	8	3	-	0/6/12/18	0 to -87, - $\infty$	-	2	EXT	-	-	Surround	2Wire	4.5	0.01	SSOP-A24
BD3871FS	4.5 to 9.5	8	3	-	24/26/28	0 to -87, - $\infty$	-	2	EXT	-	-	Surround	2Wire	40 (Gv=24dB)	0.01	SSOP-A24
BD3872FS	4.5 to 9.5	8	5	-	0/5/10/19/23/26/28	0 to -87, - $\infty$	-	2	EXT	-	-	Surround	2Wire	4.5	0.01	SSOP-A32
BD3873FS	4.5 to 9.5	8	3	-	18/21/24/27	0 to -87, - $\infty$	-	2	EXT	-	-	Surround	2Wire	40 (Gv=24dB)	0.01	SSOP-A24
BD3490FV	4.75 to 9.50	7	4	-	0/2/4/6/8/12/16/20	0 to -87 (2ch Independent control), - $\infty$	-	2	EXT	-	-	Bass Boost, Surround	I <sup>2</sup> C BUS	5.0	0.002	SSOP-B28
BD3491FS	4.75 to 9.50	7	6	-	0/2/4/6/8/12/16/20	0 to -87 (2ch Independent control), - $\infty$	-	2	EXT	-	-	Bass Boost, Surround	I <sup>2</sup> C BUS	5.0	0.002	SSOP-A32

Sound Processors with Built-in 2-band Equalizer: Built-in Bass and Treble control \*Loudness and Anti-aliasing Filter can be used exclusively. EXT: Set by external components  
 BD37511FS and BD37512FS are pin-compatible. BD37513FS, BD37514FS and BD37515FS are pin-compatible. BD37522FS and BD37523FS are pin-compatible.

## Analog Audio Processors

Sound Processors with Built-in 3-band Equalizer																				
Part No.	Supply Voltage (V)	Current Consumption (mA)	Selector		Input Gain (dB)	Volume (dB)	Fader		Parametric EQ	Loudness	LPF/HPF for Sub Woofer	Mixing		Level Meter	Option	Serial Control	Output Noise Voltage ( $\mu$ Vrms)	Distortion (%)	Package	ComfySIL™ Functional Safety*1
			Single	Diff.			(dB)	Outputs				ch	ATT (dB)							
BD37524FS	7.0 to 9.5	38	4	1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	✓	LPF	-	-	✓	-	I <sup>2</sup> C BUS	3.8	0.001	SSOP-A24	-
BD37531FV	7.0 to 9.5	38	2/3/5	3/2/1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	✓	-	-	-	-	-	I <sup>2</sup> C BUS	3.8	0.001	SSOP-B28	-
BD37532FV	7.0 to 9.5	38	2/3/5	3/2/1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	✓	LPF	-	-	-	-	I <sup>2</sup> C BUS	3.8	0.001	SSOP-B28	-
BD37533FV	7.0 to 9.5	38	2/3/5	3/2/1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	✓	LPF	✓	✓	-	-	I <sup>2</sup> C BUS	3.8	0.001	SSOP-B28	-
BD37534FV	7.0 to 9.5	38	2/3/5	3/2/1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	✓	LPF	✓	✓	✓	-	I <sup>2</sup> C BUS	3.8	0.001	SSOP-B28	-
BD37541FS	7.0 to 9.5	38	2/3/5	3/2/1	0 to +20	+15 to -79, -∞	0 to -79, -∞	6	✓	EXT	-	✓	-	-	-	I <sup>2</sup> C BUS	3.8	0.001	SSOP-B28	-
BD37542FS	7.0 to 9.5	38	2/3/5	3/2/1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	EXT	LPF	✓	✓	-	-	I <sup>2</sup> C BUS	3.8	0.001	SSOP-A32	-
BD37543FS	7.0 to 9.5	38	2/3/5	3/2/1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	EXT	LPF+HPF	✓	✓	✓	-	I <sup>2</sup> C BUS	3.8	0.001	SSOP-A32	-
BD37544FS	7.0 to 9.5	38	1/3/4	3/2/1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	-	LPF+HPF	✓	✓	-	Super Bass	I <sup>2</sup> C BUS	3.8	0.001	SSOP-A32	-
BD37545FS	7.0 to 9.5	38	2/3/5	3/2/1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	-	LPF+HPF	✓	✓	✓	External I/O	I <sup>2</sup> C BUS	3.8	0.001	SSOP-A32	-
BD37033FV-M	7.0 to 9.5	31	3/5	2/1	0 to +16	+15 to -79, -∞	+15 to -79, -∞	6	✓	✓	LPF	✓	✓	✓	-	I <sup>2</sup> C BUS	5.5	0.002	SSOP-B28	FSs
BD37034FV-M	7.0 to 9.5 V <sub>ccL</sub> to 13	36	3/5	2/1	0 to +16	+15 to -79, -∞	+15 to -79, -∞	6	✓	✓	LPF+HPF	✓	✓	✓	High Voltage Output	I <sup>2</sup> C BUS	6.0	0.002	SSOP-B28	FSs
BD3883FS	6.5 to 9.5	8	5	-	0/6/12/16/20/23/26/29	0 to -87, -∞	0/-10	2	EXT	-	-	-	-	-	Surround	2Wire	4.0	0.01	SSOP-A32	-
BD3403FV	6.5 to 9.5	16	5	-	0 to +26 (2/Step)	0 to -30 (2/Step)	0 to -59, -∞	2	EXT	-	-	-	-	-	Surround	2Wire	8.0	0.02	SSOP-B40	-

