ENTRA SUB TWO

POWERED SUBWOOFER

SERVICE MANUAL

Infinity Systems, Inc.
250 Crossways Park Dr.
Woodbury, New York 11797

Rev 1 4/2003

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SPECIFICATIONS

	Entra Sub Two
Frequency Response:	28Hz – 150Hz (±3dB)
Maximum Amplifier Output: (20Hz – 150Hz with no more than 0.1% THD)	250 watts RMS 500 watts peak
Crossover Frequencies:	50Hz – 150Hz, 24dB/octave, continuously variable
High-Pass Frequency: (Speaker-Level Output Only)	150Hz
Driver:	12" C.M.M.D.
Dimensions (H x W x D):	17" x 15-3/8" x 19-3/8" (432mm x 391mm x 492mm)
Weight:	47 lb (21.4kg)

Infinity continually strives to update and improve existing products, as well as create new ones. The specifications and construction details in this and related Infinity publications are therefore subject to change without notice.

Entra Sub Two

INFINITY ENTRA SUB TWO 150W Powered Sub/ Plate Amp

LINE VOLTAGE	Yes/No	Hi/Lo Line	Nom.	Unit	Notes
US 120vac/60Hz	Yes	108-132	120	Vrms	Normal Operation
EU 230vac/50-60Hz	Yes	207-264	230	Vrms	Normal operation, MOMS required

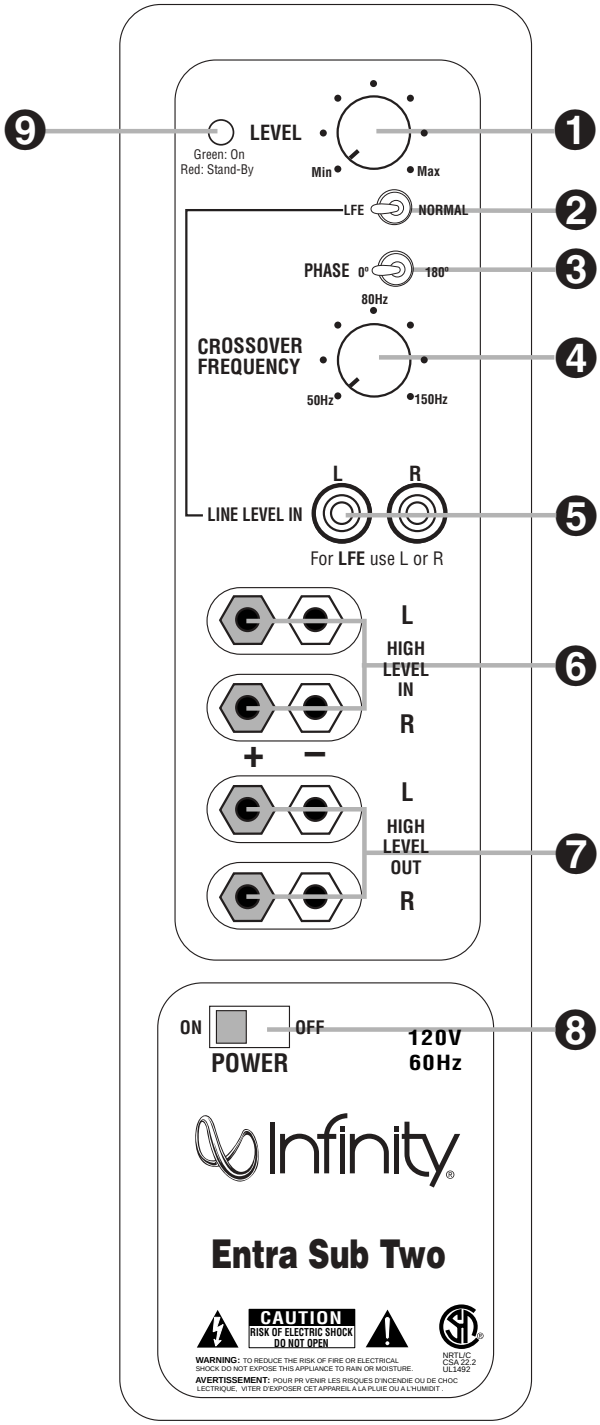
Parameter	Specification	Unit	QA Test Limits	Conditions	Notes
Amp Section					
Type (Class AB, D, other)	D	n/a	n/a		
Load Impedance (speaker)	4	Ohms	n/a	Nominal	
Rated Output Power (120VAC	150	Watts	135		Domestic version only 120 VAC-60 Hz
Rated Output Power (230VAC	150	Watts	130		EU Version only 230 VAC-50 Hz
THD @ Rated Power	0.3	%	1	22K filter	140 Watts
THD @ 1 Watt	0.1	%	0.5	22K filter	
DC Offset	10	mV-DC	30	Amplifier output	
Damping factor	>50	DF	35	Measured at amplifier board	Measured at the speaker cable. 150 Watts @ THD < 0.1 % @ 50 Hz
Input Sensitivity					
Input Frequency	50	Hz	50	Nominal Freq.	
L&R	32	mVrms	±2dB	To 1 Watt	Single input driven, AP Zo=600 Unbalance
LFE input	38	mVrms	±2dB	To 1 Watt	Single input driven, LFE switch ON, AP Zo=600 Ohms, Unbalance.
Speaker/Hi Level Input	325	mVrms	±2dB	To 1 Watt	Single input driven, EQ switch in Normal
L&R Sensitivity in dB to 1 Wat	36	dB	±2dB	To 1 Watt	Single input driven, AP Zo=600 Unbalance
Signal to Noise					
SNR-A-Weighted	90	dBA	80	relative to rated power	A-Weighting filter
SNR-unweighted	90	dBr	80	relative to rated power	22k filter
SNR rel. 1W-unweighted	65	dBr	60	relative to 1W Output	22k filter
Residual Noise Floor	0.5	mVrms	1	Volume @max, using RMS reading DMM/VOM (or A/P) BW=20 KHz.	Line level inputs must be terminated using 1KOHM
Residual Noise Floor	0.5	mVrms(max)	1	Volume @max, w/ A/P Swept Bandpass Measurement (Line freq.+ harmonics) (BW=20 Khz)	Line level inputs must be terminated using 1KOHM
Input Impedance					
Line Input (L, R,LFE)	Minimum 10K	ohms	n/a	Nominal	
Speaker/Hi Level Input	Minimum 4.7K	ohms	n/a	Nominal	
Filters					
LP filter 4th	50-150	Hz	± 10		See AP curves 2nd order variable + 2nd order fix-24 db/Octave
Subsonic filter (HPF) 3rd Orde	Fixed				
LFE Low pass 2nd order	200>LP<1K	Hz		LFE input driven only	
HP speaker out connector	200	Hz	± 10	Speaker input driven - 4 Ohms	
	100	Hz	± 10	Speaker input driven - 8 Ohms	
Limiter					
THD at Max. Output Power	<5	<10	functional	Maximum Output Power	Maximum THD as a result of limiting., Input signal 6dB above its maximum sensitivity (Single input driven)
Features	--				
Volume pot Taper (lin/log)	LOG	--	functional		A Taper
HP Speaker out	YES		functional		Refer to Filter section
Phase switch	0-180	deg	functional		
LP Filter defeat switch	YES		functional		Disables LP filter, intended for LFE
Input Configuration					
Line In (L,R) & LFE	YES	--	functional		Dual RCA jack
Spkr/Hi Level In	YES	--	functional		Binding post connector L&R
Signal Sensing (ATO)					
Auto-Turn-On (yes/no)	YES		functional		
ATO Input test frequency	50	Hz	functional	"	
ATO Level LFE Input	2	mV	functional	"	Maximum acceptable level.
ATO Level Speaker in	50	mV	functional	"	Maximum acceptable level.
ATO Turn-on time	5	ms	functional	Amp connected and AC on, then input signal applied	
Auto Mute/ Turn-OFF Time	15	minutes	20	(T) Time before muting, after input signal is removed	Auto turn of time (T) must be 5 > T < 20 Minutes
Power on Delay time	3	sec.	4	AC Power Applied	
Transients/Pops					
ATO Transient	5	mV-peak	n/a	@ Speaker Outputs	
Turn-on Transient	50	mV-peak	2v-pp	@ Speaker Outputs	AC Line cycled from OFF to ON
Turn-off Transient	50	mV-peak	2v-pp	@ Speaker Outputs	AC Line cycled from ON to OFF

Entra Sub Two

Parameter	Specification	Unit	QA Test Limits	Conditions	Notes
Efficiency					
Efficiency	65	%	60		Nominal Line voltage 120 VAC
Stand-by Input Power	20	Watts	26	@ nom. line voltage	Maximum allowable input power under nominal Input voltage and frequency, HOT or COLD operation.
Power Cons. @ rated power	234	Watts	240	@ nom. line voltage	140 Watts @ 4 Ohms nominal line voltage
Protection					
Short Circuit Protection	YES		functional	Direct short at output	Amplifier should resume operation after short circuit condition removal
Thermal Protection	YES		functional	@1/8 max unclipped Power at 1.06 times the input voltage	Temperature rise in accessible metal parts should not exceed 35K rise for domestic version or 30K rise for European versions (refer to requirements sheet).
DC Offset Protection	YES		-	DC present at Speaker Out leads	Design must insure no Offset at the speaker output under any operating condition including abnormal operation
ESD Protection	YES	KV	15	Positive and negative polarity	All input outputs ports accessible to the user must meet the performance and test criteria described in IEC801-2
Line Fuse Rating					
USA-Domestic	2	Amps		Type-T or Slo Blo-250 V	
EU	1.25	Amps		Type-T or Slo Blo-250 V	If exxternal fuse use UL/SEMKO rated holder

