Designed with TPS7A52

3.6V input,

3.3V, 2A output.

1.Input supply

Input is supplied from TPSM84824MOLR.

Parametor	min		tyo	max	
Vin	-1.833%	3.534V	3.600V	3.666V	1.833%

The output of the TPSM84824MOLR is also supplied to other power sources.

2.Output required for TPSM82813 SILR

The output of the TPSM82813 SILR is supplied to the FPGA.

Parametor	min		typ	max	
Vout	-3.000%	3.201V	3.300V	3.399V	3.000%
Iout	-	-	-	1.550A	-

3.Designed files

The following materials are available.

- Schematic
- Bills of materials
- Cin/Cout Part data
- WEBNCH Summary Report

4. What I care about

4-1.Output accuracy

DC output accuracy	±1.521%	: Use a 1.0% resistor.
Load Regulation	±0.001%	: 0.012mV/A×2A+α=0.024+α α=0.012
Line Regulation	±0.004%	: 0.03mV/V×3.3V+α=0.099%+α α=0.03%
Total output accuracy	±1.526%	

	min		typ	max	
VFB	-0.750%	0.794V	0.800V	0.806V	0.750%

±1.0%	min	typ	max
Rfbt	11.88kΩ	12.00kΩ	12.12kΩ
Rfbb	3.79kΩ	3.83kΩ	3.87kΩ

Output accuracy

	min		typ	max	
Vout	-1.502%	3.257V	3.307V	3.357V	1.521%

Satisfy the required output accuracy ± 3%

Is my output accuracy calculation correct?

4-2.VDO

Input Voltage: 3.666V(max)

Output Voltage : 3/257V(min)

VDO= 0.409 V

4-3.Tj

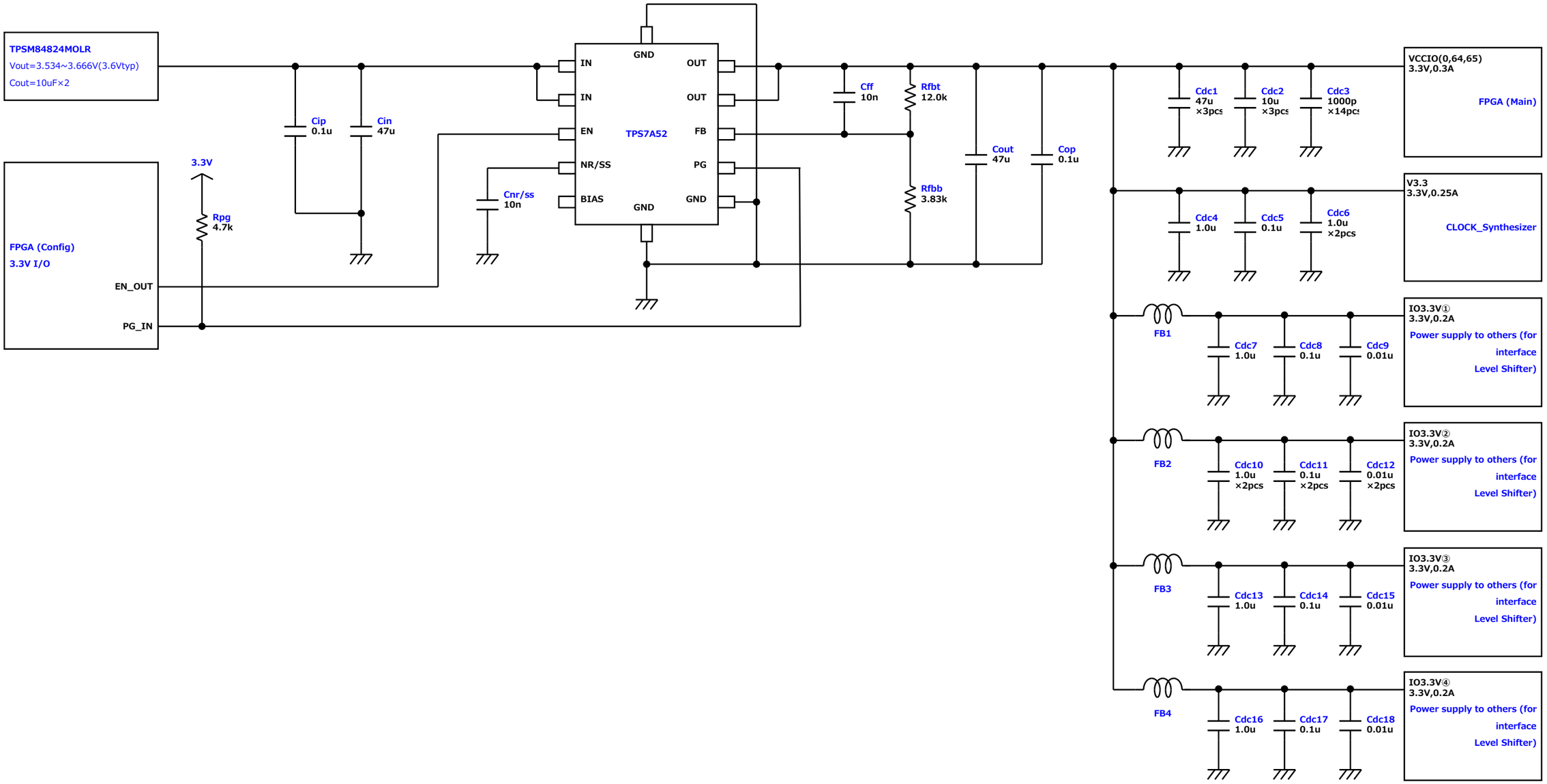
Output Current : 1.55A(max)

