



HARRIS

HA-2630/35

**Not Recommended
For New Designs
See HA-5002**

High Performance Current Booster

FEATURES

- OUTPUT CURRENT $\pm 400\text{mA}$
- SLEW RATE $500\text{V}/\mu\text{s}$
- BANDWIDTH 8MHz
- FULL POWER BANDWIDTH 8MHz
- INPUT RESISTANCE $2.0 \times 10^6 \Omega$
- OUTPUT RESISTANCE 2.0Ω
- POWER SUPPLY RANGE $\pm 5\text{V}$ to $\pm 20\text{V}$
- PACKAGE IS ELECTRICALLY ISOLATED

APPLICATIONS

- COAXIAL CABLE DRIVERS
- AUDIO OUTPUT AMPLIFIERS
- SERVO MOTOR DRIVERS
- POWER SUPPLIES (BIPOLAR)
- PRECISION DATA RECORDING

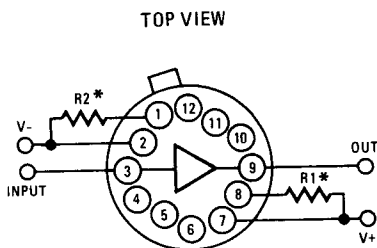
DESCRIPTION

HA-2630 and HA-2635 are monolithic, unity voltage gain current amplifiers delivering extremely high slew rate, wide bandwidth, and full power bandwidth even under heavy output loading conditions. This dielectrically isolated current booster also offers high input impedance and low output resistance. These devices are intended to be used in series with an operational amplifier and inside the feedback loop whenever additional output current is required. Output current levels are programmable by selecting two optional external resistors.

These current amplifiers offer an exceptional $500\text{V}/\mu\text{s}$ slew rate and 8MHz bandwidth which allows them to be used with many high performance op amps in precision data recording and high speed coaxial cable driver designs. $2.0\text{M}\Omega$ ohm input resistance and 2ohm output resistance coupled with $\pm 400\text{mA}$ output current make HA-2630 and HA-2635 ideal components in high fidelity audio output amplifier designs.

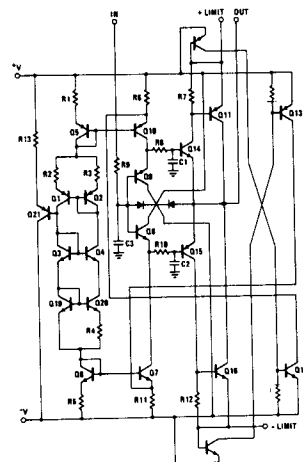
HA-2630 and HA-2635 are available in an electrically isolated TO-8 type can for ease of mounting with or without a heat sink. HA-2630 is specified over the -55°C to $+125^\circ\text{C}$ range. HA-2635 is specified from 0°C to $+75^\circ\text{C}$.

PINOUT



* Optional Current Limiting Resistor

SCHEMATIC



SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS

Voltage Between V+ and V- Terminals	40V	Operating Temperature Range:	
Input Voltage Range	± V Supply	-55°C ≤ T _A ≤ +125°C	(HA-2630)
Output Current (Note 2)	±700mA	0°C ≤ T _A ≤ +75°C	(HA-2635)
Internal Power Dissipation (Note 6)	Free Air: 1W In Heat Sink: 4W	Storage Temperature Range:	-65°C ≤ T _A ≤ +150°C

ELECTRICAL CHARACTERISTICS

V_{Supply} = ±15 Volts R_L = 50 Ohms R₁ = R₂ = 0 Ohms Unless otherwise specified.