Controls and Connections

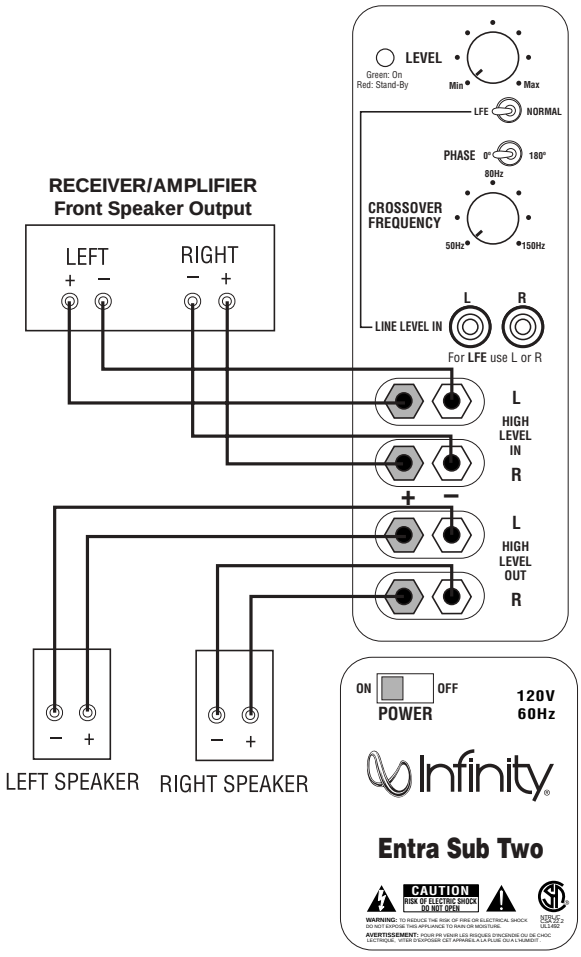
Rear Panel

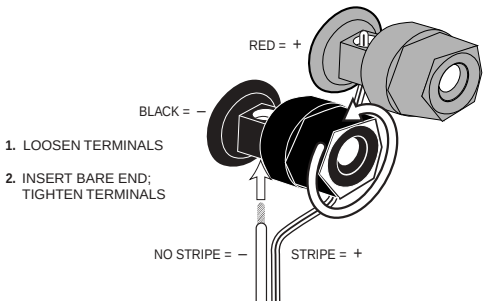


1. Subwoofer-Level Control
2. Line/LFE Selector
3. Phase Switch
4. Crossover Frequency Control
5. Line-Level/LFE Input
6. High Speaker-Level Inputs
7. High Speaker-Level Outputs
8. Power Switch
9. Status LED

System Connections

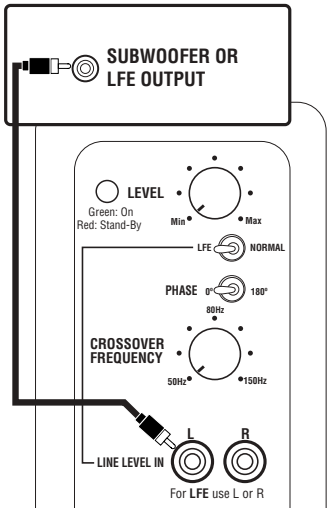
If your receiver/processor does not have subwoofer outputs for the left and right channels or an LFE output:





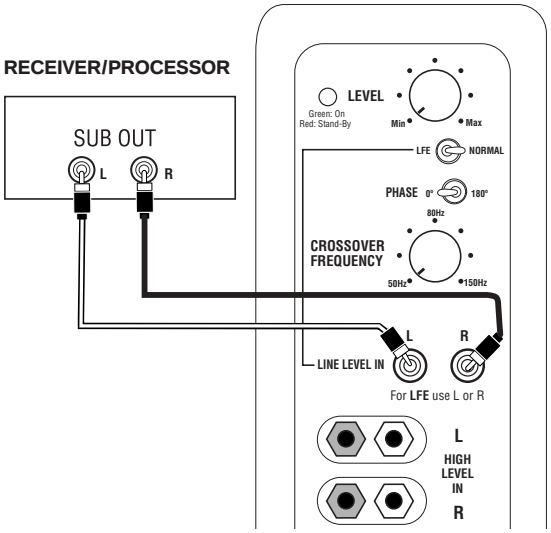
This figure shows how to connect bare wires to the terminals. Banana plugs may also be inserted directly into the rear of the connector.

If you have a Dolby* Digital or DTS® receiver/processor with a low-frequency-effect (LFE) or subwoofer output:



Set line-level/LFE switch to "LFE."

If your receiver/processor does not contain a Dolby Digital or DTS processor but has a subwoofer output:



Set line-level/LFE switch to "Normal."

NOTE: If your receiver/processor has only one sub out, you may use either the L or R input.

Operation

Power On

Plug your subwoofer's AC cord into a wall outlet. Do not use the outlets on the back of the receiver.

Initially set the subwoofer's Level control ❶ to the "min" position.

Turn on your sub by pressing the Power button ❽ on the rear panel.

Turn on your entire audio system and start a CD or movie soundtrack at a moderate level.

Auto On/Stand-By

With the Power Switch ❽ in the ON position, the LED ❾ on the back panel will remain lit in red or green to indicate the On/Stand-By mode of the subwoofer.

RED = STAND-BY (No signal detected, Amp Off)

GREEN = ON (Signal detected, Amp On)

The subwoofer will automatically enter the Stand-By mode after approximately 10 minutes when no signal is detected from your system. The subwoofer will then power ON instantly when a signal is detected. During periods of normal use, the Power Switch ❽ can be left on. You may turn off the Power Switch ❽ for extended periods of nonoperation, e.g., when you are away on vacation.

Adjust Gain

Turn your subwoofer's Level control ❶ up to the "5" position (half way). If no sound emanates from the subwoofer, check the AC-line cord and input cables. Are the connectors on the cables making proper contact? Is the AC plug connected to a "live" receptacle? Has the Power button ❽ been pressed to the "On" position? Once you have confirmed that the subwoofer is active, proceed by playing a CD, record or cassette. Use a selection that has ample bass information.

Set the overall volume control of the preamplifier or stereo to a comfortable level. Adjust the subwoofer's Level control ❶ until you obtain a pleasing blend of bass. Bass response should not overpower the room but rather be adjusted so there is a harmonious blend across the entire musical range. Many users have a tendency to set the subwoofer volume too loud, adhering to the belief that a subwoofer is there to produce lots of bass. This is not entirely true. A subwoofer is there to enhance bass, extending the response of the entire system so the bass can be felt as well as heard. However, overall balance must be maintained or the music will not sound natural. An experienced listener will set the volume of the subwoofer so its impact on bass response is always there but never obtrusive.

Phase Control

The Phase switch ❸ determines whether the subwoofer speaker's piston-like action moves in and out with the main speakers, 0˚, or opposite the main speakers, 180˚. Proper phase adjustment depends on several variables such as room size, subwoofer placement and listener position. Adjust the phase switch to maximize bass output at the listening position.

Crossover Adjustments

Low-Pass-Frequency Adjustment control ❹ – The Low-Pass control determines the highest frequency at which the subwoofer reproduces sounds. If your main speakers can comfortably reproduce some low-frequency sounds, set this control to a lower frequency setting, between 50Hz – 100Hz. This will concentrate the subwoofer's efforts on the ultradeep bass sounds required by today's films and music. If you are using smaller bookshelf speakers that do not extend to the lower bass frequencies, set the Low-Pass Frequency Adjustment control to a higher setting, between 120Hz – 150Hz.

NOTE: This control will have no effect if the Line/LFE Selector ❷ is set to "LFE." If you have a Dolby Digital or DTS processor/receiver, the Low-Pass Frequency is set by the processor/receiver. Consult your owner's manual to learn how to view or change this setting.

