

# STK and STR INTEGRATED CIRCUITS



- Over 2200 Hybrid STK and STR Integrated Circuits
- Connection diagram
- Short description
- Electrical characteristics
- Cases drawings
- Direct replacement suggestion

**2021 EDITION**



# STK and STR Integrated Circuits

## databook

1. Introduction
2. Alpha-numeric index
3. STK integrated circuits
4. STR integrated circuits

## INTRODUCTION

Due to the high parameters and reliability, the hybrid integrated circuits of the Sanyo **STK** family and Sanken **STR** family have a large applying in consumer and professional electronics equipments.

The functional set of STK integrated circuits family is very wide: power audio amplifiers, audio preamplifiers and graphic equalizers, switching and linear type voltage regulators, deflection processor, focus and convergente drivers for monitors and projection TV, motor drivers and other.

The Sanken (and Allegro affiliated manufacturer) hybrid integrated circuits of the STR family consists basically from switching and linear type voltage regulators, intended for applying in the TV and video cassette primare (high voltage) and secondare (low voltage) power supply.

In the accesible literature and in the Internet, the information about STK and STR integrated circuits is very dispersed, incompleted and consequently is not so easily accessible.

This book proposes the short but full presentation of the majority of STK and STR integrated circuits that exist on the market; presentation consisting from schematic diagrams (schematic of connections and (or) internal structure), short description and basic electrical characteristics.

The integrated circuits with the identical terminal configurations (and connection) are arranged in the same place. They are not specifically equivalent (replacements) with each other (can have to different electrical characteristics and (or) type of case); for detection of equivalent, in any situation it is necessary to consult a electrical characteristics list.

### *Replacements.*

Not less than three manufacturers make a lot of integrated circuits which one are the complete pin-to-pin replacements compatible with STK and STR family circuits, but their order (marking) code does not coincide with the respective STK or STR circuits. These manufacturers are ECG Microsemi (a Philips USA subdivision (<http://www.ecgsemi.com>)) that marks it's circuits with **ECG** prefixes; NTE Electronis Inc. (<http://www.nteinc.com>) that marks it's circuits with **NTE** prefixes and TCE (Thomson Consumer Electronics) that marks it's circuits with **SK** prefixes. In the book (appendix 2) we present the list of full equivalences of STK, STR, ECG, NTE and SK integrated circuits.

### *Important notice:*

Sanyo company already transfered the semiconductor electronic components manufacturing to ON Semiconductor (<https://www.onsemi.com/>) company (USA).

## Abbreviations used in the characteristics tables and schematics:

|                             |                                |                             |                                 |
|-----------------------------|--------------------------------|-----------------------------|---------------------------------|
| <b>μCOM</b> -               | Microcomputer                  | <b>NFB</b> -                | Negative feedback               |
| <b>AC</b> -                 | Alternate Current              | <b>OC</b> -                 | Oscillator Control              |
| <b>Adj</b> -                | Adjust, adjustable             | <b>OCP</b> -                | Over-Current Protection         |
| <b>B</b> -                  | Bias                           | <b>OLP</b>                  | Overload protection             |
| <b>BPF</b> -                | Bandpass filter                | <b>Osc.</b> -               | Oscillator                      |
| <b>B<sub>w</sub></b> -      | Bandwith (Hz-kHz)              | <b>Out</b> -                | Output                          |
| <b>BTL</b>                  | Bridge-Tied Load               | <b>OVP</b> -                | Over-Voltage Protection         |
| <b>CLK</b> -                | Clock                          | <b>P<sub>out</sub>max</b> - | Maximal output power            |
| <b>CRT</b> -                | Cathode Ray Tube               | <b>PRC</b>                  | Pulse Ratio Control             |
| <b>CTRL</b> -               | Controll                       | <b>PWM</b>                  | Puse Widht Modulation           |
| <b>Curr.</b> -              | Current                        | <b>R, G, B</b> -            | Red, Green, Blue                |
| <b>DC</b> -                 | Direct Current                 | <b>RBDS</b> -               | Radio Broadcast Data System;    |
| <b>Det.</b> -               | Detector                       | <b>rDS</b> -                | On-State Resistance             |
| <b>DRV</b> -                | Driver                         | <b>RDS</b> -                | Radio Data System               |
| <b>D.Y.</b> -               | Deflection yoke                | <b>Ref.</b> -               | Reference (voltage)             |
| <b>ELP</b>                  | External latch protection      | <b>Reg.</b> -               | Regulator                       |
| <b>EMI</b> -                | ElectroMagnetic Interference   | <b>Rectif.</b> -            | Rectifier                       |
| <b>FDBK</b> -               | Feedback                       | <b>R<sub>nom</sub></b> -    | Nominal value of load impedance |
| <b>Fosc</b> -               | Oscillation frequency          | <b>R<sub>in</sub></b> -     | Input impedance                 |
| <b>GND</b> -                | Ground                         | <b>Sync.</b> -              | Synchronization                 |
| <b>Gv</b> -                 | Voltage gain                   | <b>SMPS</b> -               | Switching mode power supply     |
| <b>HL</b> -                 | High Level (logic)             | <b>St-by</b>                | Stand-by                        |
| <b>Id</b> -                 | Drain Current                  | <b>Sw</b> -                 | Switch, switching               |
| <b>ID</b> -                 | Identificator;                 | <b>THD</b> -                | Total harmonic distorsion       |
| <b>I<sub>cc0</sub></b> -    | Quiescent power supply current | <b>TSD</b> -                | Time Set During                 |
| <b>I<sub>out</sub>max</b> - | Maximal output current         | <b>V<sub>cc</sub>min</b> -  | Minimal supply voltage          |
| <b>INH</b> -                | Inhibit                        | <b>V<sub>cc</sub>max</b> -  | Maximal supply voltage          |
| <b>LL</b> -                 | Low Level (logic)              | <b>V<sub>ds</sub></b> -     | Drain-Source Voltage            |
| <b>MON</b> -                | Monitor                        | <b>UVLO</b> -               | Under-voltage lockout           |

ALPHA-NUMERIC INDEX

|            |    |            |     |               |     |              |     |
|------------|----|------------|-----|---------------|-----|--------------|-----|
| STK0025    | 4  | STK075G    | 12  | STK2040       | 102 | STK3161B     | 108 |
| STK0029    | 4  | STK077     | 10  | STK2050       | 102 | STK3400A     | 108 |
| STK0030    | 4  | STK077G    | 12  | STK2129       | 102 | STK3400B     | 108 |
| STK0035    | 4  | STK078     | 10  | STK2135       | 102 | STK350-000   | 21  |
| STK0039    | 4  | STK078-105 | 10  | STK2139       | 102 | STK350-010   | 21  |
| STK0040    | 4  | STK078G    | 12  | STK2145       | 102 | STK350-020   | 21  |
| STK0040II  | 5  | STK080     | 10  | STK2155       | 102 | STK350-030   | 21  |
| STK0045    | 4  | STK080G    | 12  | STK2230       | 105 | STK350-040   | 21  |
| STK0049    | 4  | STK082     | 10  | STK2240       | 105 | STK350-050   | 21  |
| STK0050    | 4  | STK082-105 | 10  | STK2250       | 105 | STK350-200   | 23  |
| STK0050II  | 5  | STK082G    | 12  | STK2260       | 105 | STK350-210   | 23  |
| STK0055    | 4  | STK083     | 10  | STK280-100    | 15  | STK350-220   | 23  |
| STK0059    | 4  | STK083G    | 12  | STK280-130    | 15  | STK350-230   | 23  |
| STK0060    | 4  | STK084     | 10  | STK282-100E   | 15  | STK350-240   | 23  |
| STK0060II  | 5  | STK084G    | 12  | STK282-140E   | 15  | STK350-250   | 23  |
| STK0070    | 4  | STK085     | 10  | STK282-170E   | 15  | STK350-530TE | 24  |
| STK0070II  | 5  | STK085-105 | 10  | STK282-270A-E | 16  | STK390-120   | 24  |
| STK0080    | 4  | STK085G    | 12  | STK290-100    | 16  | STK390-910   | 25  |
| STK0080II  | 5  | STK086     | 10  | STK290-130    | 16  | STK391-020   | 25  |
| STK0100    | 4  | STK086G    | 12  | STK301-020    | 16  | STK391-110   | 25  |
| STK0100II  | 5  | STK1030    | 99  | STK301-020A   | 16  | STK391-120   | 26  |
| STK0105    | 4  | STK1035    | 100 | STK301-020B   | 16  | STK391-220   | 26  |
| STK011     | 6  | STK1039    | 100 | STK301-060    | 16  | STK392-010   | 26  |
| STK013     | 6  | STK1040    | 99  | STK301-060A   | 16  | STK392-020   | 26  |
| STK014     | 7  | STK1040II  | 101 | STK301-060B   | 16  | STK392-040   | 26  |
| STK015     | 6  | STK1045    | 100 | STK301-090    | 18  | STK392-110   | 27  |
| STK016     | 6  | STK1049    | 100 | STK301-220    | 18  | STK392-120   | 27  |
| STK0177    | 10 | STK1050    | 99  | STK3041       | 106 | STK392-150-E | 27  |
| STK018     | 7  | STK1050II  | 101 | STK3042       | 21  | STK392-180   | 27  |
| STK020     | 7  | STK1055    | 100 | STK3042II     | 21  | STK392-210   | 27  |
| STK021     | 7  | STK1059    | 100 | STK3042IIA    | 21  | STK392-220   | 27  |
| STK022     | 8  | STK1060    | 99  | STK3042III    | 21  | STK392-560   | 27  |
| STK024     | 7  | STK1060II  | 101 | STK3044       | 106 | STK392-570   | 27  |
| STK025     | 8  | STK1070    | 99  | STK3044II     | 106 | STK392-910A  | 28  |
| STK027     | 7  | STK1070II  | 101 | STK3056       | 107 | STK393-110   | 29  |
| STK0292    | 11 | STK1080    | 99  | STK3061       | 106 | STK394-210   | 27  |
| STK030     | 8  | STK1080II  | 101 | STK3062       | 21  | STK394-220   | 27  |
| STK031     | 7  | STK1100II  | 101 | STK3062II     | 21  | STK394-250   | 27  |
| STK032     | 8  | STK181B    | 12  | STK3062IIA    | 21  | STK394-510   | 27  |
| STK035     | 7  | STK181C    | 12  | STK3062III    | 21  | STK396-010   | 29  |
| STK0352    | 11 | STK181D    | 12  | STK3076       | 107 | STK396-120   | 29  |
| STK036     | 8  | STK181E    | 12  | STK3081       | 106 | STK397-010   | 30  |
| STK040     | 9  | STK182B    | 13  | STK3082       | 21  | STK400-010   | 30  |
| STK041     | 9  | STK182C    | 13  | STK3082II     | 21  | STK400-020   | 30  |
| STK043     | 9  | STK182D    | 13  | STK3082IIA    | 21  | STK400-030   | 30  |
| STK043-105 | 9  | STK182E    | 13  | STK3082III    | 21  | STK400-040   | 30  |
| STK0452    | 11 | STK183B    | 13  | STK3101       | 106 | STK400-050   | 30  |
| STK050     | 9  | STK183C    | 13  | STK3102II     | 21  | STK400-060   | 30  |
| STK054     | 10 | STK184C    | 13  | STK3102III    | 21  | STK400-070   | 30  |
| STK055     | 10 | STK184D    | 13  | STK311-010    | 19  | STK400-080   | 30  |
| STK056     | 10 | STK185A    | 14  | STK311-020    | 19  | STK400-090   | 30  |
| STK057     | 10 | STK185B    | 14  | STK311-050    | 19  | STK400-100   | 30  |
| STK058     | 10 | STK190-010 | 14  | STK3110M      | 20  | STK400-110   | 30  |
| STK060     | 10 | STK190-020 | 14  | STK311-110    | 20  | STK400-210   | 30  |
| STK062     | 10 | STK2025    | 102 | STK311-120    | 21  | STK400-220   | 30  |
| STK067     | 11 | STK2029    | 102 | STK3120M      | 21  | STK400-230   | 30  |
| STK070     | 9  | STK2030    | 102 | STK3122III    | 21  | STK400-240   | 30  |
| STK071     | 11 | STK2038II  | 104 | STK3152III    | 21  | STK400-250   | 30  |
| STK075     | 10 | STK2038IV  | 103 | STK3161       | 108 | STK400-260   | 30  |

