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| R | N | Function | Description | | | | | Alternative function | | | Description |
| 1 | 00 | ALU\_I0 | ALU Am2901 operand source selector | | | | | | | | |
| 01 | ALU\_I1 |
| 02 | ALU\_I2 |
| 03 | ALU\_I3 | ALU Am2901 function selector | | | | |  | | | |
| 04 | ALU\_I4 |
| 05 | ALU\_I5 | ALU\_nDE | | Enable ALU\_D mux output (zero otherwise) | |
| 06 | ALU\_I6 | ALU Am2901 shift/result selector | | | | |  | | | |
| 07 | ALU\_I7 |
| 2 | 08 | ALU\_I8 | XCSEL4 | | Carry result bit selector | |
| 09 | ALU\_C0 | Carry in LSB ALU | | | | | | | | |
| 10 | AMXR | Select Am2901 port A from PDP-11 instruction Rs/Rd fields | | | | | | | | |
| 11 | BMXR | Select Am2901 port B from PDP-11 instruction Rs/Rd fields | | | | | | | | |
| 12 | AMX0 | Am2901 Port A selection address | | | | |  | | | |
| 13 | AMX1 | ARS | | PDP-11 opcode Rs field to Am2901 port A | |
| 14 | AMX2 |  | | | |
| 15 | AMX3 |
| 3 | 16 | BMX0 | Am2901 Port B selection address | | | | |
| 17 | BMX1 | BRD | | PDP-11 opcode Rd field to Am2901 port A | |
| 18 | BMX2 |  | | | |
| 19 | BMX3 |
| 20 | MCI0 | Am29811 sequencer microinstruction | | | | | | | | |
| 21 | MCI1 |
| 22 | MCI2 |
| 23 | MCI3 |
| 4 | 24 | OR\_nEN | Am29811 OR conditions enable | | | | | | | | |
| 25 | CC0 | Condition Code selector for Am29811 TST entry | | | | | | | | |
| 26 | CC1 |
| 27 | CC2 |
| 28 | CC3 | Inversion for Am29811 TST entry | | | | | | | | |
| 29 | RC0 | RC0=1 - PSW[3:0] strobe, RC0 & RC1 & RC2 - PSW[7:4] strobe | | | | | | RC0=0 - register control | | |
| 30 | RC1 | if RC0=1, NZVC selector | | | | | | if RC0=0, microinstruction address register load | | |
| 31 | RC2 | if RC0=1, NZVC selector | | | | | | if RC0=0, PDP-11 instruction register load | | |
| 5 | 32 | RC3 | if RC0=1, C selector | | | | | | if RC0=0, TTL output strobe enable | | |
| 33 | DMX0 | Am2901 D input mux selector | | | | | | | | |
| 34 | DMX1 |
| 35 | CLK\_nEN | Clock enable | | | | | | | | |
| 36 | IO\_nEN | Enable IO operation | | | | | | | | |
| 37 | DOUT | Q-Bus DOUT | | | | | | | | |
| 38 | SYNC | Q-Bus SYNC, high level sets SYNC active | | | | | | | | |
| 39 | TRPLY | Q-Bus RPLY on timeout | | | | | | | | |
| 6 | 40 |  |  | D0 | ALU\_D  constant constant |  | | BUFEN | | I/O operation type | |
| 41 | OMX0 | OR conditions Am29811 selector | D1 | DIN | |
| 42 | OMX1 | D2 | nIAKO | |
| 43 | OMX2 | D3 | WTBT | |
| 44 | NAF0 | Next address field | D4 | SMX0 | | Shift in/out bit control | |
| 45 | NAF1 | D5 | SMX1 | |
| 46 | NAF2 | D6 | SMX2 | |
| 47 | NAF3 | D7 | SMX3 | |
| 7 | 48 | NAF4 | D8 | SMX4 | |
| 49 | NAF5 | D9 | SMX5 | |
| 50 | NAF6 | D10 | XCQ0 | TTL control  register | SMX6 | |
| 51 | NAF7 | D11 | XCQ1 | SMX7 | |
| 52 | NAF8 | D12 | XCQ2 | SMX8 | |
| 53 | NAF9 | D13 |  | | SMX9 | |
| 54 | NAF10 | D14 | SMX10 | |
| 55 | NAF11 | D15 | SMX11 | |