

Sprague Electric's Semiconductor Division has taken the advantages of Sprague-pioneered ion-implantation and directed them toward the design and manufacture of consumer entertainment products. With 'state-of-the-art' design and process capability, many new consumer entertainment integrated circuits are now available. Each of these provides performance advantages not

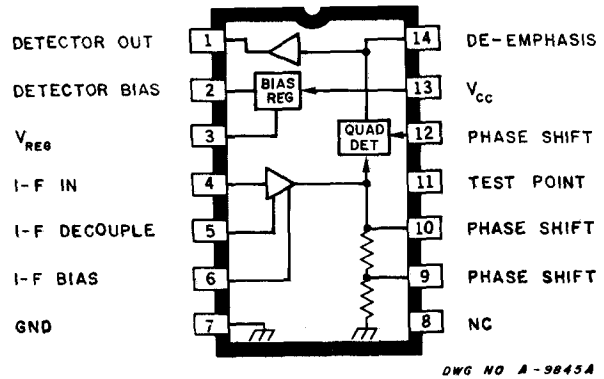
previously available with discrete fabrication techniques, while simultaneously reducing component count. With their proven reliability, Sprague ion-implanted integrated circuits not only save space in electronic equipment, but also provide enormous time and cost savings to consumer entertainment equipment manufacturers.

## TYPE ULN-2111 F-M DETECTOR and LIMITER

Comprised of a three-stage limiter and a balanced product detector, the Type ULN-2111 finds wide application in TV sound channels, F-M receivers, automatic frequency control systems and communication receivers, radar, etc.

### FEATURES

- 55 dB Min. High Voltage Gain at 4.5 MHz
- 150 to 800 $\mu$ V Threshold
- Zener Diode Power Supply Regulation
- 12 Volt Nom. Supply Voltage
- Operating Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- 600 mVrms Recovered Audio at 4.5 MHz
- Plastic Package (14-pin):  
ULN-2111A Dual In-Line A  
ULN-2111N Quad In-Line N (available until present stock exhausted)

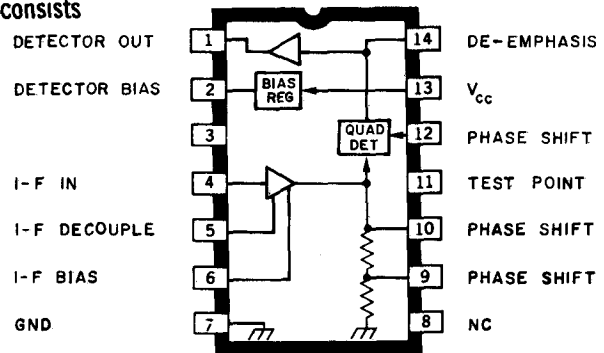


## TYPE ULN-2113A F-M DETECTOR and LIMITER

The Type ULN-2113A F-M Detector and Limiter is designed for use with nominal 8 volt supplies in portable or mobile operation. The device consists of a three-stage limiter and a balanced product detector.

### FEATURES

- Single Coil Tuning
- High Gain to 50 MHz
- Battery Operation
- Low Distortion, 1.0%
- High Sensitivity Input Limiting Voltage: 300 $\mu$ V
- Operating Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- Plastic Package (14-pin) Dual In-Line A

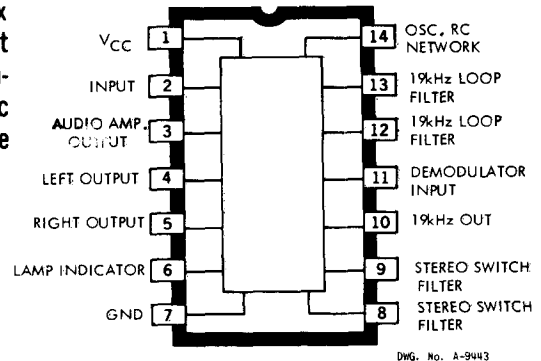


## TYPE ULN-2110A PHASE-LOCKED LOOP STEREO DECODER

The Type ULN-2110 monolithic Phase-Locked Loop FM Stereo Multiplex Decoder is used for decoding FM stereo multiplex signals into right and left audio channels while inherently suppressing SCA information when it is contained in the composite input signal. Internal functions include automatic mono/stereo mode switching and drive for an external stereo mode operation.