General-Purpose Electronic Volume with Built-in Advanced Switch																		
Part No.	Supply Voltage (V)	Current Consumption (mA)	Selector		Input Gain (dB)	Fader Volume (dB)	Outputs	Mixing		Post Filter	High-Voltage Output (dB)	Serial Control	Output Noise Voltage ( $\mu$ Vrms)	Distortion (%)	Package	ComfySIL™ Functional Safety*1		
			Single	Diff.				ch	ATT (dB)									
BD3464FV	7.0 to 9.5	25	-	-	-	+23 to -79, -∞ (1/Step)	4	-	-	-	-	I <sup>2</sup> C BUS	1.9	0.0004	SSOP-B20	-		
BD3465FV	7.0 to 9.5	25	-	-	-	+23 to -79, -∞ (1/Step)	4	3	+0 to -64, -∞ (8/Step)	-	-	I <sup>2</sup> C BUS	1.9	0.0004	SSOP-B20	-		
BD3460FS	7.0 to 9.5	25	-	-	-	+23 to -79, -∞ (1/Step)	6	-	-	-	-	I <sup>2</sup> C BUS	1.9	0.0004	SSOP-A24	-		
BD3461FS	7.0 to 9.5	25	-	-	-	+23 to -79, -∞ (1/Step)	6	3	+0 to -64, -∞ (8/Step)	-	-	I <sup>2</sup> C BUS	1.9	0.0004	SSOP-A24	-		
MUS-IC BD34602FS-M	7.0 to 9.5	35	-	-	-	+23 to -79, -∞ (1/Step)	6	3	+0 to -79, -∞ (1/Step)	-	-	I <sup>2</sup> C BUS	1.3	0.0004	SSOP-A24	FSs		
BD37067FV-M	7.0 to 9.5	37	2/3/4/5	4/3/2/1	+23 to -15 (1/Step)	+23 to -79, -∞ (1/Step)	6	1	-	✓	-	I <sup>2</sup> C BUS	8	0.003	SSOP-B40	FSs		
BD37068FV-M	7.0 to 9.5 V <sub>ccL</sub> to 17.8	30/7	1/2/3/4/5	5/4/3/2/1	+23 to -15 (1/Step)	+23 to -79, -∞ (1/Step)	6	1	-	✓	0/8.3	I <sup>2</sup> C BUS	23 (High-Voltage Mode)	0.003	SSOP-B40	FSs		
BD37069FV-M	7.0 to 9.5 V <sub>ccL</sub> to 17.8	30/7	2/3/4/5	4/3/2/1	+23 to -15 (1/Step)	+23 to -79, -∞ (1/Step)	6	1	-	✓	2/4.6/8.3	I <sup>2</sup> C BUS	23 (High-Voltage Mode)	0.003	SSOP-B40	FSs		

Bandpass Filter ICs for Spectrum Analyzer Display										
Part No.	Supply Voltage (V)	Current Consumption (mA)	Band	Input Mix Amplifier	REC Level Display	Standard Output (V)	Maximum Output (V)	BPF Center Frequency (Hz)		Package
BA3835F	4.5 to 6.5	8.5	5	✓	-	1.35	4.8	105, 340, 1k, 3.4k, 10.5k		SOP18
BA3834F	4.5 to 6.5	10.0	7	✓	-	1.35	4.8	68, 170, 420, 1k, 2.4k, 5.9k, 14.4k		SOP18

Sound Processors with Built-in 3-band Equalizer: EXT: Set by external components

BD37531FV, BD37532FV, BD37533FV and BD37534FV are pin-compatible.

