

# Cyntec Automotive Solution for ECU

# Electronica 2022

## Hall A5, Booth 215



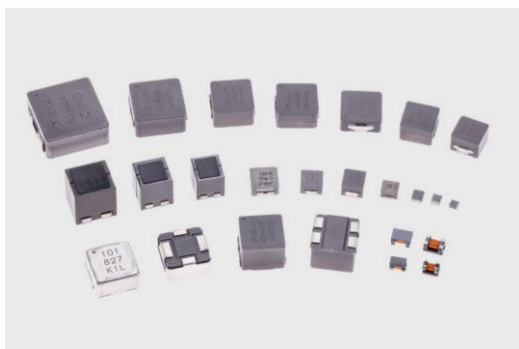
### Cyntec's Key Highlights @ Electronica 2022



- ✓ Transformers
- ✓ Power chokes
- ✓ For on-board charger and DC/DC converters



- ✓ High accuracy shunt sensors
- ✓ ASIL-D qualified shunt sensor modules
- ✓ For battery management system



- ✓ Power chokes
- ✓ Common mode chokes
- ✓ LAN transformer
- ✓ For infotainment / ADAS / lighting ECUs



- ✓ Highly integrated, miniaturized automotive-grade DC-DC modules for ECUs



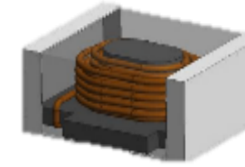
electronica



A Delta Group Company

# Ultra Small Size Power Choke for PMIC / Module

## Optimizing solution – VCTD20161BMS6

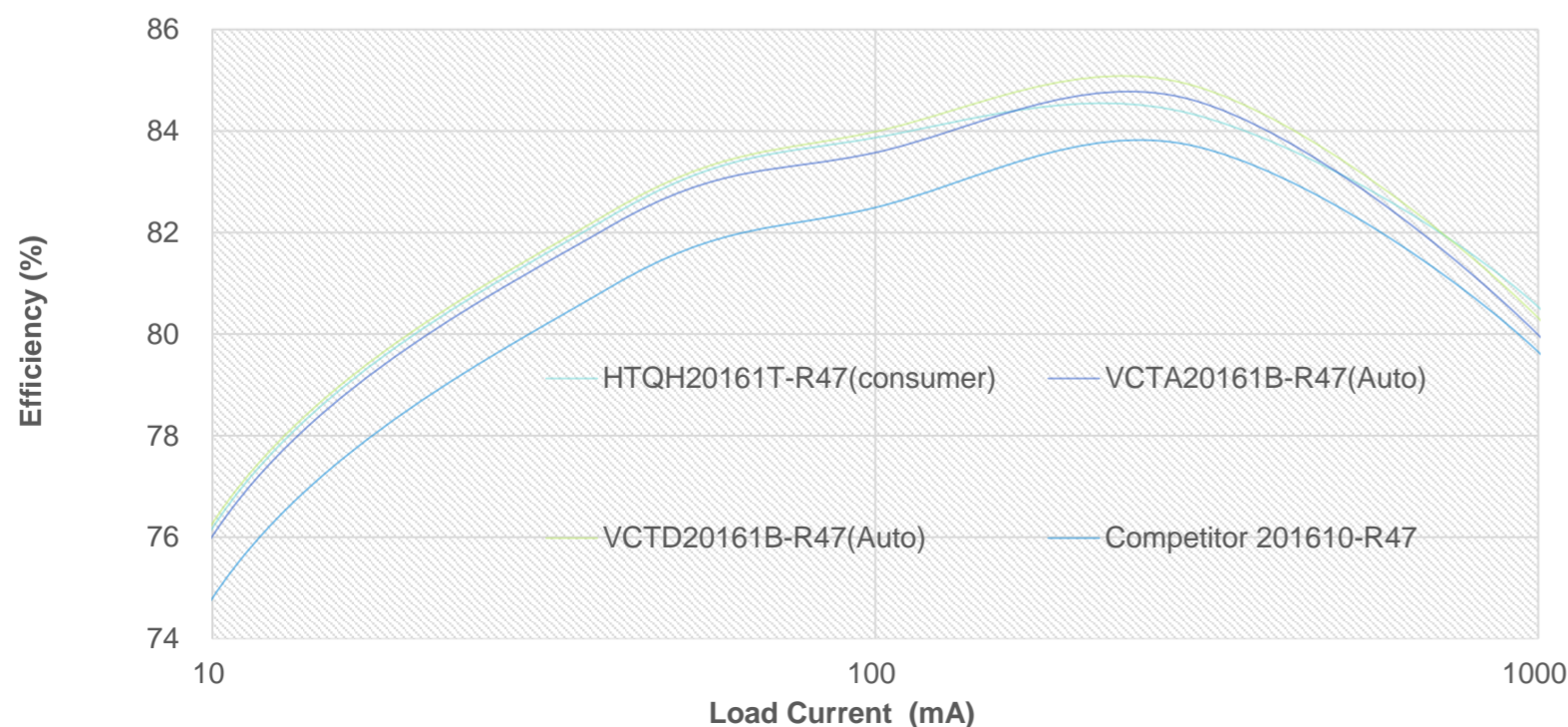