### FEATURES

- Low Number of External Parts - No Coils
- 75 mA Lamp Driving Capability
- 40 dB Channel Separation
- 8 to 14V Supply Voltage Range
- 80 dB SCA Rejection
- Operating Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- Automatic Stereo/Mono Switching



- Stereo Indicator Lamp Driver with Current Limiting
- Plastic Package (14-pin) Dual In-Line A

### Alpha-Numeric CROSS-REFERENCE to SPRAGUE Integrated Circuits

To Replace	Use Sprague Type	To Replace	Use Sprague Type	To Replace	Use Sprague Type	To Replace	Use Sprague Type
SN75474P	UDN3614M	SN76642N	ULN2113A	TL1741C	ULN2151D	732DC	ULN2120A
SN76104N	ULN2120A	SN76643N	ULN2111A	TL7401N	US8881A	741-93-5B	ULN2151D
SN76105N	ULN2122A	SN76665N	ULN2165A	TL7437N	US7437A	741CE	ULN2151D
SN76111N	ULN2121A	SN76669N	ULN2136A	TL7438N	US7438A	741HC	ULN2151D
SN76113N	ULN2128A	SN76675N	ULN2129A	UA741CT	ULN2151D	741TC	ULN2151M
SN76115N	ULN2110A	SN76678P	ULN2209M	UA741CV	ULN2151M	746DC	ULN2114A
SN76116N	ULN2244A	SN76688ND	ULN2211P	UA741EHC	ULN2151D	746HC	ULN2114K
SN76130N	ULN2126A	SN76689N	ULN2289A	UA741HC	ULN2151D	753TC	ULN2209M
SN76177ND	ULN2278P	SSS741BJ	ULN2151D	UA741TC	ULN2151M	758DC	ULN2244A
SN76226	ULN2216	SW7401N	US8881A	UA2136	ULN2136A	767DC	ULN2128A
SN76227	ULN2217	SW7437N	US7437A	UA3064	ULN2264A	767PC	ULN2128A
SN76228	ULN2218	SW7438N	US7438A	UA3065	ULN2165A	780DC	ULN2124A
SN76242N	ULN2124A	T2741WV	ULN2151D	UA3067	ULN2267A	781DC	ULN2127A
SN76243AN	ULN2127A	T7401B1	US8881A	UA3075	ULN2129A	7432DC	US7432A
SN76246N	ULN2114A	TBA221	ULN2151D	UA3089	ULN2289A	7432PC	US7432A
SN76246N	ULN2228A	TBA221B	ULN2151M	UC4741C	ULN2151D	7437DC	US7437A
SN76267N	ULN2267A	TBA221N	ULN2151D	UC4741CE	ULN2151M	7437PC	US7437A
SN76298N	ULN2298A	TBA331	ULN2046	XR1310	ULN2110A	7438DC	US7438A
SN76564N	ULN2264A	TBA341	ULN2054	705PC	ULN2278P	7438PC	US7438A
SN76635N	ULN2137A	TDA1200	ULN2289A	720DC	ULN2137A	7439DC	US7439A
				729DC	ULN2122A		