BD37541FS, BD37542FS and BD37543FS are pin-compatible. BD37033FV-M and BD37034FV-M are pin-compatible.

General-Purpose Electronic Volume with Built-in Advanced Switch: BD3464FS and BD3465FS are pin-compatible. BD3461FS and BD34602FS-M are pin-compatible. BD37067FV-M and BD37068FV-M are pin-compatible.

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\*1 For more information about "ComfySIL™ Functional Safety", please refer to the of the cover.

Media Decoders

AAC/WMA/MP3/WAV+SD Memory Card+CD-ROM																
Part No.	Supply Voltage (V)	USB	SD	iPod	Serial I/F	Display Information	MP3	WMA	AAC	CD-ROM Mode	CD-ROM File System	MP3 Recording Format	File Search	Audio Output		Package
														Analog	Digital	
BU94605AKV	3.0 to 3.6	USB2.0 Full Speed	MMC SD, miniSD, microSD, SDHC	—	I <sup>2</sup> C BUS	Folder number, File number, Play time, Folder name, File name, TAG (Artist, Album, Title)	MPEG1, 2, 2.5 LAYER1, 2, 3	WMA9 Standard	MPEG4 AAC-LC	Mode1, Mode2, form1/2, Romeo, Joliet	ISO 9660 Level1, 2	—	Search during the playback	Line	I <sup>2</sup> S SPDIF	VQFP80



AAC/WMA/MP3/WAV+SD Memory Card+CD-ROM+MP3 Record																
Part No.	Supply Voltage (V)	USB	SD	iPod	Serial I/F	Display Information	MP3	WMA	AAC	CD-ROM Mode	CD-ROM File System	MP3 Recording Format	File Search	Audio Output		Package
														Analog	Digital	
BU94702AKV	3.0 to 3.6	USB2.0 Full Speed	MMC SD, miniSD, microSD, SDHC	—	I <sup>2</sup> C BUS	Folder number, File number, Play time, Folder name, File name, TAG (Artist, Album, Title)	MPEG1, 2, 2.5 LAYER1, 2, 3	WMA9 Standard	MPEG4 AAC-LC	Mode1, Mode2, form1/2, Romeo, Joliet	ISO 9660 Level1, 2	MPEG1 Layer3 Sample Rate: 32, 44.1, 48kHz Bit Rate: 32, 64, 128, 192, 256, 320kHz	Search during the playback	Line	I <sup>2</sup> S SPDIF	VQFP80


# Audio Converters

Audio Codec

Audio Codec											
Part No.	Supply Voltage (V)	ADC	DAC	Microphone Input	Speaker Output		Headphone Output	Filter		ALC	Package
		ch/bit	ch/bit		Type	Monaural/ Stereo		EQ	Notch		
BU26154MUV	HV <sub>DD</sub> 2.7 to 5.5 LV <sub>DD</sub> 2.7 to 3.6	1ch/24bit	2ch/24bit	1	AB/D	Monaural	Stereo	✓	✓	✓	VQFN040V6060
BU26156RFS	HV <sub>DD</sub> 2.7 to 5.5 LV <sub>DD</sub> 2.7 to 3.6	2ch/24bit	2ch/24bit	2	AB/D	Stereo	Stereo	✓	✓	✓	HTSSOP-A44R

Audio DAC

PCM 768kHz/32bit, DSD 22.4MHz Stereo Audio D/A Converters												
Part No.	Supply Voltage			Output Channels	Peak Output Current (mApp)	Resolution (Bit)	SNR (dB)	THD+N (dB)	Dynamic Range (dB)	Sampling Frequency (kHz)	DSD Clock (MHz)	Package
	AVCC (V)	DVDD (V)	DVDDIO (V)									
 <b>BD34301EKV</b>	4.5 to 5.5	1.4 to 1.6	3.0 to 3.6	2	9.8	32	130	-115	130	32 to 768	2.8, 5.6, 11.2, 22.4	HTQFP64BV
 <b>BD34352EKV</b>	4.5 to 5.5	1.4 to 1.6	3.0 to 3.6	2	6.25	32	126	-112	126	32 to 768	2.8, 5.6, 11.2, 22.4	HTQFP64BV

