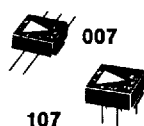


Devar Hybrid Microcircuit Operational Amplifiers

SPECIFICATIONS

At 25°C, $\pm 15\text{V}$ Power Supply
and Rated Load unless noted

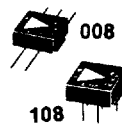


007

Bipolar
Input
Models
C-007 &
C-107



Bipolar
Input
Models
C-247 &
M-247



008

FET
Input
Models
C-008 &
C-108

OUTPUT RANGE

Voltage	min.	$\pm 10\text{ V}$	$\pm 10\text{ V}$	$\pm 10\text{ V}$
Current	min.	$\pm 5\text{ mA}$	$\pm 5\text{ mA}$	$\pm 5\text{ mA}$

VOLTAGE GAIN (DC, OPEN LOOP)

Rated Load (2K Ω)	min.	25,000 V/V	25,000 V/V	25,000 V/V
10K Ω Load	min.	100,000 V/V	100,000 V/V	100,000 V/V

FREQUENCY RESPONSE (EITHER INPUT)

Small Signal (Unity Gain, Open Loop)	min.	2.0 MHz	2.0 MHz	2.0 MHz
Large Signal: Full Output	min.	40 KHz	40 KHz	70 KHz
Rate Limit	min.	2.0 V/ $\mu\text{sec.}$	2.0 V/ $\mu\text{sec.}$	3.0 V/ $\mu\text{sec.}$
Settling Time		—	—	—

INPUT VOLTAGE RANGE

Common Mode (DC Linear)	min.	$\pm 11\text{ V}$	$\pm 11\text{ V}$	$\pm 7\text{ V}$
(Fault)	abs. max.	$\pm 15\text{ V}$	$\pm 15\text{ V}$	$\pm 15\text{ V}$
Differential (Between Inputs)	abs. max.	30 V	30 V	30 V
Common Mode Rejection Ratio	typ.	100 db	100 db	80 db

INPUT IMPEDANCE

Differential		500 K Ω 3 pf	500 K Ω 3 pf	10 ¹¹ Ω 4 pf
Common Mode (Either Input to Common)		200 M Ω 6 pf	200 M Ω 6 pf	10 ¹¹ Ω 4 pf

NOISE (REFERRED TO INPUT)

Broad Band (1 Hz to 10 KHz)				
Voltage RMS		5 μV	5 μV	2 μV
Current RMS		4 nA	4 nA	3 pA

POWER REQUIREMENTS

Nominal Supply Voltage		$\pm 15\text{ V}$	$\pm 15\text{ V}$	$\pm 15\text{ V}$
Voltage Range		$\pm 6\text{ V}$ to $\pm 22\text{ V}$	$\pm 6\text{ V}$ to $\pm 22\text{ V}$	$\pm 10\text{ V}$ to $\pm 22\text{ V}$
Current: Quiescent	max.	$\pm 7\text{ mA}$	$\pm 7\text{ mA}$	$\pm 7\text{ mA}$
Full Load	max.	+7, -12 mA	+7, -12 mA	+7 mA, -12 mA

TEMPERATURE RANGE (°C)

Operating		-25 to +85	-55 to +125	-25 to +85
Storage		-55 to +125	-65 to +150	-55 to +125

1402 B-11

GRADE	A ₁	A ₂	B ₁	C ₁	A ₁	A ₂	B ₁	C ₁	A ₁	A ₂
INPUT VOLTAGE OFFSET										
Initial (25°C) mV	max.	0.2	0.2	0.5	1.0	0.2	0.2	0.5	1.0	1.0
Avg. vs. Temperature $\mu\text{V}/^\circ\text{C}$ (-25 to +85)	max.	1.0	2.0	5.0	10	1.0	2.0	5.0	10	10
INPUT BIAS CURRENT (EACH INPUT)										
Initial (25°C) nA	max.	150	150	150	200	100	100	100	100	5
vs. Temperature nA/ $^\circ\text{C}$	max.	2	2	2	2.5	1.0	1.0	1.0	1.0	0.5*

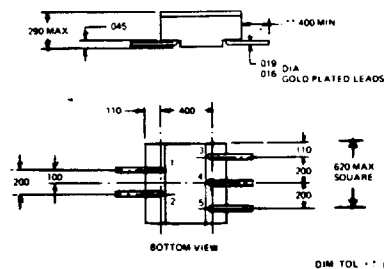
*At 25°C, doubles each 10°C

Note: M- denotes Mil-883 processing.