Entra Sub Two Mechanical/Packaging Parts List

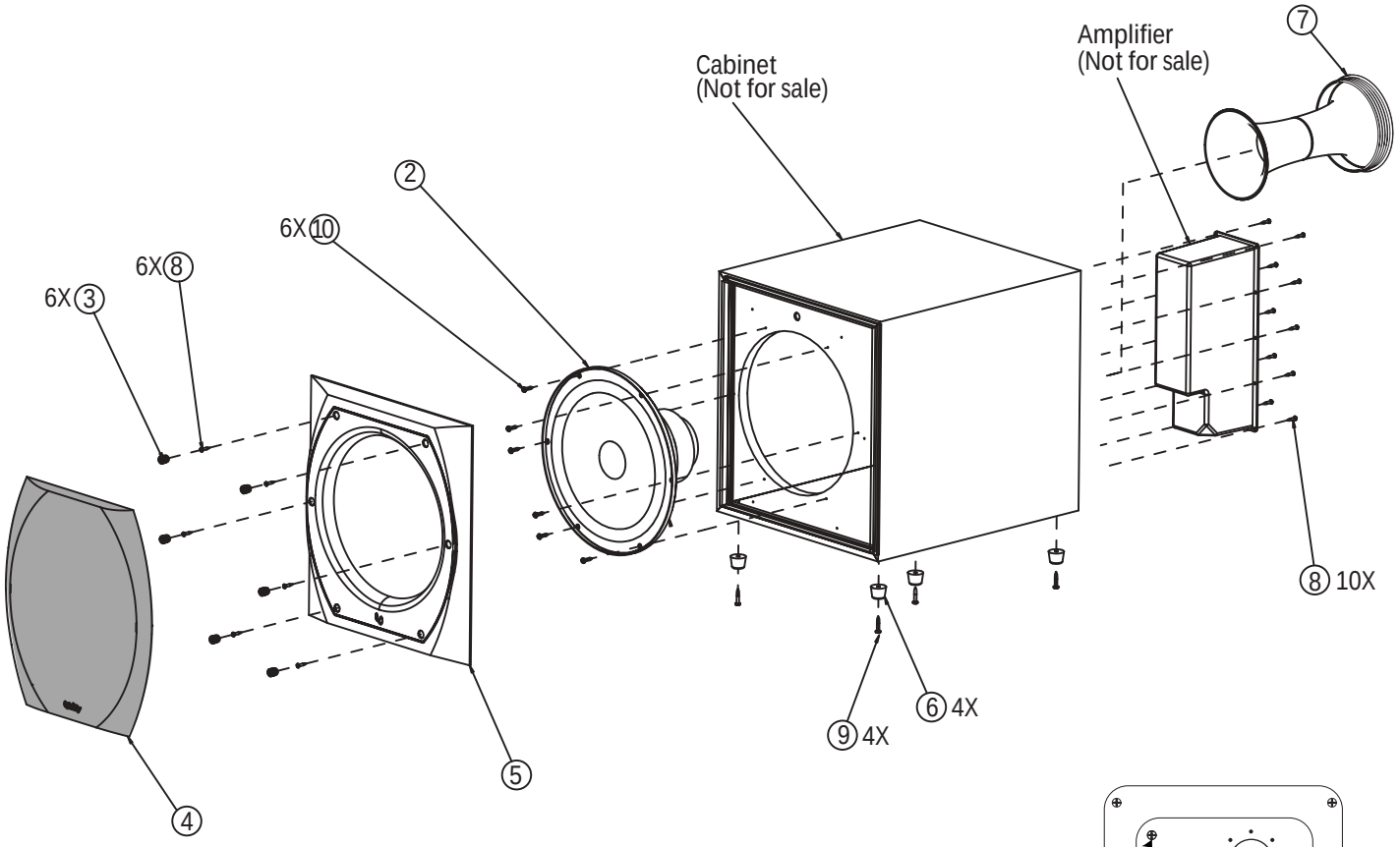
MECHANICAL PARTS LIST

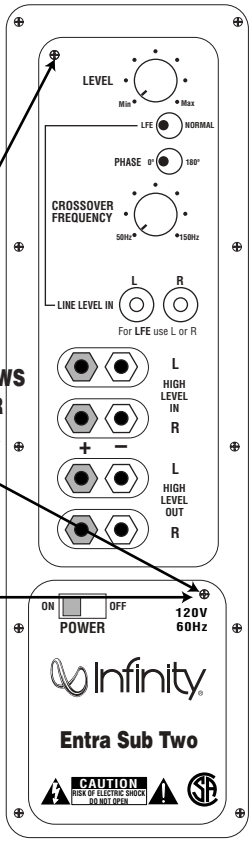
1	AMPLIFIER	Not For Sale
2	WOOFER, 12” (305mm) C.M.M.D. SHIELDED DCR = 3.4 ohms ±10%	336056-001
3	GRILLE CUP (6)	333249-001
4	GRILLE	339615-001
5	FRONT BAFFLE	339616-001
6	FOOT (4)	330163-001
7	PORT TUBE	336805-001
8	SCREW, #6 x .75, BLK, PB PPH (16) AMPLIFIER, BAFFLE	903401-012
9	SCREW, #8 x 1”, BLK, PB TRPH (4) FEET	903101-016
10	SCREW, #8 x .75, BLK, PB PPH (6) WOOFER	900101-012

PACKAGING

	OWNERS MANUAL	336422-004
	WARRANTY CARD	335841-002
	PAD, TOP, END	339611-001
	PAD, BOTTOM, END	339611-002
	OUTER CARTON	339609-001

Entra Two Subwoofer





REMOVE THESE TWO SCREWS TO REMOVE REAR COVER AND ACCESS AMPLIFIER

LONGER SCREW HERE

Figure A

TO SERVICE THE ENTRA SUB TWO

1) Remove the grille.
2) Extract (6) rubber grille retainers as shown in the illustration above; this can be accomplished by carefully pulling them out of the cavities with long-nosed pliers or similar tool.
3) Remove the (6) Phillips screws that are now exposed.
4) Remove the front baffle.
5) Remove the (6) screws that secure the driver.
6) To service the amplifier, remove the (10) Phillips screws at the rear of the enclosure, and pull the amplifier out of the back. Remove the two Phillips screws as indicated in FIGURE A to remove the rear cover.

ENTRA SUB II TESTING PROCEDURE

A. Power Amp Section

Resistance Check	Resistance from S+ (SPK O/P) to GND should be >1M Ω (NO LOAD)
	Resistance from V+ (C6 P+) to V- (C8 P-) gradually Fully CHARGED should read >10k Ω
	Resistance from V+ (C6 P+) to S+ (SPK O/P) should read >1MΩ
	Resistance from V- (C8 P-) to S+ (SPK O/P) should read >1M Ω

2. Power Up LED RED

With a 5mV signal to Low level input, LED should change to GREEN

-Voltage measurements (DVM)

	OP AMP	
LED	P-U4(1)	P-U4(7)
RED	0Vrms	11.84VDC
GREEN	7.13Vrms	-12.93VDC

3. D.C. Operation

-Voltage measurements (DVM) on CLASS D POWER AMP

Between	V+	Q4(E)	Q1(C)	Q10(C)	U7(1)	U7(2)	U7(4)	U7(6)	U7(7)	U7(8)
And This Point	GND	V-	GND	GND	GND	GND	GND	GND	GND	GND
Get this Reading	71.7V	0V	-71.7V	0V	-71.7V	-71.5V	-71.2V	0V	0V	4.65V

4. Check Switching Frequency

- Oscilloscope - **USE THE PROBE TIP TO U6(7) TO GND**
- Reading 100kHz +/-10%,24Vp-p

B. Pre Amp Section

Line Level Input Sensitivity

-Set up Turn level, X'OVER FREQ POT Fully CW and LFE switch off
Generator Set at 200mV@50Hz
Signal to Line level input

- Voltage measurements

OP AMP									SPEAKER
U2(1)	U2(14)	U2(8)	U3(7)	U3(1)	U3(14)	U3(8)	U5(7)	U5(1)	O/P
306.9mV	461mV	460mV	658mV	628mV	598mV	2.326V	2.02V	3.57V	23.33V

2. High Level Input Sensitivity

-Set up Turn level, X'OVER FREQ POT Fully CW and LFE switch off
Set Generator at 1.3V@50Hz
Signal to High level input

-Voltage measurements 15.3V at speaker output

3. Low-Pass

-Set up Set Generator at 200 mV@100Hz
Signal to Line level input
Measure voltage at S+ speaker output

-Voltage measurement

X'OVER FREQ. Setting	Output
CW	14.03V
CCW	4.8V

4. LFE

-Set up Set Generator at 200mV@200Hz
Signal to Line level input
Measure voltage at S+ speaker output

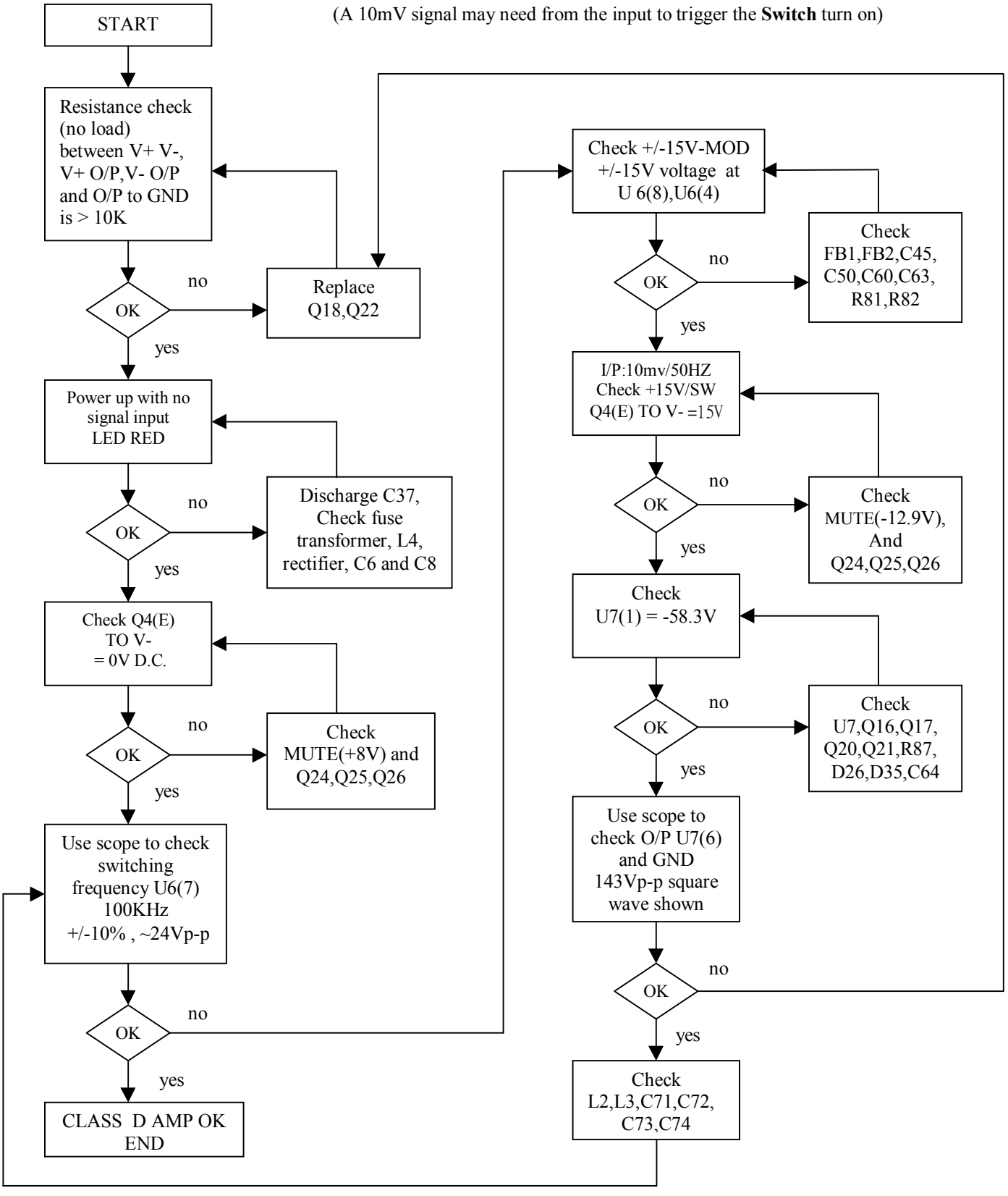
LFE switch Setting	Output
Normal	6V
LFE	18.32V

See flow chart next page for diagnostics.

