

TPS16411 FLT

RADAR ECU of TPS16411 parameter value

Result of TPS1641x_Design_Calculator_RevB.xlsm

TPS1641x Design Calculation Tool				
Constants Cells	Input/Select Cells	Calculation Cells		Recommended Value
Error Cells, Must be Fixed	Calculated, but can be over-ridden by user			
Parameter	Description	Value	Units	Tolerance
Device Selection	Refer Table-1 and select device based on current or power limiting requirement and fault behavior (auto-retry or latchoff)	TPS16411		
VIN (nom)	Nominal operating input voltage	12.00	V	21.6
Cout	Load Capacitance	2.20	uF	20.0%
Iout	Maximum load current	0.70	A	
Icharge_req	Charging (inrush) current desired in the system	0.30	A	
PLIM	Power limit threshold for active power limiting	8.00	W	
IOCP	Overcurrent threshold (above IOCP, device goes into power limiting without PDLY delay)	1.10	A	
PDLY	Required blanking time to allow transient load	5	ms	
Rstart	Load at start-up (Enter an equivalent resistor value)	100	Ohm	17.1
Vovp	Input overvoltage cut-off threshold	38.00	V	
TA(max)	Max Ambient Temperature	85	degC	

OV set point calculations				
R1: Pullup at the OV Pin	Select a value > 100k to keep I _{R12} low	100.00	kOhm	1.0%
R2_cal	Calculated value of Resistor at OV pin	4.20	kOhm	
SELECT THE VALUE OF RESISTORS AS CLOSEST AVAILABLE VALUE OF R 2				
R2	Select the closest possible value as R2_cal	4.22	kOhm	1.0%
OV_final_rising	OV threshold (VIN rising)	37.79	V	3.4%
OV_final_falling	Overvoltage Threshold (VIN Falling)	34.58	V	4.4%
I _{R12}	Current in R1, R2 Branch	115.14	uA	

Calculation of RPLIM resistor				
RPLIM_cal	Calculated resistor value	55.69	kOhm	
SELECT A ILIMIT RESISTOR WITH THE CLOSEST AVAILABLE VALUE				
RPLIM	Select the closest available value	56.20	kOhm	1.0%
PLIM_final	Final Set Point	8.05	W	5.3%

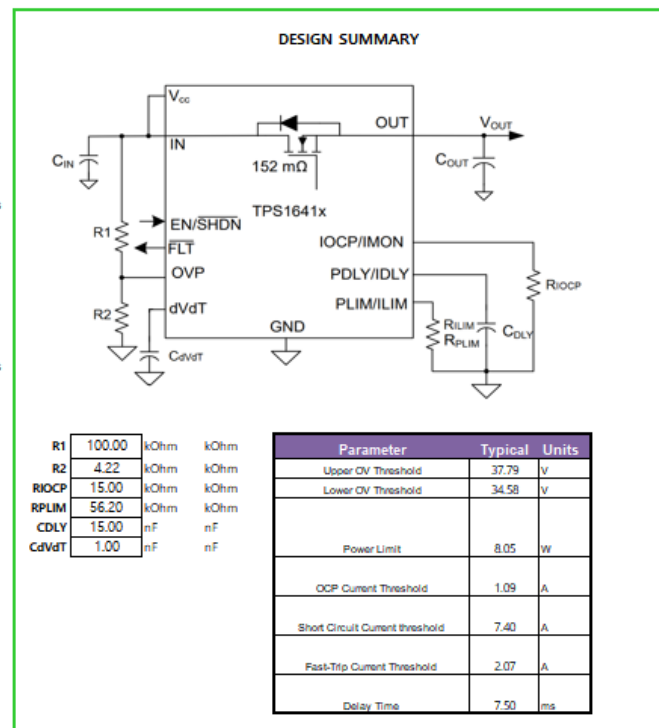
Calculations for IOCP Resistor				
RIOCP_cal	Calculated IOCP resistor	14.84	kOhm	
SELECT A ILIMIT RESISTOR WITH THE CLOSEST AVAILABLE VALUE OF RIOCP_cal				
RIOCP	Select the closest available value of RIOCP_cal	15.00	kOhm	1.0%
IOCP_final	Final OCP set Point	1.09	A	5.5%
ILOAD	Load current through the power path	#	A	
IMON voltage	Current monitoring voltage at the IOCP/IMON pin for above load current	526.50	mV	10.0%