VDO: 0.409(max)

Pd 0.409*1.55= 0.63395 W

Ta:40℃

Tj= 40+68.7×0.64W= 83.968 ℃


TPSM84824MOLR
Vout=3.534~3.666V(3.6Vtyp)
Cout=10uF×2
FPGA (Config)
3.3V I/O
EN_OUT
PG_IN
3.3V
Rpg
4.7k
Cip
0.1u
Cin
47u
Cnr/ss
10n
IN
IN
EN
NR/SS
BIAS
GND
GND
TPS7A52
OUT
OUT
FB
PG
GND
Cff
10n
Rfbt
12.0k
Rfbb
3.83k
Cout
47u
Cop
0.1u
Cdc1
47u
×3pcs
Cdc2
10u
×3pcs
Cdc3
1000p
×14pcs
VCCIO(0,64,65)
3.3V,0.3A
FPGA (Main)
Cdc4
1.0u
Cdc5
0.1u
Cdc6
1.0u
×2pcs
V3.3
3.3V,0.25A
CLOCK_Synthesizer
FB1
Cdc7
1.0u
Cdc8
0.1u
Cdc9
0.01u
IO3.3V①
3.3V,0.2A
Power supply to others (for interface Level Shifter)
FB2
Cdc10
1.0u
×2pcs
Cdc11
0.1u
×2pcs
Cdc12
0.01u
×2pcs
IO3.3V②
3.3V,0.2A
Power supply to others (for interface Level Shifter)
FB3
Cdc13
1.0u
Cdc14
0.1u
Cdc15
0.01u
IO3.3V③
3.3V,0.2A
Power supply to others (for interface Level Shifter)
FB4
Cdc16
1.0u
Cdc17
0.1u
Cdc18
0.01u
IO3.3V④
3.3V,0.2A
Power supply to others (for interface Level Shifter)