ENTRA SUB II POWER MODULE TESTING FLOW CHART

CAUTION : SPEAKER OUTPUT IS FLOATING AND IS ***NOT*** PROTECTED AGAINST A SHORT TO GROUND. ALL TEST INSTRUMENTS CONNECTED TO THE OUTPUT ***MUST*** BE FLOATING. ATTACH THE SCOPE PROBE TIP TO S - and REFERENCE LEAD TO S+.

(A 10mV signal may need from the input to trigger the **Switch** turn on)



Troubleshooting tips and solutions to common service problems

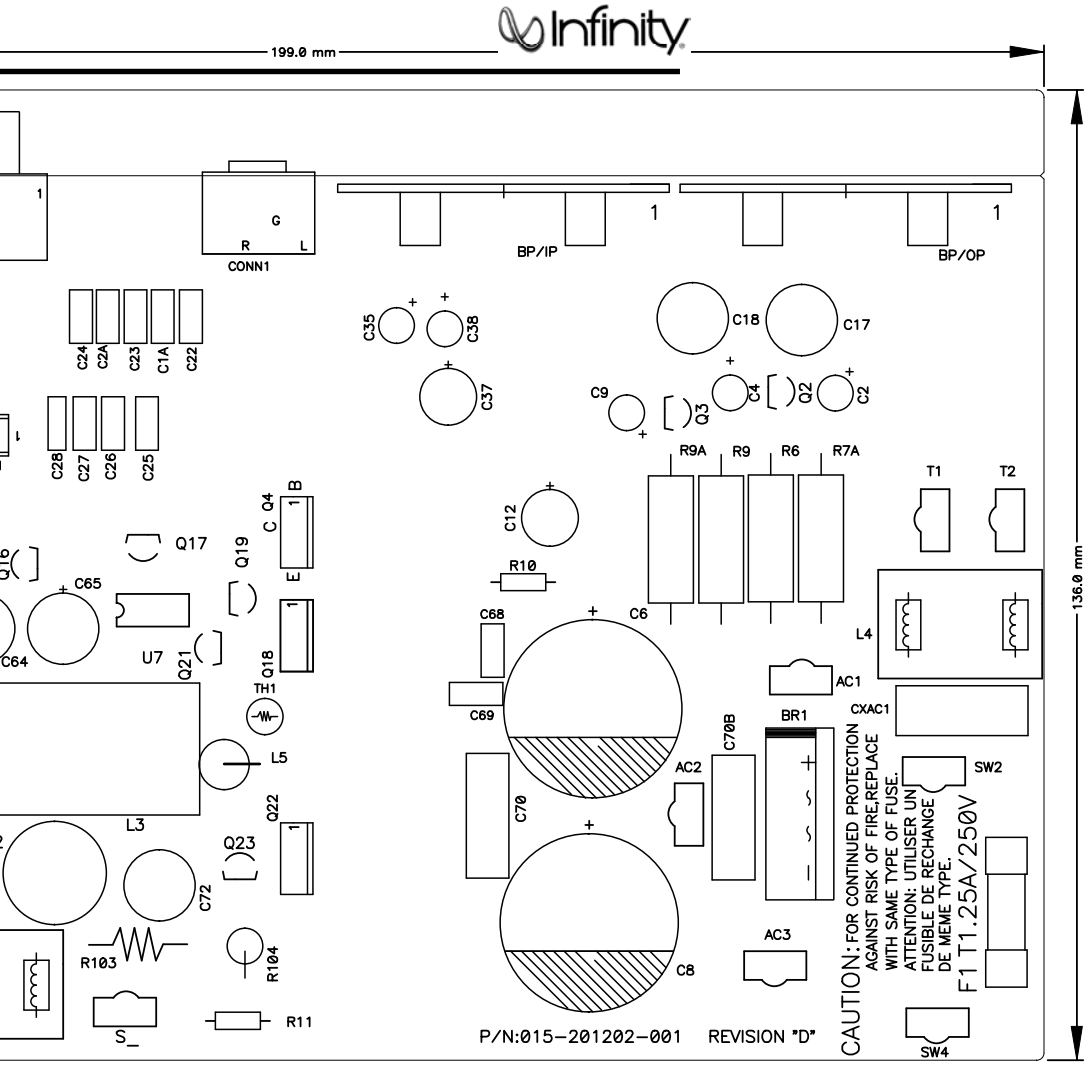
For model: Entra Sub Two **TIP# INFTT2003-02**

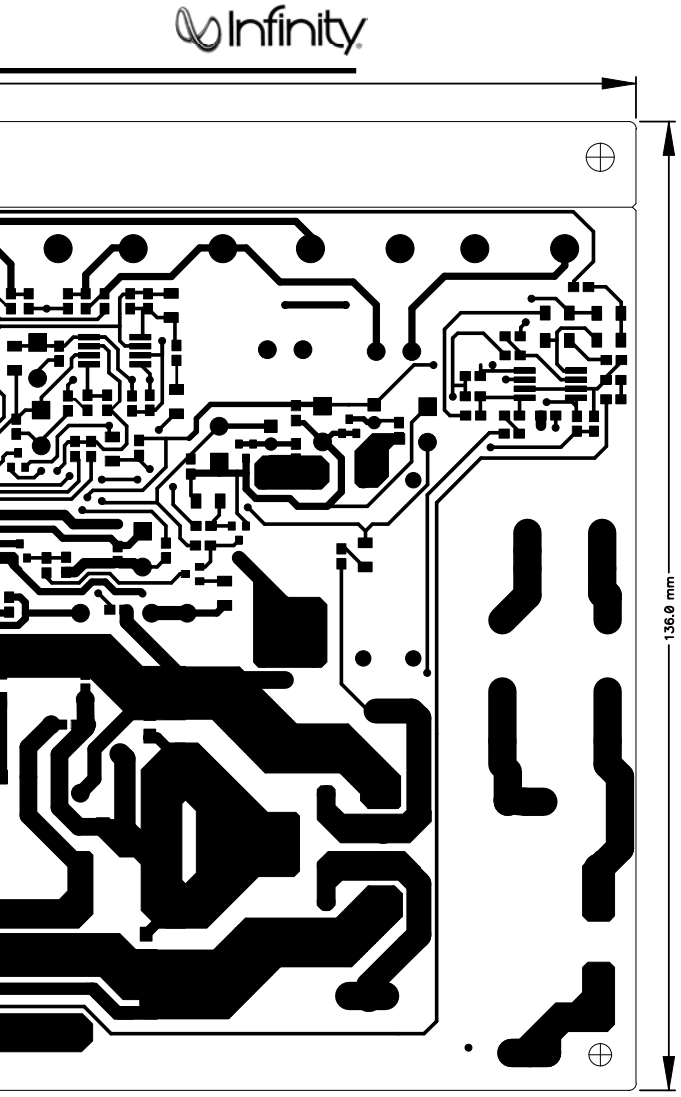
Subject: Replacing MOSFETS Q18, Q22

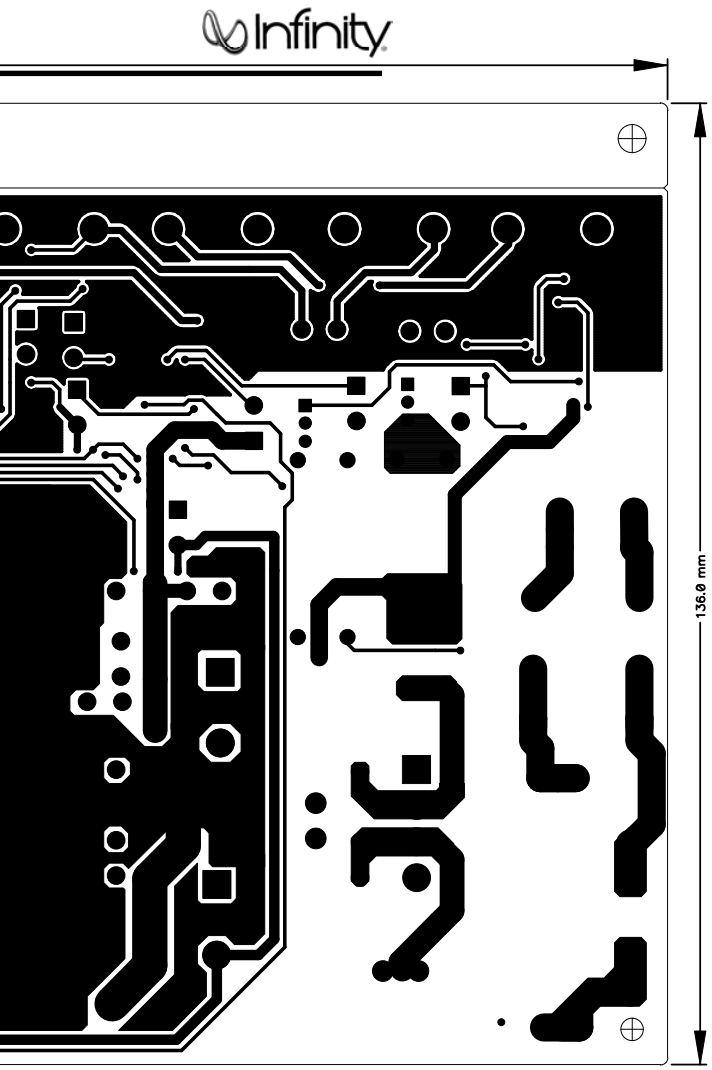
In the event you need to replace MOSFET transistors Q18 or Q22 as part of a repair, it is important to use ONLY the Infinity part# FE106401110 *or* only the brands: International Rectifier, or Fairchild.