### Original Source CROSS-REFERENCE to SPRAGUE Integrated Circuits

To Replace	Use Sprague Type	To Replace	Use Sprague Type	To Replace	Use Sprague Type	To Replace	Use Sprague Type
<b>ADVANCED MICRO DEVICES INC</b>		<b>FAIRCHILD SEMICONDUCTOR Cont.</b>		<b>INTERSIL INC</b>		<b>MOTOROLA SEMI. PROD. INC. Cont.</b>	
AM741HC	ULN2151D	CA3086	ULN2086A	ICB8008C	ULN2151D	MC1339P2	ULN2126A
AMSSS741CJ	ULN2151D	SN75451BP	UDN3611M	ICB8741C	ULN2151D	MC1356P	ULN2136A
<b>AEG-TELEFUNKEN</b>		SN75452BP	UDN3612M	ICL8008CPA	ULN2151M	MC1357P2	ULN2111A
TL1741C	ULN2151D	SN75453BP	UDN3613M	ICL8008CT Y	ULN2151D	MC1357PQ	ULN2111N
TL7401N	US8881A	SN75454BP	UDN3614M	741-93-5B	ULN2151D	MC1358P2	ULN2165A
TL7437N	US7437A	UA741EHC	ULN2151D	<b>ITT SEMICONDUCTORS</b>			
TL7438N	US7438A	UA741HC	ULN2151D	ITT505*	UHP482	MC1358PQ	ULN2165N
<b>ANALOG DEVICES INC</b>		UA741TC	ULN2151M	ITT512	UHP491	MC1364P2	ULN2264A
AD502J	ULN2151D	UA2136	ULN2136A	ITT552	ULN2001A	MC1370P	ULN2124A
AD502K	ULN2151D	UA3064	ULN2264A	ITT554	ULN2002A	MC1371P2	ULN2127A
AD512J	ULN2151D	UA3065	ULN2165A	ITT556	ULN2003A	MC1375P	ULN2129A
AD512K	ULN2151D	UA3067	ULN2267A	ITT3064	ULN2264A	MC1389P	ULN2289A
AD514J	ULN2151D	UA3075	ULN2129A	ITT3065	ULN2165A	MC1398P2	ULN2298A
AD514K	ULN2151D	UA3089	ULN2289A	ITT7401N	US8881A	MC1439G	ULN2139D
AD514L	ULN2151D	705PC	ULN2278P	ITT7438AN	US7438A	MC1439P1	ULN2139M
AD741CH	ULN2151D	720DC	ULN2137A	ITT7437N	US7437A	MC1741CG	ULN2151D
AD741CN	ULN2151M	729DC	ULN2122A	<b>LITHIC SYSTEMS INC</b>			
AD741JN	ULN2151M	732DC	ULN2120A	LA3045	ULS2045H	MC1741CP1	ULN2151M
AD741KH	ULN2151D	741CE	ULN2151D	LA3046	ULN2046A	MC3003	US7432A
AD741KN	ULN2151M	741HC	ULN2151D	LA3086	ULN2086A	MC3491P*	UHP482
AD741LH	ULN2151D	741TC	ULN2151M	<b>MICROPAC INDUSTRIES INC</b>			
AD741LN	ULN2151M	746DC	ULN2151D	SSS741CJ	ULN2151D	MC7437L	US7437A
<b>EXAR INTEGRATED SYSTEMS INC</b>		746HC	ULN2114A	<b>MIL ELECTRONICS INC</b>			
XR1310	ULN2110A	753TC	ULN2114K	ML3046	ULN2046A	MC7438L	US7438A
<b>FAIRCHILD SEMICONDUCTOR</b>		758DC	ULN2209M	<b>MOTOROLA SEMI. PROD. INC.</b>			
CA3045	ULN2045H	767DC	ULN2244A	MC1304P	ULN2120A	MC75451P	UDN3611M
CA3046	ULN2046A	767PC	ULN2128A	MC1305P	ULN2122A	MC75452P	UDN3612M
CA3065	ULN2165A	780DC	ULN2124A	MC1307P	ULN2128A	MC75453P	UDN3613M
CA3067	ULN2267A	781DC	ULN2127A	MC1310EP	ULN2110A	MC75454P	UDN3614M
CA3075	ULN2129A	7432DC	US7432A	MC1310P	ULN2110A	MPQ2221	TPQ2221
		7432DC	US7437A	<b>MOTOROLA SEMI. PROD. INC.</b>			
		7437PC	US7437A	MC1304P	ULN2120A	MPQ2222	TPQ2222
		7438DC	US7438A	MC1305P	ULN2122A	MPQ2483	TPQ2483
		7438PC	US7438A	MC1307P	ULN2128A	MPQ2484	TPQ2484
		7439DC	US7439A	MC1310EP	ULN2110A	MPQ2906	TPQ2906
				MC1310P	ULN2110A	MPQ2907	TPQ2907
				MC1311P	ULN2244A	MPQ3725	TPQ3725
				MC1324P	ULN2224A	MPQ3725A	TPQ3725A
				MC1328P	ULN2228A	MPQ3798	TPQ3798
				MC1328P2	ULN2114A	MPQ3799	TPQ3799
				MC1328PQ	ULN2114N	MPQ3904	TPQ3904
						MPQ3906	TPQ3906
						MPQ6001	TPQ6001
						MPQ6002	TPQ6002
						MPQ6100	TPQ6100
						MPQ6100A	TPQ6100A
						SN7401N	US8881A

\*Indicates the Sprague suggested replacement is similar but not an exact pin-for-pin electrical replacement.

