



Product / Process Change Notification (PCN)

- ☒ Major Change
☐ Minor Change

PCN Number: PCN_WPME-FISM_20241104

Affected Series: WPME-FISM

Affected Order Codes: 1769205141, 1769205241, 1779205111, 1779205211,
1779205241

PCN Date: 2024-10-04 (YYYY-MM-DD)

Effective Date: 2024-11-04 (YYYY-MM-DD)

Change Category:

- ☒ Equipment/Location
☒ General Data
☒ Material
☐ Process
☒ Product Design
☒ Shipping/Packaging
☒ Supplier
☐ Software

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Datasheet Change:

- ☒ Yes ☐ No

Attachment:

- ☒ Yes ☐ No

Description of Change:

Due to an improvement of the production capability, Würth Elektronik eiSos has shifted the production of the affected order codes to a new factory location.

With the aim of an extended product applicability, Würth Elektronik eiSos has updated the switching regulator IC used in the module to ensure the best performance and the electrical specifications.

There will be no change in fit or quality of the product.

The new revision of the affected order codes will be sent out after the previous revision is out of stock (according to FIFO - first-in, first-out).

Details of Change:

All changes indicated below apply to all order codes in this PCN.

Previous production line	New production line
Lot number beginning with: 489xxxxxxxxxxx	Lot number beginning with: 676xxxxxxxxxxx
Country of origin: China	Country of origin: China



The part numbers of the FISM series are now distributed in single datasheets instead of the previous family datasheet approach

Before Change

1769205x41

Mag¹C Power Module

WPME-FISM - Fixed Isolated SIP/SMT Module



3.3V, 5V, 12V or 24V Input / 1W / 3kV Functional Isolated / Unregulated 5V Output

DESCRIPTION

The FISM 1769205x41 Mag¹C power module series are unregulated, functionally isolated, fully integrated DC/DC converters.

The modules integrate the switching power stage, control circuitry, transformer and input/output capacitors.

The modules require no external components for operation thus reducing design effort and complexity to a minimum.

The FISM family ensures fast time to market and low development costs.

The 1769205x41 series of the FISM family achieves an efficiency of 84% to 90.5%.

FEATURES

- 3kV DC functional isolation for 60s
- Nominal input voltage rails: 3.3V / 5V / 12V / 24V
- Output voltage: 5V unregulated
- Low output voltage ripple: Typ. 55mV at full load
- Output voltage accuracy: Typ. -2.5% at full load
- Output power: 1W (0.2A)
- Dynamic power boost up to 0.3A for 0.5s
- Continuous short-circuit protection
- Isolation capacitance of typ. 20pF
- Integrated C_{IN}, C_{OUT} and transformer
- Operating ambient temperature range: -40°C to 105°C
- RoHS & REACH compliant
- Complies with EN55032 (CISPR-32) class B conducted and radiated emissions standard
- UL62368-1 approved

After Change

1769205141

Mag¹C Power Module

WPME-FISM - Fixed Isolated SIP/SMT Module



5V Input / 1W / 3kV Functional Isolated / Unregulated 5V Output

DESCRIPTION

The FISM 1769205141 Mag¹C power module is an unregulated, functionally isolated, fully integrated DC/DC converter.

The module integrates the switching power stage, control circuitry, transformer and input/output capacitors.

The module requires no external components for operation thus reducing design effort and complexity to a minimum.

The FISM module ensures fast time to market and low development costs.

The 1769205141 module achieves an efficiency up to 88%.

FEATURES

- 3kV DC functional isolation for 60s
- Nominal input voltage rails: 5V
- Output voltage: 5V unregulated
- Low output voltage ripple: Typ. 55mV at full load
- Output voltage accuracy: Typ. -5% at full load
- Output power: 1W (0.2A)
- Dynamic power boost up to 0.3A for 0.5s
- Continuous short-circuit protection
- Isolation capacitance of typ. 20pF
- Integrated C_{IN}, C_{OUT} and transformer
- Operating ambient temperature range: -40°C to 105°C
- RoHS & REACH compliant
- Complies with EN55032 (CISPR-32) class B conducted and radiated emissions standard
- UL62368-1 approved

The datasheet electrical specifications (absolute maximum / electrical) have been adjusted based on the new design.

Electrical specification changes valid for 1769205141

Before Change

5 ABSOLUTE MAXIMUM RATINGS

Caution:

Exceeding the listed absolute maximum ratings may affect the device negatively and may cause permanent damage.

Table 5: Absolute maximum ratings.

Table 10 Absolute Maximum Ratings					
SYMBOL	PARAMETER	LIMIT		UNIT	
		MIN ⁽¹⁾	MAX ⁽¹⁾		
VIN	Input pin voltage	3.3VIN / 5VOUT version (1769205041)	-0.4	9	V
		5VIN / 5VOUT version (1769205141)	-0.4	10	V
		12VIN / 5VOUT version (1769205241)	-0.4	16	V
		24VIN / 5VOUT version (1769205341)	-0.4	50	V
VOUT	Output pin voltage	3.3VIN / 5VOUT version (1769205041)	-0.7	16	V
		5VIN / 5VOUT version (1769205141)	-0.7	16	V
		12VIN / 5VOUT version (1769205241)	-0.7	25	V
		24VIN / 5VOUT version (1769205341)	-0.7	16	V
VISO	Isolation voltage input to output for 1s ⁽²⁾	—	4	kV	
	Isolation voltage input to output, 100% tested for 60s ⁽²⁾	—	3	kV	
Tstorage	Assembled, non-operating storage temperature	-55	125	°C	
Vesd	ESD Voltage (HBM), according to EN61000-4-2 ⁽⁴⁾	-4	4	kV	

After Change

5 ABSOLUTE MAXIMUM RATINGS

Caution:

Exceeding the listed absolute maximum ratings may affect the device negatively and may cause permanent damage.

Table 6: Absolute maximum ratings.

SYMBOL	PARAMETER	LIMIT		UNIT
		MIN ⁽¹⁾	MAX ⁽¹⁾	
VIN	Input pin voltage	-0.3	10	V
VOUT	Output pin voltage	-0.3	25	V
V _{ISO}	Isolation voltage input to output for 60s ⁽²⁾	—	3	kV
	Isolation voltage input to output, 100% tested for 1s ⁽²⁾	—	4	kV
T _{storage}	Assembled, non-operating storage temperature	-55	125	°C
V _{ESD}	ESD Voltage (HBM), according to EN61000-4-2 ⁽⁴⁾	-4	4	kV



8 ELECTRICAL SPECIFICATIONS

Caution:

MIN and MAX limits are valid for the recommended ambient temperature range of -40 °C to 105 °C. Typical values represent statistically the utmost probable values at the following conditions: $T_A = 25^\circ\text{C}$, unless otherwise noted.

Table 8: Electrical specifications.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN ⁽¹⁾	TYP ⁽²⁾	MAX ⁽¹⁾	UNIT
Output Current						
I _{MOC}	Maximum overload current		—	—	0.3 ⁽³⁾	A
Accuracy						
V _{OUT}	Line regulation	per 1.0% change in input voltage ⁽⁴⁾	—	—	1.2	%
	Load Regulation	V _{IN} nominal, V _{OUT} = 5V I _{OUT} = 0.02A to 0.2A	—	10	15	%
	Output voltage accuracy	V _{IN} nominal, I _{OUT} = 0.2A	—	-2.5	—	%
	Output voltage at no load	V _{IN} nominal	—	5.5	—	V
	Output voltage ripple & noise	V _{IN} nominal, V _{OUT} = 5V 20MHz BWL (1769205041)	—	75	—	mV _{pp}
		V _{IN} nominal, V _{OUT} = 5V 20MHz BWL (remaining versions)	—	55	—	mV _{pp}
Switching Frequency						
f _{sw}	Switching frequency, internal clock	V _{IN} nominal, I _{OUT} = 0.2A (1769205041)	—	220	—	kHz
	Switching frequency, input current	V _{IN} nominal, I _{OUT} = 0.2A (1769205041)	—	440 ⁽¹⁰⁾	—	kHz
	Switching frequency, output voltage ripple	V _{IN} nominal, I _{OUT} = 0.2A (1769205041)	—	440 ⁽¹⁰⁾	—	kHz
	Switching frequency, internal clock	V _{IN} nominal, I _{OUT} = 0.2A (remaining versions)	—	300	—	kHz
	Switching frequency, input current	V _{IN} nominal, I _{OUT} = 0.2A (remaining versions)	—	600 ⁽¹⁰⁾	—	kHz
	Switching frequency, output voltage ripple	V _{IN} nominal, I _{OUT} = 0.2A (remaining versions)	—	600 ⁽¹⁰⁾	—	kHz
Input Current						
I _{IN}	No load input current (operating, switching)	V _{IN} = 3.3V, I _{OUT} = 0A (1769205041)	—	8	—	mA
		V _{IN} = 5V, I _{OUT} = 0A (1769205141)	—	5	—	mA
		V _{IN} = 12V, I _{OUT} = 0A (1769205241)	—	4	—	mA
		V _{IN} = 24V, I _{OUT} = 0A (1769205341)	—	4	—	mA
Efficiency						
η	Efficiency	V _{IN} = 3.3V, I _{OUT} = 0.2A (1769205041)	—	84	—	%
		V _{IN} = 5V, I _{OUT} = 0.2A (1769205141)	—	90.5	—	%
		V _{IN} = 12V, I _{OUT} = 0.2A (1769205241)	—	90	—	%
		V _{IN} = 24V, I _{OUT} = 0.2A (1769205341)	—	86	—	%
Isolation Characteristics						
C _{ISO}	Isolation capacitance	100kHz/0.1V	—	20	—	pF
R _{ISO}	Isolation resistance	500VDC	1	—	—	GΩ

8 ELECTRICAL SPECIFICATIONS

Caution:

MIN and MAX limits are valid for the recommended ambient temperature range of -40 °C to 105 °C. Typical values represent statistically the utmost probable values at the following conditions: $T_A = 25^\circ\text{C}$, unless otherwise noted.