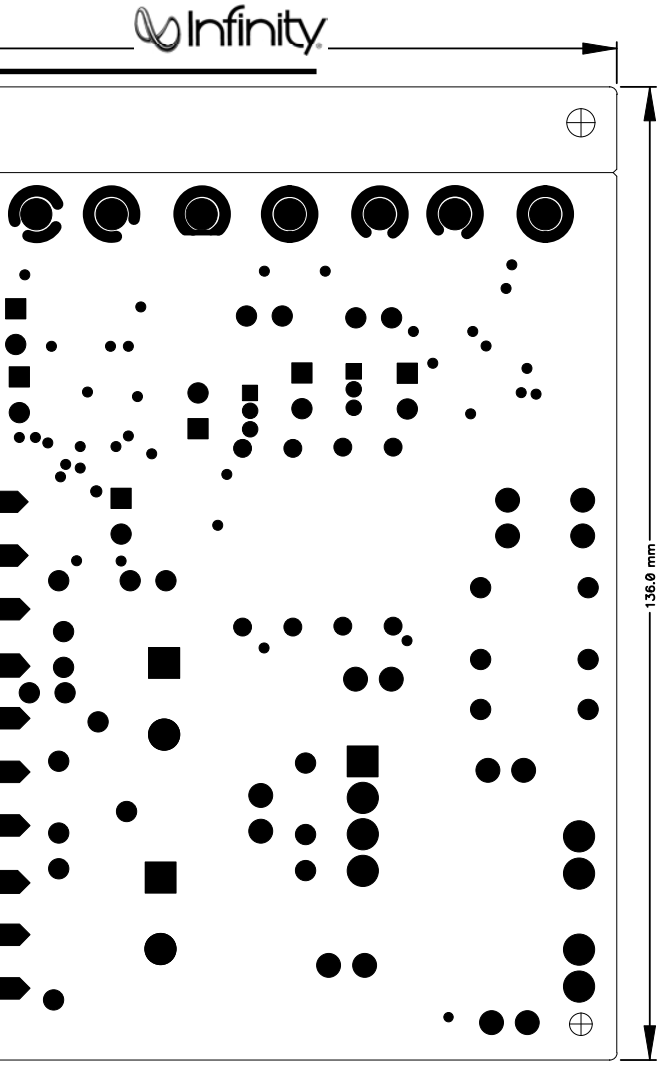
Replace both Q18 and Q22 MOSFET's in the circuit, even if only one seems to be damaged.

Do NOT mix & match these components from different manufacturers, or batches. They should be identical









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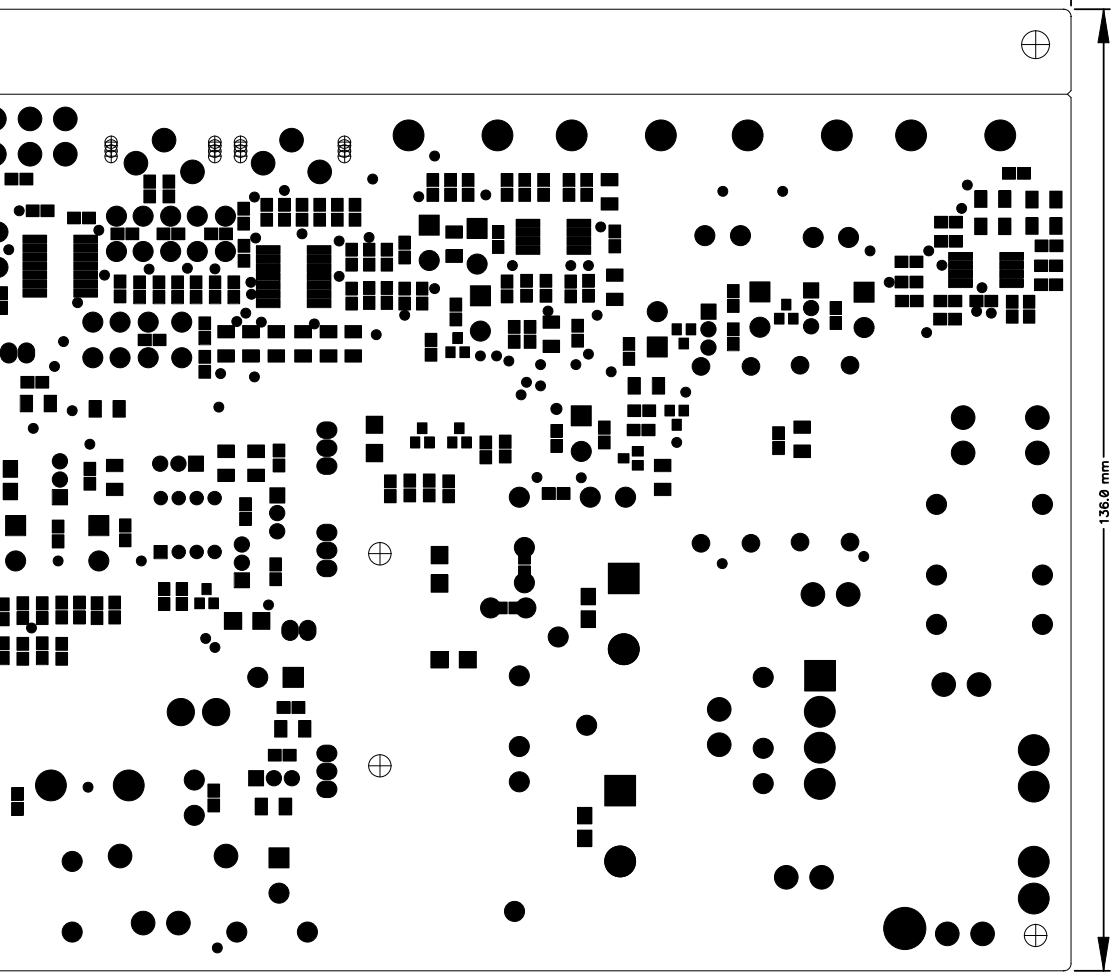
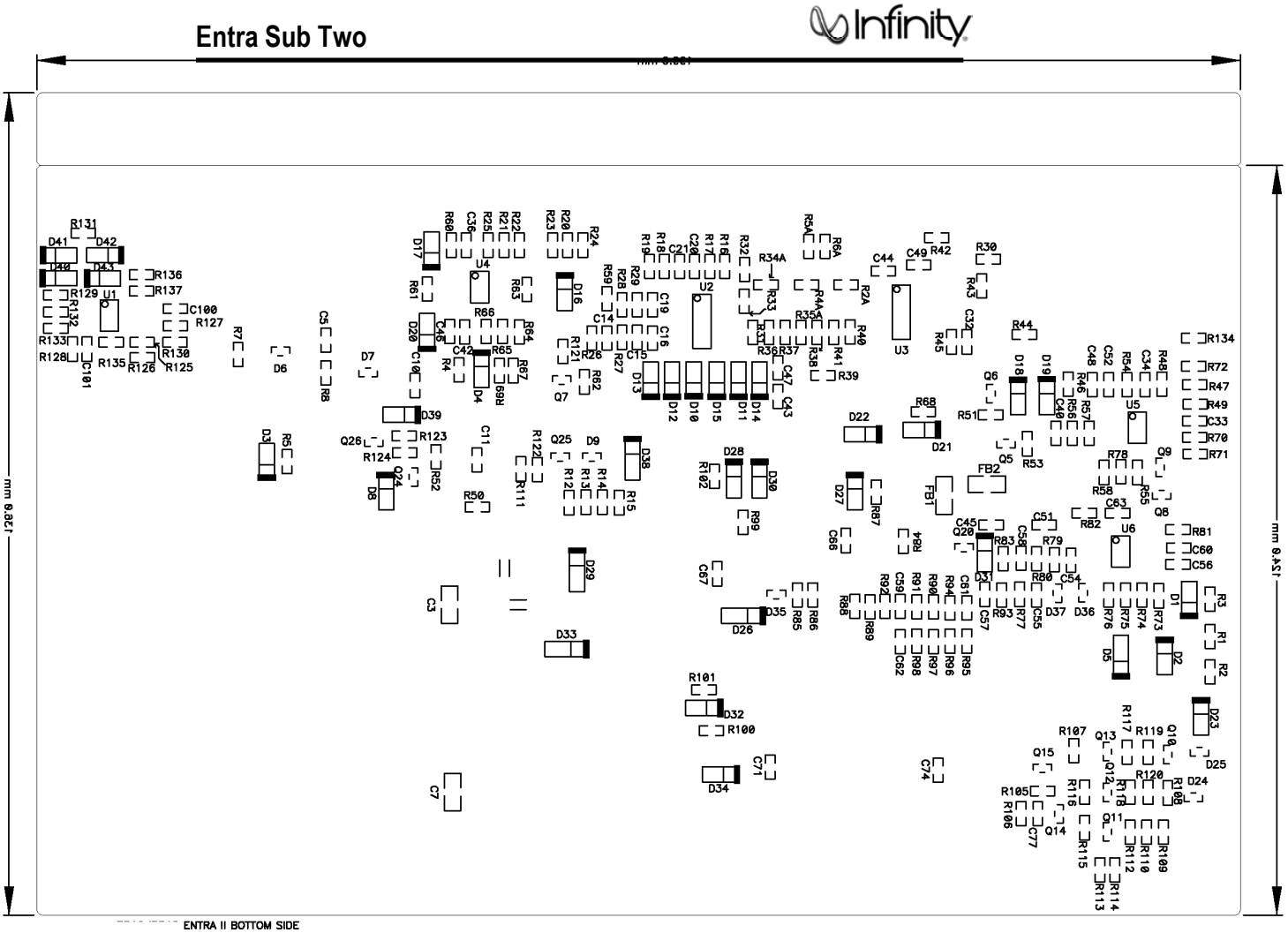