ALPHA-NUMERIC INDEX

|                 |     |                  |     |                    |     |                  |     |
|-----------------|-----|------------------|-----|--------------------|-----|------------------|-----|
| STK400-270..... | 30  | STK402-070.....  | 33  | STK4038II.....     | 110 | STK405-120A..... | 40  |
| STK400-280..... | 30  | STK402-071.....  | 33  | STK4038V.....      | 110 | STK4065.....     | 112 |
| STK400-290..... | 30  | STK402-090.....  | 33  | STK4038X.....      | 110 | STK4067.....     | 113 |
| STK400-300..... | 30  | STK4020II.....   | 110 | STK4038XI.....     | 110 | STK407-040B..... | 41  |
| STK400-310..... | 30  | STK4021.....     | 109 | STK404-050.....    | 38  | STK407-050E..... | 41  |
| STK400-450..... | 31  | STK402-100.....  | 33  | STK404-050S.....   | 38  | STK407-070E..... | 41  |
| STK400-460..... | 31  | STK402-120.....  | 33  | STK404-070.....    | 38  | STK407-090E..... | 41  |
| STK400-470..... | 31  | STK402-220.....  | 33  | STK404-070N-E..... | 38  | STK407-100E..... | 41  |
| STK400-480..... | 31  | STK402-230.....  | 33  | STK404-070S.....   | 38  | STK407-120E..... | 41  |
| STK400-490..... | 31  | STK402-240.....  | 33  | STK404-090.....    | 38  | STK407-130E..... | 41  |
| STK400-500..... | 31  | STK402-250.....  | 33  | STK404-090S.....   | 38  | STK407-240.....  | 41  |
| STK400-510..... | 31  | STK402-270.....  | 33  | STK4040II.....     | 110 | STK407-250.....  | 41  |
| STK400-520..... | 31  | STK4022II.....   | 110 | STK4040V.....      | 110 | STK407-270.....  | 41  |
| STK400-530..... | 31  | STK4023.....     | 109 | STK4040X.....      | 110 | STK407-290.....  | 41  |
| STK400-650..... | 31  | STK4024.....     | 110 | STK4040XI.....     | 110 | STK408-040E..... | 42  |
| STK400-660..... | 31  | STK402-480.....  | 34  | STK404-100.....    | 38  | STK408-050E..... | 42  |
| STK400-670..... | 31  | STK4024II.....   | 110 | STK404-100S.....   | 38  | STK408-070E..... | 42  |
| STK400-680..... | 31  | STK4024V.....    | 110 | STK404-120.....    | 38  | STK408-090E..... | 42  |
| STK400-690..... | 31  | STK4025.....     | 109 | STK404-120S.....   | 38  | STK408-230.....  | 43  |
| STK400-700..... | 31  | STK4026.....     | 110 | STK404-130.....    | 39  | STK408-230M..... | 43  |
| STK400-710..... | 31  | STK402-680.....  | 34  | STK404-130S.....   | 39  | STK408-240.....  | 43  |
| STK400-720..... | 31  | STK4026II.....   | 110 | STK404-140.....    | 39  | STK410-000.....  | 44  |
| STK400-730..... | 31  | STK4026V.....    | 110 | STK404-140S.....   | 39  | STK410-010.....  | 44  |
| STK401-010..... | 32  | STK4028.....     | 110 | STK404-200-E.....  | 39  | STK410-020.....  | 44  |
| STK401-020..... | 32  | STK4028II.....   | 110 | STK404-230-E.....  | 39  | STK410-030.....  | 44  |
| STK401-030..... | 32  | STK4028V.....    | 110 | STK4042II.....     | 110 | STK410-090.....  | 44  |
| STK401-040..... | 32  | STK4028X.....    | 110 | STK4042V.....      | 110 | STK4100MK2.....  | 113 |
| STK401-050..... | 32  | STK402-920.....  | 35  | STK4042X.....      | 110 | STK4100MK5.....  | 113 |
| STK401-060..... | 32  | STK402-930.....  | 35  | STK4042XI.....     | 110 | STK4101.....     | 60  |
| STK401-070..... | 32  | STK402-940.....  | 35  | STK4044II.....     | 110 | STK4101II.....   | 114 |
| STK401-080..... | 32  | STK402-950.....  | 35  | STK4044V.....      | 110 | STK4101V.....    | 114 |
| STK401-090..... | 32  | STK4029S.....    | 33  | STK4044X.....      | 110 | STK4102.....     | 60  |
| STK401-100..... | 32  | STK403-030.....  | 35  | STK4044XI.....     | 110 | STK4102II.....   | 114 |
| STK401-110..... | 32  | STK403-040.....  | 35  | STK4046II.....     | 111 | STK4102V.....    | 114 |
| STK401-120..... | 32  | STK403-050.....  | 35  | STK4046V.....      | 112 | STK4110MK2.....  | 113 |
| STK401-130..... | 32  | STK403-070.....  | 36  | STK4046X.....      | 112 | STK4110MK5.....  | 113 |
| STK401-140..... | 32  | STK403-090.....  | 36  | STK4046XI.....     | 112 | STK4111.....     | 60  |
| STK401-210..... | 32  | STK4030II.....   | 110 | STK4048II.....     | 111 | STK4111II.....   | 114 |
| STK401-220..... | 32  | STK4030V.....    | 110 | STK4048V.....      | 112 | STK4111V.....    | 114 |
| STK401-230..... | 32  | STK4030X.....    | 110 | STK4048X.....      | 112 | STK4112.....     | 60  |
| STK401-240..... | 32  | STK403-100.....  | 36  | STK4048XI.....     | 112 | STK411-200E..... | 43  |
| STK401-250..... | 32  | STK403-120.....  | 36  | STK405.....        | 40  | STK411-210E..... | 43  |
| STK401-260..... | 32  | STK403-130.....  | 36  | STK405-010.....    | 40  | STK411-220E..... | 43  |
| STK401-270..... | 32  | STK403-240A..... | 37  | STK405-010A.....   | 40  | STK411-230E..... | 43  |
| STK401-280..... | 32  | STK403-250A..... | 37  | STK405-030.....    | 40  | STK411-240E..... | 43  |
| STK401-290..... | 32  | STK4032II.....   | 110 | STK405-030A.....   | 40  | STK411-290E..... | 43  |
| STK401-300..... | 32  | STK4032V.....    | 110 | STK405-050.....    | 40  | STK4112II.....   | 114 |
| STK401-310..... | 32  | STK4032X.....    | 110 | STK405-050A.....   | 40  | STK4112V.....    | 114 |
| STK401-320..... | 32  | STK403-430.....  | 37  | STK405-070.....    | 40  | STK411-550E..... | 43  |
| STK401-330..... | 32  | STK403-440.....  | 37  | STK405-070A.....   | 40  | STK4115G.....    | 43  |
| STK401-340..... | 32  | STK403-450.....  | 37  | STK405-090.....    | 40  | STK412-000.....  | 44  |
| STK4017.....    | 109 | STK4034II.....   | 110 | STK405-090A.....   | 40  | STK412-010.....  | 44  |
| STK4018II.....  | 110 | STK4034V.....    | 110 | STK4050II.....     | 112 | STK412-020.....  | 44  |
| STK4019.....    | 109 | STK4034X.....    | 110 | STK4050V.....      | 112 | STK41203.....    | 44  |
| STK402-020..... | 33  | STK4036.....     | 110 | STK405-100.....    | 40  | STK412-030.....  | 44  |
| STK402-030..... | 33  | STK4036II.....   | 110 | STK405-100A.....   | 40  | STK412-040.....  | 44  |
| STK40204.....   | 33  | STK4036V.....    | 110 | STK405-110.....    | 40  | STK412-090.....  | 44  |
| STK402-040..... | 33  | STK4036X.....    | 110 | STK405-110A.....   | 40  | STK4120MK2.....  | 113 |
| STK402-050..... | 33  | STK4036XI.....   | 110 | STK405-120.....    | 40  | STK4120MK5.....  | 113 |