Table 9: Electrical specifications.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN ⁽¹⁾	TYP ⁽²⁾	MAX ⁽¹⁾	UNIT
Output Current						
I_{MOC}	Maximum overload current		—	—	0.3 ⁽³⁾	A
Accuracy						
V_{OUT}	Line regulation	per 1.0% change in input voltage ⁽⁴⁾	—	1.2	—	%
	Load Regulation	V_{IN} nominal, $V_{OUT} = 5V$ $I_{OUT} = 0.02A$ to $0.2A$	—	10	15	%
	Output voltage accuracy	V_{IN} nominal, $I_{OUT} = 0.2A$	—	-0.4	—	%
	Output voltage at no load	V_{IN} nominal	—	5.9	—	V
	Output voltage ripple & noise	V_{IN} nominal, $V_{OUT} = 5V$ 20MHz BWL	—	55	—	mV _{pp}
Switching Frequency						
f_{SW}	Switching frequency, internal clock	V_{IN} nominal, $I_{OUT} = 0.2A$	—	350	—	kHz
	Switching frequency, input current	V_{IN} nominal, $I_{OUT} = 0.2A$	—	700 ⁽¹⁰⁾	—	kHz
Input Current						
I_{IN}	No load input current	$V_{IN} = 5V$, $I_{OUT} = 0A$	—	3.8	—	mA
Efficiency						
η	Efficiency	$V_{IN} = 5V$, $I_{OUT} = 0.2A$	—	81	—	%
Isolation Characteristics						
C_{ISO}	Isolation capacitance	100kHz/0.1V	—	20	—	pF
R_{ISO}	Isolation resistance	500VDC	1	—	—	GΩ

Electrical specification changes valid for 1769205241

Before Change

5 ABSOLUTE MAXIMUM RATINGS

Caution:

Exceeding the listed absolute maximum ratings may affect the device negatively and may cause permanent damage.

Table 5: Absolute maximum ratings.

Table 8 Absolute Maximum Ratings					
SYMBOL	PARAMETER	LIMIT		UNIT	
		MIN ⁽¹⁾	MAX ⁽¹⁾		
VIN	Input pin voltage	3.3VIN / 5VOUT version (1769205041)	-0.4	9	V
		5VIN / 5VOUT version (1769205141)	-0.4	10	V
		12VIN / 5VOUT version (1769205241)	-0.4	16	V
		24VIN / 5VOUT version (1769205341)	-0.4	50	V
VOUT	Output pin voltage	3.3VIN / 5VOUT version (1769205041)	-0.7	16	V
		5VIN / 5VOUT version (1769205141)	-0.7	16	V
		12VIN / 5VOUT version (1769205241)	-0.7	25	V
		24VIN / 5VOUT version (1769205341)	-0.7	16	V
VISO	Isolation voltage input to output for 1s ⁽²⁾	—	4	kV	
	Isolation voltage input to output, 100% tested for 60s ⁽²⁾	—	3	kV	
Tstorage	Assembled, non-operating storage temperature	-55	125	°C	
VESD	ESD Voltage (HBM), according to EN61000-4-2 ⁽³⁾	-4	4	kV	

After Change

5 ABSOLUTE MAXIMUM RATINGS

Caution:

Exceeding the listed absolute maximum ratings may affect the device negatively and may cause permanent damage.

Table 6: Absolute maximum ratings.

SYMBOL	PARAMETER	LIMIT		UNIT
		MIN ⁽¹⁾	MAX ⁽¹⁾	
V_{IN}	Input pin voltage	-0.3	25	V
V_{OUT}	Output pin voltage	-0.3	25	V
V_{ISO}	Isolation voltage input to output for 60s ⁽²⁾	—	3	kV
	Isolation voltage input to output, 100% tested for 1s ⁽²⁾	—	4	kV
$T_{storage}$	Assembled, non-operating storage temperature	-55	125	°C
V_{ESD}	ESD Voltage (HBM), according to EN61000-4-2 ⁽³⁾	-4	4	kV



8 ELECTRICAL SPECIFICATIONS

Caution:

MIN and MAX limits are valid for the recommended ambient temperature range of -40°C to 105°C. Typical values represent statistically the utmost probable values at the following conditions: $T_A = 25^\circ\text{C}$, unless otherwise noted.

Table 8: Electrical specifications.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN ⁽¹⁾	TYP ⁽²⁾	MAX ⁽¹⁾	UNIT
Output Current						
I_{MOC}	Maximum overload current		—	—	0.3 ⁽³⁾	A
Accuracy						
V_{OUT}	Line regulation	per 1.0% change in input voltage ⁽⁴⁾	—	—	1.2	%
	Load Regulation	V_{IN} nominal, $V_{OUT} = 5V$ $I_{OUT} = 0.02A$ to $0.2A$	—	10	15	%
	Output voltage accuracy	V_{IN} nominal, $I_{OUT} = 0.2A$	—	-2.5	—	%
	Output voltage at no load	V_{IN} nominal	—	5.5	—	V
	Output voltage ripple & noise	V_{IN} nominal, $V_{OUT} = 5V$ 20MHz BWL (1769205041)	—	75	—	mV _{rms}
		V_{IN} nominal, $V_{OUT} = 5V$ 20MHz BWL (remaining versions)	—	55	—	mV _{rms}
Switching Frequency						
f_{sw}	Switching frequency, internal clock	V_{IN} nominal, $I_{OUT} = 0.2A$ (1769205041)	—	220	—	kHz
	Switching frequency, input current	V_{IN} nominal, $I_{OUT} = 0.2A$ (1769205041)	—	440 ⁽¹⁰⁾	—	kHz
	Switching frequency, output voltage ripple	V_{IN} nominal, $I_{OUT} = 0.2A$ (1769205041)	—	440 ⁽¹⁰⁾	—	kHz
	Switching frequency, internal clock	V_{IN} nominal, $I_{OUT} = 0.2A$ (remaining versions)	—	300	—	kHz
	Switching frequency, input current	V_{IN} nominal, $I_{OUT} = 0.2A$ (remaining versions)	—	600 ⁽¹⁰⁾	—	kHz
	Switching frequency, output voltage ripple	V_{IN} nominal, $I_{OUT} = 0.2A$ (remaining versions)	—	600 ⁽¹⁰⁾	—	kHz
Input Current						
I_{IN}	No load input current (operating, switching)	$V_{IN} = 3.3V$, $I_{OUT} = 0A$ (1769205041)	—	8	—	mA
		$V_{IN} = 5V$, $I_{OUT} = 0A$ (1769205141)	—	5	—	mA
		$V_{IN} = 12V$, $I_{OUT} = 0A$ (1769205241)	—	4	—	mA
		$V_{IN} = 24V$, $I_{OUT} = 0A$ (1769205341)	—	4	—	mA
Efficiency						
η	Efficiency	$V_{IN} = 3.3V$, $I_{OUT} = 0.2A$ (1769205041)	—	84	—	%
		$V_{IN} = 5V$, $I_{OUT} = 0.2A$ (1769205141)	—	90.5	—	%
		$V_{IN} = 12V$, $I_{OUT} = 0.2A$ (1769205241)	—	90	—	%
		$V_{IN} = 24V$, $I_{OUT} = 0.2A$ (1769205341)	—	86	—	%
Isolation Characteristics						
C_{ISO}	Isolation capacitance	100kHz/0.1V	—	20	—	pF
R_{ISO}	Isolation resistance	500VDC	1	—	—	GΩ

8 ELECTRICAL SPECIFICATIONS

Caution:

MIN and MAX limits are valid for the recommended ambient temperature range of -40°C to 105°C. Typical values represent statistically the utmost probable values at the following conditions: $T_A = 25^\circ\text{C}$, unless otherwise noted.

Table 9: Electrical specifications.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN ⁽¹⁾	TYP ⁽²⁾	MAX ⁽¹⁾	UNIT
Output Current						
I_{MOC}	Maximum overload current		—	—	0.3 ⁽³⁾	A
Accuracy						
V_{OUT}	Line regulation	per 1.0% change in input voltage ⁽⁴⁾	—	1.2	—	%
	Load Regulation	V_{IN} nominal, $V_{OUT} = 5V$ $I_{OUT} = 0.02A$ to $0.2A$	—	10	15	%
	Output voltage accuracy	V_{IN} nominal, $I_{OUT} = 0.2A$	—	-1	—	%
	Output voltage at no load	V_{IN} nominal	—	5.8	—	V
	Output voltage ripple & noise	V_{IN} nominal, $V_{OUT} = 5V$ 20MHz BWL	—	55	—	mV _{rms}
Switching Frequency						
f_{SW}	Switching frequency, internal clock	V_{IN} nominal, $I_{OUT} = 0.2A$	—	250	—	kHz
	Switching frequency, input current	V_{IN} nominal, $I_{OUT} = 0.2A$	—	500 ⁽¹⁰⁾	—	kHz
Input Current						
I_{IN}	No load input current	$V_{IN} = 12V$, $I_{OUT} = 0A$	—	3.1	—	mA
Efficiency						
η	Efficiency	$V_{IN} = 12V$, $I_{OUT} = 0.2A$	—	88	—	%
Isolation Characteristics						
C_{ISO}	Isolation capacitance	100kHz/0.1V	—	20	—	pF
R_{ISO}	Isolation resistance	500VDC	1	—	—	GΩ

Electrical specification changes valid for 1779205111

Before Change

ABSOLUTE MAXIMUM RATINGS

Caution:

Exceeding the listed absolute maximum ratings may affect the device negatively and may cause permanent damage. These are stress ratings only, which do not imply functional operation of the device at these or any other condition beyond those indicated under Operating Conditions.