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# Video Amplifiers

## Composite Video Amplifiers

Ultra-compact (WL-CSP) Output Capacitor-less 1ch Video Drivers												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Amplifier Gain (dB)	Freq. Chara.1 (dB)	Freq. Chara.2 (dB)	Input type	LPF	Mute (Standby) (μA)	Output Capa-less	Max Output Level (V <sub>p-p</sub> )	Video Out→In Change Mode	Package (mm)
BH76906GU	2.5 to 3.45	15	6	-0.2 (4.5MHz)	-26 (18MHz)	Bias (150kΩ)	8th order 4.5MHz	0	✓	5.2	—	VCSP85H 1.6×1.6, H=1.0 Max
BH76912GU	2.5 to 3.45	15	12	-0.2 (4.5MHz)	-26 (18MHz)	Bias (150kΩ)	8th order 4.5MHz	0	✓	5.2	—	VCSP85H 1.6×1.6, H=1.0 Max
BH76916GU	2.5 to 3.45	15	16.5	-0.2 (4.5MHz)	-26 (18MHz)	Bias (150kΩ)	8th order 4.5MHz	0	✓	5.2	—	VCSP85H 1.6×1.6, H=1.0 Max

Output Capacitor-less 1ch Video Drivers												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Amplifier Gain (dB)	Freq. Chara.1 (dB)	Freq. Chara.2 (dB)	Input type	LPF	Mute (Standby) (μA)	Output Capa-less	Max Output Level (V <sub>p-p</sub> )	Package	
BH76806FVM	2.5 to 3.45	16	6	-0.45 (4.5MHz)	-51 (23.5MHz)	Bias (150kΩ)	8th order 4.5MHz	0	✓	5.2	MSOP8	
BH76809FVM	2.5 to 3.45	16	9	-0.45 (4.5MHz)	-51 (23.5MHz)	Bias (150kΩ)	8th order 4.5MHz	0	✓	5.2	MSOP8	
BH76812FVM	2.5 to 3.45	15	12	-0.45 (4.5MHz)	-51 (23.5MHz)	Bias (150kΩ)	8th order 4.5MHz	0	✓	5.2	MSOP8	
BH76816FVM	2.5 to 3.45	15	16.5	-0.45 (4.5MHz)	-51 (23.5MHz)	Bias (150kΩ)	8th order 4.5MHz	0	✓	5.2	MSOP8	

Compact Low Current 1ch Video Drivers												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Amplifier Gain (dB)	Freq. Chara.1 (dB)	Freq. Chara.2 (dB)	Input type	LPF	Mute (Standby) (μA)	Output Capa-less	Max Output Level (V <sub>p-p</sub> )	Video Out→In Change Mode	Package
BH76106HFV	2.6 to 5.5	7	6	0.1 (4.5MHz)	-45 (19MHz)	Clamp	8th order 4.5MHz	0	✓	2.6	—	HVSOF6
BH76109HFV	2.6 to 5.5	7	9	0.1 (4.5MHz)	-45 (19MHz)	Clamp	8th order 4.5MHz	0	✓	2.6	—	HVSOF6
BH76112HFV	2.6 to 5.5	7	12	0.1 (4.5MHz)	-45 (19MHz)	Clamp	8th order 4.5MHz	0	✓	2.6	—	HVSOF6
BH76206HFV	2.6 to 5.5	8	6	-0.3 (6MHz)	-40 (27MHz)	Clamp	8th order 6MHz	0	✓	2.6	—	HVSOF6

1ch Video Drivers Built-in Video Switch												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Amplifier Gain (dB)	Freq. Chara. (dB)	Switchers	Input type	Video Driver	Mute	Output Capa-less	Max Output Level (V <sub>p-p</sub> )		Package
										V <sub>CC</sub> =3V	V <sub>CC</sub> =5V	
BH76330FVM	2.8 to 5.5	10	6	0 (10MHz)	3 input-1 output	Clamp	✓	✓ (Standby)	✓	2.7	4.6	MSOP8
BH76331FVM	2.8 to 5.5	10	6	0 (10MHz)	3 input-1 output	Bias	✓	✓ (Standby)	—	2.8	4.6	MSOP8
BH76360FV	2.8 to 5.5	12	6	0 (10MHz)	6 input-1 output	Clamp	✓	✓ (Standby)	✓	2.7	4.6	SSOP-B16
BH76361FV	2.8 to 5.5	12	6	0 (10MHz)	6 input-1 output	Bias	✓	✓ (Standby)	—	2.8	4.6	SSOP-B16

