Functional Safety Information

TS3A27518E-Q1 Functional Safety FIT Rate, FMD and Pin FMA

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1 Overview

This document contains information for TS3A27518E-Q1 (TSSOP-24 and QFN-24 package) to aid in a functional safety system design. Information provided are:

- Functional Safety Failure In Time (FIT) rates of the semiconductor component estimated by the application of industry reliability standards
- Component failure modes and their distribution (FMD) based on the primary function of the device

Figure 1-1 shows the device functional block diagram for reference.

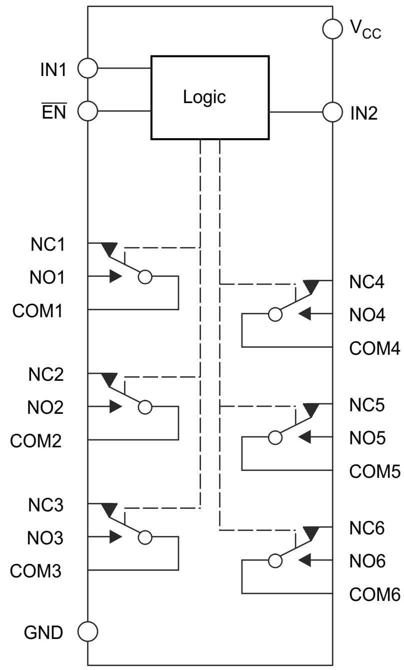

Figure 1-1. Functional Block Diagram

TS3A27518E-Q1 was developed using a quality-managed development process, but was not developed in accordance with the IEC 61508 or ISO 26262 standards.

2 Functional Safety Failure In Time (FIT) Rates

2.1 TSSOP-24 Package

This section provides Functional Safety Failure In Time (FIT) rates for TSSOP-24 package of TS3A27518E-Q1 based on two different industry-wide used reliability standards:

- Table 2-1 provides FIT rates based on IEC TR 62380 / ISO 26262 part 11
- Table 2-2 provides FIT rates based on the Siemens Norm SN 29500-2

Table 2-1. Component Failure Rates per IEC TR 62380 / ISO 26262 Part 11

FIT IEC TR 62380 / ISO 26262	FIT (Failures Per 10^9 Hours)
Total Component FIT Rate	16
Die FIT Rate	2
Package FIT Rate	14

The failure rate and mission profile information in Table 2-1 comes from the Reliability data handbook IEC TR 62380 / ISO 26262 part 11:

- Mission Profile: Motor Control from Table 11
- Power dissipation: 50 mW
- Climate type: World-wide Table 8
- Package factor (lambda 3): Table 17b
- Substrate Material: FR4
- EOS FIT rate assumed: 0 FIT

Table 2-2. Component Failure Rates per Siemens Norm SN 29500-2

Table	Category	Reference FIT Rate	Reference Virtual T_J
5	CMOS/BICMOS ASICs Analog and Mixed ≦ 50 V supply	20 FIT	55°C

The Reference FIT Rate and Reference Virtual T_J (junction temperature) in Table 2-2 come from the Siemens Norm SN 29500-2 tables 1 through 5. Failure rates under operating conditions are calculated from the reference failure rate and virtual junction temperature using conversion information in SN 29500-2 section 4.

2.2 QFN-24 Package

This section provides Functional Safety Failure In Time (FIT) rates for the QFN-24 package of TS3A27518E-Q1 based on two different industry-wide used reliability standards:

- Table 2-3 provides FIT rates based on IEC TR 62380 / ISO 26262 part 11
- Table 2-4 provides FIT rates based on the Siemens Norm SN 29500-2

Table 2-3. Component Failure Rates per IEC TR 62380 / ISO 26262 Part 11

FIT IEC TR 62380 / ISO 26262	FIT (Failures Per 10^9 Hours)
Total Component FIT Rate	13
Die FIT Rate	2
Package FIT Rate	11

The failure rate and mission profile information in Table 2-3 comes from the Reliability data handbook IEC TR 62380 / ISO 26262 part 11:

- Mission Profile: Motor Control from Table 11
- Power dissipation: 50 mW
- Climate type: World-wide Table 8
- Package factor (lambda 3): Table 17b
- Substrate Material: FR4
- EOS FIT rate assumed: 0 FIT

Table 2-4. Component Failure Rates per Siemens Norm SN 29500-2

Table	Category	Reference FIT Rate	Reference Virtual T_J
5	CMOS/BICMOS ASICs Analog and Mixed ≦ 50 V supply	20 FIT	55°C

The Reference FIT Rate and Reference Virtual T_J (junction temperature) in Table 2-4 come from the Siemens Norm SN 29500-2 tables 1 through 5. Failure rates under operating conditions are calculated from the reference failure rate and virtual junction temperature using conversion information in SN 29500-2 section 4.

3 Failure Mode Distribution (FMD)

The failure mode distribution estimation for TS3A27518E-Q1 Table 3-1 in comes from the combination of common failure modes listed in standards such as IEC 61508 and ISO 26262, the ratio of sub-circuit function size and complexity and from best engineering judgment.

The failure modes listed in this section reflect random failure events and do not include failures due to misuse or overstress.

Table 3-1. Die Failure Modes and Distribution

Die Failure Modes	Failure Mode Distribution (%)
MUX channel no output (HIZ)	20%
MUX channel stuck NO	15%
MUX channel stuck NC	15%
MUX functional out of specification voltage or timing	50%

The FMD in Table 3-1 excludes short circuit faults across the isolation barrier. Faults for short circuit across the isolation barrier can be excluded according to ISO 61800-5-2:2016 if the following requirements are fulfilled:

1. The signal isolation component is OVC III according to IEC 61800-5-1. If a SELV/PELV power supply is used, pollution degree 2/OVC II applies. All requirements of IEC 61800-5-1:2007, 4.3.6 apply.
2. Measures are taken to ensure that an internal failure of the signal isolation component cannot result in excessive temperature of its insulating material.

Creepage and clearance requirements should be applied according to the specific equipment isolation standards of an application. Care should be taken to maintain the creepage and clearance distance of a board design to ensure that the mounting pads of the isolator on the printed-circuit board do not reduce this distance.

4 Pin Failure Mode Analysis (Pin FMA)

This section provides a Failure Mode Analysis (FMA) for the pins of the TS3A27518E-Q1 (TSSOP-24 and QFN-24 package). The failure modes covered in this document include the typical pin-by-pin failure scenarios:

- Pin short-circuited to Ground (see Table 4-2 and Table 4-6)
- Pin open-circuited (see Table 4-3 and Table 4-7)
- Pin short-circuited to an adjacent pin (see Table 4-4 and Table 4-8)
- Pin short-circuited to supply (see Table 4-5 and Table 4-9)

Table 4-2 through Table 4-9 also indicate how these pin conditions can affect the device as per the failure effects classification in Table 4-1.

Table 4-1. TI Classification of Failure Effects

Class	Failure Effects
A	Potential device damage that affects functionality
B	No device damage, but loss of functionality
C	No device damage, but performance degradation
D	No device damage, no impact to functionality or performance

Following are the assumptions of use and the device configuration assumed for the pin FMA in this section:

- External pull-up resistor on $\overline{CS}$ to VDD
- RC filter on every analog input, AINx.
  Series resistors are sized to limit the input currents into the analog inputs to <10 mA in all circumstances, for example also in case device is unpowered and input signal is applied.
- Device is the only target on the SPI bus.

4.1 TSSOP-24 Package

Figure 4-1 shows the TS3A27518E-Q1 pin diagram for the TSSOP-24 package. For a detailed description of the device pins, refer to the *Pin Configuration and Functions* section in the TS3A27518E-Q1 data sheet.