# SPRAGUE

## INTEGRATED CIRCUIT CROSS REFERENCE GUIDE O.E.M. TO SPRAGUE

### Original Source CROSS-REFERENCE to SPRAGUE Integrated Circuits

To Replace	Use Sprague Type	To Replace	Use Sprague Type	To Replace	Use Sprague Type	To Replace	Use Sprague Type
<b>NATIONAL SEMI. MICRO. DIV.</b>		<b>NUCLEONIC PRODUCTS CO. INC.</b>		<b>SGS-ATES</b>		<b>TEXAS INSTRUMENTS Cont.</b>	
CA 3045	ULN2045H	NC7401N	US8881A	TDA 1200	ULN2289A	SN55462JP	UDS3612H
CA 3046	ULN2046A	SFC2046E	ULN2046A	L141T1	ULN2151D	SN55463JP	UDS3613H
CA 3054	ULN2054A	SFC2054EC	ULN2054A	T7401B1	US8881A	SN55464JP	UDS3614H
CA 3086	ULN2086A	<b>N V PHILIPS</b>		<b>SIEMENS</b>		SN55471JP	UDS3611H
DM7401N	US8881A	TBA221		ULN2151D	ULN2151D	SN55472JP	UDS3612H
DM7427N	US7427A	TBA221B	ULN2151M	<b>SIGNETICS CORP.</b>		SN55473JP	UDS3613H
DM7432N	US7432A	<b>PLESSEY SEMICONDUCTORS</b>		N5065A	ULN2165A	SN55474JP	UDS3614H
DM7437N	US7437A	SL3045	ULN2046A	N5070B	ULN2124A	SN75451BP	UDN3611M
DM7438N	US7438A	SL3046	ULN2046A	N5071A	ULN2127A	SN75452BP	UDN3612M
DS3611N	UDN3611M	SL3086	ULN2086A	N5072A	ULN2114A	SN75453BP	UDN3613M
DS3612N	UDN3612M	SL3145	ULN2045H	N5111A	ULN2111A	SN75454BP	UDN3614M
DS3613N	UDN3613M	<b>PRECISION MONOLITHICS INC.</b>		N7401A	US8881A	SN75461P	UDN3611M
DS3614N	UDN3614M	DVR-01	UHP480	N7437A	US7437A	SN75462P	UDN3612M
DS7889N*	UHP482	SSS741BJ	ULN2151D	N7438A	US7438A	SN75463P	UDN3613M
DS8885N*	UHP481	<b>RAYTHEON COMPANY</b>		N8881A	US8881A	SN75464P	UDN3614M
DS8889N*	UHP482	RC741T	ULN2151D	NE546A	ULN2137A	SN75471P	UDN3611M
LM377	ULN2278P	<b>RCA CORP. SOLID STATE DIV.</b>		PA239	ULN2126A	SN75472P	UDN3612M
LM380	ULN2280B	CA 758E	ULN2244A	UA741CT	ULN2151D	SN75473P	UDN3613M
LM384	ULN2281B	CA 1310E	ULN2110A	UA741CV	ULN2151M	SN75474P	UDN3614M
LM741CH	ULN2151D	CA 1398E	ULN2298A	<b>SILICON GENERAL INC.</b>		SN76104N	ULN2120A
LM741CN	ULN2151M	CA 2111AE	ULN2111A	SG 741CM	ULN2151M	SN76105N	ULN2122A
LM746N	ULN2114A	CA 3014	ULN2113A	SG 741SCM	ULN2151M	SN76111N	ULN2121A
LM1304N	ULN2120A	CA 3045	ULN2045H	SG 741SCT	ULN2151D	SN76113N	ULN2128A
LM1304N-01	ULN2120N	CA 3046	ULN2046A	SG 3081N	ULN2081A	SN76115N	ULN2110A
LM1305N	ULN2122A	CA 3047	ULN2047	SG 3082N	ULN2082A	SN76116N	ULN2244A
LM1305N-01	ULN2122N	CA 3054	ULN2054A	SG 3086	ULN2086A	SN76130N	ULN2126A
LM1307N	ULN2128A	CA 3065	ULN2165A	SG 3217J	ULN2151D	SN76177ND	ULN2278P