## Video Switches

1ch Video Switches (Wide Band-width)												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Amplifier Gain (dB)	Freq. Chara. (dB)	Switchers	Input type	Video Driver	Mute	Crosstalk (dB)	Max Output Level (V <sub>p-p</sub> )		Package
										V <sub>CC</sub> =3V	V <sub>CC</sub> =5V	
BH76332FVM	2.8 to 5.5	9	0	0 (30MHz)	3 input-1 output	Clamp	—	✓ (Standby)	-65 (4.43MHz)	1.8	3.8	MSOP8
BH76333FVM	2.8 to 5.5	8	0	0 (30MHz)	3 input-1 output	Bias	—	✓ (Standby)	-65 (4.43MHz)	1.9	3.4	MSOP8
BH76362FV	2.8 to 5.5	11	0	0 (30MHz)	6 input-1 output	Clamp	—	✓ (Standby)	-65 (4.43MHz)	1.8	3.8	SSOP-B16
BH76363FV	2.8 to 5.5	11	0	0 (30MHz)	6 input-1 output	Bias	—	✓ (Standby)	-65 (4.43MHz)	1.9	3.4	SSOP-B16

Video and Audio Signal Switch												
Part No.	Supply Voltage (V)	Video Circuit Current (mA)	Audio Circuit Current (mA)	Video Freq. Chara.1 (dB)	Video Freq. Chara.2 (dB)	Video Amplifier Gain (dB)	Audio Freq. Chara.1 (dB)	Audio Freq. Chara.2 (dB)	Audio Amplifier Gain (dB)	Residual Noise (μV <sub>rms</sub> )	Package	
BH7649KS2	7.5 to 9.5	34	23	0 (6.75MHz)	-30 (27MHz)	-3/-6/0/+3/+6	-0.5 (24kHz)	-26 (96kHz)	-6/0	20	SQFP-T52	

## Others

Isolation Amplifier												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Amplifier Gain (dB)	Freq. Chara. (dB)	ch	Input type	Video Driver	Input Impedance (kΩ)	CMRR (dB)	Max Output Level (V <sub>p-p</sub> )	Package	
BH7673G	4.5 to 5.5	4.8	0	0 (10MHz)	1	Bias	—	150	60	3.8	SSOP5	



# Image Correction

Image Correction IC for Panel											
Part No.	Supply Voltage (V)			Image Data Size	Control I/F	Input/Output Digital I/F	Image Adjustment	PWM Output	LVDS Transmitter	Package	Automotive Grade AEC-Q100
	V <sub>DD</sub> Core	V <sub>DD</sub> I/O	V <sub>DD</sub> LVDS								
<b>BU1523KV</b>	1.65 to 1.95	3.0 to 3.6	3.0 to 3.6	Supports up to WVGA+ (864x480)	I <sup>2</sup> C BUS	24bit RGB Interface 8bit YUV=4 : 2 : 2 ITU-R BT.656	✓	–	✓	VQFP100	Preparing

Video Encoders Built-in Image Correction										
Part No.	Supply Voltage (V)			Image Data Size	Control I/F	Input/Output Digital I/F	Fog Reduction	Video Encoder	Package	Automotive Grade AEC-Q100
	V <sub>DD</sub> Core	V <sub>DD</sub> I/O	V <sub>DD</sub>							
<b>BU6521KV</b>	1.4 to 1.6	2.7 to 3.6	2.7 to 3.6	ITU-R BT.656	I <sup>2</sup> C BUS Serial EEPROM Interface	8bit YUV=4 : 2 : 2 ITU-R BT.656	✓	✓	VQFP48C	YES

# Video LSIs

## Video Decoder

(LAPIS Technology products)

CVBS/S-video											
Part No.	Supply Voltage (V)	Input (Analog)		Output (Digital)	Pixel Frequency	Crystal Oscillator supported	Feature	Operating Temperature (°C)	Package	Halogen Free Support*1	Automotive Grade*2
		Terminal	Type								
<b>ML86101A</b>	3.3/1.5	CVBS×4 or CVBS×2+S-video×1 or S-video×2	NTSC PAL SECAM	ITU-R BT.656 YUV 8bit	12.2727MHz, 13.5MHz, 14.3181MHz, 14.75MHz	✓	Simple, small	-40 to +85	P-TQFP48 -0707-0.50-ZK6	✓	YES
<b>ML86112</b>	3.3/1.2	CVBS×4 or differential×2	NTSC PAL	MIPI-CSI2 (YUV422-8bit) ITU-R BT.656	12.2727MHz, 13.5MHz, 14.3181MHz, 14.75MHz, 24.5454MHz, 27.000MHz, 28.636MHz, 29.500MHz	✓	Simple, small MIPI output I/P conversion	-40 to +105	P-WQFN32 -0505-0.50-W66	✓	YES
<b>ML86V7668A</b>	3.3/2.5	CVBS×4 or CVBS×1+S-video×3	NTSC PAL SECAM	ITU-R BT.656 YUV 8/16bit RGB 18bit	12.2727MHz, 13.5MHz	–	RGB output	-40 to +85	P-TQFP100 -1414-0.50-ZK6	✓	YES