ALPHA-NUMERIC INDEX

|                     |     |                   |     |                   |     |                     |     |
|---------------------|-----|-------------------|-----|-------------------|-----|---------------------|-----|
| STK4121 .....       | 60  | STK4141X .....    | 115 | STK4174MK2 .....  | 116 | STK4215MK5 .....    | 119 |
| STK412-100 .....    | 45  | STK4142 .....     | 60  | STK4174MK5 .....  | 116 | STK4216MK10 .....   | 115 |
| STK412-150 .....    | 45  | STK4142II .....   | 114 | STK4175MK2 .....  | 116 | STK4216X .....      | 115 |
| STK412-150C-E ..... | 45  | STK4142V .....    | 114 | STK4175MK5 .....  | 116 | STK4219MK2 .....    | 120 |
| STK412-150M .....   | 45  | STK4144MK2 .....  | 116 | STK4176X .....    | 115 | STK4220MK2 .....    | 113 |
| STK41217 .....      | 45  | STK4144MK5 .....  | 116 | STK4179MK2 .....  | 117 | STK4220MK5 .....    | 113 |
| STK412-170 .....    | 45  | STK4145MK2 .....  | 116 | STK4180MK2 .....  | 113 | STK4221I .....      | 117 |
| STK412-170C-E ..... | 45  | STK4145MK5 .....  | 116 | STK4180MK5 .....  | 113 | STK4221V .....      | 118 |
| STK4121II .....     | 114 | STK415 .....      | 46  | STK4181 .....     | 60  | STK4224MK2 .....    | 119 |
| STK4121J .....      | 44  | STK415-090E ..... | 48  | STK4181II .....   | 114 | STK4224MK5 .....    | 119 |
| STK4121V .....      | 114 | STK4150MK2 .....  | 113 | STK4181V .....    | 114 | STK4225MK2 .....    | 119 |
| STK4122 .....       | 60  | STK4150MK5 .....  | 113 | STK4181X .....    | 115 | STK4225MK5 .....    | 119 |
| STK412-200 .....    | 44  | STK4151 .....     | 60  | STK4182 .....     | 60  | STK4229MK2 .....    | 120 |
| STK412-210 .....    | 44  | STK415-100E ..... | 48  | STK4182II .....   | 114 | STK4230MK2 .....    | 113 |
| STK412-220 .....    | 44  | STK415-120E ..... | 48  | STK4182V .....    | 114 | STK4230MK5 .....    | 113 |
| STK41223 .....      | 44  | STK415-130E ..... | 48  | STK4184MK2 .....  | 116 | STK4231I .....      | 117 |
| STK412-230 .....    | 44  | STK415-140E ..... | 48  | STK4184MK5 .....  | 116 | STK4231V .....      | 118 |
| STK412-240M .....   | 44  | STK4151II .....   | 114 | STK4185MK2 .....  | 116 | STK4234MK2 .....    | 119 |
| STK412-290 .....    | 44  | STK4151V .....    | 114 | STK4185MK5 .....  | 116 | STK4234MK5 .....    | 119 |
| STK4122II .....     | 114 | STK4151X .....    | 115 | STK4186X .....    | 115 | STK4235MK2 .....    | 119 |
| STK4122V .....      | 114 | STK4152 .....     | 60  | STK4189MK2 .....  | 117 | STK4235MK5 .....    | 119 |
| STK412-410 .....    | 44  | STK4152II .....   | 114 | STK4190MK2 .....  | 113 | STK4239MK2 .....    | 120 |
| STK41242 .....      | 44  | STK4152V .....    | 114 | STK4190MK5 .....  | 113 | STK4241I .....      | 117 |
| STK412-420 .....    | 44  | STK4154MK2 .....  | 116 | STK4191 .....     | 60  | STK4241V .....      | 118 |
| STK412-430 .....    | 44  | STK4154MK5 .....  | 116 | STK419-110 .....  | 49  | STK425-050 .....    | 49  |
| STK41244 .....      | 44  | STK4155MK2 .....  | 116 | STK419-130 .....  | 49  | STK425-070 .....    | 49  |
| STK412-440 .....    | 44  | STK4155MK5 .....  | 116 | STK419-140 .....  | 49  | STK425-090 .....    | 49  |
| STK412-490 .....    | 44  | STK4159MK2 .....  | 117 | STK4191II .....   | 114 | STK426-530 .....    | 50  |
| STK412-530 .....    | 44  | STK416-090E ..... | 48  | STK4191V .....    | 114 | STK4273 .....       | 119 |
| STK412-740E .....   | 46  | STK4160MK2 .....  | 113 | STK4191X .....    | 115 | STK4274 .....       | 120 |
| STK412-750E .....   | 46  | STK4160MK5 .....  | 113 | STK4192 .....     | 60  | STK4275 .....       | 121 |
| STK412-770E .....   | 46  | STK4161 .....     | 60  | STK4192II .....   | 114 | STK4277 .....       | 121 |
| STK413 .....        | 46  | STK416-100E ..... | 48  | STK4192V .....    | 114 | STK4278 .....       | 122 |
| STK413-000 .....    | 47  | STK416-120E ..... | 48  | STK4194MK2 .....  | 116 | STK4278-L .....     | 122 |
| STK413-010 .....    | 47  | STK416-130E ..... | 48  | STK4194MK5 .....  | 116 | STK428-430 .....    | 52  |
| STK413-020 .....    | 47  | STK4161I .....    | 114 | STK4195MK2 .....  | 116 | STK428-610A .....   | 50  |
| STK413-030 .....    | 47  | STK4161V .....    | 114 | STK4195MK5 .....  | 116 | STK428-610-E .....  | 50  |
| STK413-090 .....    | 47  | STK4161X .....    | 115 | STK4196MK10 ..... | 115 | STK428-630 .....    | 50  |
| STK4130MK2 .....    | 113 | STK4162 .....     | 60  | STK4196X .....    | 115 | STK428-640 .....    | 50  |
| STK4130MK5 .....    | 113 | STK4162II .....   | 114 | STK4199MK2 .....  | 117 | STK430 .....        | 46  |
| STK4131 .....       | 60  | STK4162V .....    | 114 | STK4200MK2 .....  | 113 | STK4301 .....       | 122 |
| STK4131I .....      | 114 | STK4164MK2 .....  | 116 | STK4200MK5 .....  | 113 | STK430II .....      | 46  |
| STK4131V .....      | 114 | STK4164MK5 .....  | 116 | STK4201I .....    | 117 | STK430III .....     | 46  |
| STK4132 .....       | 60  | STK4165MK2 .....  | 116 | STK4201V .....    | 118 | STK4311 .....       | 122 |
| STK413-200 .....    | 47  | STK4165MK5 .....  | 116 | STK4201X .....    | 115 | STK43205 .....      | 51  |
| STK413-210 .....    | 47  | STK4169MK2 .....  | 117 | STK4204MK2 .....  | 119 | STK432-050 .....    | 51  |
| STK413-220 .....    | 47  | STK417-090 .....  | 43  | STK4204MK5 .....  | 119 | STK432-070 .....    | 51  |
| STK413-230 .....    | 47  | STK4170MK2 .....  | 113 | STK4205MK2 .....  | 119 | STK432-090 .....    | 51  |
| STK413-290 .....    | 47  | STK4170MK5 .....  | 113 | STK4205MK5 .....  | 119 | STK432-420 .....    | 44  |
| STK4132II .....     | 114 | STK4171 .....     | 60  | STK4206X .....    | 115 | STK433 .....        | 46  |
| STK4132V .....      | 114 | STK417-100 .....  | 43  | STK4209MK2 .....  | 120 | STK433-030 .....    | 52  |
| STK413-400 .....    | 47  | STK417-120 .....  | 43  | STK4210MK2 .....  | 113 | STK433-030-E .....  | 52  |
| STK413-420 .....    | 47  | STK417-130 .....  | 43  | STK4210MK5 .....  | 113 | STK433-040 .....    | 52  |
| STK413-430 .....    | 47  | STK4171I .....    | 114 | STK4211I .....    | 117 | STK433-040-E .....  | 52  |
| STK4140MK2 .....    | 113 | STK4171V .....    | 114 | STK4211V .....    | 118 | STK433-040N-E ..... | 52  |
| STK4140MK5 .....    | 113 | STK4171X .....    | 115 | STK4211X .....    | 115 | STK433-060 .....    | 52  |
| STK4141 .....       | 60  | STK4172 .....     | 60  | STK4214MK2 .....  | 119 | STK433-060-E .....  | 52  |
| STK4141I .....      | 114 | STK4172II .....   | 114 | STK4214MK5 .....  | 119 | STK433-060N-E ..... | 52  |
| STK4141V .....      | 114 | STK4172V .....    | 114 | STK4215MK2 .....  | 119 | STK433-070 .....    | 52  |