VCTA / VCTD series

Sample available now!

PN	Value (uH)	Dimensions (Max.)	DCR (mOhm)		Idc (A)		Isat (A)		Max. Operating Temp (°C)
			Typ.	Max.	Typ.	Max.	Typ.	Max.	
VCTD20161B-70NMS6 (Simulation)	0.07	2.2*1.8*1.2	4.6	5.5	11.3	10.2	12.8	11	165
VCTD20161B-R22MS6 (Simulation)	0.22	2.2*1.8*1.2	10.8	13	7.2	6.5	8.9	7.6	165
Competitor	0.33	2.2*1.8*1.2	24	31	4.8	4.3	5.8	5.2	150
VCTA20161B-R33MS6		2.2*1.8*1.2	19	23	4.7	4.2	5.9	5.1	165
VCTD20161B-R33MS6 (Under development)		2.2*1.8*1.2	15.2	18	6.1	5.5	7.6	6.5	165
Competitor	0.47	2.2*1.8*1.2	28	39	3.9	4.5	5	4.5	150
HTEH20161T-R47MSR (Consumer)		2.2*1.8*1.0	18	22	5.4	4.8	6	5.5	125
VCTA20161B-R47MS6		2.2*1.8*1.2	21	25	4.5	4.0	5.4	4.8	165
VCTD20161B-R47MS6 (Under development)		2.2*1.8*1.2	18.3	22	5.7	5.1	6	5.4	165