MECHANICAL

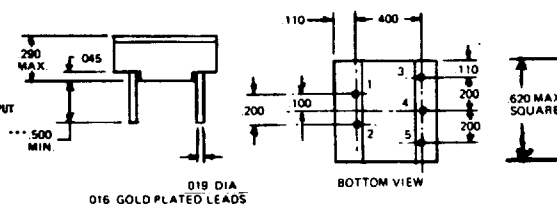
Models C-007 & C-008

PIN 1: INVERTING INPUT
PIN 2: NON INVERTING INPUT
PIN 3: (+) 15 V DC
PIN 4: (-) 15 V DC
PIN 5: OUTPUT



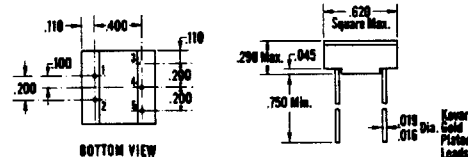
Models C-107 & C-108

PIN 1: INVERTING INPUT
PIN 2: NON INVERTING INPUT
PIN 3: (+) 15 V DC
PIN 4: (-) 15 V DC
PIN 5: OUTPUT



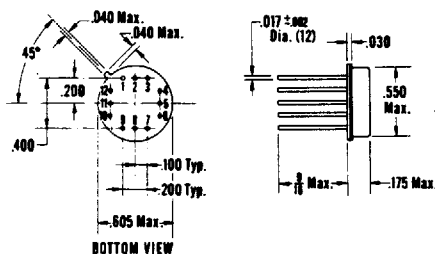
**Model
C-018 &
C-118**

PIN 1: INVERTING INPUT
PIN 2: NON INVERTING INPUT
PIN 3: (+) 15 V DC
PIN 4: (-) 15 V DC
PIN 5: OUTPUT



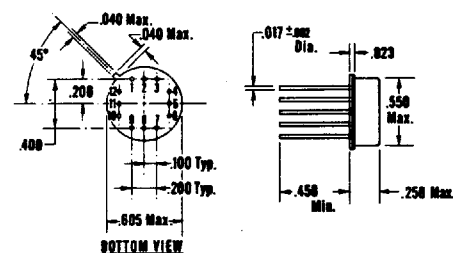
**Model
C-218 &
C-228**

PIN 1: NON INVERTING INPUT
PIN 2: INVERTING INPUT
PIN 3: N.C.
PIN 4: (+) 15 V DC
PIN 5: TRIM
PIN 6: (-) 15 V DC
PIN 7: CASE GROUND
PIN 8: OUTPUT
PIN 9: TRIM
(Other Pins - No Connection)



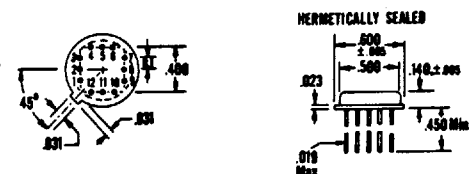
**Model
C-238**

PIN 1: (+) INPUT
PIN 2: (-) INPUT
PIN 3: M.C.
PIN 4: (+) 15 V DC
PIN 5: (-) 15 V DC
PIN 7: CASE GROUND
PIN 8: OUTPUT
PIN 9: DO NOT USE
PIN 10: DO NOT USE
PIN 11: M.C.
PIN 12: M.C.



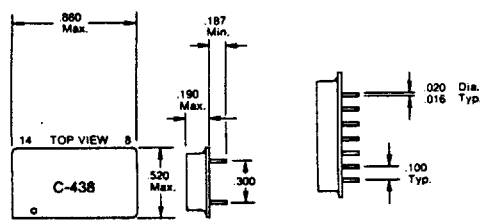
Models C-247 & C-248

PIN 1: NON INVERTING INPUT
PIN 2: INVERTING INPUT
PIN 4: (+) 15 V DC
PIN 5: COMMON
PIN 6: (-) 15 V DC
PIN 7: CASE
PIN 8: OUTPUT
(Other Pins - No Connection)



Models C-418 & C-438

PIN 1: N.C.
PIN 2: N.C.
PIN 3: N.C.
PIN 4: (—) INPUT
PIN 5: (+) INPUT
PIN 6: (—) 15 V DC
PIN 7: N.C.
PIN 8: CASE
PIN 9: N.C.
PIN 10: OUTPUT
PIN 11: (+) 15 V DC
PIN 12: N.C.
PIN 13: N.C.
PIN 14: N.C.



SCHEMATIC

FIG. 1
SLEW RATE MEASUREMENT CIRCUIT

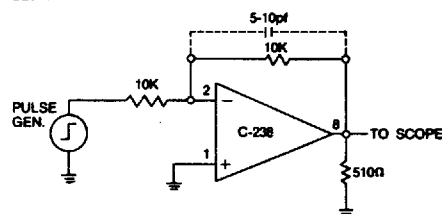


FIG. 2
SETTLING TIME MEASUREMENT CIRCUIT

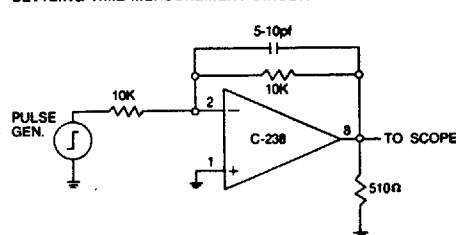


FIG. 1A
SLEW RATE MEASUREMENT CIRCUIT

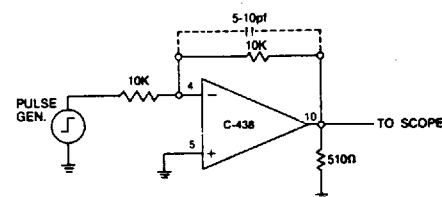


FIG. 2A
SETTLING TIME MEASUREMENT CIRCUIT

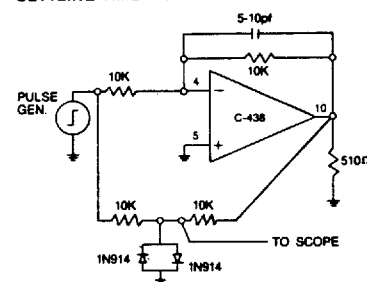


FIG. 3
UNITY GAIN FOLLOWER
WITH VOLTAGE OFFSET NULL
CIRCUIT

