

MJLM118-X REV 0CL

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SINGLE OPERATIONAL AMPLIFIER, HIGH SPEED
Industry Part Number

LM118

Prime Die

LM118

Controlling Document

38510/10107, AMEND.2 REV G

NS Part Numbers

 JL118BCA
 JL118BGA
 JL118BHA
 JL118BPA
 JL118SCA
 JL118SGA
 JL118SHA
 JL118SPA

Processing

MIL-STD-883, Method 5004

Quality Conformance Inspection

MIL-STD-883, Method 5005

Subgrp	Description	Temp (°C)
1	Static tests at	+25
2	Static tests at	+125
3	Static tests at	-55
4	Dynamic tests at	+25
5	Dynamic tests at	+125
6	Dynamic tests at	-55
7	Functional tests at	+25
8A	Functional tests at	+125
8B	Functional tests at	-55
9	Switching tests at	+25
10	Switching tests at	+125
11	Switching tests at	-55
12	Settling time at	+25
13	Settling time at	+125
13	Settling time at	-55

Electrical Characteristics

DC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)

DC: $\pm V_{CC} = \pm 20V$

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
Vio	Input Offset Voltage	+Vcc = 35V, -Vcc = -5V, Vcm = -15V			-4	4	mV	1
					-6	6	mV	2, 3
		+Vcc = 5V, -Vcc = -35V, Vcm = 15V			-4	4	mV	1
					-6	6	mV	2, 3
		Vcm = 0V			-4	4	mV	1
					-6	6	mV	2, 3
		+Vcc = 5V, -Vcc = -5V, Vcm = 0V			-4	4	mV	1
					-6	6	mV	2, 3
Iio	Input Offset Current	+Vcc = 35V, -Vcc = -5V, Vcm = -15V, Rs = 100K Ohms	7		-40	40	nA	1
			7		-80	80	nA	2, 3
		+Vcc = 5V, -Vcc = -35V, Vcm = 15V, Rs = 100K Ohms	7		-40	40	nA	1
			7		-80	80	nA	2, 3
		Vcm = 0V, Rs = 100K Ohms	7		-40	40	nA	1
			7		-80	80	nA	2, 3
		+Vcc = 5V, -Vcc = -5V, Vcm = 0V, Rs = 100K Ohms	7		-40	40	nA	1
			7		-80	80	nA	2, 3
Iib+	Input Bias Current	+Vcc = 35V, -Vcc = -5V, Vcm = -15V, Rs = 100K Ohms	7		1	250	nA	1, 2
			7		1	400	nA	3
		+Vcc = 5V, -Vcc = -35V, Vcm = 15V, Rs = 100K Ohms	7		1	250	nA	1, 2
			7		1	400	nA	3
		Vcm = 0V, Rs = 100K Ohms	7		1	250	nA	1, 2
			7		1	400	nA	3
		+Vcc = 5V, -Vcc = -5V, Vcm = 0V, Rs = 100K Ohms	7		1	250	nA	1, 2
			7		1	400	nA	3

Electrical Characteristics

DC PARAMETERS(Continued)

(The following conditions apply to all the following parameters, unless otherwise specified.)

DC: $\pm V_{CC} = \pm 20V$

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
Iib-	Input Bias Current	+Vcc = 35V, -Vcc = -5V, Vcm = -15V, Rs = 100K Ohms	7		1	250	nA	1, 2
			7		1	400	nA	3
		+Vcc = 5V, -Vcc = -35V, Vcm = 15V, Rs = 100K Ohms	7		1	250	nA	1, 2
			7		1	400	nA	3
		Vcm = 0V, Rs = 100K Ohms	7		1	250	nA	1, 2
			7		1	400	nA	3
		+Vcc = 5V, -Vcc = -5V, Vcm = 0V, Rs = 100K Ohms	7		1	250	nA	1, 2
			7		1	400	nA	3
PSRR+	Power Supply Rejection Ratio	+Vcc = 10V, -Vcc = -20V			-100	100	uV/V	1
					-150	150	uV/V	2, 3
PSRR-	Power Supply Rejection Ratio	+Vcc = 20V, -Vcc = -10V			-100	100	uV/V	1
					-150	150	uV/V	2, 3
CMRR	Common Mode Rejection Ratio	Vcm = $\pm 15V$, Vcc = $\pm 35V$ to $\pm 5V$			80		dB	1, 2, 3
Vio(adj)+	Offset Null				7		mV	1, 2, 3
Vio(adj)-	Offset Null					-7	mV	1, 2, 3
Delta Vio/Delta T	Temperature Coefficient of Input Offset Voltage	25 C $\leq$ TA $\leq$ 125 C	2		-50	50	uV/ C	2
		-55 C $\leq$ TA $\leq$ 25 C	2		-50	50	uV/ C	3
Delta Iio/Delta T	Temperature Coefficient of Input Offset Current	25 C $\leq$ TA $\leq$ 125 C	2		-1000	1000	pA/ C	2
		-55 C $\leq$ TA $\leq$ 25 C	2		-1000	1000	pA/ C	3
Ios+	Short Circuit Current	+Vcc = 15V, -Vcc = -15V, t $\leq$ 25mS, Vcm = -15V			-65		mA	1, 2, 3
Ios-	Short Circuit Current	+Vcc = 15V, -Vcc = -15V, t $\leq$ 25mS, Vcm = 15V				65	mA	1, 2
		+Vcc = 15V, -Vcc = -15V, t $\leq$ 25mS, Vcm = 15V				80	mA	3
Icc	Power Supply Current	+Vcc = 15V, -Vcc = -15V				8	mA	1
						7	mA	2
						9	mA	3