ALPHA-NUMERIC INDEX

|                     |     |                   |     |                     |     |                      |     |
|---------------------|-----|-------------------|-----|---------------------|-----|----------------------|-----|
| STK433-070-E .....  | 52  | STK442-130 .....  | 56  | STK499-220E .....   | 43  | STK5441 .....        | 132 |
| STK433-090 .....    | 52  | STK443 .....      | 46  | STK499-230E .....   | 43  | STK5443 .....        | 132 |
| STK433-090-E .....  | 52  | STK443-050 .....  | 57  | STK499-240E .....   | 43  | STK5446 .....        | 132 |
| STK433-100 .....    | 52  | STK443-070 .....  | 57  | STK499-290E .....   | 43  | STK544UC62K-E .....  | 66  |
| STK433-100-E .....  | 52  | STK443-090 .....  | 57  | STK521 .....        | 62  | STK544UC63K-E .....  | 67  |
| STK433-105 .....    | 46  | STK4432 .....     | 123 | STK522 .....        | 62  | STK5451 .....        | 132 |
| STK433-120 .....    | 52  | STK45303 .....    | 56  | STK523 .....        | 62  | STK5461 .....        | 133 |
| STK433-120-E .....  | 52  | STK453-030 .....  | 56  | STK531 .....        | 62  | STK5461ST .....      | 133 |
| STK433-130 .....    | 52  | STK453-030A ..... | 56  | STK5314 .....       | 124 | STK5462 .....        | 133 |
| STK433-130-E .....  | 52  | STK453-060 .....  | 56  | STK531U369A-E ..... | 64  | STK5464 .....        | 134 |
| STK433-130N-E ..... | 52  | STK457 .....      | 57  | STK531U394A-E ..... | 64  | STK5466 .....        | 134 |
| STK4332 .....       | 123 | STK459 .....      | 57  | STK532 .....        | 62  | STK5466ST .....      | 134 |
| STK433-230 .....    | 53  | STK460 .....      | 57  | STK5321 .....       | 124 | STK5467 .....        | 135 |
| STK433-230A-E ..... | 53  | STK461 .....      | 57  | STK5322 .....       | 124 | STK5468 .....        | 135 |
| STK433-240 .....    | 53  | STK463 .....      | 57  | STK5322HSL .....    | 124 | STK5468S .....       | 135 |
| STK433-240A-E ..... | 53  | STK465 .....      | 57  | STK5324 .....       | 124 | STK5471 .....        | 134 |
| STK433-260 .....    | 53  | STK470-010 .....  | 58  | STK5325 .....       | 124 | STK5472 .....        | 135 |
| STK433-260A-E ..... | 53  | STK470-020 .....  | 58  | STK5326 .....       | 125 | STK5473 .....        | 136 |
| STK433-270 .....    | 53  | STK470-020A ..... | 58  | STK5327 .....       | 125 | STK5474 .....        | 136 |
| STK433-270A-E ..... | 53  | STK470-040 .....  | 58  | STK533 .....        | 62  | STK5476 .....        | 134 |
| STK433-290 .....    | 53  | STK470-050 .....  | 59  | STK5331 .....       | 125 | STK5477 .....        | 136 |
| STK433-290-E .....  | 53  | STK470-050A ..... | 59  | STK5332 .....       | 125 | STK5479 .....        | 137 |
| STK433-300 .....    | 53  | STK470-070 .....  | 60  | STK5333 .....       | 126 | STK5481 .....        | 137 |
| STK433-300-E .....  | 53  | STK470-080 .....  | 60  | STK5335 .....       | 126 | STK5482 .....        | 137 |
| STK433-320 .....    | 53  | STK470-090 .....  | 60  | STK5336 .....       | 127 | STK5486 .....        | 138 |
| STK433-320-E .....  | 53  | STK475-010 .....  | 59  | STK5337 .....       | 126 | STK5490 .....        | 138 |
| STK433-330 .....    | 53  | STK4773 .....     | 123 | STK5338 .....       | 126 | STK551U362A-E .....  | 64  |
| STK433-330-E .....  | 53  | STK4793 .....     | 123 | STK5339B .....      | 126 | STK551U392A-E .....  | 64  |
| STK433-330N-E ..... | 53  | STK4803 .....     | 123 | STK5340 .....       | 127 | STK551U3A2A-E .....  | 64  |
| STK433-730-E .....  | 54  | STK4813 .....     | 123 | STK5342 .....       | 125 | STK554U362A-E .....  | 64  |
| STK433-760-E .....  | 54  | STK4833 .....     | 123 | STK5343 .....       | 125 | STK554U362C-E .....  | 64  |
| STK433-840N-E ..... | 55  | STK4843 .....     | 123 | STK5346 .....       | 127 | STK554U392A-E .....  | 64  |
| STK433-870N-E ..... | 55  | STK4853 .....     | 123 | STK534U342C-E ..... | 64  | STK554U392C-E .....  | 64  |
| STK433-890N-E ..... | 55  | STK4863 .....     | 123 | STK534U362C-E ..... | 64  | STK561F .....        | 63  |
| STK433-930 .....    | 55  | STK4873 .....     | 123 | STK5352 .....       | 128 | STK563 .....         | 63  |
| STK433-940 .....    | 55  | STK48801 .....    | 60  | STK5353 .....       | 128 | STK5632D .....       | 139 |
| STK433-960 .....    | 55  | STK488-010 .....  | 60  | STK5361 .....       | 128 | STK5633A .....       | 139 |
| STK433-970 .....    | 55  | STK488-020 .....  | 60  | STK5362 .....       | 128 | STK563A .....        | 63  |
| STK433A .....       | 46  | STK488-050 .....  | 60  | STK5364 .....       | 128 | STK563F .....        | 63  |
| STK435 .....        | 46  | STK4893 .....     | 123 | STK5371 .....       | 129 | STK571F .....        | 63  |
| STK435-105 .....    | 46  | STK490-040 .....  | 61  | STK5372 .....       | 129 | STK57FU394AG-E ..... | 67  |
| STK4352 .....       | 123 | STK490-070 .....  | 61  | STK5372H .....      | 129 | STK581U3C2D-E .....  | 71  |
| STK435A .....       | 46  | STK490-090 .....  | 61  | STK5381 .....       | 129 | STK583 .....         | 63  |
| STK436 .....        | 46  | STK490-110 .....  | 61  | STK5383 .....       | 130 | STK583F .....        | 63  |
| STK436-105 .....    | 46  | STK490-140 .....  | 61  | STK5391 .....       | 130 | STK583FST .....      | 63  |
| STK4362 .....       | 123 | STK490-220 .....  | 61  | STK5392 .....       | 130 | STK5C4U332J-E .....  | 68  |
| STK436A .....       | 46  | STK490-310 .....  | 61  | STK541 .....        | 62  | STK5F1U3E2D-E .....  | 68  |
| STK437 .....        | 46  | STK490-340 .....  | 61  | STK541UC60C-E ..... | 65  | STK5F4U3E2D-E .....  | 69  |
| STK4372 .....       | 123 | STK4913 .....     | 123 | STK541UC62A-E ..... | 65  | STK5MFU3C1A-E .....  | 69  |
| STK439 .....        | 46  | STK496-070 .....  | 41  | STK541UC62K-E ..... | 66  | STK5Q4U352J-E .....  | 70  |
| STK4392 .....       | 123 | STK496-090 .....  | 41  | STK542 .....        | 62  | STK5Q4U362J-E .....  | 70  |
| STK441 .....        | 46  | STK496-220 .....  | 43  | STK5421 .....       | 131 | STK6103 .....        | 139 |
| STK441-105 .....    | 46  | STK496-420Y ..... | 43  | STK5422 .....       | 131 | STK6105 .....        | 139 |
| STK4412 .....       | 123 | STK496-430 .....  | 43  | STK543 .....        | 62  | STK611-721-E .....   | 72  |
| STK442-040 .....    | 56  | STK496-620Y ..... | 44  | STK5431 .....       | 131 | STK6153 .....        | 140 |
| STK442-070 .....    | 56  | STK496-630 .....  | 44  | STK5431SL .....     | 131 | STK621-015 .....     | 72  |
| STK442-090 .....    | 56  | STK499-040 .....  | 62  | STK5431ST .....     | 131 | STK621-017 .....     | 72  |
| STK442-110 .....    | 56  | STK499-070 .....  | 62  | STK5434 .....       | 131 | STK621-018 .....     | 72  |
| STK442-120 .....    | 56  | STK499-090 .....  | 62  | STK5436 .....       | 131 | STK621-031 .....     | 71  |

ALPHA-NUMERIC INDEX

|                     |     |                      |     |                     |     |                  |     |
|---------------------|-----|----------------------|-----|---------------------|-----|------------------|-----|
| STK621-041 .....    | 71  | STK672-040-E .....   | 74  | STK681-070 .....    | 85  | STK6982H .....   | 151 |
| STK621-041A-E ..... | 71  | STK672-050 .....     | 74  | STK681-200 .....    | 85  | STK6982HII ..... | 151 |
| STK621-043A-E ..... | 73  | STK672-060 .....     | 74  | STK681-200-E .....  | 85  | STK711-410 ..... | 89  |
| STK621-051 .....    | 71  | STK672-070 .....     | 75  | STK681-210-E .....  | 85  | STK711-420 ..... | 89  |
| STK621-061A-E ..... | 71  | STK672-080 .....     | 75  | STK681-300 .....    | 86  | STK711-430 ..... | 89  |
| STK621-061-E .....  | 71  | STK6720H .....       | 145 | STK681-310 .....    | 86  | STK711-440 ..... | 89  |
| STK621-140B-E ..... | 66  | STK672-110 .....     | 76  | STK681-310N-E ..... | 86  | STK711-450 ..... | 89  |
| STK621-150A-E ..... | 66  | STK672-120 .....     | 76  | STK681-320 .....    | 86  | STK711-460 ..... | 89  |
| STK621-150B-E ..... | 66  | STK6721H .....       | 145 | STK681-332-E .....  | 86  | STK711-470 ..... | 89  |
| STK6215 .....       | 140 | STK672-210 .....     | 77  | STK681-352-E .....  | 87  | STK711-480 ..... | 89  |
| STK6217 .....       | 140 | STK672-220 .....     | 77  | STK681-360-E .....  | 87  | STK711-490 ..... | 89  |
| STK628-120-E .....  | 73  | STK6722H .....       | 145 | STK682-010-E .....  | 87  | STK711-510 ..... | 89  |
| STK628-130-E .....  | 73  | STK672-311 .....     | 78  | STK683 .....        | 88  | STK711-520 ..... | 89  |
| STK6325A .....      | 141 | STK672-330 .....     | 78  | STK6855 .....       | 146 | STK711-530 ..... | 89  |
| STK6325B .....      | 141 | STK672-340 .....     | 78  | STK6865H .....      | 147 | STK711-540 ..... | 89  |
| STK6325C .....      | 142 | STK672-350 .....     | 78  | STK6875 .....       | 147 | STK711-550 ..... | 89  |
| STK6327A .....      | 142 | STK672-360-E .....   | 78  | STK6877 .....       | 147 | STK711-560 ..... | 89  |
| STK6327B .....      | 142 | STK672-400 .....     | 79  | STK6932 .....       | 148 | STK711-570 ..... | 89  |
| STK6328A .....      | 143 | STK672-410 .....     | 79  | STK6940 .....       | 148 | STK711-580 ..... | 89  |
| STK6351 .....       | 143 | STK672-430A-E .....  | 80  | STK6941 .....       | 148 | STK711-590 ..... | 89  |
| STK65010II .....    | 161 | STK672-430AN-E ..... | 80  | STK6942 .....       | 148 | STK7216S .....   | 152 |
| STK65020II .....    | 161 | STK672-432A-E .....  | 80  | STK6950 .....       | 148 | STK7217 .....    | 152 |
| STK65030 .....      | 161 | STK672-432AN-E ..... | 80  | STK6951 .....       | 148 | STK7221 .....    | 152 |
| STK65030II .....    | 161 | STK672-432BN-E ..... | 80  | STK6952 .....       | 148 | STK7231 .....    | 153 |
| STK65040 .....      | 161 | STK672-440A-E .....  | 80  | STK6960 .....       | 149 | STK7241 .....    | 153 |
| STK65040II .....    | 161 | STK672-440AN-E ..... | 80  | STK6960H .....      | 149 | STK7253 .....    | 153 |
| STK65050 .....      | 161 | STK672-440BN-E ..... | 80  | STK6961 .....       | 149 | STK730-010 ..... | 88  |
| STK65050II .....    | 161 | STK672-442A-E .....  | 80  | STK6961H .....      | 149 | STK730-020 ..... | 88  |
| STK65060 .....      | 161 | STK672-442AN-E ..... | 80  | STK6962 .....       | 149 | STK730-030 ..... | 88  |
| STK65060II .....    | 161 | STK672-442B-E .....  | 80  | STK6962C .....      | 149 | STK730-040 ..... | 88  |
| STK655 .....        | 73  | STK672-442BN-E ..... | 80  | STK6962CL .....     | 149 | STK730-050 ..... | 88  |
| STK6601 .....       | 144 | STK672-530 .....     | 78  | STK6962H .....      | 149 | STK730-060 ..... | 88  |
| STK6603 .....       | 144 | STK672-540 .....     | 78  | STK6965 .....       | 150 | STK730-070 ..... | 88  |
| STK6605 .....       | 144 | STK672-580 .....     | 80  | STK6965H .....      | 150 | STK730-080 ..... | 88  |
| STK6607 .....       | 144 | STK672-590 .....     | 80  | STK6966 .....       | 150 | STK730-090 ..... | 88  |
| STK66083P .....     | 162 | STK672-600 .....     | 81  | STK6966H .....      | 150 | STK730-120 ..... | 88  |
| STK6621 .....       | 144 | STK672-610 .....     | 81  | STK6967 .....       | 150 | STK730-130 ..... | 88  |
| STK6623 .....       | 144 | STK672-612B-E .....  | 82  | STK6967H .....      | 150 | STK730-140 ..... | 88  |
| STK6625 .....       | 144 | STK672-630A-E .....  | 82  | STK6968 .....       | 150 | STK730-150 ..... | 88  |
| STK669 .....        | 74  | STK672-630AN-E ..... | 82  | STK6970 .....       | 150 | STK7302 .....    | 154 |
| STK6711AMK3 .....   | 144 | STK672-630CN-E ..... | 82  | STK6970H .....      | 150 | STK7308 .....    | 154 |
| STK6711AMK4 .....   | 144 | STK672-632A-E .....  | 82  | STK6971 .....       | 150 | STK7309 .....    | 154 |
| STK6711BMK3 .....   | 144 | STK672-632AN-E ..... | 82  | STK6971H .....      | 150 | STK730B .....    | 91  |
| STK6711BMK4 .....   | 144 | STK672-640A-E .....  | 82  | STK6972 .....       | 150 | STK730C .....    | 91  |
| STK6712AMK3 .....   | 144 | STK672-640CN-E ..... | 82  | STK6972C .....      | 150 | STK730D .....    | 91  |
| STK6712AMK4 .....   | 144 | STK672-642A-E .....  | 82  | STK6972H .....      | 150 | STK7310 .....    | 154 |
| STK6712BMK3 .....   | 144 | STK672-642AN-E ..... | 82  | STK6980 .....       | 151 | STK7312 .....    | 154 |
| STK6712BMK4 .....   | 144 | STK672-730A-E .....  | 83  | STK6980B .....      | 151 | STK731B .....    | 91  |
| STK6713AMK3 .....   | 144 | STK672-732A-E .....  | 83  | STK6980BII .....    | 151 | STK731C .....    | 91  |
| STK6713AMK4 .....   | 144 | STK672-732AN-E ..... | 83  | STK6980H .....      | 151 | STK732B .....    | 91  |
| STK6713BMK3 .....   | 144 | STK672-740A-E .....  | 83  | STK6980HII .....    | 151 | STK732C .....    | 91  |
| STK6713BMK4 .....   | 144 | STK672-740AN-E ..... | 83  | STK6981 .....       | 151 | STK733B .....    | 91  |
| STK6714AMK3 .....   | 144 | STK672-742A-E .....  | 83  | STK6981B .....      | 151 | STK733C .....    | 91  |
| STK6714AMK4 .....   | 144 | STK673-010 .....     | 84  | STK6981BII .....    | 151 | STK73410II ..... | 155 |
| STK6714BMK3 .....   | 144 | STK673-011 .....     | 84  | STK6981H .....      | 151 | STK7344 .....    | 155 |
| STK6714BMK4 .....   | 144 | STK673-011-E .....   | 84  | STK6981HII .....    | 151 | STK7348 .....    | 155 |
| STK672-010 .....    | 75  | STK6772 .....        | 146 | STK6982 .....       | 151 | STK7356 .....    | 155 |
| STK672-020 .....    | 75  | STK681-050 .....     | 85  | STK6982B .....      | 151 | STK7358 .....    | 155 |
| STK672-040 .....    | 74  | STK681-060 .....     | 85  | STK6982BII .....    | 151 | STK7360 .....    | 155 |