SYMBOL	PARAMETER	LIMIT		UNIT	
		MIN ⁽¹⁾	MAX ⁽¹⁾		
VIN	Input pin voltage	3.3VIN / 5VOUT version (1779205011)	-0.4	9	V
		5VIN / 5VOUT version (1779205111)	-0.4	6	V
		12VIN / 5VOUT version (1779205211)	-0.4	25	V
		24VIN / 5VOUT version (1779205311)	-0.4	50	V
VOUT	Output pin voltage	3.3VIN / 5VOUT version (1779205011)	-0.7	16	V
		5VIN / 5VOUT version (1779205111)	-0.7	11	V
		12VIN / 5VOUT version (1779205211)	-0.7	16	V
		24VIN / 5VOUT version (1779205311)	-0.7	16	V
VISO	Isolation voltage input to output for 1s ⁽⁵⁾	-	3000	V	
	Isolation voltage input to output, 100% tested for 60s ^(6,7)	-	1500	V	
Tstorage	Assembled, non-operating storage temperature	-55	125	°C	
VESD	ESD Voltage (HBM), according to EN61000-4-2 ⁽¹⁶⁾	-4	4	kV	

After Change

5 ABSOLUTE MAXIMUM RATINGS

Caution:

Exceeding the listed absolute maximum ratings may affect the device negatively and may cause permanent damage.

Table 6: Absolute maximum ratings.

SYMBOL	PARAMETER	LIMIT		UNIT
		MIN ⁽¹⁾	MAX ⁽¹⁾	
V_{IN}	Input pin voltage	-0.3	10	V
V_{OUT}	Output pin voltage	-0.3	25	V
V_{ISO}	Isolation voltage input to output for 60s ⁽⁵⁾	—	1.5	kV
	Isolation voltage input to output, 100% tested for 1s ⁽⁷⁾	—	3	kV
$T_{storage}$	Assembled, non-operating storage temperature	-55	125	°C
V_{ESD}	ESD Voltage (HBM), according to EN61000-4-2 ⁽¹⁶⁾	-4	4	kV



ELECTRICAL SPECIFICATIONS

MIN and MAX limits are valid for the recommended ambient temperature range of -40 °C to 105 °C. Typical values represent statistically the utmost probable values at the following conditions: $T_A = 25^\circ\text{C}$, unless otherwise noted.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN ⁽¹⁾	TYP ⁽²⁾	MAX ⁽¹⁾	UNIT
Output Current						
I _{MOC}	Maximum overload current		-	-	300 ⁽¹⁾	mA
Accuracy						
V _{OUT}	Line regulation	per 1.0% change in input voltage ⁽⁸⁾	-	-	1.2	%
	Load Regulation	V _{IN} nominal, V _{OUT} = 5V I _{OUT} = 20mA to 200mA	-	5	-	%
	Output voltage accuracy	V _{IN} nominal, I _{OUT} = 200mA	-7.5	-	8	%
	Output voltage at no load	V _{IN} nominal	-	5.5	-	V
	Output voltage ripple & noise	V _{IN} nominal, V _{OUT} = 5V 20MHz BWL	-	55	-	mV _{PP}
Switching Frequency						
f _{SW}	Switching frequency	V _{IN} = 3.3V, I _{OUT} = 200mA(1779205011)	-	600	-	kHz
		V _{IN} = 5V, I _{OUT} = 200mA (1779205111)	-	300	-	kHz
		V _{IN} = 12V, I _{OUT} = 200mA (1779205211)	-	600	-	kHz
		V _{IN} = 24V, I _{OUT} = 200mA (1779205311)	-	600	-	kHz
Input Current						
I _{IN}	No load input current (operating, switching)	V _{IN} = 3.3V, I _{OUT} = 0mA (1779205111)	-	11	-	mA
		V _{IN} = 5V, I _{OUT} = 0mA (1779205111)	-	11	-	mA
		V _{IN} = 12V, I _{OUT} = 0mA (1779205211)	-	3	-	mA
		V _{IN} = 24V, I _{OUT} = 0mA (1779205311)	-	3	-	mA
Efficiency						
η	Efficiency	V _{IN} = 3.3V, I _{OUT} = 200mA (1779205011)	-	83	-	%
		V _{IN} = 5V, I _{OUT} = 200mA (1779205111)	-	85	-	%
		V _{IN} = 12V, I _{OUT} = 200mA (1779205211)	-	85	-	%
		V _{IN} = 24V, I _{OUT} = 200mA (1779205311)	-	82	-	%
Isolation Characteristics						
C _{ISO}	Isolation capacitance	100kHz/0.1V	-	20	-	pF
R _{ISO}	Isolation resistance	500VDC	1	-	-	GΩ

8 ELECTRICAL SPECIFICATIONS

Caution:

MIN and MAX limits are valid for the recommended ambient temperature range of -40 °C to 105 °C. Typical values represent statistically the utmost probable values at the following conditions: $T_A = 25^\circ\text{C}$, unless otherwise noted.

Table 9: Electrical specifications.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN ⁽¹⁾	TYP ⁽²⁾	MAX ⁽¹⁾	UNIT
Output Current						
I_{MOC}	Maximum overload current		—	—	0.3 ⁽⁸⁾	A
Accuracy						
V_{OUT}	Line regulation	per 1.0% change in input voltage ⁽⁸⁾	—	1.2	—	%
	Load Regulation	V_{IN} nominal, $V_{OUT} = 5V$ $I_{OUT} = 0.02A$ to 0.2A	—	10	15	%
	Output voltage accuracy	V_{IN} nominal, $I_{OUT} = 0.2A$	—	-0.4	—	%
	Output voltage at no load	V_{IN} nominal	—	5.9	—	V
	Output voltage ripple & noise	V_{IN} nominal, $V_{OUT} = 5V$ 20MHz BWL	—	55	—	mV _{pp}
Switching Frequency						
f_{SW}	Switching frequency, internal clock	V_{IN} nominal, $I_{OUT} = 0.2A$	—	350	—	kHz
	Switching frequency, input current	V_{IN} nominal, $I_{OUT} = 0.2A$	—	700 ⁽¹⁰⁾	—	kHz
Input Current						
I_{IN}	No load input current	$V_{IN} = 5V$, $I_{OUT} = 0A$	—	3.6	—	mA
Efficiency						
η	Efficiency	$V_{IN} = 5V$, $I_{OUT} = 0.2A$	—	82	—	%
Isolation Characteristics						
C_{ISO}	Isolation capacitance	100kHz/0.1V	—	20	—	pF
R_{ISO}	Isolation resistance	500VDC	1	—	—	GΩ

Electrical specification changes valid for 1779205211

Before Change

ABSOLUTE MAXIMUM RATINGS

Caution:

Exceeding the listed absolute maximum ratings may affect the device negatively and may cause permanent damage. These are stress ratings only, which do not imply functional operation of the device at these or any other condition beyond those indicated under Operating Conditions.

SYMBOL	PARAMETER	LIMIT		UNIT	
		MIN ⁽¹⁾	MAX ⁽¹⁾		
VIN	Input pin voltage	3.3VIN / 5VOUT version (1779205011)	-0.4	9	V
		5VIN / 5VOUT version (1779205111)	-0.4	6	V
		12VIN / 5VOUT version (1779205211)	-0.4	25	V
		24VIN / 5VOUT version (1779205311)	-0.4	50	V
VOUT	Output pin voltage	3.3VIN / 5VOUT version (1779205011)	-0.7	16	V
		5VIN / 5VOUT version (1779205111)	-0.7	11	V
		12VIN / 5VOUT version (1779205211)	-0.7	16	V
		24VIN / 5VOUT version (1779205311)	-0.7	16	V
VISO	Isolation voltage input to output for 1s ⁽⁸⁾	-	3000	V	
	Isolation voltage input to output, 100% tested for 60s ⁽²⁾	-	1500	V	
Tstorage	Assembled, non-operating storage temperature	-55	125	°C	
VESD	ESD Voltage (HBM), according to EN61000-4-2 ⁽¹⁰⁾	-4	4	kV	

After Change

5 ABSOLUTE MAXIMUM RATINGS

Caution:

Exceeding the listed absolute maximum ratings may affect the device negatively and may cause permanent damage.

Table 6: Absolute maximum ratings.