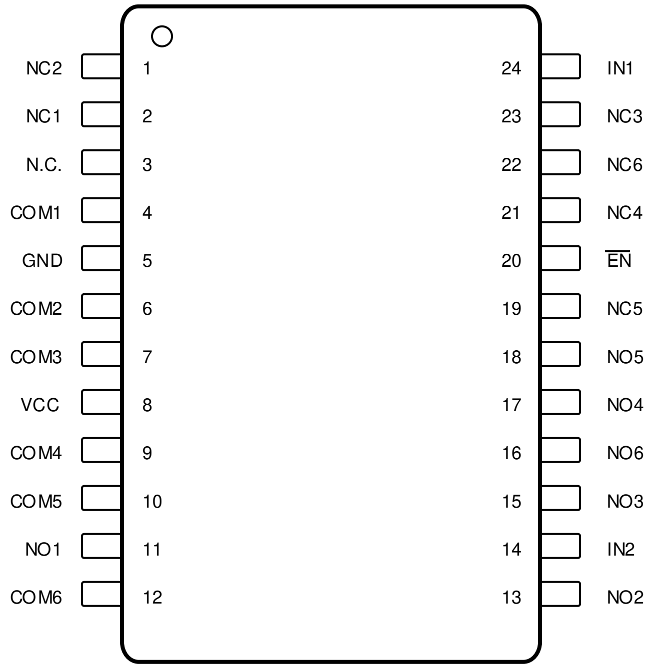

Figure 4-1. Pin Diagram (TSSOP-24 Package)

Table 4-2. Pin FMA for Device Pins Short-Circuited to Ground

Pin Name	Pin No.	Description of potential failure effect(s)	Failure effect class
NC2	1	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NC1	2	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
N.C.	3	No effect, unconnected pin.	D
COM1	4	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
GND	5	No effect; normal operation.	D
COM2	6	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM3	7	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
VCC	8	Device is unpowered and not functional. Observe that the absolute maximum ratings for all pins of the device are met, otherwise device damage may be plausible.	A
COM4	9	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM5	10	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO1	11	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM6	12	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO2	13	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A

Table 4-2. Pin FMA for Device Pins Short-Circuited to Ground (continued)

Pin Name	Pin No.	Description of potential failure effect(s)	Failure effect class
IN2	14	Address is stuck low. Cannot control the switch states.	B
NO3	15	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO6	16	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO4	17	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO5	18	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NC5	19	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
$\overline{EN}$	20	$\overline{EN}$ is stuck low. Can no longer disable the device.	B
NC4	21	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NC6	22	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NC3	23	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
IN1	24	Address is stuck low. Cannot control the switch states.	B

Table 4-3. Pin FMA for Device Pins Open-Circuited

Pin Name	Pin No.	Description of potential failure effect(s)	Failure effect class
NC2	1	Corruption of the signal passed onto the COM2 pin.	B
NC1	2	Corruption of the signal passed onto the COM1 pin.	B
N.C.	3	No effect; unconnected pin.	B
COM1	4	Corruption of the signal passed onto the NO1/NC1 pins.	B
GND	5	No effect; normal operation.	B
COM2	6	Corruption of the signal passed onto the NO2/NC2 pins.	B
COM3	7	Corruption of the signal passed onto the NO3/NC3 pins.	B
VCC	8	Device is unpowered and not functional.	B
COM4	9	Corruption of the signal passed onto the NO4/NC4 pins.	B
COM5	10	Corruption of the signal passed onto the NO5/NC5 pins.	B
NO1	11	Corruption of the signal passed onto the COM1 pin.	B
COM6	12	Corruption of the signal passed onto the NO6/NC6 pins.	B
NO2	13	Corruption of the signal passed onto the COM2 pin.	B
IN2	14	Loss of control of the IN2 pin. Cannot control the switch. Unknown state can cause an increase in the IDD current	B
NO3	15	Corruption of the signal passed onto the COM3 pin.	B
NO6	16	Corruption of the signal passed onto the COM6 pin.	B
NO4	17	Corruption of the signal passed onto the COM4 pin.	B
NO5	18	Corruption of the signal passed onto the COM5 pin.	B
NC5	19	Corruption of the signal passed onto the COM5 pin.	B
$\overline{EN}$	20	Loss of control of the $\overline{EN}$ pin. Cannot disable the switch. Unknown state can cause an increase in the IDD current	B
NC4	21	Corruption of the signal passed onto the COM4 pin.	B
NC6	22	Corruption of the signal passed onto the COM6 pin.	B
NC3	23	Corruption of the signal passed onto the COM3 pin.	B