ALPHA-NUMERIC INDEX

|                  |     |                     |     |                   |     |                   |     |
|------------------|-----|---------------------|-----|-------------------|-----|-------------------|-----|
| STK73605I .....  | 162 | STK7575A .....      | 159 | STR30123 .....    | 185 | STR3A475HDL ..... | 169 |
| STK73606I .....  | 162 | STK7575B .....      | 159 | STR30125 .....    | 185 | STR40090 .....    | 186 |
| STK7362 .....    | 155 | STK760 .....        | 89  | STR30130 .....    | 185 | STR40115 .....    | 187 |
| STK73901 .....   | 163 | STK760-211C-E ..... | 94  | STR30134 .....    | 185 | STR41090 .....    | 187 |
| STK73902 .....   | 163 | STK760-213A-E ..... | 95  | STR30135 .....    | 185 | STR4211 .....     | 176 |
| STK73903 .....   | 163 | STK760-216-E .....  | 95  | STR3015 .....     | 175 | STR440 .....      | 166 |
| STK73904 .....   | 163 | STK760-220A-E ..... | 96  | STR3023 .....     | 175 | STR441 .....      | 166 |
| STK73905 .....   | 163 | STK760-221A-E ..... | 96  | STR3025 .....     | 175 | STR4412 .....     | 176 |
| STK73906 .....   | 163 | STK760-710A-E ..... | 96  | STR3030 .....     | 175 | STR442 .....      | 166 |
| STK73907 .....   | 163 | STK760-712A-E ..... | 96  | STR3035 .....     | 175 | STR450 .....      | 167 |
| STK73908 .....   | 163 | STK761 .....        | 89  | STR3110 .....     | 175 | STR451 .....      | 167 |
| STK73909 .....   | 163 | STK762 .....        | 89  | STR3113 .....     | 175 | STR452 .....      | 167 |
| STK7402 .....    | 156 | STK770 .....        | 97  | STR3115 .....     | 175 | STR453 .....      | 167 |
| STK7404 .....    | 156 | STK772B .....       | 97  | STR3120 .....     | 175 | STR454 .....      | 167 |
| STK740-411 ..... | 92  | STK78501 .....      | 164 | STR3123 .....     | 175 | STR455 .....      | 167 |
| STK740-420 ..... | 92  | STK78603 .....      | 164 | STR3125 .....     | 175 | STR456A .....     | 168 |
| STK740-441 ..... | 92  | STK792-110 .....    | 97  | STR3127 .....     | 175 | STR470A .....     | 168 |
| STK740-450 ..... | 92  | STK792-210 .....    | 98  | STR3130 .....     | 175 | STR4A162D .....   | 170 |
| STK740-470 ..... | 92  | STK79315A .....     | 164 | STR3135 .....     | 175 | STR4A162S .....   | 170 |
| STK740-471 ..... | 92  | STK795 .....        | 98  | STR3215 .....     | 175 | STR4A164D .....   | 170 |
| STK740-480 ..... | 92  | STK795-010 .....    | 98  | STR3225 .....     | 175 | STR4A164HD .....  | 170 |
| STK740-490 ..... | 92  | STK79901 .....      | 165 | STR3230 .....     | 175 | STR50020 .....    | 188 |
| STK7406 .....    | 156 | STK79905B .....     | 165 | STR3235 .....     | 175 | STR50041 .....    | 188 |
| STK7408 .....    | 156 | STK8020 .....       | 159 | STR370 .....      | 166 | STR50103A .....   | 189 |
| STK7410 .....    | 156 | STK8030 .....       | 159 | STR371 .....      | 166 | STR50115B .....   | 190 |
| STK743B .....    | 92  | STK8040 .....       | 159 | STR380 .....      | 166 | STR50155 .....    | 190 |
| STK7452 .....    | 157 | STK8050 .....       | 159 | STR381 .....      | 166 | STR5020 .....     | 177 |
| STK7458 .....    | 157 | STK8060 .....       | 159 | STR382 .....      | 166 | STR50203M .....   | 189 |
| STK750-010 ..... | 93  | STK8250 .....       | 160 | STR383 .....      | 166 | STR50330 .....    | 188 |
| STK752 .....     | 89  | STK8250II .....     | 160 | STR384 .....      | 166 | STR5100 .....     | 177 |
| STK755-030 ..... | 93  | STK8260 .....       | 160 | STR385 .....      | 166 | STR51041 .....    | 188 |
| STK755-110 ..... | 94  | STK8260II .....     | 160 | STR3A151 .....    | 169 | STR51203M .....   | 190 |
| STK755-170 ..... | 94  | STK8270 .....       | 160 | STR3A151D .....   | 169 | STR51402M .....   | 190 |
| STK7554 .....    | 157 | STK8270II .....     | 160 | STR3A152 .....    | 169 | STR51404M .....   | 190 |
| STK756 .....     | 89  | STK8280 .....       | 160 | STR3A152D .....   | 169 | STR51424M .....   | 190 |
| STK7561A .....   | 158 | STK8280II .....     | 160 | STR3A153 .....    | 169 | STR52100A .....   | 188 |
| STK7561F .....   | 158 | STR10006 .....      | 183 | STR3A153D .....   | 169 | STR53041 .....    | 188 |
| STK7561G .....   | 158 | STR11006 .....      | 183 | STR3A154 .....    | 169 | STR53043 .....    | 188 |
| STK7561J .....   | 158 | STR12006 .....      | 184 | STR3A154D .....   | 169 | STR53103B .....   | 189 |
| STK7561L .....   | 158 | STR13006 .....      | 184 | STR3A155 .....    | 169 | STR54041 .....    | 188 |
| STK7562A .....   | 158 | STR14006 .....      | 184 | STR3A155D .....   | 169 | STR5412 .....     | 177 |
| STK7562F .....   | 158 | STR15006 .....      | 184 | STR3A161HD .....  | 169 | STR56041 .....    | 188 |
| STK7562G .....   | 158 | STR16006 .....      | 184 | STR3A162HD .....  | 169 | STR57041 .....    | 188 |
| STK7562J .....   | 158 | STR17006 .....      | 184 | STR3A163HD .....  | 169 | STR5707 .....     | 178 |
| STK7562L .....   | 158 | STR20005 .....      | 184 | STR3A251 .....    | 169 | STR5708 .....     | 178 |
| STK7563A .....   | 158 | STR2005 .....       | 174 | STR3A251D .....   | 169 | STR5717 .....     | 178 |
| STK7563F .....   | 158 | STR2012 .....       | 174 | STR3A253 .....    | 169 | STR58041 .....    | 188 |
| STK7563FE .....  | 158 | STR2013 .....       | 174 | STR3A253D .....   | 169 | STR58330-M .....  | 191 |
| STK7563G .....   | 158 | STR2015 .....       | 174 | STR3A255 .....    | 169 | STR59041 .....    | 188 |
| STK7563J .....   | 158 | STR2024 .....       | 174 | STR3A255D .....   | 169 | STR5A162D .....   | 171 |
| STK7563L .....   | 158 | STR212 .....        | 166 | STR3A451 .....    | 169 | STR5A164D .....   | 171 |
| STK7565A .....   | 158 | STR2W152D .....     | 168 | STR3A451D .....   | 169 | STR5A451D .....   | 171 |
| STK7565F .....   | 158 | STR2W153D .....     | 168 | STR3A453 .....    | 169 | STR5A453D .....   | 171 |
| STK7571A .....   | 159 | STR3010 .....       | 175 | STR3A453D .....   | 169 | STR5A464D .....   | 172 |
| STK7571B .....   | 159 | STR30110 .....      | 185 | STR3A455 .....    | 169 | STR5A464S .....   | 173 |
| STK7572A .....   | 159 | STR30112 .....      | 185 | STR3A455D .....   | 169 | STR6135T .....    | 179 |
| STK7572B .....   | 159 | STR30113 .....      | 185 | STR3A461HDL ..... | 169 | STR6307 .....     | 179 |
| STK7573A .....   | 159 | STR30115 .....      | 185 | STR3A462HDL ..... | 169 | STR6309 .....     | 179 |
| STK7573B .....   | 159 | STR30120 .....      | 185 | STR3A463HDL ..... | 169 | STR6456 .....     | 181 |