PARAMETER	TEMP.	HA-2630 -55°C to +125°C			HA-2635 0°C to +75°C			UNITS
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
INPUT CHARACTERISTICS								
Bias Current	+25°C Full		30	150 200		30	150 200	μA μA
Input Resistance	+25°C		2.0			2.0		MΩ
Input Capacitance	+25°C		5.0			5.0		pF
TRANSFER CHARACTERISTICS								
Voltage Gain (Note 1)	Full	.85	.95		.85	.95		V/V
Offset Voltage (V _{OUT} - V _{IN})	+25°C Full		70	±200 ±300		70	±200 ±300	mV mV
Bandwidth (-3dB)	+25°C		8.0			8.0		MHz
OUTPUT CHARACTERISTICS								
Output Voltage Swing	Full	±10	±12		±10	±12		V
Output Current (Note 1)	Full	±300	±400		±300	±400		mA
Output Resistance	+25°C		2.0			2.0		Ω
Full Power Bandwidth (Note 1)	+25°C		8.0			8.0		MHz
TRANSIENT RESPONSE								
Rise Time (Note 3)	+25°C		30			30		ns
Slew Rate (Note 4)	+25°C	200	500		200	500		V/μs
POWER SUPPLY CHARACTERISTICS								
Supply Current	Full		15	20		15	23	mA
Supply Voltage Range	Full	±5		±20	±5		±20	V
Power Supply Rejection Ratio (Note 5)	Full		66			66		dB

- NOTES: 1. V_O = ±10V
 2. Heat sink is required for continuous short circuit protection, regardless of current limit setting.
 3. V_O = 0.4V p-p.
 4. V_O = 10V p-p.

5. ΔV_{SUPPLY} = ±5V.
 6. Without heat sink, derate by 14mW/°C ambient temperature above 100°C ambient, with heat sink, derate by 67mW/°C case temperature above 115°C case.

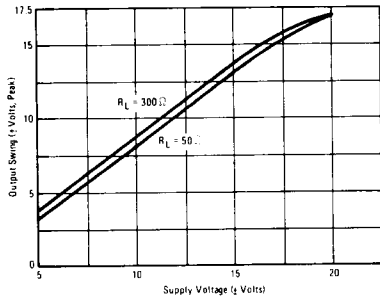
2

OPAMP, COMP. CONTROL FUNCT.

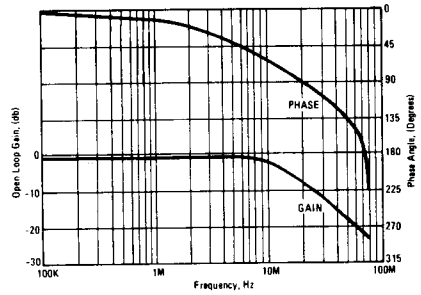
PERFORMANCE CURVES

$V_+ = 15\text{VDC}$, $V_- = 15\text{VDC}$, $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE STATED

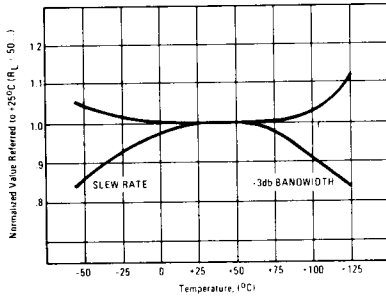
OUTPUT SWING
($R_{LIMIT} = 0\Omega$)



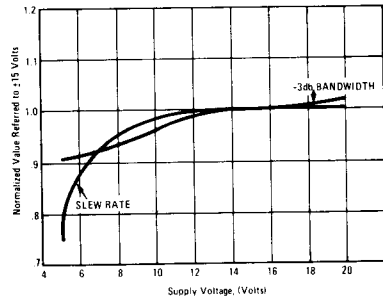
OPEN LOOP FREQUENCY AND PHASE RESPONSE ($R_L = 50\Omega$, $C_L \approx 10\text{pF}$)



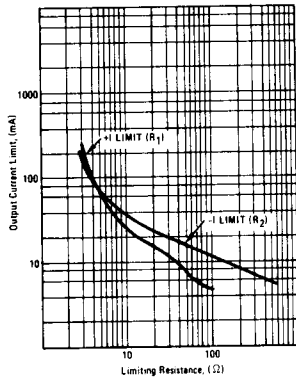
NORMALIZED AC PARAMETERS vs. TEMPERATURE ($R_L = 50\Omega$)