SYMBOL	PARAMETER	LIMIT		UNIT
		MIN ⁽¹⁾	MAX ⁽¹⁾	
V_{IN}	Input pin voltage	-0.3	25	V
V_{OUT}	Output pin voltage	-0.3	25	V
V_{ISO}	Isolation voltage input to output for 60s ⁽⁸⁾	—	1.5	kV
	Isolation voltage input to output, 100% tested for 1s ⁽⁷⁾	—	3	kV
$T_{storage}$	Assembled, non-operating storage temperature	-55	125	°C
V_{ESD}	ESD Voltage (HBM), according to EN61000-4-2 ⁽¹⁰⁾	-4	4	kV



ELECTRICAL SPECIFICATIONS

MIN and MAX limits are valid for the recommended ambient temperature range of -40 °C to 105 °C. Typical values represent statistically the utmost probable values at the following conditions: $T_A = 25^\circ\text{C}$, unless otherwise noted.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN ⁽¹⁾	TYP ⁽²⁾	MAX ⁽¹⁾	UNIT
Output Current						
I _{MOC}	Maximum overload current		-	-	300 ⁽⁷⁾	mA
Accuracy						
V _{OUT}	Line regulation	per 1.0% change in input voltage ⁽⁸⁾	-	-	1.2	%
	Load Regulation	V _{IN} nominal, V _{OUT} = 5V I _{OUT} = 20mA to 200mA	-	5	-	%
	Output voltage accuracy	V _{IN} nominal, I _{OUT} = 200mA	-7.5	-	8	%
	Output voltage at no load	V _{IN} nominal	-	5.5	-	V
	Output voltage ripple & noise	V _{IN} nominal, V _{OUT} = 5V 20MHz BWL	-	55	-	mV _{PP}
Switching Frequency						
f _{SW}	Switching frequency	V _{IN} = 3.3V, I _{OUT} = 200mA(1779205011)	-	600	-	kHz
		V _{IN} = 5V, I _{OUT} = 200mA (1779205111)	-	300	-	kHz
		V _{IN} = 12V, I _{OUT} = 200mA (1779205211)	-	600	-	kHz
		V _{IN} = 24V, I _{OUT} = 200mA (1779205311)	-	600	-	kHz
Input Current						
I _{IN}	No load input current (operating, switching)	V _{IN} = 3.3V, I _{OUT} = 0mA (1779205111)	-	11	-	mA
		V _{IN} = 5V, I _{OUT} = 0mA (1779205111)	-	11	-	mA
		V _{IN} = 12V, I _{OUT} = 0mA (1779205211)	-	3	-	mA
		V _{IN} = 24V, I _{OUT} = 0mA (1779205311)	-	3	-	mA
Efficiency						
η	Efficiency	V _{IN} = 3.3V, I _{OUT} = 200mA (1779205011)	-	83	-	%
		V _{IN} = 5V, I _{OUT} = 200mA (1779205111)	-	85	-	%
		V _{IN} = 12V, I _{OUT} = 200mA (1779205211)	-	85	-	%
		V _{IN} = 24V, I _{OUT} = 200mA (1779205311)	-	82	-	%
Isolation Characteristics						
C _{ISO}	Isolation capacitance	100kHz/0.1V	-	20	-	pF
R _{ISO}	Isolation resistance	500VDC	1	-	-	GΩ

8 ELECTRICAL SPECIFICATIONS

Caution:

MIN and MAX limits are valid for the recommended ambient temperature range of -40 °C to 105 °C. Typical values represent statistically the utmost probable values at the following conditions: $T_A = 25^\circ\text{C}$, unless otherwise noted.

Table 9: Electrical specifications.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN ⁽¹⁾	TYP ⁽²⁾	MAX ⁽¹⁾	UNIT
Output Current						
I_{MOC}	Maximum overload current		—	—	0.3 ⁽⁸⁾	A
Accuracy						
V_{OUT}	Line regulation	per 1.0% change in input voltage ⁽⁸⁾	—	1.2	—	%
	Load Regulation	V_{IN} nominal, $V_{OUT} = 5\text{V}$ $I_{OUT} = 0.02\text{A}$ to 0.2A	—	10	15	%
	Output voltage accuracy	V_{IN} nominal, $I_{OUT} = 0.2\text{A}$	—	-1	—	%
	Output voltage at no load	V_{IN} nominal	—	5.8	—	V
	Output voltage ripple & noise	V_{IN} nominal, $V_{OUT} = 5\text{V}$ 20MHz BWL	—	55	—	mV _{PP}
Switching Frequency						
f_{SW}	Switching frequency, internal clock	V_{IN} nominal, $I_{OUT} = 0.2\text{A}$	—	250	—	kHz
	Switching frequency, input current	V_{IN} nominal, $I_{OUT} = 0.2\text{A}$	—	500 ⁽¹⁰⁾	—	kHz
Input Current						
I_{IN}	No load input current	$V_{IN} = 12\text{V}$, $I_{OUT} = 0\text{A}$	—	2.5	—	mA
Efficiency						
η	Efficiency	$V_{IN} = 12\text{V}$, $I_{OUT} = 0.2\text{A}$	—	88	—	%
Isolation Characteristics						
C_{ISO}	Isolation capacitance	100kHz/0.1V	—	20	—	pF
R_{ISO}	Isolation resistance	500VDC	1	—	—	GΩ

Electrical specification changes valid for 1779205241

Before Change

ABSOLUTE MAXIMUM RATINGS

Caution:

Exceeding the listed absolute maximum ratings may affect the device negatively and may cause permanent damage. These are stress ratings only, which do not imply functional operation of the device at these or any other condition beyond those indicated under Operating Conditions.

SYMBOL	PARAMETER		LIMIT		UNIT
			MIN ⁽¹⁾	MAX ⁽¹⁾	
VIN	Input pin voltage	5VIN / 5VOUT version, (1779205141)	-0.4	6	V
		12VIN / 5VOUT version, (1779205241)	-0.4	25	V
		24VIN / 5VOUT version, (1779205341)	-0.4	50	V
VOUT	Output pin voltage	5VIN / 5VOUT version, (1779205141)	-0.7	11	V
		12VIN / 5VOUT version, (1779205241)	-0.7	16	V
		24VIN / 5VOUT version, (1779205341)	-0.7	16	V
VISO	Isolation voltage input to output for 1s ⁽⁸⁾	-	4000	V	
	Isolation voltage input to output, tested 100% for 60s ⁽²⁾	-	3000	V	
Tstorage	Assembled, non-operating storage temperature	-55	125	°C	
VESD	ESD Voltage (HBM), according to EN61000-4-2 ⁽¹⁰⁾	-4	4	kV	

After Change

5 ABSOLUTE MAXIMUM RATINGS

Caution:

Exceeding the listed absolute maximum ratings may affect the device negatively and may cause permanent damage.

Table 6: Absolute maximum ratings.

SYMBOL	PARAMETER	LIMIT		UNIT
		MIN ⁽¹⁾	MAX ⁽¹⁾	
V_{IN}	Input pin voltage	-0.3	25	V
V_{OUT}	Output pin voltage	-0.3	25	V
V_{ISO}	Isolation voltage input to output for 60s ⁽⁸⁾	—	3	kV
$T_{storage}$	Isolation voltage input to output, 100% tested for 1s ⁽⁸⁾	—	4	kV
$T_{storage}$	Assembled, non-operating storage temperature	-55	125	°C
V_{ESD}	ESD Voltage (HBM), according to EN61000-4-2 ⁽⁹⁾	-4	4	kV



ELECTRICAL SPECIFICATIONS

MIN and MAX limits are valid for the recommended ambient temperature range of -40 °C to 105 °C. Typical values represent statistically the utmost probable values at the following conditions: $T_A = 25^\circ\text{C}$, unless otherwise noted.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN ⁽¹⁾	TYP ⁽²⁾	MAX ⁽¹⁾	UNIT
Output Current						
I _{MOC}	Maximum overload current		-	-	300 ⁽³⁾	mA
Accuracy						
V _{OUT}	Line regulation	per 1.0% change in input voltage ⁽⁴⁾	-	-	1.2	%
	Load Regulation	V _{IN} nominal, V _{OUT} = 5V I _{OUT} = 20mA to 200mA	-	10	-	%
	Output voltage accuracy	V _{IN} nominal, I _{OUT} = 200mA	-7.5	-	8	%
	Output voltage at no load	V _{IN} nominal	-	5.5	-	V
	Output voltage ripple & noise	V _{IN} nominal, V _{OUT} = 5V 20MHz BWL	-	55	-	mV _{pp}
Switching Frequency						
f _{sw}	Switching frequency	V _{IN} = 5V, I _{OUT} = 200mA (1779205141)	-	300	-	kHz
		V _{IN} = 12V, I _{OUT} = 200mA (1779205241)	-	600	-	kHz
		V _{IN} = 24V, I _{OUT} = 200mA (1779205341)	-	600	-	kHz
Input Current						
I _{IN}	No load input current (operating, switching)	V _{IN} = 5V, I _{OUT} = 0mA (1779205141)	-	11	-	mA
		V _{IN} = 12V, I _{OUT} = 0mA (1779205241)	-	3	-	mA
		V _{IN} = 24V, I _{OUT} = 0mA (1779205341)	-	3	-	mA
Efficiency						
η	Efficiency	V _{IN} = 5V, I _{OUT} = 200mA (1779205111)	-	85	-	%
		V _{IN} = 12V, I _{OUT} = 200mA (1779205241)	-	85	-	%
		V _{IN} = 24V, I _{OUT} = 200mA (1779205341)	-	80	-	%
Isolation Characteristics						
C _{ISO}	Isolation capacitance	100kHz/0.1V	-	20	-	pF
R _{ISO}	Isolation resistance	500VDC	1	-	-	GΩ

8 ELECTRICAL SPECIFICATIONS

Caution:

MIN and MAX limits are valid for the recommended ambient temperature range of -40 °C to 105 °C. Typical values represent statistically the utmost probable values at the following conditions: $T_A = 25^\circ\text{C}$, unless otherwise noted.