( PFM) 3.8V To 1.1V\_T1

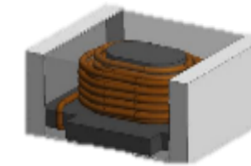


**More Spec Information**  
Power Choke: [Click here](#)

# Ultra Small Size Power Choke for PMIC / Module

## 16081T tiny power choke for next generation SOC

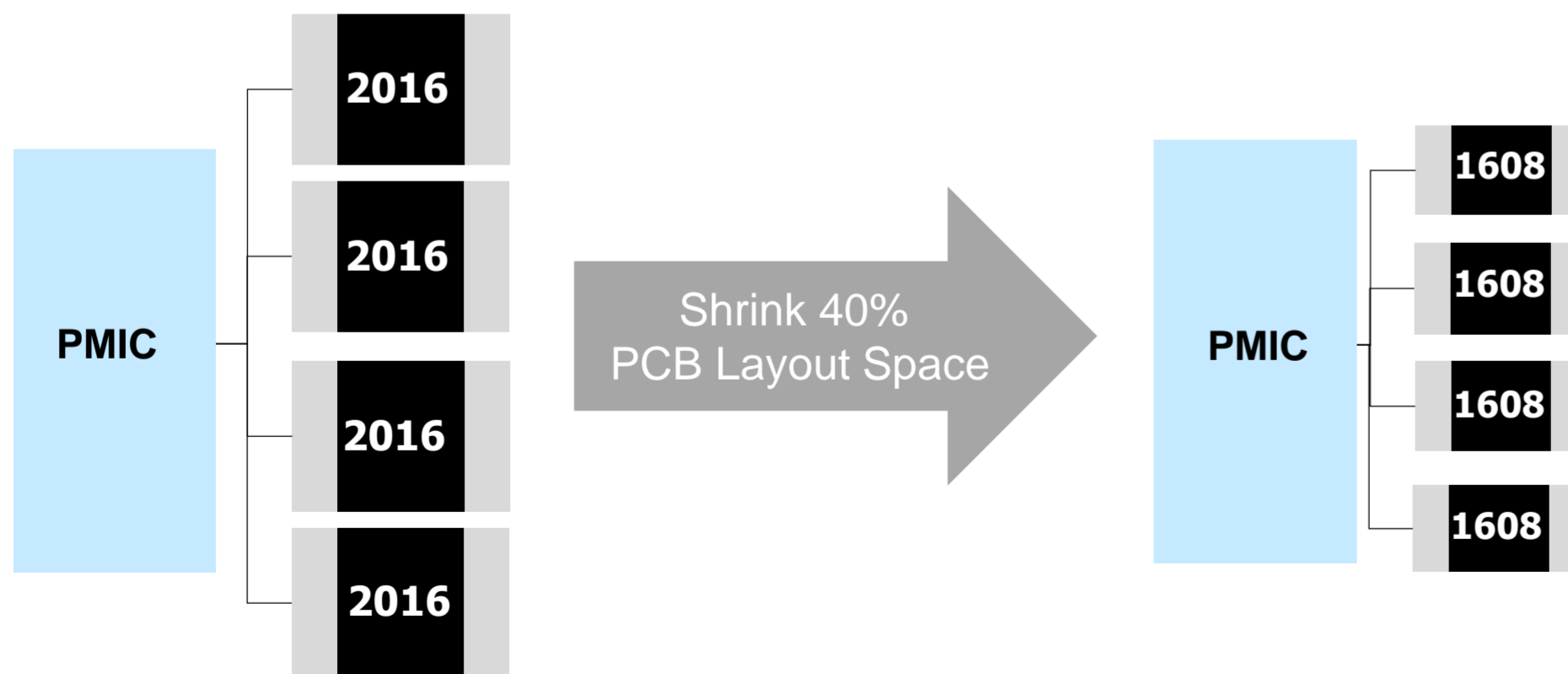
- Develop smaller size choke (1608) for limited layout space
- Cooperate with Key IC: Qualcomm, NXP



VCTB series

**Sample available now!**

PN	Value (uH)	Dimensions (Max.)	DCR (mOhm)		Idc (A)		Isat (A)		Max. Operating Temp (°C)
			Typ.	Max.	Typ.	Max.	Typ.	Max.	
VCTB16081T-R24MS2 (Simulation)	0.24	1.8*1.0*1.0	32.5	39	2.9	2.6	4.7	4.3	125
VCTB16081T-R47MS2	0.47		56	68	2.2	2.0	3.3	3.0	125
VCTB16081T-1R0MS2 (Under development)	1.0		142	170	1.3	1.1	2.0	1.8	125