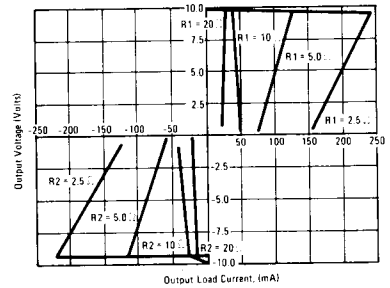
NORMALIZED AC PARAMETERS vs. SUPPLY VOLTAGE ($R_L = 50\Omega$)



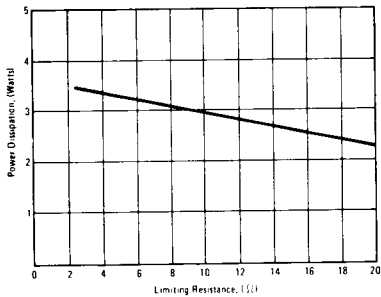
OUTPUT CURRENT LIMITING vs. LIMITING RESISTANCE



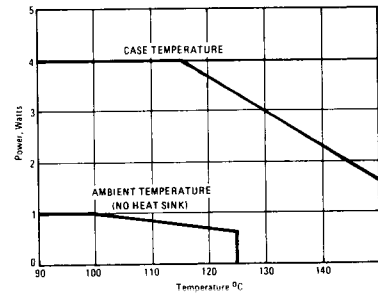
OUTPUT CURRENT CHARACTERISTIC



POWER DISSIPATION vs. LIMITING RESISTANCE WITH OUTPUT SHORTED TO GROUND; $V_{IN} = +10\text{V}$

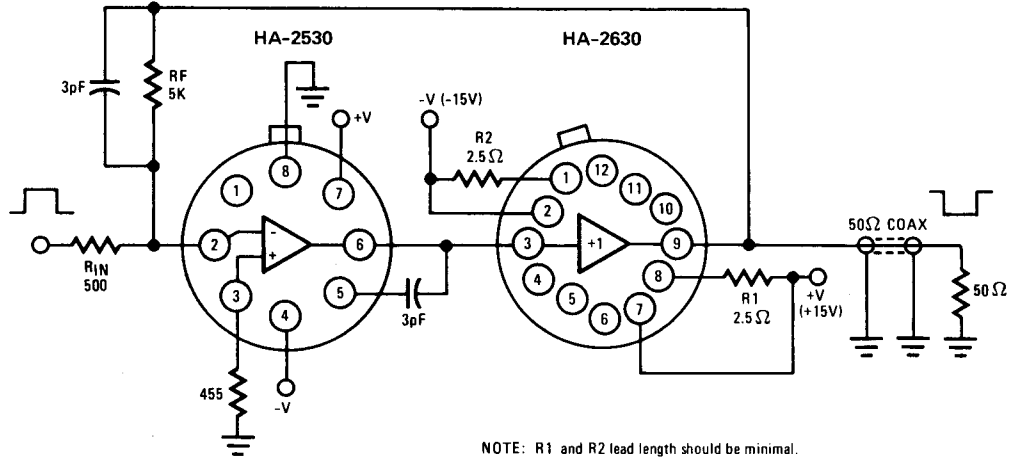


MAXIMUM ALLOWABLE INTERNAL POWER DISSIPATION vs. TEMPERATURE

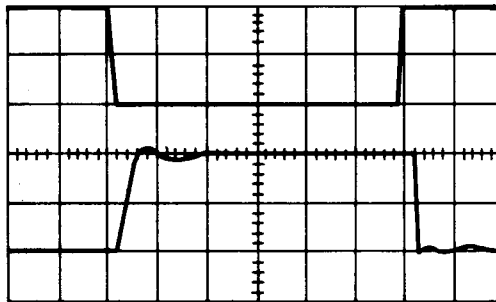


TYPICAL APPLICATION

20dB, 5MHz VIDEO COAXIAL LINE DRIVER



LINE DRIVER PULSE RESPONSE



Horizontal Scale = 200ns/Div.

Upper Trace: Input, 200mV/Div.

Lower Trace: Output, 2V/Div.

SOME OTHER APPLICATIONS

- BIPOLAR POWER SUPPLY
- FUNCTION GENERATOR OUTPUT
- DEFLECTION COIL DRIVE
- AUDIO OUTPUT AMPLIFIER