Table 9: Electrical specifications.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN ⁽¹⁾	TYP ⁽²⁾	MAX ⁽¹⁾	UNIT
I_{MOC}	Maximum overload current	Output Current	—	—	0.3 ⁽³⁾	A
Accuracy						
V_{OUT}	Line regulation	per 1.0% change in input voltage ⁽⁴⁾	—	1.2	—	%
	Load Regulation	V_{IN} nominal, $V_{OUT} = 5V$ $I_{OUT} = 0.02A$ to 0.2A	—	10	15	%
	Output voltage accuracy	V_{IN} nominal, $I_{OUT} = 0.2A$	—	-1	—	%
	Output voltage at no load	V_{IN} nominal	—	5.8	—	V
	Output voltage ripple & noise	V_{IN} nominal, $V_{OUT} = 5V$ 20MHz BWL	—	55	—	mV _{pp}
Switching Frequency						
f_{SW}	Switching frequency, internal clock	V_{IN} nominal, $I_{OUT} = 0.2A$	—	250	—	kHz
	Switching frequency, input current	V_{IN} nominal, $I_{OUT} = 0.2A$	—	500 ⁽¹⁰⁾	—	kHz
Input Current						
I_{IN}	No load input current	$V_{IN} = 12V$, $I_{OUT} = 0A$	—	2.9	—	mA
Efficiency						
η	Efficiency	$V_{IN} = 12V$, $I_{OUT} = 0.2A$	—	88	—	%
Isolation Characteristics						
C_{ISO}	Isolation capacitance	100kHz/0.1V	—	20	—	pF
R_{ISO}	Isolation resistance	500VDC	1	—	—	GΩ

Due to the change in production line the isolation voltage test specification has changed. The modules are now 100% production tested for 1 second. Therefore, the specified isolation voltage has been increased to the 1 second value.

Specified isolation voltage changes for 1769205141 & 1769205241 & 1779205241

Before Change

3.3V, 5V, 12V or 24V Input / 1W **3kV Functional Isolated** Unregulated 5V Output

DESCRIPTION

The FISM 1769205x41 Magi³C power module series are unregulated, functionally isolated, fully integrated DC/DC converters.

The modules integrate the switching power stage, control circuitry, transformer and input/output capacitors.

The modules require no external components for operation thus reducing design effort and complexity to a minimum.

The FISM family ensures fast time to market and low development costs.

The 1769205x41 series of the FISM family achieves an efficiency of 84% to 90.5%.

The series is available in an SMT-8 package (13.2 x 11.4 x 7.25)mm.

FEATURES

- 3kV DC functional isolation for 60s
- Nominal input voltage rails: 3.3V / 5V / 12V / 24V
- Output voltage: 5V unregulated
- Low output voltage ripple: Typ. 55mV at full load
- Output voltage accuracy: Typ. -2.5% at full load
- Output power: 1W (0.2A)
- Dynamic power boost up to 0.3A for 0.5s
- Continuous short-circuit protection
- Isolation capacitance of typ. 20pF
- Integrated C_{IN} , C_{OUT} and transformer
- Operating ambient temperature range: -40 °C to 105 °C
- RoHS & REACH compliant
- Complies with EN55032 (CISPR-32) class B conducted and radiated emissions standard
- UL62368-1 approved

After Change

5V Input / 1W **4kV Functional Isolated** Unregulated 5V Output

DESCRIPTION

The FISM 1769205141 Magi³C power module is an unregulated, functionally isolated, fully integrated DC/DC converter.

The module integrates the switching power stage, control circuitry, transformer and input/output capacitors.

The module requires no external components for operation thus reducing design effort and complexity to a minimum.

The FISM module ensures fast time to market and low development costs.

The 1769205141 module achieves an efficiency up to 88%.

The module is available in an SMT-8 package (12.7 x 11.05 x 6.25)mm.

FEATURES

- 4kV DC functional isolation for 1s
- Nominal input voltage rail: 5V
- Output voltage: 5V unregulated
- Low output voltage ripple: Typ. 55mV at full load
- Output voltage accuracy: Typ. -0.4% at full load
- Output power: 1W (0.2A)
- Dynamic power boost up to 0.3A for 0.5s
- Continuous short-circuit protection
- Isolation capacitance of typ. 20pF
- Integrated C_{IN} , C_{OUT} and transformer
- Operating ambient temperature range: -40 °C to 105 °C
- RoHS & REACH compliant
- Complies with EN55032 (CISPR-32) class B conducted and radiated emissions standard
- UL62368-1 recognized



5 ABSOLUTE MAXIMUM RATINGS

Caution:
Exceeding the listed absolute maximum ratings may affect the device negatively and may cause permanent damage.

Table 5: Absolute maximum ratings.

SYMBOL		PARAMETER	LIMIT		UNIT
			MIN ⁽¹⁾	MAX ⁽¹⁾	
VIN	Input pin voltage	3.3V _{IN} / 5V _{OUT} version (1769205041)	-0.4	9	V
		5V _{IN} / 5V _{OUT} version (1769205141)	-0.4	10	V
		12V _{IN} / 5V _{OUT} version (1769205241)	-0.4	16	V
		24V _{IN} / 5V _{OUT} version (1769205341)	-0.4	50	V
VOUT	Output pin voltage	3.3V _{IN} / 5V _{OUT} version (1769205041)	-0.7	16	V
		5V _{IN} / 5V _{OUT} version (1769205141)	-0.7	16	V
		12V _{IN} / 5V _{OUT} version (1769205241)	-0.7	25	V
		24V _{IN} / 5V _{OUT} version (1769205341)	-0.7	16	V
V _{ISO}		Isolation voltage input to output for 1s ⁽²⁾	—	4	kV
		Isolation voltage input to output, 100% tested for 60s ⁽²⁾	—	3	kV
T _{storage}		Assembled, non-operating storage temperature	-55	125	°C
V _{ESD}		ESD Voltage (HBM), according to EN61000-4-2 ⁽³⁾	-4	4	kV

5 ABSOLUTE MAXIMUM RATINGS

Caution:
Exceeding the listed absolute maximum ratings may affect the device negatively and may cause permanent damage.

Table 6: Absolute maximum ratings.

SYMBOL	PARAMETER	LIMIT		UNIT
		MIN ⁽¹⁾	MAX ⁽¹⁾	
VIN	Input pin voltage	-0.3	10	V
VOUT	Output pin voltage	-0.3	25	V
V _{ISO}	Isolation voltage input to output for 60s ⁽²⁾	—	3	kV
	Isolation voltage input to output, 100% tested for 1s ⁽²⁾	—	4	kV
T _{storage}	Assembled, non-operating storage temperature	-55	125	°C
V _{ESD}	ESD Voltage (HBM), according to EN61000-4-2 ⁽³⁾	-4	4	kV

Specified isolation voltage changes for 1779205111 & 1779205211

Before Change

3.3V, 5V, 12V or 24V Input Voltage / 1W 1.5kV Functional Isolated / Unregulated 5V Output

DESCRIPTION

The FISM power module family is an unregulated, functional isolated, fully integrated DC/DC converter.

The module integrates the switching power stage, control circuitry, transformer and input/output capacitors.

The module requires no external components for operation thus reducing design effort and complexity to a minimum.

The FISM ensures fast time to market and low development costs.

The 1779205x11 series of the FISM family achieves typically an efficiency of 82% up to 86%.

The series is available in a SIP-4 package (11.60 x 6 x 10.16mm).

FEATURES

- 1.5kV DC functional isolation for 60s
- Continuous short-circuit protection
- Current capability up to 0.2A
- Nominal input voltage rails: 3.3V / 5V / 12V / 24V
- Output voltage: 5V unregulated
- No minimum load required
- Continuous output power: 1W
- Integrated C_{IN}, C_{OUT} and transformer
- Dynamic power boost up to 300mA for 0.5s
- Low output voltage ripple: Typ. 55mV at full load
- Output voltage accuracy: Typ. +3% / -4.3%
- Operating switching frequency: 300kHz (1779205111) 600kHz (1779205011, 1779205211, 1779205311)
- Operating ambient temperature range: -40°C to 105°C
- RoHS & REACH compliant
- Complies with EN55032 (CISPR-32) class B conducted and radiated emissions standard
- UL62368-1 approved

ABSOLUTE MAXIMUM RATINGS

Caution:
Exceeding the listed absolute maximum ratings may affect the device negatively and may cause permanent damage. These are stress ratings only, which do not imply functional operation of the device at these or any other condition beyond those indicated under Operating Conditions.

SYMBOL	PARAMETER	LIMIT		UNIT	
		MIN ⁽¹⁾	MAX ⁽¹⁾		
VIN	Input pin voltage	3.3VIN / 5VOUT version (1779205011)	-0.4	9	V
		5VIN / 5VOUT version (1779205111)	-0.4	6	V
		12VIN / 5VOUT version (1779205211)	-0.4	25	V
		24VIN / 5VOUT version (1779205311)	-0.4	50	V
VOUT	Output pin voltage	3.3VIN / 5VOUT version (1779205011)	-0.7	16	V
		5VIN / 5VOUT version (1779205111)	-0.7	11	V
		12VIN / 5VOUT version (1779205211)	-0.7	16	V
		24VIN / 5VOUT version (1779205311)	-0.7	16	V
VISO	Isolation voltage input to output for 1s ⁽²⁾	-	3000	V	
	Isolation voltage input to output, 100% tested for 60s ⁽²⁾	-	1500	V	
Tstorage	Assembled, non-operating storage temperature	-55	125	°C	
VESD	ESD Voltage (HBM), according to EN61000-4-2 ⁽³⁾	-4	4	kV	

After Change

5V Input / 1W 3kV Functional Isolated / Unregulated 5V Output

DESCRIPTION

The FISM 1779205111 MagI²C power module is an unregulated, functionally isolated, fully integrated DC/DC converter.

The module integrates the switching power stage, control circuitry, transformer and input/output capacitors.

The module requires no external components for operation thus reducing design effort and complexity to a minimum.