ALPHA-NUMERIC INDEX

|                   |     |                  |     |                  |     |                   |     |
|-------------------|-----|------------------|-----|------------------|-----|-------------------|-----|
| STR6458 .....     | 181 | STR-A6131M ..... | 193 | STR-E1555 .....  | 202 | STR-G6551 .....   | 207 |
| STR6652 .....     | 181 | STR-A6132 .....  | 193 | STR-E1565 .....  | 202 | STR-G6622 .....   | 207 |
| STR6654 .....     | 181 | STR-A6151 .....  | 193 | STR-F6138 .....  | 203 | STR-G6623 .....   | 207 |
| STR6656 .....     | 181 | STR-A6151M ..... | 193 | STR-F6168 .....  | 203 | STR-G6624 .....   | 207 |
| STR6707 .....     | 180 | STR-A6153E ..... | 193 | STR-F6229 .....  | 203 | STR-G6632 .....   | 207 |
| STR6708 .....     | 180 | STR-A6159 .....  | 193 | STR-F6238 .....  | 203 | STR-G6651 .....   | 207 |
| STR6709 .....     | 180 | STR-A6159M ..... | 193 | STR-F6264S ..... | 203 | STR-G6652 .....   | 207 |
| STR6754 .....     | 181 | STR-A6169 .....  | 193 | STR-F6267S ..... | 203 | STR-G6653 .....   | 207 |
| STR6756 .....     | 181 | STR-A6251 .....  | 194 | STR-F6268S ..... | 203 | STR-G8654A .....  | 207 |
| STR6A153MV .....  | 174 | STR-A6251M ..... | 194 | STR-F6424S ..... | 203 | STR-G8656 .....   | 207 |
| STR6A161HVD ..... | 174 | STR-A6252 .....  | 194 | STR-F6426S ..... | 203 | STR-G9626 .....   | 207 |
| STR6A161HZ .....  | 174 | STR-A6252M ..... | 194 | STR-F6428S ..... | 203 | STR-G9628 .....   | 207 |
| STR6A163HVD ..... | 174 | STR-A6259H ..... | 194 | STR-F6454 .....  | 203 | STR-G9656 .....   | 207 |
| STR6A163HZ .....  | 174 | STR-A6259M ..... | 194 | STR-F6456 .....  | 203 | STR-H2013 .....   | 208 |
| STR6A169HVD ..... | 174 | STR-A6269H ..... | 194 | STR-F6467 .....  | 203 | STR-H3435 .....   | 209 |
| STR6A169HZ .....  | 174 | STR-A6269M ..... | 194 | STR-F6468 .....  | 203 | STR-H7224 .....   | 210 |
| STR7001 .....     | 182 | STR-A6331 .....  | 196 | STR-F6502 .....  | 203 | STR-L451 .....    | 211 |
| STR7002 .....     | 182 | STR-A6351 .....  | 196 | STR-F6511 .....  | 203 | STR-L472 .....    | 211 |
| STR7003 .....     | 182 | STR-A6359 .....  | 196 | STR-F6512 .....  | 203 | STR-L474 .....    | 211 |
| STR7101 .....     | 182 | STR-A6372 .....  | 196 | STR-F6513 .....  | 203 | STR-L6452 .....   | 211 |
| STR7102 .....     | 182 | STR-B5051 .....  | 196 | STR-F6514 .....  | 203 | STR-L6472 .....   | 211 |
| STR7103 .....     | 182 | STR-B5052 .....  | 196 | STR-F6516 .....  | 203 | STR-M6329 .....   | 212 |
| STR729 .....      | 166 | STR-B5053 .....  | 196 | STR-F6523 .....  | 203 | STR-M6511 .....   | 212 |
| STR80145A .....   | 191 | STR-B5054 .....  | 196 | STR-F6524 .....  | 203 | STR-M6515 .....   | 212 |
| STR81145A .....   | 191 | STR-B5055 .....  | 196 | STR-F6535 .....  | 203 | STR-M6529 .....   | 212 |
| STR81159A .....   | 191 | STR-B5056 .....  | 196 | STR-F6537 .....  | 203 | STR-M6529F .....  | 212 |
| STR82145 .....    | 191 | STR-B5057 .....  | 196 | STR-F6548 .....  | 203 | STR-M6547 .....   | 212 |
| STR83145 .....    | 191 | STR-B5058 .....  | 196 | STR-F6552 .....  | 203 | STR-M6549 .....   | 212 |
| STR83146 .....    | 191 | STR-B5059 .....  | 196 | STR-F6553 .....  | 203 | STR-M6559 .....   | 212 |
| STR83159 .....    | 191 | STR-B5451 .....  | 197 | STR-F6612 .....  | 203 | STR-M6811A .....  | 212 |
| STR84145 .....    | 191 | STR-B5452 .....  | 197 | STR-F6614 .....  | 203 | STR-M6831AF ..... | 212 |
| STR84146 .....    | 191 | STR-B5453 .....  | 197 | STR-F6616 .....  | 203 | STR-S5041S .....  | 213 |
| STR9005 .....     | 182 | STR-B5454 .....  | 197 | STR-F6624 .....  | 203 | STR-S5141G .....  | 214 |
| STR90050 .....    | 193 | STR-B5455 .....  | 197 | STR-F6626 .....  | 203 | STR-S5703 .....   | 178 |
| STR90090 .....    | 193 | STR-B5456 .....  | 197 | STR-F6628 .....  | 203 | STR-S5706 .....   | 214 |
| STR9012 .....     | 182 | STR-B5457 .....  | 197 | STR-F6629B ..... | 203 | STR-S5707 .....   | 178 |
| STR90120 .....    | 193 | STR-B5458 .....  | 197 | STR-F6632 .....  | 203 | STR-S5708 .....   | 178 |
| STR9015 .....     | 182 | STR-B5459 .....  | 197 | STR-F6652 .....  | 203 | STR-S5741 .....   | 214 |
| STR90150 .....    | 193 | STR-D1005T ..... | 198 | STR-F6653 .....  | 203 | STR-S5941 .....   | 214 |
| STR9024 .....     | 182 | STR-D1816 .....  | 198 | STR-F6654 .....  | 203 | STR-S6301 .....   | 215 |
| STR-A6051M .....  | 192 | STR-D3010 .....  | 185 | STR-F6655 .....  | 203 | STR-S6301A .....  | 215 |
| STR-A6052M .....  | 192 | STR-D3012 .....  | 185 | STR-F6656 .....  | 203 | STR-S6307 .....   | 179 |
| STR-A6053M .....  | 192 | STR-D3013 .....  | 185 | STR-F6656L ..... | 203 | STR-S6308 .....   | 179 |
| STR-A6059H .....  | 192 | STR-D3015 .....  | 185 | STR-F6658B ..... | 203 | STR-S6309 .....   | 179 |
| STR-A6061H .....  | 192 | STR-D3020 .....  | 185 | STR-F6667B ..... | 203 | STR-S6401 .....   | 216 |
| STR-A6061HD ..... | 192 | STR-D3023 .....  | 185 | STR-F6668 .....  | 203 | STR-S6401F .....  | 216 |
| STR-A6061HZ ..... | 192 | STR-D3025 .....  | 185 | STR-F6672 .....  | 203 | STR-S6411 .....   | 216 |
| STR-A6061MZ ..... | 192 | STR-D3030 .....  | 185 | STR-F6674 .....  | 203 | STR-S6411F .....  | 216 |
| STR-A6062H .....  | 192 | STR-D3034 .....  | 185 | STR-F6676 .....  | 203 | STR-S6513 .....   | 216 |
| STR-A6062HD ..... | 192 | STR-D3035 .....  | 185 | STR-F6707 .....  | 203 | STR-S6525 .....   | 217 |
| STR-A6063HD ..... | 192 | STR-D5095A ..... | 186 | STR-F9656 .....  | 205 | STR-S6545 .....   | 216 |
| STR-A6063HZ ..... | 192 | STR-D6004 .....  | 199 | STR-G5551 .....  | 206 | STR-S6703 .....   | 180 |
| STR-A6063MZ ..... | 192 | STR-D6008 .....  | 199 | STR-G5624 .....  | 206 | STR-S6704 .....   | 180 |
| STR-A6069H .....  | 192 | STR-D6009E ..... | 199 | STR-G5653 .....  | 206 | STR-S6707 .....   | 180 |
| STR-A6069HD ..... | 192 | STR-D6108 .....  | 199 | STR-G5853 .....  | 207 | STR-S6708 .....   | 180 |
| STR-A6069HZ ..... | 192 | STR-D6601 .....  | 201 | STR-G6153T ..... | 207 | STR-S6709 .....   | 180 |
| STR-A6069MZ ..... | 192 | STR-D6602 .....  | 201 | STR-G6351 .....  | 207 | STR-T2224 .....   | 218 |
| STR-A6079M .....  | 192 | STR-D6801 .....  | 200 | STR-G6352 .....  | 207 | STR-T2268 .....   | 218 |
| STR-A6131 .....   | 193 | STR-D6802 .....  | 200 | STR-G6353 .....  | 206 | STR-T2268H .....  | 218 |