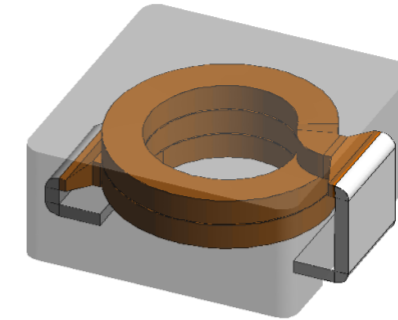


**More Spec Information**  
Power Choke: [Click here](#)

# Low Inductance / High Isat Power Choke for ADAS

## Key Feature

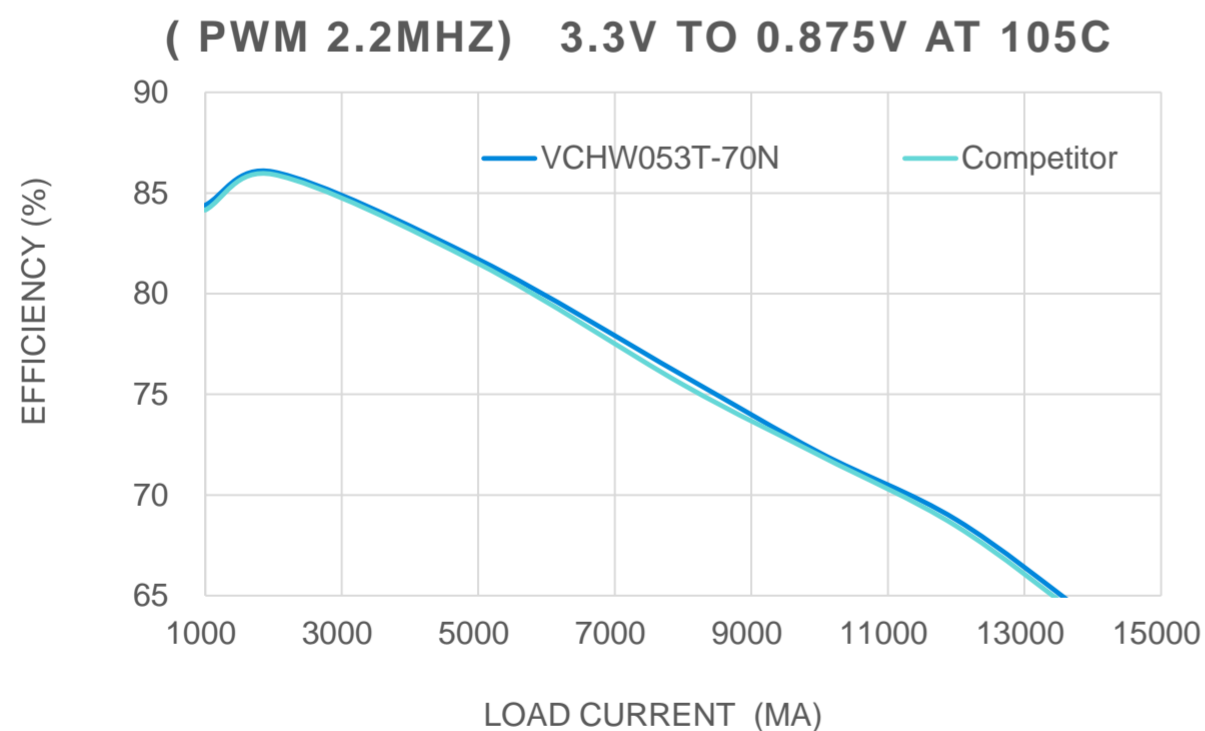
- Low DCR & High Saturation
- Better thermal stability
- Better conversion efficiency for CCM



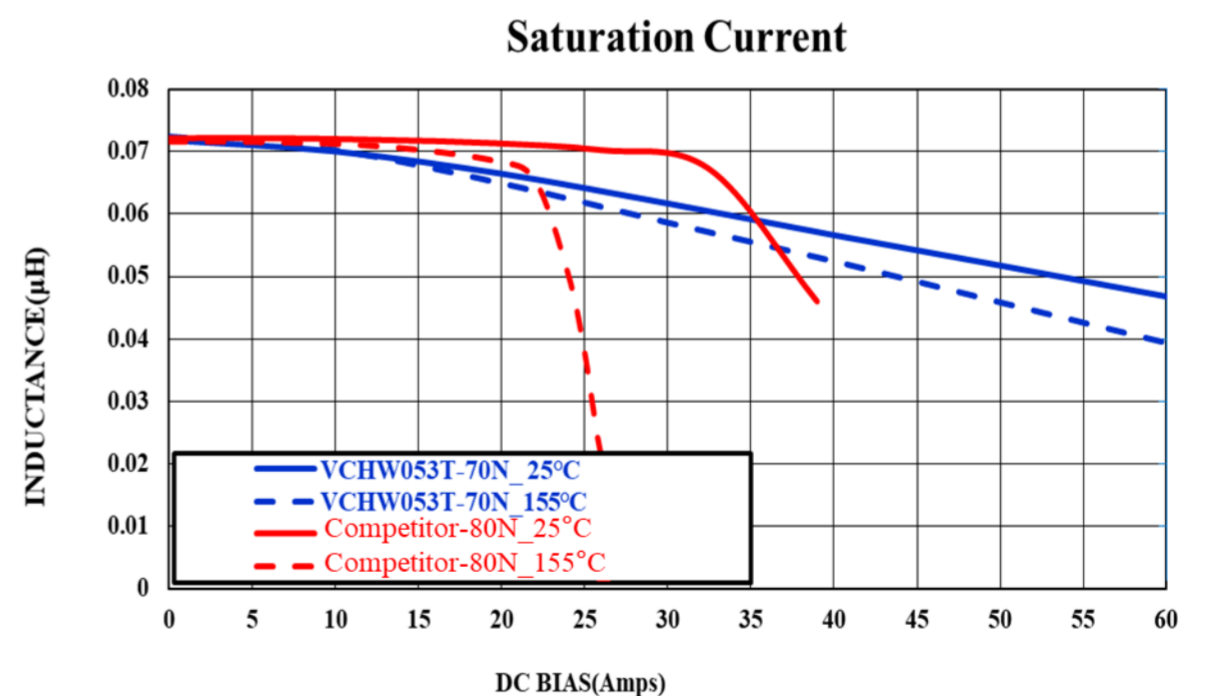
Sample available now!