The FISM module ensures fast time to market and low development costs.

The 1779205111 module achieves an efficiency up to 88%.

The module is available in an SIP-4 package (11.5 x 6 x 10mm).

FEATURES

- 3kV DC functional isolation for 1s
- Nominal input voltage rail: 5V
- Output voltage: 5V unregulated
- Low output voltage ripple: Typ. 55mV at full load
- Output voltage accuracy: Typ. -0.4% at full load
- Output power: 1W (0.2A)
- Dynamic power boost up to 0.3A for 0.5s
- Continuous short-circuit protection
- Isolation capacitance of typ. 20pF
- Integrated C_{IN}, C_{OUT} and transformer
- Operating ambient temperature range: -40°C to 105°C
- RoHS & REACH compliant
- Complies with EN55032 (CISPR-32) class B conducted and radiated emissions standard
- UL62368-1 recognized

5 ABSOLUTE MAXIMUM RATINGS

Caution:
Exceeding the listed absolute maximum ratings may affect the device negatively and may cause permanent damage.

Table 6: Absolute maximum ratings.

SYMBOL	PARAMETER	LIMIT		UNIT
		MIN ⁽¹⁾	MAX ⁽¹⁾	
VIN	Input pin voltage	-0.3	10	V
VOUT	Output pin voltage	-0.3	25	V
V _{ISO}	Isolation voltage input to output for 60s ⁽²⁾	—	1.5	kV
	Isolation voltage input to output, 100% tested for 1s ⁽²⁾	—	3	kV
T _{storage}	Assembled, non-operating storage temperature	-55	125	°C
V _{ESD}	ESD Voltage (HBM), according to EN61000-4-2 ⁽³⁾	-4	4	kV



The datasheet package specifications have been adjusted based on the new design.

Package specification change valid for 1769205141 & 1769205241

Before Change

11 PACKAGE SPECIFICATIONS

Table 11: Package specifications.

ITEM	PARAMETER	TYP ⁽³⁾	UNIT
Case	UL94V-0 (Refer to UL approval E150608)	—	—
φ(RH)	Maximum storage humidity (see HANDLING RECOMMENDATIONS for soldering requirements)	95	%
Weight		1.3	g
Vibration	MIL-STD-202G: 5g for 1 minute, 120 cycles each of 3 orientation, test from 10Hz-55Hz		
IP	Degree of protection according to IEC/EC 60529	X0	
Washing	Washing compatible with standard industrial water based washers.		

After Change

11 PACKAGE SPECIFICATIONS

Table 12: Package specifications.

ITEM	PARAMETER	TYP ⁽³⁾	UNIT
Case	UL94V-0 (Refer to UL approval E150608)	—	—
φ(RH)	Maximum storage humidity (see HANDLING RECOMMENDATIONS for soldering requirements)	95	%
Weight		1.2	g
Vibration	MIL-STD-202G: 5g for 1 minute, 120 cycles each of 3 orientation, test from 10Hz-55Hz		
IP	Degree of protection according to IEC/EC 60529	X0	
Washing	Washing compatible with standard industrial water based washers.		

Package specification change valid for 1779205111 & 1779205211

Before Change

PACKAGE SPECIFICATIONS

ITEM	PARAMETER	TYP ⁽³⁾	UNIT
Case	UL94V-0 (Refer to UL approval E150608)	—	—
φ(RH)	Operating humidity	5-95	%
Weight		1.3	g
Vibration	MIL-STD-202G: 5g for 1 minute, 120 cycles each of 3 orientation, test from 10Hz-55Hz		
IP	Degree of protection according to IEC/EC 60529	X0	
Washing	Washing compatible with standard industrial water based washers.		

After Change

11 PACKAGE SPECIFICATIONS

Table 12: Package specifications.

ITEM	PARAMETER	TYP ⁽³⁾	UNIT
Case	UL94V-0 (Refer to UL approval E150608)	—	—
φ(RH)	Maximum storage humidity (see HANDLING RECOMMENDATIONS for soldering requirements)	95	%
Weight		1.5	g
Vibration	MIL-STD-202G: 5g for 1 minute, 120 cycles each of 3 orientation, test from 10Hz-55Hz		
IP	Degree of protection according to IEC/EC 60529	X0	
Washing	Washing compatible with standard industrial water based washers.		

The datasheet MTBF specifications have been adjusted based on the new internal design.

MTBF changes valid for 1769205141 & 1769205241

Before Change

12 RELIABILITY

Table 12: Reliability.

SYMBOL	PARAMETER	TEST CONDITIONS	TYP ⁽³⁾	UNIT
MTBF ⁽¹⁾	Mean Time Between Failures	+25°C: Ground Benign	28000 · 10 ³	h
		+100°C: Ground Benign	5000 · 10 ³	h

After Change

12 RELIABILITY

Table 13: Reliability.

SYMBOL	PARAMETER	TEST CONDITIONS	TYP ⁽³⁾	UNIT
MTBF ⁽¹⁾	Mean Time Between Failures	+25°C: Ground Benign	7541 · 10 ³	h
		+85°C: Ground Benign	2398 · 10 ³	h

MTBF changes valid for 1779205241

Before Change

RELIABILITY

SYMBOL	PARAMETER	TEST CONDITIONS	TYP ⁽³⁾	UNIT
MTBF ⁽³⁾	Mean Time Between Failures	+25°C: Ground Benign	5200 · 10 ³	h
		+100°C: Ground Benign	950 · 10 ³	h

After Change

12 RELIABILITY

Table 13: Reliability.

SYMBOL	PARAMETER	TEST CONDITIONS	TYP ⁽³⁾	UNIT
MTBF ⁽¹⁾	Mean Time Between Failures	+25°C: Ground Benign	7057 · 10 ³	h
		+85°C: Ground Benign	2282 · 10 ³	h

MTBF changes valid for 1779205111 & 1779205211

Before Change

RELIABILITY

SYMBOL	PARAMETER	TEST CONDITIONS	TYP ⁽³⁾	UNIT
MTBF ⁽⁹⁾	Mean Time Between Failures	+25°C: Ground Benign	5200 · 10 ³	h
		+100°C: Ground Benign	950 · 10 ³	h

After Change

12 RELIABILITY

Table 13: Reliability.

SYMBOL	PARAMETER	TEST CONDITIONS	TYP ⁽³⁾	UNIT
MTBF ⁽¹¹⁾	Mean Time Between Failures	+25°C: Ground Benign	7941 · 10 ³	h
		+85°C: Ground Benign	2360 · 10 ³	h

The diagrams shown in chapter TYPICAL PERFORMANCE CURVES are updated based on new electrical specifications. The used test conditions stay the same as before.

The modules still are based on either a full bridge or a push-pull topology. In some cases the single part number topology switched from previous full bridge topology to a push-pull topology or vice versa. The topology change is indicated in the BLOCK DIAGRAM chapter.

Topology change valid for 1769205141

Before Change

16 BLOCK DIAGRAM

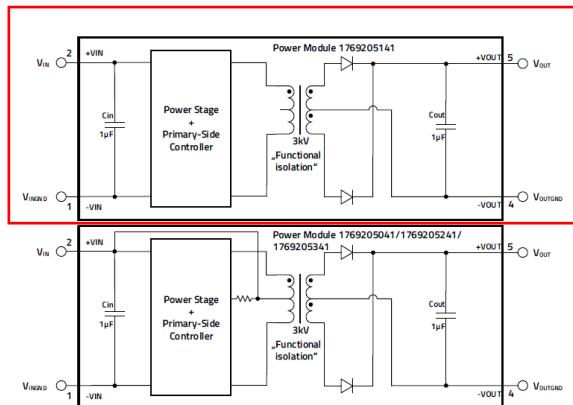


Figure 17: 1769205141 block Diagram.

17 CIRCUIT DESCRIPTION

The Mag¹C power module 1769205141 is based on full bridge topology, whereas the Mag¹C power modules 1769205041 / 1769205241 / 1769205341 are based on a push-pull converter. All modules have an integrated IC, rectifying diodes, input and output capacitors and a transformer.

Since there is no feedback path from the output to the input, the duty cycle is fixed at 50% and is independent of the load (zero load to full load). The output voltage is unregulated and defined by the turns ratio of the transformer.

After Change

16 BLOCK DIAGRAM

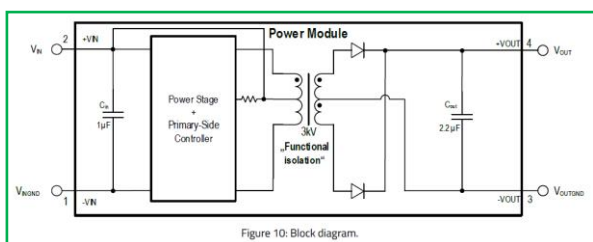


Figure 10: Block diagram.

17 CIRCUIT DESCRIPTION

The Mag¹C power module 1769205141 is based on a push-pull topology. The module has an integrated IC, rectifying diodes, input and output capacitors and a transformer.

Since there is no feedback path from the output to the input, the duty cycle is fixed at 50% and is independent of the load (zero load to full load). The output voltage is unregulated and defined by the turns ratio of the transformer.

Topology change valid for 1769205241

Before Change

16 BLOCK DIAGRAM

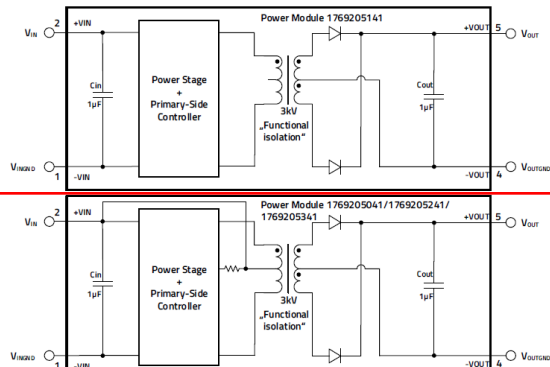


Figure 17: 1769205x41 block Diagram.