CVBS/S-video/Component/RGB											
<b>ML86V7675</b>	3.3/1.5	CVBS×4 (+Comp or S-video)×1 +Comp×1	NTSC PAL SECAM	ITU-R BT.656 YUV 8bit	7.9930MHz to 33.333MHz	✓	WVGA, EGA analog RGB supported	-40 to +85	P-TQFP64 -1010-0.50-ZK6	✓	YES

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## Video Encoder

(LAPIS Technology products)

CVBS											
Part No.	Supply Voltage (V)	Input (Digital)	Output (Analog)		Pixel Frequency	Crystal Oscillator supported	Feature	Operating Temperature (°C)	Package	Halogen Free Support*1	Automotive Grade*2
			Terminal	Type							
<b>ML86V76580</b>	3.3/1.8	ITU-R BT.656 YUV 8bit	CVBS	NTSC PAL	12.2727MHz, 13.5MHz, 14.3181MHz, 14.75MHz	–	75Ω drive	-40 to +85	P-TQFP48 -0707-0.50-ZK6 S-VFBGA25 -2.76x2.50-0.50-W	✓	YES
<b>ML86640</b>	3.3	TU-R BT.656 YUV 8/16/24bit RGB 24bit	CVBS	NTSC PAL	13.5MHz, 27MHz, 54MHz	–	75Ω drive P/I conversion	-40 to +105	P-TQFP48 -0707-0.50-ZK6	✓	YES

CVBS/S-video/Component/RGB											
<b>ML86V7655</b>	3.3/2.5	ITU-R BT.656 YUV 8/16/24bit RGB 24bit	CVBS S-video Component	NTSC PAL	12.2727MHz, 13.5MHz, 14.3181MHz, 14.75MHz, 18MHz	–	I/P, P/I conversion	-40 to +85	P-TQFP100 -1414-0.50-ZK6	✓	YES

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## Video Interface

(LAPIS Technology products)

LVTTTL/LVDS/MIPI Video Interface											
Part No.	Supply Voltage (V)	Input	Output	Feature	Operating Temperature (°C)	Package	Halogen Free Support*1	Automotive Grade*2			
<b>ML86795</b>	3.3 (1.8)/1.5	ITU-R BT.656 YUV 8bit Single/Dual LVDS (RGB 18/24bit) MIPI-CSI2 (RGB565/888, YUV422-8bit)	ITU-R BT.656 YUV 8/16bit Single/Dual LVDS (RGB 18/24bit) MIPI-CSI2 (RGB565/888, YUV422-8bit) Two Virtual Channel Supported	LVTTTL/LVDS/MIPI-CSI2 I/F, LVTTTL/LVDS/MIPI to LVTTTL/LVDS/MIPI translate, MIPI Virtual Channel	-40 to +105	P-WQFN64 -0909-0.50-63	✓	YES			
☆ <b>ML86781</b>	3.3/1.5	RGB888 MIPI CSI-2 (RGB565/888, YUV422-8bit) MIPI DSI (RGB565/888, YUV422-8bit)	RGB888 Single/Dual LVDS (RGB666/888) MIPI CSI-2 (RGB565/888, YUV422-8bit)	LVTTTL/MIPI DSI/CSI-2 to LVTTTL/LVDS/MIPI CSI-2 ·Separate one image into two	-40 to +85	P-TQFP128 -1414-0.40-Z6K6- MC	✓	YES			
☆ <b>ML86796</b>	3.3/1.5	MIPI CSI-2 (RGB565/666/888, YUV422-8/10bit, RAW8/10/12/14/16/20/24)×4	MIPI CSI-2 (RGB565/666/888, YUV422-1/10bit, RAW8/10/12/14/16/20/24)×2	MIPI CSI-2 to MIPI CSI2 ·Supports 4Virtual Channel inputs	-40 to +85 (T.B.D)	P-TQFP100 -1414-0.50-ZK6 (T.B.D)	✓	YES			

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### Display Controller Series for Small to Medium-Sized TFT LCD

(LAPIS Technology products)