P/N	Value (nH)	Dimensions (Max.)	DCR (mOhm)		Idc (A)		Isat (A)		Max. Operating Tem (°C)
			Typ.	Max.	Typ.	Max.	Typ.	Max.	
Competitor	80	5.2*5.2*2.8	0.8	0.88	34		36		155
Cyntec VCHW053T-70NMS5	70	5.8*5.45*3.0	0.7	0.77	37	33	50	42	155

## Efficiency test



## Thermal stability



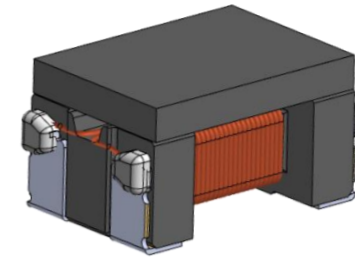
- ✓ Better efficiency at 105°C by 0.4% over 10A.
- ✓ High saturated current for lower ripple and better transient response
- ✓ Better thermal stability

**More Spec Information**  
Power Choke: [Click here](#)

# CAN & Ethernet Common Mode Choke

## Key Feature

- Metal Lead Frame
- High Mechanical Reliability (Vibration, Shock, Temperature Cycle)
- Products for Different Protocols

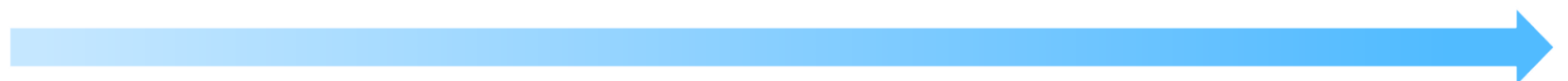


Sample available now!

Standard	IEC62228-3 CiA 110		OPEN Alliance IEEE 802.3 xx		
	Classical CAN	CAN-FD	Ethernet		
Speed	<1Mbits	2Mbtis / 5Mbits	10Base 10Mbits	100Base 100Mbits	1000Base 1Gbits
Products	VFB4532 Series	VFB3225 Series VFC3225 Series VFB4532-101V	VFC3225-131 (under development)	VFE3225-201	VFE3225-800NB