Calculations for I-FASTTRIP and ISCP thresholds				
I-fast_trip	Fast-Trip Current threshold	2.07	A	
ISCP	Short Circuit Current threshold (fixed internally)	6.70	A	

Calculations for CDLY				
CDLY_cal	Calculated value of capacitor at IDLY/PDLY pin	12.00	nF	12.00
CDLY_sel	Capacitor value selected at IDLY/PDLY pin	15.00	nF	5.0%
t _{DLY} final	Time duration for which load transients are allowed	7.50	ms	

Table - 1: Device Comparison Table

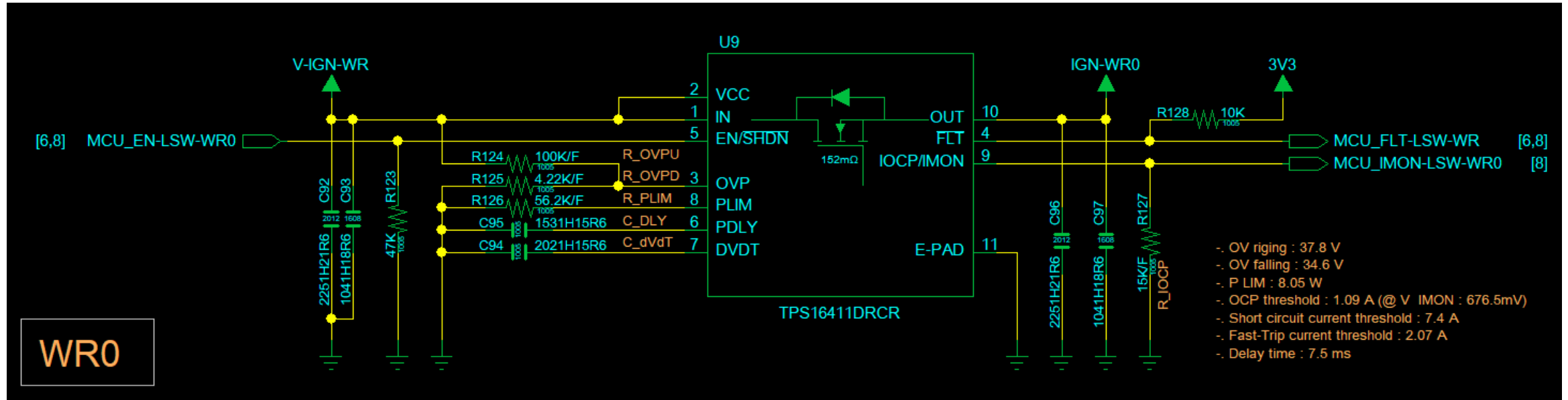
TPS16410	PLIM	Auto-Retry
TPS16411	PLIM	Latch-Off
TPS16412	ILIM	Auto-Retry
TPS16413	ILIM	Latch-Off
TPS16414	PLIM	Auto-Retry
TPS16415	PLIM	Latch-Off
TPS16416	ILIM	Auto-Retry
TPS16417	ILIM	Latch-Off



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→ I did change R_PLIM, R_IOCP to 30W and 3A

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■ Power sepc. of MOVON RADAR UNIT

- V_{in}: 9~36V (Typ V_{in}=12V)
- I_{in}(Peak): 570mA @ 12V
- I_{in}(mean): 220mA @ 12V