17 CIRCUIT DESCRIPTION

The Mag³C power module 1769205141 is based on full bridge topology whereas the Mag³C power modules 1769205041 / 1769205241 / 1769205341 are based on a push-pull converter. All modules have an integrated IC, rectifying diodes, input and output capacitors and a transformer.

Since there is no feedback path from the output to the input, the duty cycle is fixed at 50% and is independent of the load (zero load to full load). The output voltage is unregulated and defined by the turns ratio of the transformer.

After Change

16 BLOCK DIAGRAM

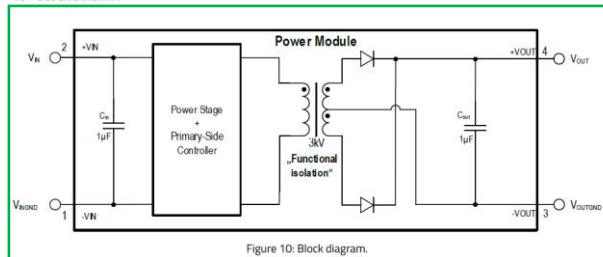


Figure 10: Block diagram.

17 CIRCUIT DESCRIPTION

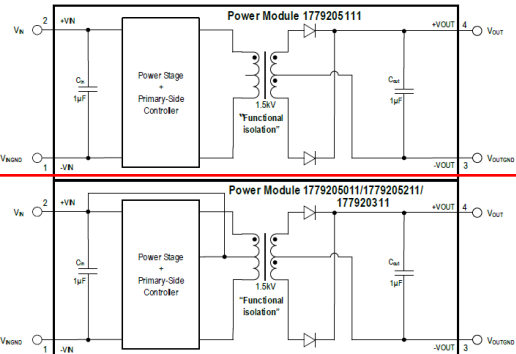
The Mag³C power module 1769205241 is based on a full bridge topology. The module has an integrated IC, rectifying diodes, input and output capacitors and a transformer.

Since there is no feedback path from the output to the input, the duty cycle is fixed at 50% and is independent of the load (zero load to full load). The output voltage is unregulated and defined by the turns ratio of the transformer.

Topology change valid for 1779205211

Before Change

BLOCK DIAGRAM



CIRCUIT DESCRIPTION

The Mag³C power module 1779205111 is based on full bridge topology whereas the Mag³C power modules 1779205011 / 1779205211 / 1779205311 are based on a push-pull converter. All modules have an integrated IC, rectifying diodes, input and output capacitors and a transformer.

Since there is no feedback path from the output to the input, the duty cycle is fixed at 50% and is independent of the load (zero load to full load). The output voltage is unregulated and defined by the turns ratio of the transformer.

After Change

16 BLOCK DIAGRAM

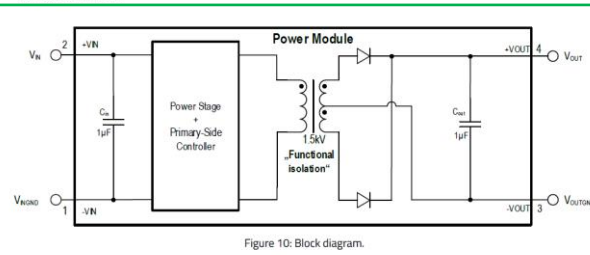


Figure 10: Block diagram.

17 CIRCUIT DESCRIPTION

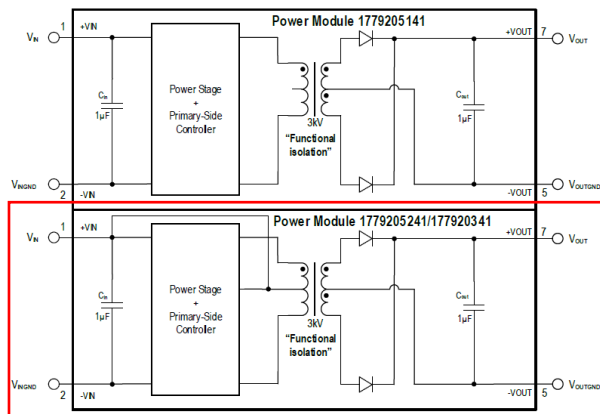
The Mag³C power module 1779205211 is based on a full bridge topology. The module has an integrated IC, rectifying diodes, input and output capacitors and a transformer.

Since there is no feedback path from the output to the input, the duty cycle is fixed at 50% and is independent of the load (zero load to full load). The output voltage is unregulated and defined by the turns ratio of the transformer.

Topology change valid for 1779205241

Before Change

BLOCK DIAGRAM



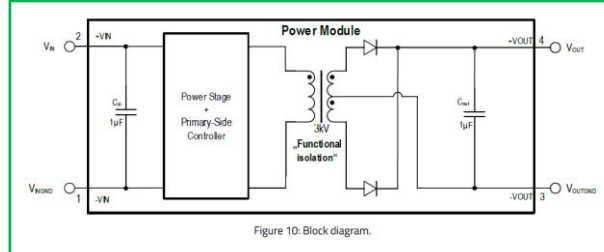
CIRCUIT DESCRIPTION

The Mag¹C power module 1779205141 is based on full bridge topology whereas the Mag¹C power modules 1779205241 / 1779205341 are based on a push-pull converter. All modules have an integrated IC, rectifying diodes, input and output capacitors and a transformer.

Since there is no feedback path from the output to the input, the duty cycle is fixed at 50% and is independent of the load (zero load to full load). The output voltage is unregulated and defined by the turns ratio of the transformer.

After Change

16 BLOCK DIAGRAM



17 CIRCUIT DESCRIPTION

The Mag¹C power module 1779205241 is based on a full bridge topology. The module has an integrated IC, rectifying diodes, input and output capacitors and a transformer.

Since there is no feedback path from the output to the input, the duty cycle is fixed at 50% and is independent of the load (zero load to full load). The output voltage is unregulated and defined by the turns ratio of the transformer.

The handling recommendations for the wave solder profile (valid for THT parts only) have been expanded to include the maximum allowable time for each wave.

Before Change

18.1 Solder Profile

Table 10: Wave solder profile.

Profile Feature	Old standard (Pb)	New (Pb-free)
Time within peak temperature t_p	10s	10s
Average ramp-up rate between t_s and t_p	200°C/s	200°C/s
Final preheat temperature T_s	130°C/s	130°C/s
Peak temperature T_p	+235°C/s	+260°C/s
Ramp-down rate	-5°C/s	-5°C/s
Heating rate during preheat	4°C/s	4°C/s

After Change

19.1 Soldering Profile

Table 12: Wave solder profile.

Profile Feature	Old standard (Pb)	New (Pb-free)
Time within peak temperature t_p	max. 10s	max. 10s
Average ramp-up rate	max. 5s each wave	max. 5s each wave
Final preheat temperature T_s	200°C/s	200°C/s
Peak temperature T_p	130°C/s	130°C/s
Ramp-down rate	+235°C/s	+260°C/s
Heating rate during preheat	-5°C/s	-5°C/s
	4°C/s	4°C/s

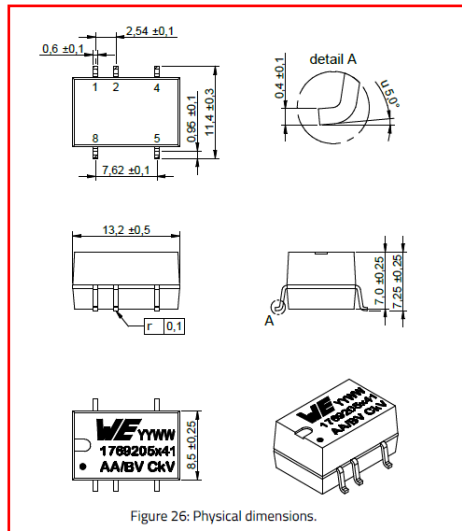
The mechanical dimensions have been updated based on new production. SIP-4 & SIP-7 package shapes stay the same but with slightly deviated package length and height. SMT-8 package shape is changed but neither pinout, footprint or recommended land pattern are affected by the change in shape. Production tolerances have been changed based on new production line.