Table 4-3. Pin FMA for Device Pins Open-Circuited (continued)

Pin Name	Pin No.	Description of potential failure effect(s)	Failure effect class
IN1	24	Loss of control of the IN2 pin. Cannot control the switch. Unknown state can cause an increase in the IDD current.	B

Table 4-4. Pin FMA for Device Pins Short-Circuited to Adjacent Pin

Pin Name	Pin No.	Shorted to	Description of Potential Failure Effect(s)	Failure Effect Class
NC2	1	NC1	Possible corruption of the signal passed onto the COM pin.	B
NC1	2	N.C.	Unconnected pin, electrically floating; no effect.	D
N.C.	3	COM1	Unconnected pin, electrically floating; no effect.	D
COM1	4	GND	Corruption of the signal passed onto the NO1/NC1 pins. If there is no limiting resistor in the switch path, then device damage is possible.	A
GND	5	COM2	Device functions, but the analog signal is corrupted. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM2	6	COM3	Possible corruption of the signal passed onto the NO/NC pins.	B
COM3	7	VCC	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
VCC	8	COM4	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM4	9	COM5	Possible corruption of the signal passed onto the NO/NC pins.	B
COM5	10	NO1	Possible corruption of the signal passed onto the COM5 and NO1/NO5 pin.	B
NO1	11	COM6	Possible corruption of the signal passed onto the NO1 and COM6/COM1 pin.	B
COM6	12	NO2	Not considered; corner pin.	D
NO2	13	IN2	Possible corruption of the signal passed onto the COMx pins. Loss of control of the switch state.	B
IN2	14	NO3	Possible corruption of the signal passed onto the COMx pins. Loss of control of the switch state.	B
NO3	15	NO6	Possible corruption of the signal passed onto the COM pin.	B
NO6	16	NO4	Possible corruption of the signal passed onto the COM pin.	B
NO4	17	NO5	Possible corruption of the signal passed onto the COM pin.	B
NO5	18	NC5	Possible corruption of the signal passed onto the COM pin.	B
NC5	19	$\overline{EN}$	Corruption of the signal passed onto the NC5 pin. Loss of control of the switch state.	A
$\overline{EN}$	20	NC4	Corruption of the signal passed onto the NC4 pin. Loss of control of the switch state.	A
NC4	21	NC6	Possible corruption of the signal passed onto the COM pin.	B
NC6	22	NC3	Possible corruption of the signal passed onto the COM pin.	B
NC3	23	IN1	Possible corruption of the signal passed onto the COMx pins. Loss of control of the switch state.	B
IN1	24	NC2	Not considered; corner pin.	D

Table 4-5. Pin FMA for Device Pins Short-Circuited to VDD

Pin Name	Pin No.	Description of potential failure effect(s)	Failure effect class
NC2	1	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NC1	2	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
N.C.	3	No effect, unconnected pin.	D
COM1	4	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A

Table 4-5. Pin FMA for Device Pins Short-Circuited to VDD (continued)

Pin Name	Pin No.	Description of potential failure effect(s)	Failure effect class
GND	5	Device is unpowered and not functional. Observe that the absolute maximum ratings for all pins of the device are met, otherwise device damage may be plausible.	A
COM2	6	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM3	7	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
VCC	8	No effect; normal operation.	D
COM4	9	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM5	10	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO1	11	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM6	12	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO2	13	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
IN2	14	Address stuck high. Cannot control the switch states.	B
NO3	15	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO6	16	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO4	17	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO5	18	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NC5	19	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
/EN	20	$\overline{EN}$ stuck high. Can no longer enable the device.	B
NC4	21	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NC6	22	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NC3	23	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
IN1	24	Address stuck high. Cannot control the switch states.	B

4.2 QFN-24 Package

Figure 4-2 shows the TS3A27518E-Q1 pin diagram for the QFN-24 package. For a detailed description of the device pins, refer to the *Pin Configuration and Functions* section in the TS3A27518E-Q1 data sheet.