Video Decoder, Scaler Included																	
Part No.	Supply Voltage (V)	Input (Analog)		Input (Digital)	Output	Resolution	OSD	MCU	Feature	Operating Temperature (°C)	Package	Halogen Free Support*1	Automotive Grade*2				
		Terminal	Type														
ML86V8201	3.3/1.5	CVBS×2 or S-video×1	NTSC PAL SECAM	ITU-R BT.656 YUV 8/16/24bit RGB 18/24bit	ITU-R BT.656 YUV 8bit RGB 18/24bit	QVGA to WVGA	Line	—	Rear camera function Image quality adjustment	-40 to +85	P-TQFP100 -1414-0.50-ZK6	✓	YES				
ML86203		CVBS×1	—	ITU-R BT.656 YUV 8/16/24bit RGB 18/24bit	ITU-R BT.656 YUV 8bit Single LVDS (RGB 18/24bit)	VGA to WXGA	—	—	Rear camera function WXGA panel support Image quality adjustment		P-TQFP80 -1010-0.40-ZK6	✓	YES				
ML86207		CVBS×2	NTSC PAL	ITU-R BT.656 YUV 8/16/24bit RGB 18/24bit + Single LVDS (RGB 18/24bit)	ITU-R BT.656 YUV 8bit RGB 18/24bit Single LVDS (RGB 18/24bit)		Text Line	—	—		LVTTTL/LVDS I/F Digital video input ×2 WXGA panel support Rear camera function Image quality adjustment OSD function	P-TQFP100 -1414-0.50-ZK6	✓	YES			
ML86287						Text Line BMP	—	—	LVTTTL/LVDS I/F Digital video input ×2 WXGA panel support Rear camera function Picture in Picture Image quality adjustment OSD, ROM-OSD function		P-TQFP128 -1414-0.40-ZK6-MC	✓	YES				
ML86209		CVBS single×2 or differential×1	—	ITU-R BT.656 YUV 8/16bit ITU-R BT.1120 like Single/Dual LVDS (RGB 18/24bit) MIPI-CS12 (RGB565/888, YUV422-8bit)	ITU-R BT.656 or MIPI-CS12 (RGB565/888, YUV422-8bit) + Single/Dual LVDS (RGB 18/24bit)	VGA to Full HD	Text Line BMP	—	—		LVTTTL/LVDS/MIPI-CS12 I/F Digital video input ×4 Full HD panel support Rear camera function Image quality adjustment OSD, ROM-OSD function	P-TQFP128 -1414-0.40-Z6K6	✓	YES			
ML86289											LVTTTL/LVDS/MIPI-CS12 I/F Digital video input ×4 Full HD panel support Rear camera function Picture in Picture Image quality adjustment OSD, ROM-OSD function	P-TQFP128 -1414-0.40-Z6K6-MC	✓	YES			
☆ML86290	CVBS single×3 or differential×1	NTSC PAL	ITU-R BT.656 YUV 8/16bit ITU-R BT.1120-like MIPI-DSI (RGB 16/24bit, YUV 8bit, ARGB8565) MIPI-CS12 (RGB 16/24bit, YUV 8bit)	Dual/Single LVDS (RGB 18/24bit)	QVGA to Full HD	BMP	—	—	Multi Input support LVTTTL/MIPI-DSI/MIPI-CS12/CVBS I/F Rear camera function Picture in Picture ROM-OSD function	P-TQFP128 -1414-0.40-Z6K6-MC	✓	YES					
☆ML86291									Multi Input support LVTTTL/MIPI-DSI/MIPI-CS12/CVBS I/F Rear camera function Picture in Picture ROM-OSD function (10windows, 2layers)	P-TQFP128 -1414-0.40-Z6K6-MC	✓	YES					
ML86V8202C	3.3/1.8	CVBS×2 +(Comp or S-video)×1 +Comp×1	NTSC PAL SECAM	ITU-R BT.656 YUV 8/16/24bit RGB 18/24bit	ITU-R BT.656 style YUV 8/16/24bit RGB 18/24bit	QVGA to WVGA	Text Line BMP	—	Component video support Image quality adjustment	-40 to +85	P-TQFP100 -1414-0.50-ZK6	✓	YES				
ML86240	3.3/1.5	CVBS×4 or CVBS×2 +(Comp or S-video)×1 +Comp×1		ITU-R BT.656 YUV 8/16/24bit RGB 18/24bit 2ch	ITU-R BT.656 YUV 8bit RGB 18/24bit									Component video support Digital video input ×2 Rear camera function Image quality adjustment OSD function	P-TFBGA144 -1111-0.80-1	✓	YES
ML86241	3.3 (1.8)/1.5	CVBS×4 or CVBS×2 +(Comp or S-video)×1 +Comp×1		ITU-R BT.656 YUV 8/16/24bit RGB 18/24bit + Single LVDS (RGB 18/24bit)	ITU-R BT.656 YUV 8/16bit + RGB 18/24bit Single LVDS (RGB 18/24bit)									Component video support LVTTTL/LVDS I/F Digital video input ×2 WXGA panel support Rear camera function Image quality adjustment OSD, ROM-OSD function	P-TFBGA144 -1111-0.80-1	✓	YES
ML86243	3.3/1.5	CVBS single×2 or differential×1	NTSC PAL	ITU-R BT.656 YUV 8/16bit ITU-R BT.1120 like Single/Dual LVDS (YUV 8/16bit RGB 18/24bit)	ITU-R BT.656 YUV 8/16bit RGB 24bit Single/Dual LVDS (RGB 18/24bit) MIPI-CS12 (RGB565/888 YUV422-16bit)	QVGA to WVGA	Text Line BMP	—	Multi Input/Output support LVTTTL/LVDS/MIPI-CS12/ CVBS I/F Rear camera function Picture in Picture Image quality adjustment OSD, ROM-OSD function State monitor function	-40 to +85	P-TQFP128 -1414-0.40-Z6K6-MC	✓	YES				
☆ML86244		CVBS single×2 or differential×1												Multi Input support LVTTTL/LVDS/CVBS I/F Picture in Picture Image quality adjustment OSD, ROM-OSD function State monitor function	P-TQFP128 -1414-0.40-Z6K6-MC	✓	YES
ML86245		—												Multi Input/Output support LVTTTL/LVDS/MIPI-CS12/ CVBS I/F Rear camera function Picture in Picture Image quality adjustment OSD, ROM-OSD function State monitor function	P-TQFP128 -1414-0.40-Z6K6-MC	✓	YES
ML86321		CVBS single×2 or differential×1												NTSC PAL	ITU-R BT.656 YUV 8/16bit ITU-R BT.1120 like MIPI-CS12 (RGB565/888, YUV422-8bit)	YUV 8/16bit Single LVDS (RGB 18/24bit)	QVGA to WVGA