Low Speed

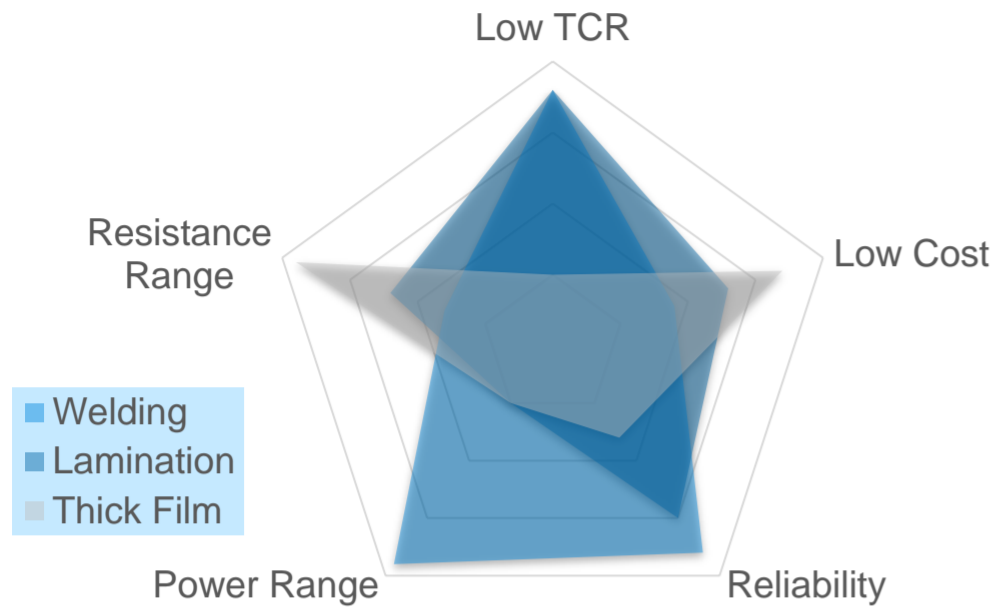
High Speed



## More Spec Information

Common Mode Choke: [Click here](#)

# Current Sensing Resistor



Technology Platform	TCR (ppm/°C)	Cost	Reliability	Resistance Range	Power Range
Thick Film	100-300	👍👍👍	<2%	10mΩ - 1Ω	Up to 3W
Lamination	50-150	👍👍	<1%	1.0mΩ – 0.5Ω	Up to 4W
Welding	50-150	👍👍	<1%	0.1mΩ – 10mΩ	Up to 12W

	Chip Size (mil)	Chip Size (mm)	Operation Temp (°C)	Watt (W)	Tolerance (%)	Resistance Distribution									
						0.1mΩ	1mΩ	10mΩ	100mΩ	1Ω					
<b>Thick Film</b>  High resistance Smaller size	0508	1220	-55~155	0.5	1					20				500	
	0805	2012	-55~155	0.5	1					20				500	
	0612	1632	-55~155	2~1	1					10				1000	
	1206	3216	-55~155	1~0.5	1					10				1000	
<b>Lamination</b>  middle power & middle size	2512	6432	-55~155	2~1	1					10				1000	
	0805	1220	-65~170	1	1					1		10			
	1206	3216	-65~170	2~1	1					1		10			
<b>Welding</b>  low resistance high power	2512	6432	-65~170	3~1	1			0.3				10			
	2512	6432	-65~170	6~4	1			0.3			3				
	3922	10550	-65~170	9~5	1			0.2					4		
	2726	6966	-65~170	12~10	1			0.2	0.5						