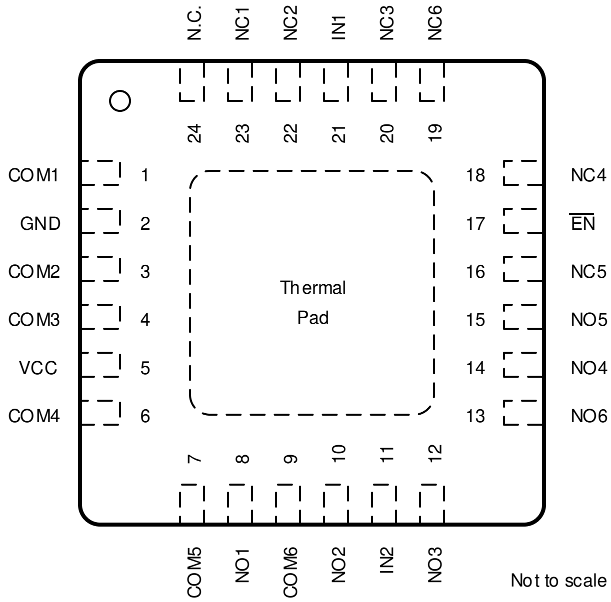

Figure 4-2. Pin Diagram (QFN-24 Package)

Table 4-6. Pin FMA for Device Pins Short-Circuited to Ground

Pin Name	Pin No.	Description of potential failure effect(s)	Failure effect class
COM1	1	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
GND	2	No effect; normal operation.	D
COM2	3	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM3	4	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
VCC	5	Device is unpowered. Device is not functional. Observe that the absolute maximum ratings for all pins of the device are met, otherwise device damage may be plausible.	A
COM4	6	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM5	7	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO1	8	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM6	9	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO2	10	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
IN2	11	Address stuck low. Cannot control the switch states.	B
NO3	12	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO6	13	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO4	14	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO5	15	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A

Table 4-6. Pin FMA for Device Pins Short-Circuited to Ground (continued)

Pin Name	Pin No.	Description of potential failure effect(s)	Failure effect class
NC5	16	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
/EN	17	$\overline{EN}$ stuck low. Can no longer disable the device.	B
NC4	18	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NC6	19	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NC3	20	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
IN1	21	Address stuck low. Cannot control the switch states.	B
NC2	22	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NC1	23	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
N.C.	24	No effect; unconnected pin.	D

Table 4-7. Pin FMA for Device Pins Open-Circuited

Pin Name	Pin No.	Description of potential failure effect(s)	Failure effect class
COM1	1	Corruption of the signal passed onto the NO1/NC1 pins.	B
GND	2	No effect; normal operation.	B
COM2	3	Corruption of the signal passed onto the NO2/NC2 pins.	B
COM3	4	Corruption of the signal passed onto the NO3/NC3 pins.	B
VCC	5	Device is unpowered and not functional.	B
COM4	6	Corruption of the signal passed onto the NO4/NC4 pins.	B
COM5	7	Corruption of the signal passed onto the NO5/NC5 pins.	B
NO1	8	Corruption of the signal passed onto the COM1 pin.	B
COM6	9	Corruption of the signal passed onto the NO6/NC6 pins.	B
NO2	10	Corruption of the signal passed onto the COM2 pin.	B
IN2	11	Loss of control of the IN2 pin. Cannot control the switch. Unknown state can cause increase in the IDD current.	B
NO3	12	Corruption of the signal passed onto the COM3 pin.	B
NO6	13	Corruption of the signal passed onto the COM6 pin.	B
NO4	14	Corruption of the signal passed onto the COM4 pin.	B
NO5	15	Corruption of the signal passed onto the COM5 pin.	B
NC5	16	Corruption of the signal passed onto the COM5 pin.	B
/EN	17	Loss of control of the $\overline{EN}$ pin. Cannot disable the switch. Unknown state can cause increase in the IDD current.	B
NC4	18	Corruption of the signal passed onto the COM4 pin.	B
NC6	19	Corruption of the signal passed onto the COM6 pin.	B
NC3	20	Corruption of the signal passed onto the COM3 pin.	B
IN1	21	Loss of control of the IN2 pin. Cannot control the switch. Unknown state can cause an increase in the IDD current.	B
NC2	22	Corruption of the signal passed onto the COM2 pin.	B
NC1	23	Corruption of the signal passed onto the COM1 pin.	B
N.C.	24	No effect; unconnected pin.	B