LM1307N-01	ULN2128N	CA 3067	ULN2267A	SG 3821J	ULN2045H	SN76226	ULN2216
LM1310N	ULN2110A	CA 3070	ULN2124A	SG 3821N	ULN2046A	SN76227	ULN2217
LM1800	ULN2244A	CA 3071	ULN2127A	SG 3822N	ULN2054A	SN76228	ULN2218
LM1820N	ULN2137A	CA 3072	ULN2114A	SG 3822N	ULN2054A	SN76242N	ULN2124A
LM1841N	ULN2136A	CA 3075	ULN2129A	SG 3886N	ULN2086A	SN76243AN	ULN2127A
LM2111N	ULN2111A	CA 3081	ULN2081A	<b>SOLITRON DEVICES INC.</b>		SN76246N	ULN2114A
LM2111N-01	ULN2111N	CA 3082	ULN2082A	UC4741C	ULN2151D	SN76246N	ULN2228A
LM2113N	ULN2113A	CA 3083	ULN2083	UC4741CE	ULN2151M	SN76267N	ULN2267A
LM2113N-01	ULN2113N	CA 3086	ULN2086A	<b>STEWART-WARNER MICROCIRCUITS INC.</b>		SN76298N	ULN2298A
LM3045H	ULN2045H	CA 3089	ULN2289A	SW7401N	US8881A	SN76564N	ULN2264A
LM3046N	ULN2046A	CA 3120E	ULN2125A	SW7437N	US7437A	SN76635N	ULN2137A
LM3054N	ULN2054A	CA 3121	ULN2269A	SW7438N	US7438A	SN76642N	ULN2113A
LM3064N	ULN2264A	CA 3123E	ULN2137A	SW7438N	US7438A	SN76643N	ULN2111A
LM3065N	ULN2165A	<b>R T C</b>		<b>TEXAS INSTRUMENTS</b>		SN76665N	ULN2165A
LM3065N-01	ULN2165N	TBA221B	ULN2151M	SN 7427N	US7427A	SN76669N	ULN2136A
LM3067N	ULN2267A	TBA221N	ULN2151D	SN 7437N	US7437A	SN76675N	ULN2129A
LM3070N	ULN2124A	<b>SESCOSEM</b>		SN 7438N	US7438A	SN76678P	ULN2209M
LM3071N	ULN2127A	TBA331	ULN2046	SN 72741L	ULN2151D	SN76688ND	ULN2211P
LM3075N	ULN2129A	TBA341	ULN2054	SN72741P	ULN2151M	SN76689N	ULN2289A
LM3075N-01	ULN2129N	<b>THOMSON CSF</b>		SN55451B JP	UDS3611H	<b>THOMSON CSF</b>	
LM3086N	ULN2086A	SFC2741C		SN55452B JP	UDS3612H	SFC2741DC	ULN2151D
LM3611N	UDN3611M	SFC2741DC		SN55453B JP	UDS3613H	ULN2151M	
LM3612N	UDN3612M	<b>TRANSISTRON ELECTRONICS CORP.</b>		SN55454B JP	UDS3614H	ULN2151D	
LM3613N	UDN3613M	T2741WV		SN55461JP	UDS3611H	ULN2151D	
LM3614N	UDN3614M						
MC1304P	ULN2120A						
MC1305P	ULN2122A						
MC1307P	ULN2128A						
MC1310P	ULN2210A						

\*Indicates the Sprague suggested replacement is similar but not an exact pin-for-pin electrical replacement.

Although care has been taken in the preparation of this guide to insure its technical correctness, no responsibility is assumed by the Sprague World Trade Corp. for any consequences of the use of items listed.

Warranty is limited to replacement of defective parts only.

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