ALPHA-NUMERIC INDEX

|                   |     |                    |     |               |     |                      |     |
|-------------------|-----|--------------------|-----|---------------|-----|----------------------|-----|
| STR-V152 .....    | 219 | STR-Z2151 .....    | 228 | ECG1324 ..... | 9   | ECG1871 .....        | 114 |
| STR-V153 .....    | 219 | STR-Z2152 .....    | 229 | ECG1325 ..... | 9   | ECG1872 .....        | 137 |
| STR-V653 .....    | 219 | STR-Z2154 .....    | 229 | ECG1326 ..... | 10  | ECG1874 .....        | 114 |
| STR-W5753A .....  | 220 | STR-Z2156 .....    | 229 | ECG1327 ..... | 10  | ECG1875 .....        | 105 |
| STR-W5754 .....   | 220 | STR-Z2156A .....   | 229 | ECG1328 ..... | 10  | ECG1876 .....        | 131 |
| STR-W6051S .....  | 221 | STR-Z2527 .....    | 230 | ECG1329 ..... | 46  | ECG1877 .....        | 122 |
| STR-W6052S .....  | 221 | STR-Z2586 .....    | 230 | ECG1330 ..... | 57  | ECG1878 .....        | 21  |
| STR-W6053S .....  | 221 | STR-Z2587 .....    | 230 | ECG1331 ..... | 57  | ECG1879 .....        | 119 |
| STR-W6251 .....   | 222 | STR-Z2588 .....    | 230 | ECG1332 ..... | 7   | ECG1880 .....        | 125 |
| STR-W6251D .....  | 222 | STR-Z2589 .....    | 230 | ECG1333 ..... | 4   | ECG1881 .....        | 134 |
| STR-W6252 .....   | 222 | STR-Z3201 .....    | 231 | ECG1334 ..... | 5   | ECG1882 .....        | 110 |
| STR-W6252D .....  | 222 | STR-Z4151 .....    | 232 | ECG1335 ..... | 5   | ECG1883 .....        | 129 |
| STR-W6253 .....   | 222 | STR-Z4201 .....    | 232 | ECG1336 ..... | 9   | ECG1884 .....        | 137 |
| STR-W6253D .....  | 222 | STR-Z4202A .....   | 233 | ECG1337 ..... | 10  | ECG1885 .....        | 145 |
| STR-W6654 .....   | 222 | STR-Z4267 .....    | 233 | ECG1338 ..... | 21  | ECG1886 .....        | 177 |
| STR-W6723N .....  | 223 | STR-Z4316 .....    | 233 | ECG1339 ..... | 21  | ECG7021 .....        | 156 |
| STR-W6734 .....   | 223 | STR-Z4317 .....    | 233 | ECG1340 ..... | 10  | ECG7022 .....        | 134 |
| STR-W6735 .....   | 223 | STR-Z4369 .....    | 233 | ECG1341 ..... | 10  | ECG7023 .....        | 134 |
| STR-W6735N .....  | 223 | STR-Z4479 .....    | 233 | ECG1342 ..... | 4   | ECG7024 .....        | 127 |
| STR-W6750F .....  | 223 | STR-Z4567 .....    | 233 | ECG1343 ..... | 46  | ECG7025 .....        | 155 |
| STR-W6753 .....   | 223 | STR-Z4569 .....    | 233 | ECG1344 ..... | 46  | ECG7026 .....        | 128 |
| STR-W6754 .....   | 223 | STR-Z4579 .....    | 233 | ECG1345 ..... | 57  | ECG7027 .....        | 133 |
| STR-W6754L .....  | 223 | C0DAZYY00028 ..... | 192 | ECG1346 ..... | 4   | ECG7028 .....        | 135 |
| STR-W6756 .....   | 223 | C5AA00000107 ..... | 26  | ECG1347 ..... | 57  | ECG7029 .....        | 117 |
| STR-W6756N .....  | 223 | C5AA00000196 ..... | 27  | ECG1356 ..... | 102 | ECG7030 .....        | 110 |
| STR-W6765 .....   | 223 | C5BA00000105 ..... | 60  | ECG1357 ..... | 99  | ECG7031 .....        | 110 |
| STR-W67652E ..... | 223 | C5HABZZ00007 ..... | 203 | ECG1358 ..... | 99  | ECG7032 .....        | 112 |
| STR-W6765N .....  | 223 | C5HABZZ00014 ..... | 203 | ECG1359 ..... | 46  | ECG7033 .....        | 155 |
| STR-W6851 .....   | 224 | C5HABZZ00051 ..... | 185 | ECG1360 ..... | 99  | ECG7034 .....        | 136 |
| STR-W6852 .....   | 224 | C5HABZZ00062 ..... | 188 | ECG1546 ..... | 166 | ECG7035 .....        | 125 |
| STR-W6853 .....   | 224 | C5HABZZ00080 ..... | 203 | ECG1548 ..... | 166 | ECG7036 .....        | 126 |
| STR-W6854 .....   | 224 | C5ZAZ0000083 ..... | 54  | ECG1553 ..... | 166 | ECG7037 .....        | 128 |
| STR-W6856 .....   | 224 | EA33X8351 .....    | 6   | ECG1644 ..... | 168 | ECG7038 .....        | 138 |
| STR-X6468N .....  | 225 | ECG1024 .....      | 6   | ECG1645 ..... | 166 | ECG7074 .....        | 136 |
| STR-X6729 .....   | 225 | ECG1025 .....      | 7   | ECG1646 ..... | 166 | ECG7075 .....        | 154 |
| STR-X6737 .....   | 225 | ECG1027 .....      | 6   | ECG1719 ..... | 166 | ECG7076 .....        | 156 |
| STR-X6737M .....  | 225 | ECG1028 .....      | 10  | ECG1732 ..... | 63  | ECG7125 .....        | 88  |
| STR-X6750B .....  | 225 | ECG1090 .....      | 8   | ECG1733 ..... | 131 | ECG7126 .....        | 88  |
| STR-X6750F .....  | 225 | ECG1139 .....      | 7   | ECG1734 ..... | 132 | GEIC-330 .....       | 46  |
| STR-X6756 .....   | 225 | ECG1148 .....      | 8   | ECG1735 ..... | 132 | GEIC-331 .....       | 46  |
| STR-X6757 .....   | 225 | ECG1212 .....      | 6   | ECG1736 ..... | 151 | HLX1402R .....       | 6   |
| STR-X6757N .....  | 225 | ECG1218 .....      | 46  | ECG1737 ..... | 158 | IRAM136-0760A .....  | 64  |
| STR-X6759 .....   | 225 | ECG1219 .....      | 46  | ECG1740 ..... | 175 | IRAM136-1060A .....  | 64  |
| STR-X6759B .....  | 225 | ECG1220 .....      | 46  | ECG1741 ..... | 175 | IRAM136-1060B .....  | 64  |
| STR-X6759F .....  | 225 | ECG1252 .....      | 7   | ECG1742 ..... | 175 | IRAM136-1060BS ..... | 64  |
| STR-X6759N .....  | 225 | ECG1274 .....      | 7   | ECG1743 ..... | 175 | IRAM136-1061A .....  | 64  |
| STR-X6768N .....  | 225 | ECG1279 .....      | 4   | ECG1748 ..... | 149 | IRAM136-1561A .....  | 64  |
| STR-X6769 .....   | 225 | ECG1280 .....      | 4   | ECG1815 ..... | 110 | IRAM136-3023B .....  | 71  |
| STR-X6769B .....  | 225 | ECG1281 .....      | 4   | ECG1816 ..... | 114 | IRAM136-3063B .....  | 71  |
| STR-Y6453 .....   | 226 | ECG1282 .....      | 4   | ECG1817 ..... | 114 | IRAM256-1067A .....  | 64  |
| STR-Y6456 .....   | 226 | ECG1315 .....      | 114 | ECG1818 ..... | 114 | IRAM256-1567A .....  | 64  |
| STR-Y6473 .....   | 226 | ECG1316 .....      | 114 | ECG1819 ..... | 114 | IRAM256-2067A .....  | 64  |
| STR-Y6476 .....   | 226 | ECG1317 .....      | 114 | ECG1820 ..... | 123 | IRAMS06UP60A .....   | 72  |
| STR-Y6735 .....   | 227 | ECG1318 .....      | 124 | ECG1821 ..... | 134 | IRAMS06UP60B .....   | 66  |
| STR-Y6753 .....   | 227 | ECG1319 .....      | 109 | ECG1822 ..... | 134 | IRAMS10UP60A .....   | 67  |
| STR-Y6754 .....   | 227 | ECG1320 .....      | 4   | ECG1823 ..... | 138 | IRAMS10UP60B .....   | 66  |
| STR-Y6763 .....   | 227 | ECG1321 .....      | 4   | ECG1824 ..... | 148 | IRAMS12UP60A .....   | 67  |
| STR-Y6765 .....   | 227 | ECG1322 .....      | 4   | ECG1825 ..... | 150 | IRAMX16UP60A .....   | 67  |
| STR-Y6766 .....   | 227 | ECG1323 .....      | 6   | ECG1870 ..... | 154 | IRAMX16UP60B .....   | 66  |

ALPHA-NUMERIC INDEX

|                    |     |                |     |                  |     |              |     |
|--------------------|-----|----------------|-----|------------------|-----|--------------|-----|
| IRAMX20UP60A ..... | 67  | NTE1356 .....  | 102 | PAC008A .....    | 110 | SK9890 ..... | 114 |
| IRAMX30TP60A ..... | 67  | NTE1358 .....  | 99  | PAC009A .....    | 117 | SK9891 ..... | 110 |
| IRAMY20UP60B ..... | 71  | NTE1359 .....  | 46  | PAC010A .....    | 43  | SK9892 ..... | 114 |
| IRIS-A6131 .....   | 193 | NTE15012 ..... | 175 | PAC011A .....    | 44  | SK9893 ..... | 114 |
| IRIS-A6151 .....   | 193 | NTE15018 ..... | 175 | PAC012A .....    | 43  | SK9897 ..... | 114 |
| IRIS-A6159 .....   | 193 | NTE15019 ..... | 175 | PAC013A .....    | 44  | SK9898 ..... | 150 |
| IRIS-A6331 .....   | 196 | NTE15020 ..... | 175 | PAC10A .....     | 43  | SK9902 ..... | 134 |
| IRIS-A6351 .....   | 196 | NTE15021 ..... | 175 | PAC11A .....     | 44  | SK9987 ..... | 99  |
| IRIS-A6359 .....   | 196 | NTE15031 ..... | 119 | RH-IX1089A ..... | 10  | SK9994 ..... | 175 |
| IRIS-A6372 .....   | 196 | NTE15034 ..... | 117 | RH-IX1112 .....  | 114 | SK9995 ..... | 175 |
| IRIS-F6426S .....  | 203 | NTE1644 .....  | 168 | SK10007 .....    | 4   | SK9996 ..... | 175 |
| IRIS-F6428S .....  | 203 | NTE1645 .....  | 166 | SK10029 .....    | 151 | SK9997 ..... | 21  |
| IRIS-F6454R .....  | 203 | NTE1733 .....  | 131 | SK10030 .....    | 158 | SK9998 ..... | 57  |
| IRIS-F6456S .....  | 203 | NTE1734 .....  | 132 | SK10086 .....    | 177 |              |     |
| IRIS-G5624A .....  | 206 | NTE1735 .....  | 132 | SK10140 .....    | 114 |              |     |
| IRIS-G5653 .....   | 206 | NTE1736 .....  | 151 | SK10141 .....    | 114 |              |     |
| IRIS-G6351S .....  | 207 | NTE1737 .....  | 158 | SK10161 .....    | 154 |              |     |
| IRIS-G6353 .....   | 206 | NTE1740 .....  | 175 | SK10164 .....    | 137 |              |     |
| IRIS-G6623 .....   | 207 | NTE1741 .....  | 175 | SK10166 .....    | 105 |              |     |
| IRIS-G6624 .....   | 207 | NTE1742 .....  | 175 | SK10168 .....    | 122 |              |     |
| IRIS-G6651 .....   | 207 | NTE1743 .....  | 175 | SK10169 .....    | 119 |              |     |
| IRIS-G6653 .....   | 206 | NTE1748 .....  | 149 | SK10170 .....    | 125 |              |     |
| IRIS-W6753 .....   | 223 | NTE1776 .....  | 185 | SK10171 .....    | 134 |              |     |
| IRIS-W6756 .....   | 223 | NTE1777 .....  | 185 | SK10172 .....    | 110 |              |     |
| IRIS-X6757 .....   | 225 | NTE1778 .....  | 185 | SK10173 .....    | 129 |              |     |
| IX1112 .....       | 114 | NTE1796 .....  | 188 | SK10174 .....    | 137 |              |     |
| JCV8007 .....      | 44  | NTE1815 .....  | 110 | SK10175 .....    | 145 |              |     |
| JCV8008 .....      | 47  | NTE1816 .....  | 114 | SK10490 .....    | 168 |              |     |
| NTE1024 .....      | 6   | NTE1817 .....  | 114 | SK10491 .....    | 166 |              |     |
| NTE1027 .....      | 6   | NTE1818 .....  | 114 | SK10492 .....    | 166 |              |     |
| NTE1028 .....      | 10  | NTE1819 .....  | 114 | SK3152 .....     | 6   |              |     |
| NTE1139 .....      | 7   | NTE1820 .....  | 123 | SK3154 .....     | 6   |              |     |
| NTE1218 .....      | 46  | NTE1821 .....  | 134 | SK3155 .....     | 7   |              |     |
| NTE1219 .....      | 46  | NTE1822 .....  | 134 | SK3435 .....     | 10  |              |     |
| NTE1274 .....      | 7   | NTE1823 .....  | 138 | SK3436 .....     | 10  |              |     |
| NTE1281 .....      | 4   | NTE1824 .....  | 148 | SK3740 .....     | 46  |              |     |
| NTE1282 .....      | 4   | NTE1825 .....  | 150 | SK3741 .....     | 46  |              |     |
| NTE1315 .....      | 114 | NTE1839 .....  | 185 | SK3972 .....     | 46  |              |     |
| NTE1316 .....      | 114 | NTE1840 .....  | 188 | SK4815 .....     | 109 |              |     |
| NTE1317 .....      | 114 | NTE7140 .....  | 122 | SK7646 .....     | 166 |              |     |
| NTE1318 .....      | 124 | NTE7152 .....  | 189 | SK7647 .....     | 166 |              |     |
| NTE1320 .....      | 4   | NTE7166 .....  | 203 | SK7659 .....     | 10  |              |     |
| NTE1323 .....      | 6   | NTE7178 .....  | 27  | SK7660 .....     | 10  |              |     |
| NTE1326 .....      | 10  | NTE7179 .....  | 26  | SK7661 .....     | 4   |              |     |
| NTE1327 .....      | 10  | NTE7180 .....  | 26  | SK7662 .....     | 5   |              |     |
| NTE1328 .....      | 10  | NTE7181 .....  | 26  | SK7703 .....     | 63  |              |     |
| NTE1329 .....      | 46  | NTE7187 .....  | 120 | SK7720 .....     | 166 |              |     |
| NTE1330 .....      | 57  | NTE7211 .....  | 33  | SK7809 .....     | 131 |              |     |
| NTE1331 .....      | 57  | NTE7212 .....  | 33  | SK7811 .....     | 132 |              |     |
| NTE1333 .....      | 4   | NTE7220 .....  | 44  | SK7817 .....     | 175 |              |     |
| NTE1336 .....      | 9   | NTE7224 .....  | 223 | SK8988 .....     | 148 |              |     |
| NTE1337 .....      | 10  | PA301 .....    | 7   | SK9189 .....     | 57  |              |     |
| NTE1338 .....      | 21  | PA400 .....    | 8   | SK9406 .....     | 57  |              |     |
| NTE1339 .....      | 21  | PA401 .....    | 8   | SK9757 .....     | 21  |              |     |
| NTE1340 .....      | 10  | PA500 .....    | 8   | SK9760 .....     | 63  |              |     |
| NTE1343 .....      | 46  | PA500X .....   | 8   | SK9761 .....     | 63  |              |     |
| NTE1344 .....      | 46  | PA501 .....    | 8   | SK9762 .....     | 149 |              |     |
| NTE1345 .....      | 57  | PA501X .....   | 8   | SK9849 .....     | 21  |              |     |
| NTE1347 .....      | 57  | PAC007A .....  | 118 | SK9889 .....     | 123 |              |     |