Table 4-8. Pin FMA for Device Pins Short-Circuited to Adjacent Pin

Pin Name	Pin No.	Shorted to	Description of potential failure effect(s)	Failure effect class
COM1	1	GND	Corruption of the signal passed onto the NO1/NC1 pins. If there is no limiting resistor in the switch path, then device damage is possible.	A
GND	2	COM2	Device functions, but the analog signal is corrupted. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM2	3	COM3	Possible corruption of the signal passed onto the NO/NC pins.	B
COM3	4	VCC	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
VCC	5	COM4	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM4	6	COM5	Not considered; corner pin.	D
COM5	7	NO1	Possible corruption of the signal passed onto the COM5 and NO1/NO5 pin.	B
NO1	8	COM6	Possible corruption of the signal passed onto the NO1 and COM6/COM1 pin.	B
COM6	9	NO2	Possible corruption of the signal passed onto the COM6 and NO2/NO6 pin.	B
NO2	10	IN2	Possible corruption of the signal passed onto the COMx pins. Loss of control of the switch state.	B
IN2	11	NO3	Possible corruption of the signal passed onto the COMx pins. Loss of control of the switch state.	B
NO3	12	NO6	Not considered; corner pin.	D
NO6	13	NO4	Possible corruption of the signal passed onto the COM pin.	B
NO4	14	NO5	Possible corruption of the signal passed onto the COM pin.	B
NO5	15	NC5	Possible corruption of the signal passed onto the COM pin.	B
NC5	16	/EN	Corruption of the signal passed onto the NC5 pin. Loss of control of the switch state.	A
/EN	17	NC4	Corruption of the signal passed onto the NC4 pin. Loss of control of the switch state.	A
NC4	18	NC6	Not considered; corner pin.	D
NC6	19	NC3	Possible corruption of the signal passed onto the COM pin.	B
NC3	20	IN1	Possible corruption of the signal passed onto the COMx pins. Loss of control of the switch state.	B
IN1	21	NC2	Possible corruption of the signal passed onto the COMx pins. Loss of control of the switch state.	B
NC2	22	NC1	Possible corruption of the signal passed onto the COM pin.	B
NC1	23	N.C.	Unconnected pin, electrically floating; no effect.	D
N.C.	24	COM1	Not considered; corner pin.	D

Table 4-9. Pin FMA for Device Pins Short-Circuited to VDD

Pin Name	Pin No.	Description of potential failure effect(s)	Failure effect class
COM1	1	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
GND	2	Device is unpowered. Device is not functional. Observe that the absolute maximum ratings for all pins of the device are met, otherwise device damage may be plausible.	A
COM2	3	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM3	4	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
VCC	5	No effect; normal operation.	D
COM4	6	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM5	7	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A

Table 4-9. Pin FMA for Device Pins Short-Circuited to VDD (continued)

Pin Name	Pin No.	Description of potential failure effect(s)	Failure effect class
NO1	8	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
COM6	9	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO2	10	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
IN2	11	Address is stuck high. Cannot control the switch states.	B
NO3	12	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO6	13	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO4	14	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NO5	15	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NC5	16	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
/EN	17	$\overline{\text{EN}}$ stuck high. Can no longer enable the device.	B
NC4	18	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NC6	19	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NC3	20	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
IN1	21	Address stuck high. Cannot control the switch states.	B
NC2	22	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
NC1	23	Corruption of the analog signal. If there is no limiting resistor in the switch path, then device damage is possible.	A
N.C.	24	No effect; unconnected pin.	D