Table 8-4. Operating PIN Mode (continued)

Function	Restart Mode	Sleep Mode	Standby Mode	Normal Mode	Fail-safe Mode	Fast Mode
Transmitter	Off	Off	Off	On	Off	On (Slope control off)
Watchdog	Off	Off	On with long first pulse	On	Off	On but only sets flag
nRST Pin	Low	Low	High	High	LDO state dependent	High
WAKE Pin	Off	On	On	Off	On	Off
WKRQ/INH	On	Off	On	On	INH - On; WKRQ - Fault dependent	On
LIMP	• Same as previous state when due to a WD fault • Turns off when exiting fail-safe mode due to any other fault	Off	Previous state prior to entering STBY due to WD fault	Previous state prior to entering normal mode due to WD fault	On	Previous state prior to entering fast mode due to WD fault
HSS	Off	Off	On and controlled by HSSC pin	On and controlled by HSSC pin	Off	On and controlled by HSSC pin
V_{CC}	Ramping	Off	On	On	Fault dependent	On
Comment		nRST is internally connected to the LDO output which in sleep mode is off	Wake up event detected, waiting on processors to set EN	LIN transmission up to 20 kbps	LDO off for TSD, V_{CCSC} or OV_{CC} events	LIN transmission up to 200 kbps

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Note

LDO state for fault dependent in fail-safe mode is as follows:
- Watchdog error - On
- Thermal shut down - Off
- UV_{CC} - On
- OV_{CC} over-voltage - Off
- V_{CCSC} - Off
- Restart counter exceeded - On
- SWE timer expiration - On

If TXD is held dominant when device enters normal or fast modes, the LIN transmitter does not turn on until the TXD pin goes recessive.

If V_{SUP} is ≤ UV_{SUP} WKRQ/INH is off.

WKRQ depends upon the LDO being on, so any event that causes the LDO to be turned off will turn off WKRQ.

Any WD failure in Fast Mode will only set interrupt and not take any other action (will not set LIMP, transition to Fail-safe or Restart or take any WD fail action)

- nRST depends upon the LDO state. When LDO is on, nRST reflects the LDO value.
  - When LDO is on, nRST reflects the LDO or I/O voltage value except for a UV_{CC} event where nRST is low.
  - When LDO is off, nRST is low.

Table 8-5. Operating SPI Mode

Function	Restart Mode	Sleep Mode	Standby Mode	Normal Mode	Fail-safe Mode	Fast Mode
RXD	High	Floating	Low for a wake event and power up event otherwise high	Mirrors LIN bus	Fault dependent	Mirrors LIN bus
LIN BUS Termination	Weak current pull-up	Weak current pull-up	45 kΩ (typical)	45 kΩ (typical)	Weak current pull-up	45 kΩ (typical)
Vbat Voltage Divider	Off	Off	On	On	Fault dependent	On
Transmitter	Off	Off	Off	On	Off	On (Slope control off)

Product Folder Links: *TLIN1431-Q1*