**SECTION 1**  
**STK Integrated Circuits**





The **STK79315A** is a vertical deflection signal processor and output amplifier

*Applications:*

- Large screen ultra-high definition CRT displays

*Features:*

- Vertical deflection basic function (vertical oscillator, sawtooth waveform generator, output amplifier) built-in
- Vertical centering correction circuit built-in, variable over a wide range. DC controllable
- Pump-up circuit built-in for low power dissipation;
- High-current, high-withstand voltage output amplifier
- Wide vertical pull-in range, adjustment-free oscillator
- DC controllable vertical amplitude
- Quiescent current adjustment for zero crossover distortion in the output amplifier
- Wide supply range for all loads

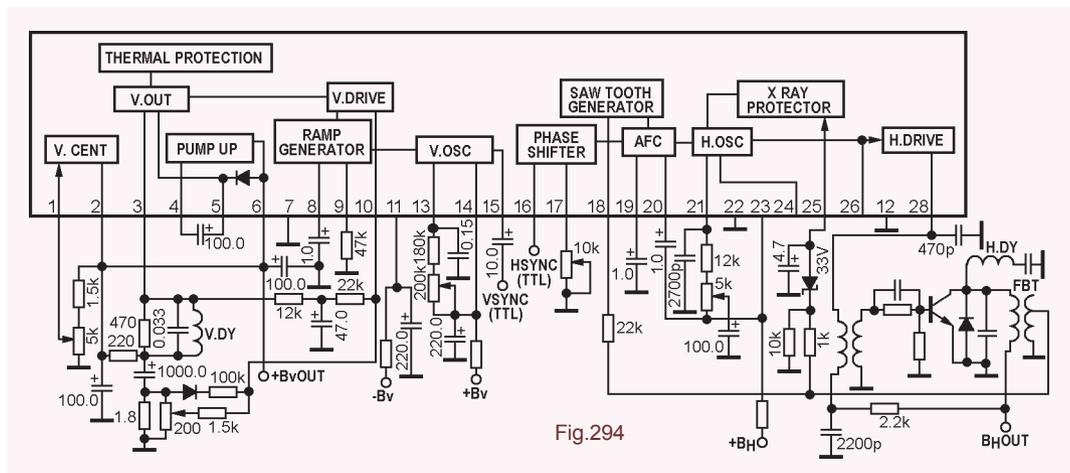
Fig.293 shows a typical application

| Type             | Case  | BVout | +Bv | Ipomax | Icc0 | FVp  | FVosc | Mnf |
|------------------|-------|-------|-----|--------|------|------|-------|-----|
| <b>STK73915A</b> | H4-18 | 80V   | 14V | ±2A    | 20mA | 60Hz | 120Hz | San |

### Deflection signal processor, vertical and horizontal power amplifier for CRT display



STK79901  
STK79905B



The **STK79901** and **STK79905B** are deflection signal processor with vertical and horizontal power amplifier

*Applications:*

- Large screen ultra-high definition CRT displays

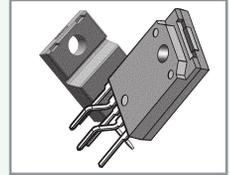
*Features:*

- Pin-to-pin and case compatible types with variable electrical characteristics
- Vertical and horizontal deflection basic function built-in
- Pump-up circuit built-in for low power dissipation
- High-current, high-withstand voltage output amplifier
- Wide supply range for all loads

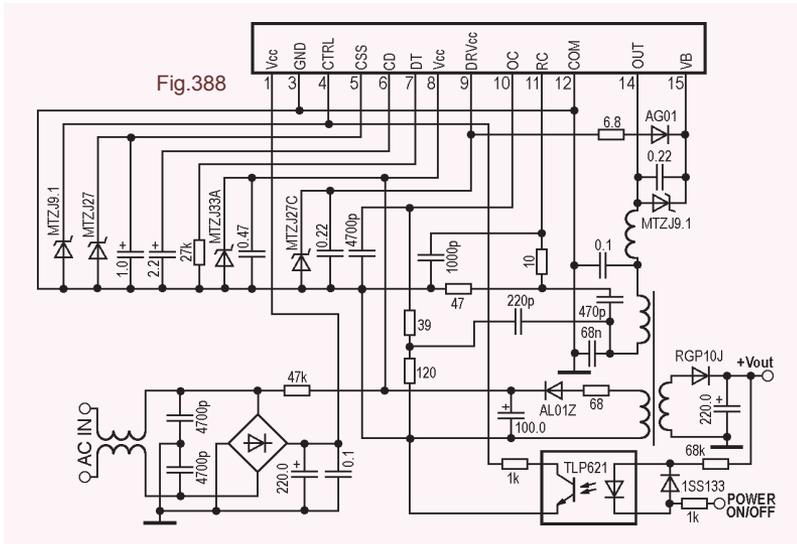
Fig.294 shows a typical application

| Type             | Case  | BVout | +Bv | +BH | Ipomax | Icc28 | FVp  | FHosc   | Mnf |
|------------------|-------|-------|-----|-----|--------|-------|------|---------|-----|
| <b>STK79901</b>  | H4-28 | 30V   | 14V | 14V | ±1.3A  | 200mA | 60Hz | 15750Hz | San |
| <b>STK79905B</b> | H4-28 | 30V   | 14V | 14V | ±1.5A  | 200mA | 60Hz | 15750Hz | San |

**SECTION 2**  
**STR Integrated Circuits**







- Two avalanche-rated power MOSFET
- Under-voltage lockout with hysteresis
- Integrated protection types are:
  - Pulse-by-pulse current limiting
  - Under voltage lockout with hysteresis
  - Latched over-voltage and and thermal shutdown protection
  - Latched external fault signal

Fig.388 shows a typical application

| Type      | Case    | V <sub>in(AC)</sub> | V <sub>dss</sub> | R <sub>ds(on)mx</sub> | I <sub>dmax</sub> | P <sub>d</sub> | F <sub>osc</sub> | Mnf |
|-----------|---------|---------------------|------------------|-----------------------|-------------------|----------------|------------------|-----|
| STR-Z4267 | HSOP-15 | 85..264V            | 500V             | 0.14Ω                 | 2A                | 100W           | 120kHz           | Sak |
| STR-Z4316 | HSOP-15 | 85..264V            | 600V             | 0.23Ω                 | 2A                | 100W           | 140kHz           | Sak |
| STR-Z4317 | HSOP-15 | 85..264V            | 600V             | 0.25Ω                 | 2A                | 100W           | 140kHz           | Sak |
| STR-Z4369 | HSOP-15 | 85..264V            | 600V             | 0.27Ω                 | 2A                | 100W           | 140kHz           | Sak |
| STR-Z4479 | HSOP-15 | 85..264V            | 650V             | 0.21Ω                 | 2.2A              | 120W           | 160kHz           | Sak |
| STR-Z4567 | HSOP-15 | 85..264V            | 800V             | 0.23Ω                 | 2.2A              | 120W           | 160kHz           | Sak |
| STR-Z4569 | HSOP-15 | 85..264V            | 800V             | 0.18Ω                 | 2.5A              | 120W           | 200kHz           | Sak |
| STR-Z4579 | HSOP-15 | 85..264V            | 800V             | 0.17Ω                 | 2.5A              | 140W           | 200kHz           | Sak |



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