Part	Manufacturer	Part Number	Quantity	Description
Cip	MuRata	GRM033R61E104KE14D	1	Cap: 0.1 µF Total Derated Cap: 0.07 µF VDC: 25 V ESR: 30 mΩ Package: 0201
Rpg	KOA	RK73H1ETTP4701F	1	Resistance: 4.7 kΩ Tolerance: 1.0% Power: 0.1 W Package: 0402
Cin	MuRata	GRM31CR61C476ME44L	1	Cap: 47 µF Total Derated Cap: 31.8 µF VDC: 16 V ESR: 2 mΩ Package: 1206
CNR/SS	MuRata	GRM033R61E103KA12D	1	Cap: 10 nF Total Derated Cap: 10 nF VDC: 25 V ESR: 80 mΩ Package: 0201
U1	Texas Instruments	TPSM82813SILR	1	
Cff	MuRata	GRM033R61E103KA12D	1	Cap: 10 nF Total Derated Cap: 10 nF VDC: 25 V ESR: 80 mΩ Package: 0201
Cout	MuRata	GRM31CR61C476ME44L	1	Cap: 47 µF Total Derated Cap: 34.2 µF VDC: 16 V ESR: 2 mΩ Package: 1206
Rfbt	KOA	RK73H1ETTP1202F	1	Resistance: 12.0 kΩ Tolerance: 1.0% Power: 0.1 W Package: 0402
Rfbb	KOA	RK73H1ETTP3831F	1	Resistance: 3.83 kΩ Tolerance: 1.0% Power: 0.1 W Package: 0402
Cop	MuRata	GRM033R61E104KE14D	1	Cap: 0.1 µF Total Derated Cap: 0.07 µF VDC: 25 V ESR: 30 mΩ Package: 0201
Cdc1	MuRata	GRM31CR61C476ME44L	3	Cap: 47 µF Total Derated Cap: 34.2 µF VDC: 16 V ESR: 2 mΩ Package: 1206
Cdc2	MuRata	GRM188R61E106KA73D	3	Cap: 10 µF Total Derated Cap: 6.2 µF VDC: 25 V ESR: 3 mΩ Package: 0603
Cdc3	MuRata	GRM0335C1E102JA01D	14	Cap: 1000 pF Total Derated Cap: 1000 pF VDC: 25 V ESR: 9 mΩ Package: 0201
Cdc4	MuRata	GRM155R61E105KA12D	1	Cap: 1.0 µF Total Derated Cap: 0.58 µF VDC: 25 V ESR: 11 mΩ Package: 0402
Cdc5	MuRata	GRM033R61E104KE14D	1	Cap: 0.1 µF Total Derated Cap: 0.07 µF VDC: 25 V ESR: 30 mΩ Package: 0201
Cdc6	MuRata	GRM155R61E105KA12D	2	Cap: 1.0 µF Total Derated Cap: 0.58 µF VDC: 25 V ESR: 11 mΩ Package: 0402
Cdc7	MuRata	GRM155R61E105KA12D	1	Cap: 1.0 µF Total Derated Cap: 0.58 µF VDC: 25 V ESR: 11 mΩ Package: 0402
Cdc8	MuRata	GRM033R61E104KE14D	1	Cap: 0.1 µF Total Derated Cap: 0.07 µF VDC: 25 V ESR: 30 mΩ Package: 0201
Cdc9	MuRata	GRM033R61E103KA12D	1	Cap: 0.01 µF Total Derated Cap: 0.0094 µF VDC: 25 V ESR: 80 mΩ Package: 0201
Cdc10	MuRata	GRM155R61E105KA12D	2	Cap: 1.0 µF Total Derated Cap: 0.58 µF VDC: 25 V ESR: 11 mΩ Package: 0402
Cdc11	MuRata	GRM033R61E104KE14D	2	Cap: 0.1 µF Total Derated Cap: 0.07 µF VDC: 25 V ESR: 30 mΩ Package: 0201
Cdc12	MuRata	GRM033R61E103KA12D	2	Cap: 0.01 µF Total Derated Cap: 0.0094 µF VDC: 25 V ESR: 80 mΩ Package: 0201
Cdc13	MuRata	GRM155R61E105KA12D	2	Cap: 1.0 µF Total Derated Cap: 0.58 µF VDC: 25 V ESR: 11 mΩ Package: 0402
Cdc14	MuRata	GRM033R61E104KE14D	2	Cap: 0.1 µF Total Derated Cap: 0.07 µF VDC: 25 V ESR: 30 mΩ Package: 0201
Cdc15	MuRata	GRM033R61E103KA12D	2	Cap: 0.01 µF Total Derated Cap: 0.0094 µF VDC: 25 V ESR: 80 mΩ Package: 0201
Cdc16	MuRata	GRM155R61E105KA12D	2	Cap: 1.0 µF Total Derated Cap: 0.58 µF VDC: 25 V ESR: 11 mΩ Package: 0402
Cdc17	MuRata	GRM033R61E104KE14D	2	Cap: 0.1 µF Total Derated Cap: 0.07 µF VDC: 25 V ESR: 30 mΩ Package: 0201
Cdc18	MuRata	GRM033R61E103KA12D	2	Cap: 0.01 µF Total Derated Cap: 0.0094 µF VDC: 25 V ESR: 80 mΩ Package: 0201
FB1	MuRata	BLM18PG330SN1D	1	Ferrite Beads, Rated Current (at 85℃): 3A DC Resistance(max.): 0.025Ω
FB2	MuRata	BLM18PG330SN1D	1	Ferrite Beads, Rated Current (at 85℃): 3A DC Resistance(max.): 0.025Ω
FB3	MuRata	BLM18PG330SN1D	1	Ferrite Beads, Rated Current (at 85℃): 3A DC Resistance(max.): 0.025Ω
FB4	MuRata	BLM18PG330SN1D	1	Ferrite Beads, Rated Current (at 85℃): 3A DC Resistance(max.): 0.025Ω

Home Products Product Details

Capacitors 〉 Ceramic Capacitors 〉 Ceramic Capacitors(SMD)

Chip Multilayer Ceramic Capacitors for General Purpose

Please be sure to read these general terms of use, before using this product.
Cautions about imitations

GRM31CR61C476ME44#

"#" indicates a package specification code.

