

Table 8-5. Operating SPI Mode (continued)

Function	Restart Mode	Sleep Mode	Standby Mode	Normal Mode	Fail-safe Mode	Fast Mode
Watchdog	Off	Off	Default on with long first window but programmable off	On If programmed off in standby mode when entering normal mode a long first window is implemented	Off	On but only sets flag
SPI pins	Off	Off	On	On	Fault dependent	On
nINT pin	Off	Off	On	On	Fault dependent	On
nRST pin	Low	Low	High	High	LDO state dependent	High
WAKE Pin	Off	On	On	Off	On	Off
WKQ/RQ/INH	On	Off	On	On	INH - On; WKQ - Fault dependent	On
LIMP	<ul style="list-style-type: none"> Same as previous state when due to a WD fault When exiting fail-safe mode due to any other fault how 8'h1A[3:2] is programmed determines how LIMP is cleared 	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 unless cyclic sensing enabled	On	On	Off	On
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	LIN transmission up to 20 kbps	LDO off for TSD, V _{CCSC} or OV _{CC} events	LIN transmission up to 200 kbps

Note

Function status when in fail-safe mode that states fault dependent are defined in [Table 8-6](#)

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} WKQ/RQ/INH is off.

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

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)

Table 8-6. Fault Dependent States In Fail-safe Mode

Function	Watchdog Error	Thermal Shutdown	UV _{CC}	V _{CC} Over Voltage	V _{CCSC}	Restart Counter Exceeded
LDO (2)	On	Off	On	Off	Off	On (1)
INH	Programmed	On	On	On	On	On
WKQ	Programmed	Off	Off	Off	Off	On
SPI	On	Off	On	Off	Off	On

(1) LDO is on in fail-safe mode if the restart counter causes the change when fail-safe mode is enabled.

(2) LDO is on in fail-safe mode if the SWE timer times out causing the device to enter fail-safe mode if enabled.