**More Spec Information**  
 Current Sensing Resistor: [Click here](#)

# High Integration Power Module

## Space Saving

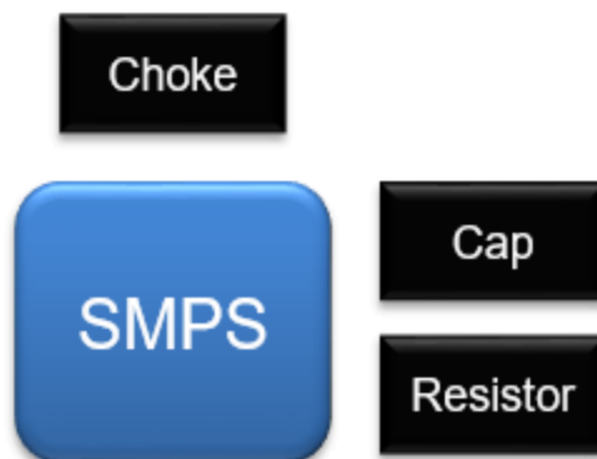
### Linear Regulators



- **Low** efficiency
- **Large** size



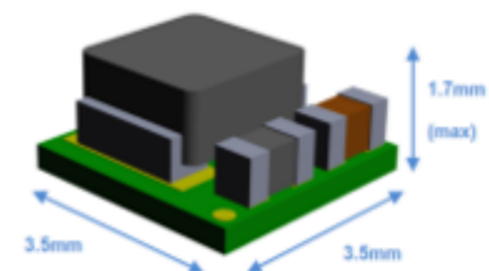
### Switching Regulators



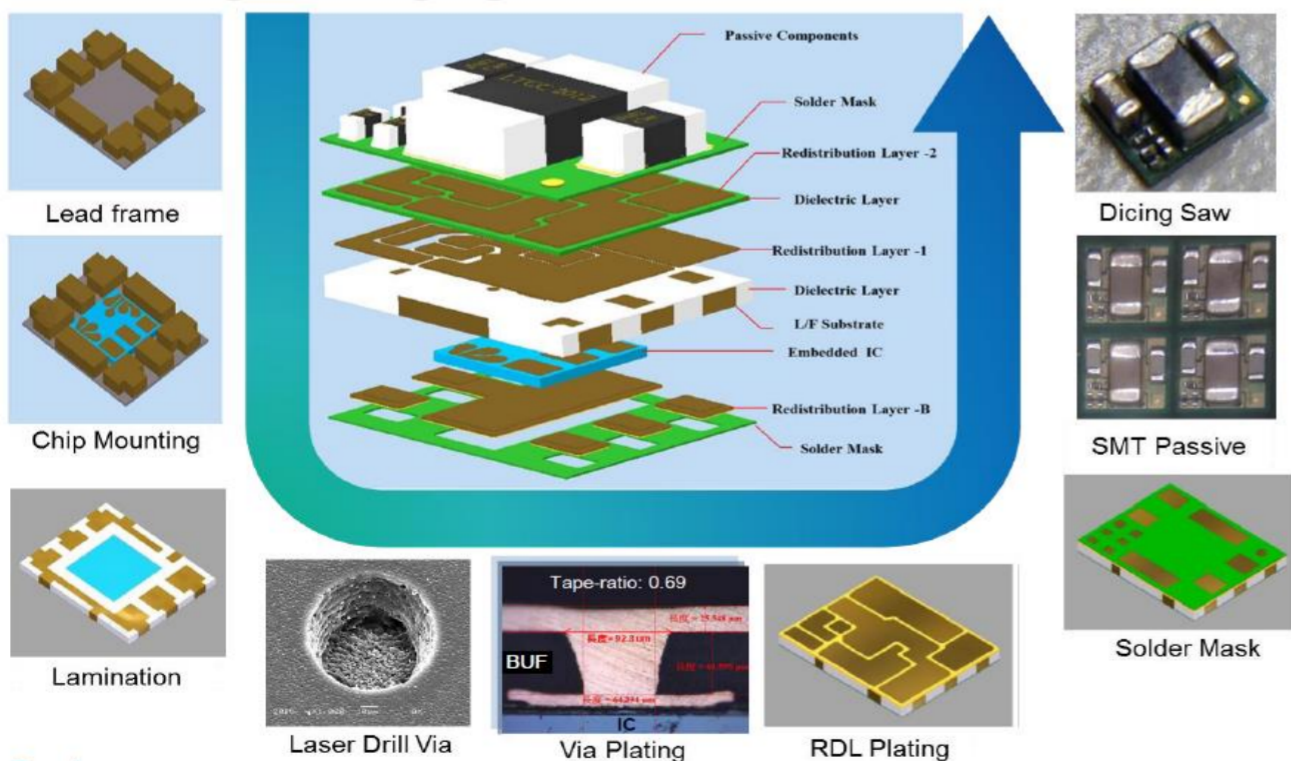
- **High** efficiency
- **More** components
- **More** optimization effort



### POL Power Modules



- **High** efficiency
- **Integrated** passives
- **Optimized** EE and thermal performance



Part Number	VUN12AD01-SH	VUN12AD02-KMH	VUN12AD03-KM
Size (mm)	3.5X3.5X1.7	6.0X6.0X2.6	6.0X6.0X3.5
Freq.	0.42MHz	2.1MHz	0.43MHz
Vin	4.5-28.0V	4.0-36.0V	4.0-36.0V
Vout	3.0-8.5V	0.9-8.0V	0.9-5.0V
Iout	1.0Amp	2.0Amp	3.0Amp

**More Spec Information**  
Power Module: [Click here](#)



# Making Things Smaller and Smarter

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