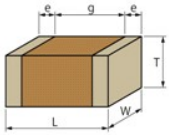
In Production

General RoHS REACH 85 °C max. Reflow OK Flow OK

< List of part numbers with package codes >

GRM31CR61C476ME44L GRM31CR61C476ME44K

Appearance & Shape



Specifications

Search for products with similar specifications

Length	3.2±0.3mm
Width	1.6±0.3mm
Thickness	1.6±0.3mm
Capacitance	47μF ±20%
Distance between external terminals g	1.5mm min.
External terminal size e	0.3 to 0.8mm
Operating Temperature Range	-55℃ to 85℃
Rated Voltage	16Vdc
Size code in inch(mm)	1206 (3216M)
Capacitance change rate	±15.0%
Temperature characteristics (complied standard)	X5R(EIA)
Temperature range of temperature characteristics	-55℃ to 85℃

Product Search Assistant

Introducing similar parts with same or smaller size.

■Smaller ■Higher capacitance (Nominal) ■Higher Voltage ■Higher Temperature ■Better DC bias
■Search silicon capacitors with similar capacitance

Notices

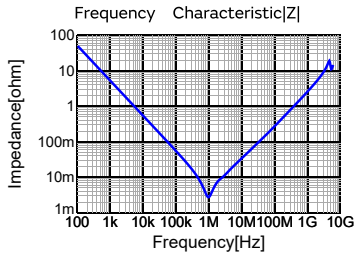
Measure capacitance after heat treatment

References

Packaging	Specifications	Minimum Order Quantity
L	180Embossed Tape	2000
K	330Embossed Tape	6000

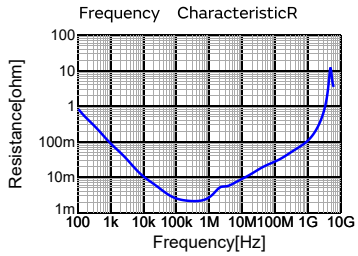
Mass (typ.)	
1 piece	64.0mg
φ180mm Reel	169g

Characteristic Data



GRM31CR61C476ME44,DC0V,25degC

Save image



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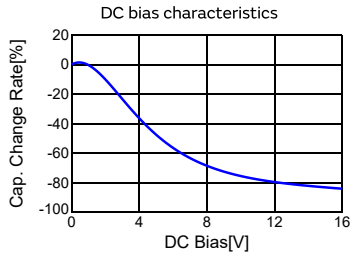

GRM31CR61C476ME44,capchange, 25.0degC, AC0.5Vrms

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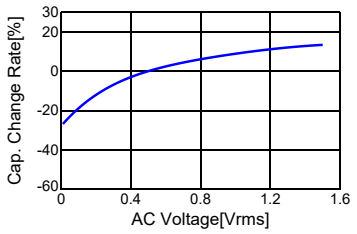

GRM31CR61C476ME44,capchange, DC0V, 25.0degC

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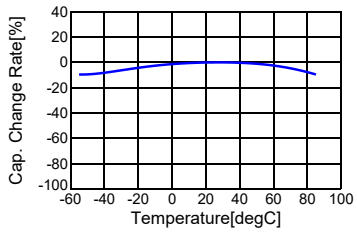

GRM31CR61C476ME44,capchange, DC0.0V, AC0.5Vrms

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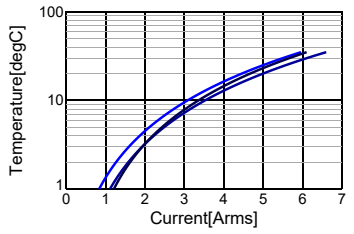

GRM31CR61C476ME44(☑60kHz ☑300kHz ☑600kHz)

Save image

(Simsurfing)Go to the detailed chart