TTOM SIDE

Entra Sub Two



Entra Sub Two

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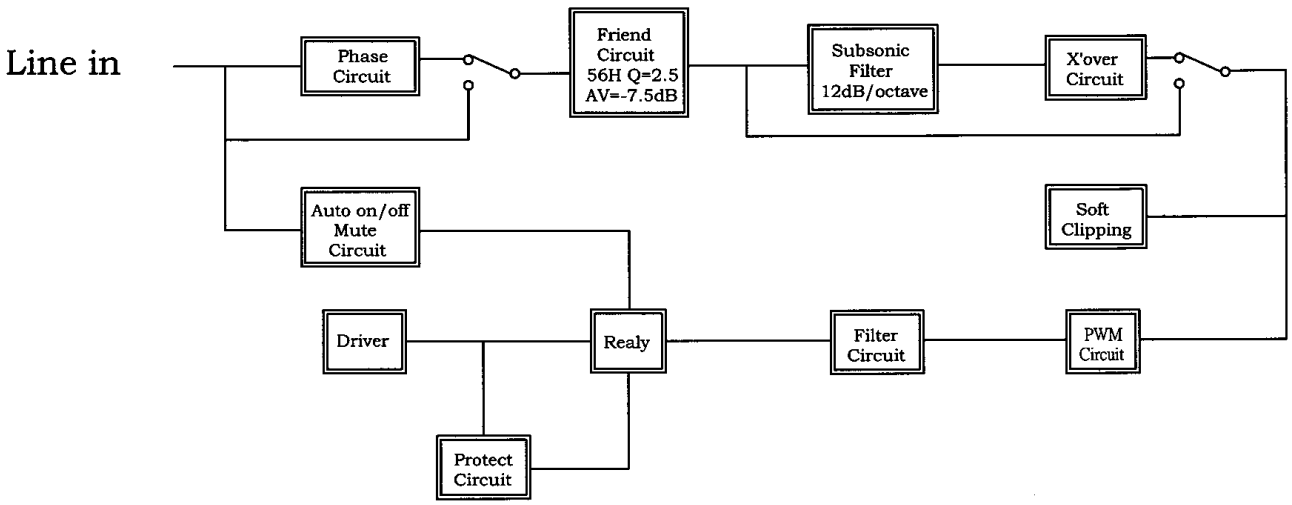
Entra Sub II BLOCK DIAGRAM



ENTRA II SUB Electrical Parts List				
Part Number	Description		Q'ty	Reference Designator
Resistors				
020-220497-120	Film Resistor	2K2 1/4W J TAPING	1	R11
021-100401-120	MOF Resistor	1K 1W J KINK MO-100	1	R103
021-220202-120	MOF	22R 2W(S) J MB TYPE 15x8	1	R10
021-240405-020	MOF Resistor	2K4/5WS J 17x6 KINK	4	R6,9,R7A,R9A
022-500003-020	KNP Resistor	0R05 3WS J FK TYPE	1	R104
024-000098-120	SMD Resistor	0R 1/8W J 0805 TAPING	1	R68
024-100298-120	SMD Resistor	10R 1/8W J 0805 TAPING	2	R81,82
024-100398-120	SMD Resistor	100R 1/8W J 0805 TAPING	1	R62
024-100498-120	SMD Resistor	1K 1/8W J 0805 TAPING	9	R79,83,92,95,96,105,108,5A,65
024-100598-120	SMD Resistor	10K 1/8W J 0805 TAPING	10	R2,17,19,20,21,37,54,58,63,71,
024-100698-120	SMD Resistor	100K 1/8W J 0805 TAPING	6	R3,22-25,112
024-105598-100	SMD Resistor	10K5 1/8W F 0805 TAPING	1	R35A
024-110598-100	SMD Resistor	11K 1/8W F 0805 TAPING	1	R98
024-124598-100	SMD Resistor	12K4 1/8W F 0805 TAPING	1	R41
024-130598-120	SMD Resistor	13K 1/8W J 0805 TAPING	2	R42,43
024-133698-100	SMD Resistor	133K 1/8W F 0805 TAPING	1	R45
024-137398-100	SMD Resistor	137R 1/8W F 0805 TAPING	1	R6A
024-137698-100	SMD Resistor	137K 1/8W F 0805 TAPING	1	R32
024-150498-120	SMD Resistor	1K5 1/8W J 0805 TAPING	1	R67
024-150598-100	SMD Resistor	15K 1/8W F 0805 TAPING	2	R132,133
024-160598-100	SMD Resistor	16K 1/8W F 0805 TAPING	4	R125,126,135,136
024-160798-120	SMD Resistor	1M6 1/8W J 0805 TAPING	1	R121
024-180598-100	SMD Resistor	18K 1/8W 1% 0805 TAPING	1	R29
024-196598-100	SMD Resistor	19K6 1/8W F 0805 TAPING	1	R40
024-200598-120	SMD Resistor	20K 1/8W J 0805 TAPING	1	R94
024-220398-120	SMD Resistor	220R 1/8W J 0805 TAPING	1	R90
024-220498-121	SMD Resistor	2K2 1/8W J 0805 TAPING	3	R1,87,61
024-220598-120	SMD Resistor	22K 1/8W J 0805 TAPING	1	R118
024-220798-120	SMD Resistor	2M2 1/8W J 0805 TAPING	1	R80
024-237598-120	SMD Resistor	23K7 1/8W F 0805 TAPING	1	R48
024-270498-120	SMD Resistor	2K7 1/8W J 0805 TAPING	2	R73,64
024-300398-120	SMD Resistor	300R 1/8W J 0805 TAPING	1	R55
024-300598-120	SMD Resistor	30K 1/8W J 0805 TAPING	1	R56
024-316498-100	SMD Resistor	3K16 1/8W F 0805 TAPING	1	R38
024-330498-120	SMD Resistor	3K3 1/8W J 0805 TAPING	11	R7,8,26,27,12-15,59,28,78
024-330598-120	SMD Resistor	33K 1/8W J 0805 TAPING	3	R4,5,131
024-390498-120	SMD Resistor	3K9 1/8W J 0805 TAPING	1	R93
024-390598-120	SMD Resistor	39K 1/8W J 0805 TAPING	1	R77
024-402598-100	SMD Resistor	40K2 1/8W F 0805 TAPING	1	R39
024-453598-100	SMD Resistor	45K3 1/8W F 0805 TAPING	1	R30
024-470298-120	SMD Resistor	47R 1/8W J 0805 TAPING	2	R101,102
024-470398-120	SMD Resistor	470R 1/8W J 0805 TAPING	3	R76,99,100
024-470498-120	SMD Resistor	4K7 1/8W J 0805 TAPING	3	R85,86,128
024-470598-120	SMD Resistor	47K 1/8W J 0805 TAPING	4	R44,47,49,107
024-470698-120	SMD Resistor	470K 1/8W J 0805 TAPING	3	R70,129,130
024-470798-120	SMD Resistor	4.7M 1/8W J 0805 TAPING	1	R60
024-487498-100	SMD Resistor	4K87 1/8W F 0805 TAPING	2	R51,53
024-510398-120	SMD Resistor	510R 1/8W J 0805 TAPING	1	R57
024-560598-120	SMD Resistor	56K 1/8W J 0805 TAPING	1	R122
024-620398-100	SMD Resistor	620R 1/8W F 0805 TAPING	2	R16,18
024-620598-120	SMD Resistor	62K 1/8W J 0805 TAPING	1	R4A
024-680498-120	SMD Resistor	6.8K 1/8W J 0805 TAPING	2	R46,91
024-680598-120	SMD Resistor	68K 1/8W J 0805 TAPING	6	R33,34A,31,50,52,66
024-732498-100	SMD Resistor	7K32 1/8W F 0805 TAPING	1	R36
024-820598-120	SMD Resistor	82K 1/8W J 0805 TAPING	1	R69
024-910398-100	SMD Resistor	910R 1/8W F 0805 TPAING	1	R110
024-976398-100	SMD Resistor	976R 1/8W F 0805 TAPING	1	R2A
026-200595-269	VR	PN:RD163121R03D-20KBx2(EJ)	1	VR2