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\*2 Please inquire to the sales for AEC-Q100.

\*3 Please inquire to the sales for input/output specification.

(LAPIS Technology products)

Image Adjustment Functions Included													
Part No.	Supply Voltage (V)	Input (Analog)		Input (Digital)	Output	Resolution	OSD	MCU	Feature	Operating Temperature (°C)	Package	Halogen Free Support*1	Automotive Grade*2
		Terminal	Type										
ML86V8101	3.3			RGB 18bit	RGB 18bit	QVGA to QHD	-		Image quality adjustment function	-40 to +85	P-TQFP64 -1010-0.50-ZK6	✓	YES
ML86V8102				RGB 18/24bit	RGB 18/24bit				RGB 24bits supported image quality adjustment function		P-TQFP80 -1010-0.40-ZK6	✓	YES
ML86173	3.3/1.5	-	-	ITU-R BT.656 YUV 8/10bit RGB 18/24bit Single/Dual LVDS (RGB 18/24bit)	Single/Dual LVDS (RGB 18/24bit)	WVGA to H2880 (Max) V1080 (Max) (Pixel rate 160MHz Max)	Text BMP	-	Image quality adjustment OSD, ROM OSD function (30windows, 2layers) Frequency conversion function State monitor function	-40 to +85	P-TQFP100 -1414-0.50-Z6K6	✓	YES
ML86175				ITU-R BT.656 YUV 8/16bit RGB 18/24bit Single/Dual LVDS (RGB 18/24bit)		H2048 (Max) V2048 (Max) (Pixel rate 160MHz Max)			Image quality adjustment 90 degree rotation function OSD, ROM OSD function (15windows, 1layer) Frequency conversion function State monitor function		TQFP128 -1414-0.40-Z6K6-MC	✓	YES
☆ML86177				RGB 24bit Single LVDS (RGB 24bit)	RGB 24bit Single LVDS (RGB 24bit)	QVGA to WXGA	BMP	Warping and rotation for HUD ROM OSD function (10windows, 2layers) Status output Fail detection function	-40 to +105 (T.B.D)	P-TQFP128 -1414-0.40-Z6K6-MC	✓	YES	
Video decoder, 8051MCU Included													
ML86V8401	3.3/1.8	CVBS×3 or CVBS×2 +S-video×1	NTSC PAL SECAM	ITU-R BT.656 YUV 8/16/24bit RGB 18/24bit	ITU-R BT.656 RGB 18/24bit	QVGA to WVGA	Text	8051 (8bit)	System control MCU installed	-40 to +85	P-TQFP100 -1414-0.50-ZK6	✓	YES

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