Electrical Characteristics

DC PARAMETERS(Continued)

(The following conditions apply to all the following parameters, unless otherwise specified.)

DC: $\pm V_{CC} = \pm 20V$

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
Vopp+	Output Voltage Swing	Rl = 10K Ohms, Vcm = -20V			17		V	4, 5, 6
		Rl = 2K Ohms, Vcm = -20V			16		V	4, 5, 6
Vopp-	Output Voltage Swing	Rl = 10K Ohms, Vcm = 20V				-17	V	4, 5, 6
		Rl = 2K Ohms, Vcm = 20V				-16	V	4, 5, 6
Avs+	Open Loop Voltage Gain	Vout = 15V, Rl = 2K Ohms	1		50		V/mV	4
			1		32		V/mV	5, 6
		Vout = 15V, Rl = 10K Ohms	1		50		V/mV	4
			1		32		V/mV	5, 6
Avs-	Open Loop Voltage Gain	Vout = -15V, Rl = 2K Ohms	1		50		V/mV	4
			1		32		V/mV	5, 6
		Vout = -15V, Rl = 10K Ohms	1		50		V/mV	4
			1		32		V/mV	5, 6
Avs	Open Loop Voltage Gain	$\pm V_{CC} = \pm 5V$, Vout = $\pm 2V$, Rl = 2K Ohms	1		10		V/mV	4, 5, 6
		$\pm V_{CC} = \pm 5V$, Vout = $\pm 2V$, Rl = 10K Ohms	1		10		V/mV	4, 5, 6

Electrical Characteristics

AC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)

AC: $\pm V_{CC} = \pm 20V$

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
NI(BB)	Noise Input Broadband	BW = 10Hz to 5KHz, $R_s = 0 \text{ Ohms}$	3			25	μV_{rms}	7
NI(PC)	Noise Input Popcorn	BW = 10Hz to 5KHz, $R_s = 20K \text{ Ohms}$	3			80	μV_{pk}	7
TR(tr)	Transient Response: Rise Time	$V_{in} = 50mV$, PRR = 1KHz	4			40	nS	7, 8A, 8B
TR(os)	Transient Response: Overshoot	$V_{in} = 50mV$, PRR = 1KHz	4			50	%	7, 8A, 8B
Sr+	Slew Rate	$A_v = 1$, $V_{in} = -5V \text{ to } +5V$	4		50		V/ μS	7, 8B
			4		40		V/ μS	8A
Sr-	Slew Rate	$A_v = 1$, $V_{in} = +5V \text{ to } -5V$	4		50		V/ μS	7, 8B
			4		40		V/ μS	8A
ts+	Settling Time	$V_{in} = -5V \text{ to } +5V$	5, 6			800	nS	12
			5, 6			1200	nS	13, 13
ts-	Settling Time	$V_{in} = +5V \text{ to } -5V$	5, 6			800	nS	12
			5, 6			1200	nS	13, 13

DC PARAMETERS: DRIFT VALUES

(The following conditions apply to all the following parameters, unless otherwise specified.)

DC: $\pm V_{CC} = \pm 20V$. "Delta calculations performed on JAN S and QMLV devices at group B, subgroup 5 only".

Vio	Input Offset Voltage	$V_{cm} = 0V$			-1	1	mV	1
Iib+	Input Bias Current	$V_{cm} = 0V$, $R_s = 100K \text{ Ohms}$			-25	25	nA	1
Iib-	Input Bias Current	$V_{cm} = 0V$, $R_s = 100K \text{ Ohms}$			-25	25	nA	1

Note 1: Datalog in K = V/mV.

Note 2: Calculated parameter.

Note 3: Test on either A360, J273 AC or bench test.

Note 4: Test on LTX or bench test.

Note 5: Errorband = $\pm 2\%$.

Note 6: Test on Bench, refer to SP-16655.

Note 7: S/S $R_s = 20K \text{ Ohms}$, tested with $R_s = 100K \text{ Ohms}$ for better resolution.