Entra Sub Two

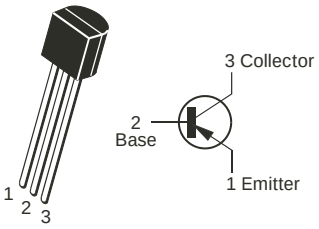
Part Number	Description		Q'ty	Reference Designator
026-500495-252	VR 5KA	PN:RK163111R52B-5KA (EJ)	1	VR1
Capacitors				
031-100244-100	Ceramic	0u01/50V K 0805 X7R TAPING	7	C33,45,51,66,67,5,10
031-100343-100	SMD Capacitor	100pF/50V J 0805 NPO TAPING	3	C16,36,58
031-100344-100	SMD Capacitor	0u1/50V K 0805 X7R TAPING	12	C11,42-44,46-49,52,54,55,60
031-100384-100R	SMD Capacitor	0u1/250V K 1206 X7R TAPING	2	C3,7
031-220344-100	SMD Capacitor	220pF/50V J 0805 NPO TAPING	5	C14,15,20,21,19
031-330444-300	SMD Capacitor	3300pF/50V K 0805 X7R TAPING	2	C40,34
031-470244-102	SMD Capacitor	0u047/50V K 0805 X7R TAPING	2	C62,59
031-560243-100	SMD Capacitor	56pF/50V J 0805 NPO TAPING	2	C57,61
031-560343-102	SMD Capacitor	560pF/50V J 0805 NPO TAPING	1	C56
032-100484-200	END PP Capacitor	1uF/250V K P:15mm	2	C70,C70B
032-270343-301	MP Capacitor	0u27/63V J P:5 TAPING	1	C29
033-200645-300	NP Capacitor	200u/50V M (R)1321 P:5	2	C17,18
033-470464-270	NPE Capacitor	4u7/100V K10 (R)1015 GNE	1	C73
033-680464-270	NPE Capacitor	6u8/100V K10 (R)1020 GNE	1	C72
034-100525-300	Electrolytic Capacitor	10uF/25V M (R)0511 P:5 TAPING	1	C35
034-100625-300	Electrolytic Capacitor	100uF/25V M (R)6.3x11 P:5	1	C64
034-220525-301	Electrolytic Capacitor	22uF/25V M (R)5x11 P:5 TAPING	5	C4,9,41,50,53
034-220615-301	Electrolytic Capacitor	220uF/16V M (R)0611 P:5	1	C37
034-330515-000	Electrolytic Capacitor	33uF/16V M (R)0511 P:5 TAPING	1	C39
034-330525-300	Electrolytic Capacitor	33uF/25V M (R)0511 P:5	1	C1
034-330615-300	Electrolytic Capacitor	330uF/16V M (R)0812 P:5	2	C12,78
034-330780-300	Electrolytic Capacitor	3300uF/80V M (R) 22*48 SNAPIN	2	C6,8
034-470415-301	Electrolytic Capacitor	4u7/50V M (R)0511 P:5 TAPING	1	C2
034-470615-301	Electrolytic Capacitor	470uF/16V M (R)0812 P:5 TAPING	1	C65
035-180354-300	PE Capacitor	0u18/63V J P=5 P/N:ESK063P18JA	1	C1A
035-330293-300	ESK Capacitor	0u033/63V J P:5 TAPING	1	C28
035-470244-100	PE Capacitor	0u047/63V K P:5m/m TAPING	1	C30
035-470353-301	ESKCapacitor	0u47/63V J P:5m/m TAPING	2	C25,26
035-680253-300	PE Capacitor	0u068/63V J P:5m/m TAPING	2	C2A,C27
038-100363-300	MPE Capacitor	0u1/100V J TAPING	2	C68,69
038-330393-300	MPE Capacitor	0u33/63V J TAPING	1	C31
039-100390-100	UL Safety Capacitor	0u1/275V PN:XG275M104VSL7	1	CXAC1
Semiconductors				
051-000600-100	NPN Transistor	MPSW06RLRA TO-92 TAPING	2	Q2,Q16
051-003100-000	Transistor	TIP 31C TO-220	1	Q4
051-005600-100	NPN Transistor	MPSW56RLRA MPQ TO-92 TAPING	1	Q3
051-222200-100	NPN Transistor	PN:MPS2222ARLRA TO-92 TAPING	1	Q21
051-290700-100	PNP Transistor	PN:P2N2907A TO-92 TAPING	2	Q19,23
051-540101-000	PNP Transistor	PN:2N5401 TO-92 TAPING	1	Q1
051-555100-000	NPN Transistor	PN:2N5551 TO-92 TAPING	1	Q17
051-640001-000	MOSFET N-Channel	PN:IRF640N TO-220 (IR)	2	Q18,22
052-400080-000	Rectifier	400V,8A,PN:RS804	1	BR1
053-211100-000	IC;DIP,DRIVER	PN:IR2111 8PIN (IR)	1	U7
054-000100-100	SMD DIODE	PN:ES1D 200V 1A TAPING	5	D5,26,29,33,38
054-001002-100	SMD ZENER DIODE	PN:BZX84C10 10V SOT-23 TAPING	1	D35
054-001501-100	SMD ZENER DIODE	PN:BZX84C15 15V SOT-23 TAPING	3	D6,7,9
054-007200-100	SMD IC	PN:TL072CDR SO-8 TAPING (TI)	3	U5,6,1
054-007400-100	SMD IC;(OP-Amp)	PN:TL074CDR TAPING (TI)	2	U2,3
054-033904-100	SMD Transistor	PN:MMBT3904LT1 SOT23 TAPING	7	Q11,14,13,5,8,25,9
054-033906-100	SMD Transistor	PN:MMBT3906LT1 SOT23 TAPING	4	Q6,10,12,15
054-045580-100	SMD IC;(OP-Amp)	PN:NJM4558M-TE3 DMP-8 TAPING	1	U4
054-050601-100	SMD ZENER DIODE	PN:BZX84C5V6 5.6V SOT-23 TAPIN	3	D24,36,37
054-211400-100	SMD Transistor (NPN)	PN:DTC114EK SMT3 TAPING (ROHI	1	Q7
054-414803-100	SMD DIODE	PN:LL4148 TAPING (Wishay)	12	D1-4,8,27,28,30-32,34,39,
054-540100-100	SMD Transistor (PNP)	PN:MMBT5401 LT1 SOT-23 TAPING	3	Q20,24,26

Entra Sub Two

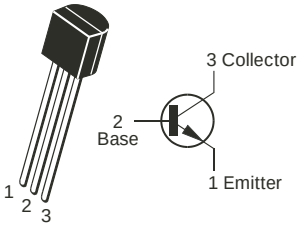
Part Number	Description		Q'ty	Reference Designator
Miscellaneous				
025-010300-000	Thermo Switch	TSE-103 K L:50mm	1	TH1
041-115001-000	BEAD COIL	YT-10911	1	L5
042-010053-003	X'fmr	YT-10616-4	1	
043-300101-000	INDUCTOR	30uH YT-10033	1	L2
043-324300-000	INDUCTOR	324uH YT-10778	1	L4
043-560200-000	INDUCTOR	56uH YT-10779	1	L1
043-700101-000	TOROIDAL INDUCTOR	70uH YT-10682	1	L3
044-100100-000	SMD FERRITE BEAD	PN:321611 600R/100MHz 1206	2	FB1,FB2
050-505200-001	LED	PN:LT-2402-21	1	
061-020000-000	Knob	φ20x15m/m UL94V-0 BLK	1	
061-314002-000	Strain Relief	P/N SB4F-2	1	
061-400014-000	RUBBER FOOT	ID:6.2 OD:11.5 t=2mm BLK	1	
061-700044-000	Mica	13x18mm TO-220 No Hole	1	
063-010012-000	Bracket	P/N:TRK-1	1	
063-321101-000	Panel	322x105.7x15mm BLK ABS-94V0	1	
063-531808-000	Bucket	322x105.7x146.5mm BLK (94VO)	1	
072-010007-000	RCA Housing	SCJ-1020 2P(G) WHT,RED	1	CONN1
072-060170-000	B.P.	B.P.	2	BP/IP,BP/OP
073-032088-600	Heatsink	58x32x70mm	1	
073-050001-000	FUSE CLIP	P/N:CFFH1206	1	
074-020018-000	Rocker Switch	RF1003-BB4-0	1	
074-030002-000	TOGGLE SW	P/N L101	2	SW5,SW6
074-300018-000	RELAY	PN:943-1C-48D	1	K1
093-105202-300	FUSE:UL GSL(2AG)	FUSE:2A,250V,5*20mm	1	F1

Integrated Circuit Diagrams

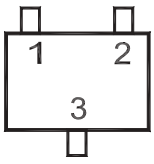
2N2907A, 2N5401
Q1, 19, 23



MPSW06RLRA,
MPSW56RLRAMPQ,
MPS2222ARLRA,
2N5551
Q2, 16, 3, 21, 19, 23, 17

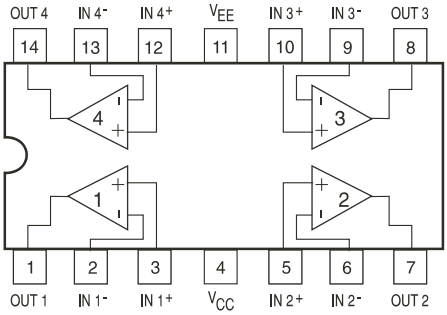


MMBT3904LTI SOT23,
MMBT3906LTI SOT23,
DTC114EK SMT3,
MMBT5401 LTI,
MMBT5551 LTI
Q11, 14, 13, 5, 8, 9, 6, 10, 12, 15, 7, 20, 24, 26, 25

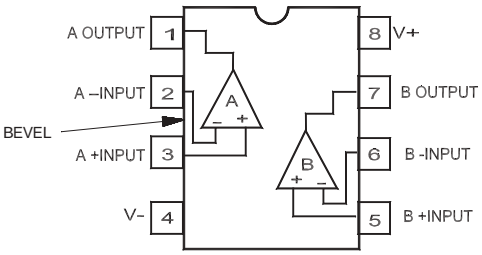


1) Emitter
2) Base
3) Collector

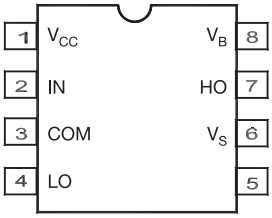
OPAMP, QUAD
TL074CDR
U2, 3



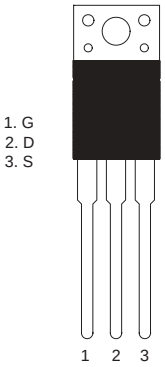
OPAMP, DUAL
TL072CDR SO-8,
NJM4558M-TE3
U1, 4-6