Mechanical dimension changes valid for 1769205141 & 1769205241

Before Change

22 PHYSICAL DIMENSIONS

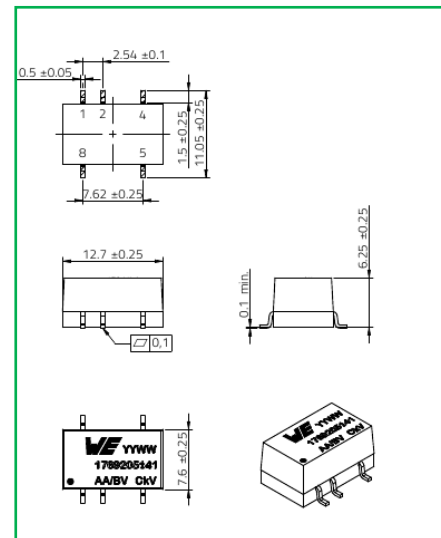
22.1 Component



After Change

22 PHYSICAL DIMENSIONS

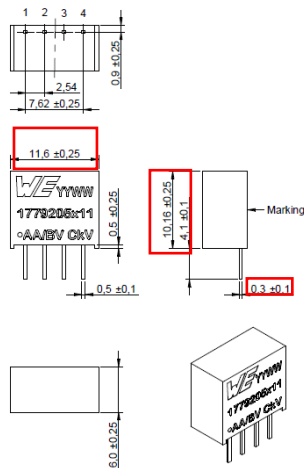
22.1 Component



Mechanical dimension changes valid for 1779205111 & 1779205211

Before Change

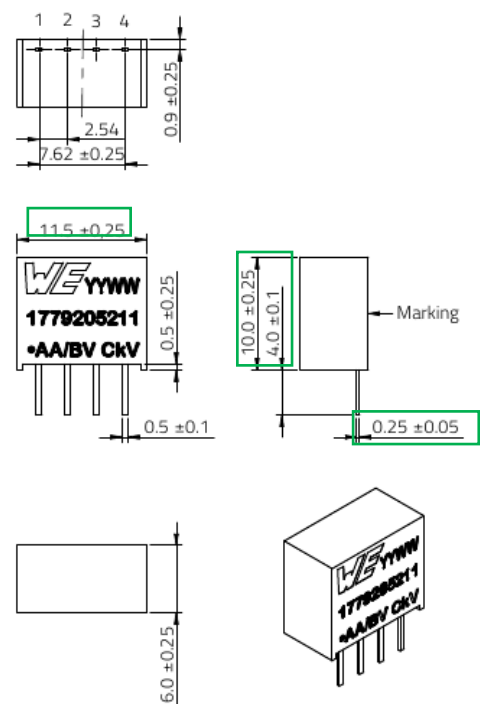
PHYSICAL DIMENSIONS



After Change

22 PHYSICAL DIMENSIONS

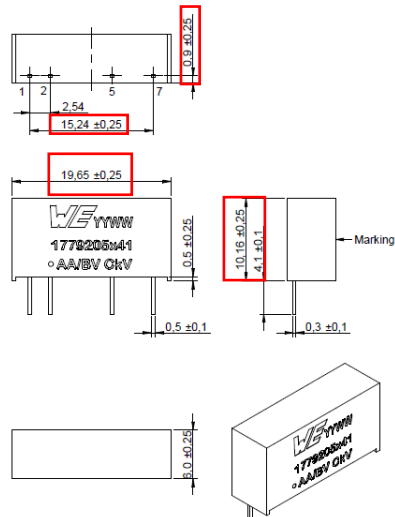
22.1 Component



Mechanical dimension changes valid for 1779205241

Before Change

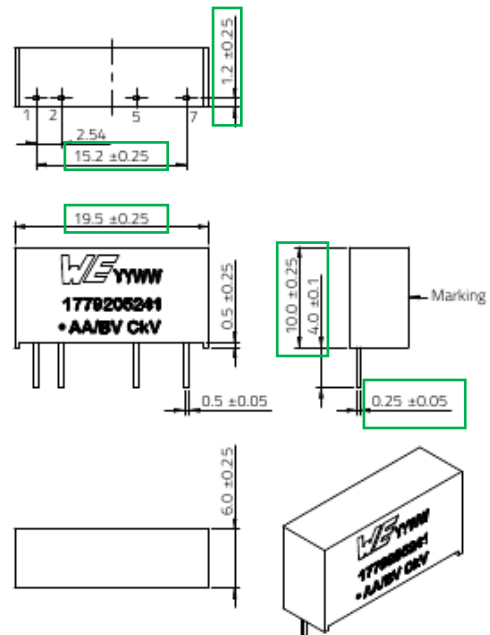
PHYSICAL DIMENSIONS



After Change

22 PHYSICAL DIMENSIONS

22.1 Component



The packaging specifications have been adjusted.

Tape & Reel specification changes valid for 1769025141 & 1769205241

Before Change

22.3 Packaging Tape and Reel (mm)

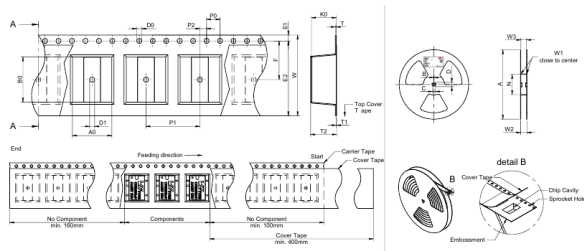


Figure 21: Packaging dimensions.

Table 16: Tape dimensions.

A0	B0	D0 / D1	E1	E2	K0	P0	P1	P2	T	T1	T2	W
±0.10	±0.10	±0.10	±0.10	±0.10	±0.10	±0.10	±0.10	±0.05			±0.10	±0.10
11.70	13.10	1.50	1.75	22.25	7.50	4.00	16.00	2.00	0.50	0.35	8.00	24.00

Tape material is polystyrene

Table 17: Reel dimensions.

A	B	C	D	N	W1	W2	W3
±2.0	±0.30	±0.20	±0.50	±1.00	+1.00 -0.50	±2.00	+1.00 -0.50
330.00	2.30	13.00	21.00	100.00	24.5	28.50	24.50

After Change

22.3 Packaging Tape and Reel (mm)

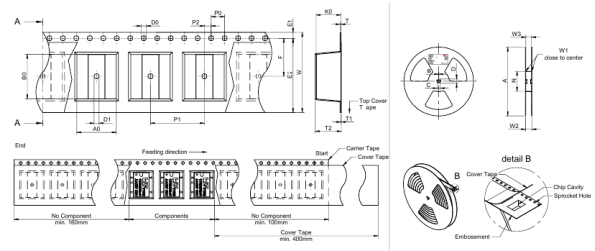


Figure 21: Packaging dimensions.

Table 16: Tape dimensions.

A0	B0	D0 / D1	E1	E2	F	K0	P0	P1	P2	T	T1	T2	W
typ.	typ.	min. +0.1/-0.0	±0.10	min.	±0.10	typ.	±0.10	±0.10	±0.10		ref.	typ.	+0.30/ -0.1
12.00	13.50	1.50	1.75	22.25	11.50	7.00	4.00	16.00	2.00	0.50	0.1	7.70	24.00

Tape material is polystyrene

Table 17: Reel dimensions.

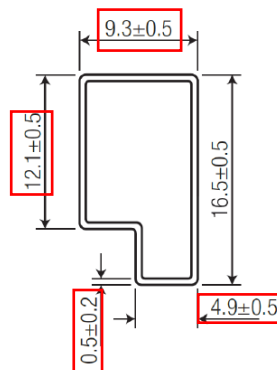
A	B	C	D	N	W1	W2	W3	W3
±2.0	min.	min.	min.	min.	+2.00	max.	min.	max.
330.00	1.50	12.80	20.20	60.00	24.40	30.40	23.90	27.40

Tube specification changes valid for 1779025111 & 1779205211 & 1779205241

Before Change

PACKAGING

TUBE (mm)



Tolerance: xx.x = ±0.5mm ; xx.xx = ±0.25mm unless otherwise noted

After Change

22.3 Packaging

Tube (mm)



Figure 21: Packaging dimensions.

Table 16: Packaging dimensions.

Dimension	L	W	H
Tolerance	typ.	typ.	typ.
Value	522mm	16.5mm	9.5mm



Reliability / Qualification of Change:

An additional reliability testing was performed and approved. Sample size is valid for every single partnumber stated in this PCN unless otherwise noted.

Additional details of the tests can be found in the table below:

Test Item	Sample Size	Reference	Test Conditions	Acceptance
Temperature Cycling	25	JESD22 Method JA-104	Temperature: -40°C to 85°C Testing Time: 500 cycles Test Cycles/h: 3 Min. soak time: 1 min	Approved
High Temperature Operational Life*	78	JESD22-A108	Tj: 125°C Testing Time: 1000h	Approved
Five Times Reflow*	25	Internal	Peak reflow temperature acc. datasheet solder profile reference	Approved
Electrical Characterization	30	User Spec.	Measure electrical DC performance @25 °C, - 40 °C, 105 °C Transient performance tests @25°C Thermal derating measurement.	Approved
Low Temperature Storage Life	25	JESD22-A119	500hrs @ -55°C	Approved
High Temperature Storage Life	25	JESD22-A119	500hrs @ 125°C	Approved
Steady State Humidity*	25	MIL-STD-202, Method 106	Temperature: 65± 2°C Testing Time: 504h Humidity: 95%RH	Approved
High Pot Test	5	UL62368-1	Specified isolation voltage value tested for 60s. Given design parameter tested for 1s	Approved
Moisture Resistance*	25	MIL-STD-202 Method 106G	Temp: 25-65C (± 2 °C) Humidity: 95%RH Test time: 160h, 10 cycle each 16h, ramp up 2.5h, ramp down 2.5h, soak 3h	Approved



Unbiased Temperature Humidity*	25		264 hrs @ 110°C / 85% r.H.	Approved
Mechanical Shock	30	MIL-STD- 202-213	3 shocks in each direction (x, -x, y, -y, z, -z), peak value of 100 g, duration 6 ms, half-sine, velocity change 12.3 ft/s.	Approved
Vibration	30	MIL-STD- 202-204	5 g for 20 min, 12 cycles each of 3 orientations. Test from 10 Hz to 2000 Hz.	Approved

- * High Temperature Operational Life was performed with 3 partnumbers
 (1769205141, 1779205211, 1779205241) to cover the changes in internal BOM and new design.
- * Five Times Reflow is only valid for SMT-8 package (1769205141 and 1769205241).
- * Moisture Resistance is only valid for SMT-8 package (1769205141 and 1769205241).
- * Unbiased Temperature Humidity is only valid for SMT-8 package (1769205141 and 1769205241).