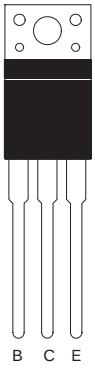
IR2111 HALF-BRIDGE
DRIVER
U7



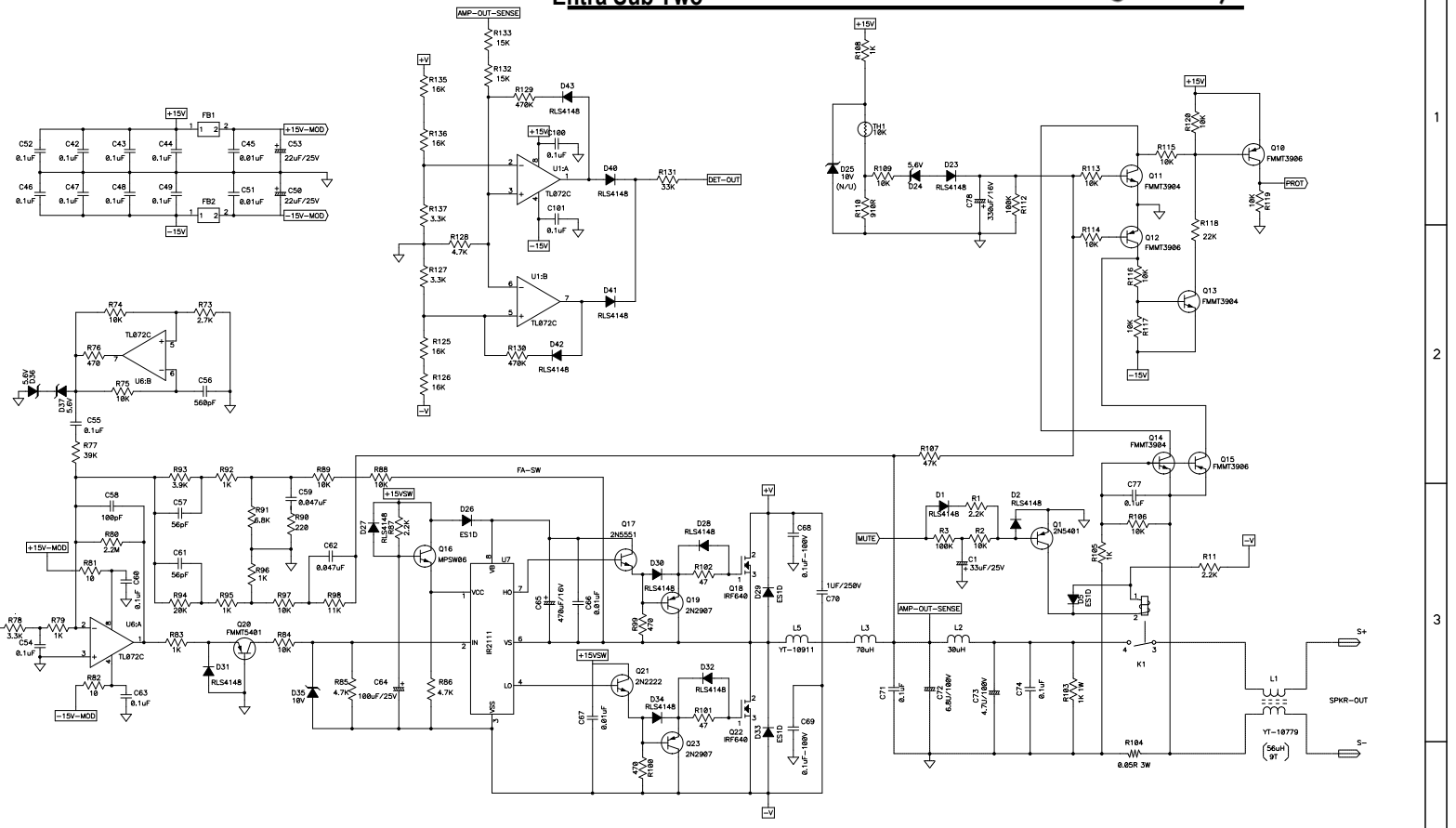
MOSFET IRF640
Q18, 22



TIP31C
Q4



Entra Sub Two

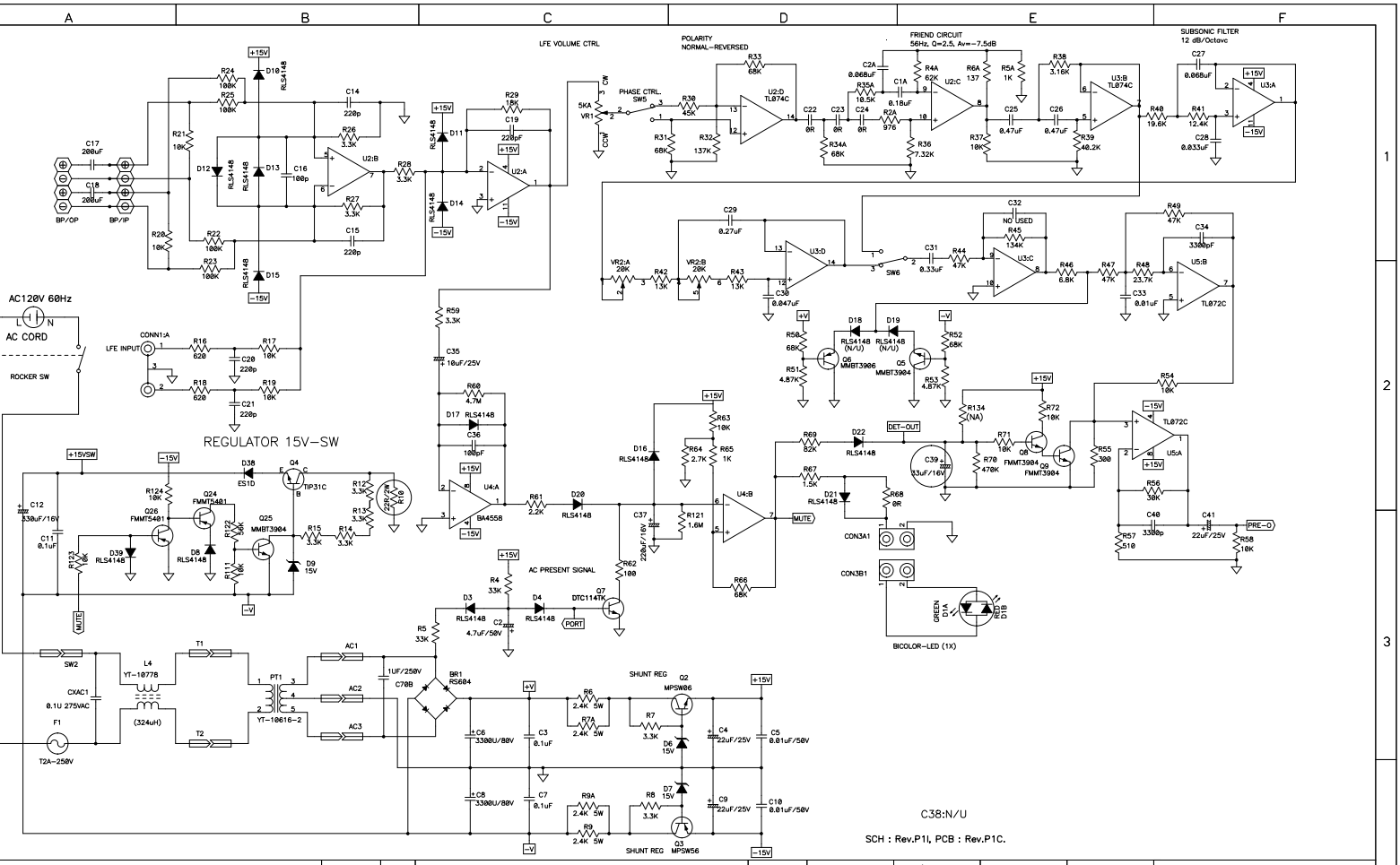


SCH : Rev.P1I, PCB : Rev.P1D.

Notes:	Date:	Rev:	Notes:	Date:
ENTRA SUB 2 DECIGN	2002/04/02	P1H	CHANGE:R68,R121,R134	2002/05/13
Change : R11, 28, 29, 78, Q4, D25	2002/04/09	P1I	CHANGE:C39,R10	2002/07/29
R11 WAS 0R IS 2.2K, D42 REVERSE	2002/04/10			
C73 WAS 50V IS 100V, R128 WAS 470K IS 4.7K.	2002/04/11			
CHANGE:C6,C8,R6,R9,R88 ADD:R7A,R9A	2002/04/17			
CHANGE:R29	2002/04/30			
CHANGE:R110	2002/05/09			

Draw by	Designed by	Checked by	Approved By

Customer:	JBL
P/N:	
Model no:	ENTRA SUB 2
Sch name:	POWER AMP PCB
Issue no:	
Date:	2002/07/29
Sheet: 2/2	Rev: P1I
Size: A2	Author: BELLE



Notes:	Date:	Rev:
ENTRA SUB 2 DECIGN	2002/04/02	P1H
Changr : R11, 28, 29, 78, 04, D25	2002/04/09	P1I
R6A WAS 138R IS 137R, R45 WAS 187K IS 134K. C30 WAS 0.033uF IS 0.047uF	2002/04/10	
LED WAS x 2 IS x 1.	2002/04/11	
CHANGE:C6,C8,R6,R9,R88 ADD:R7A,R9A	2002/04/17	
CHANGE:R29	2002/04/30	
CHANGE:R110	2002/05/09	

Notes:	Date:
CHANGE:R68,R121,R134	2002/05/13
CHANGE:C39,R10	2002/07/29

Draw by	Designed by	Checked by	Approved By

Entra Sub Two

Customer:	JBL
P/N:	
Model no:	ENTRA SUB 2
Sch name:	PRE AMP PCB
Issue no:	
Date:	2002/07/29
Sheet: 1/2	Rev: P1I
Size: A2	Author: BELLE