Clip-bond Flat Power (CFP)
- Package Strategy

Providing a true alternative to previous-generation SMx packages, our Clip-bond Flat Power (CFP) packages meet the challenging demands of efficient and space-saving designs. Ideal for automotive, industrial, consumer, and computing applications.

Why Package Strategy is Important

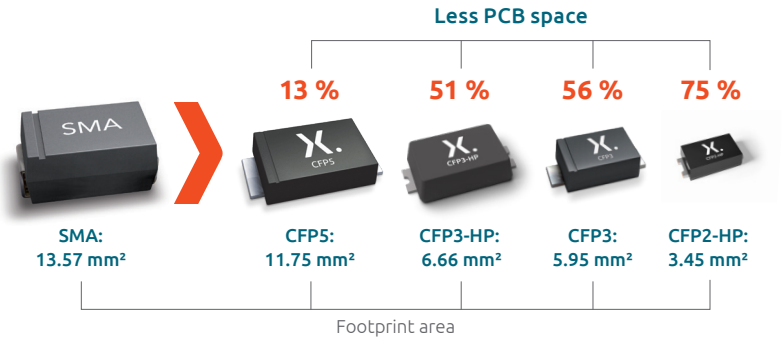
- Global Power Diode Demand is increasing
- Capacity of new CFP packages is increasing to support demand
- Capacity of previous-generation (SMx) packages is not increasing
- Carrying-over SMx designs could lead to future supply issues
- The industry is moving to new CFP packages

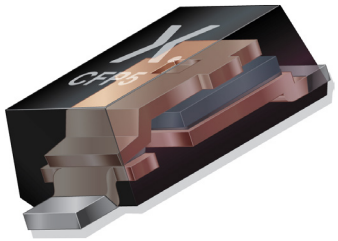
CFP Portfolio

- Available in CFP3, CFP5, CFP15B, CFP2-HP, CFP3-HP
- For Recovery Rectifiers and Planar & Trench Schottkys
- For Rectifiers from 1A - 20A forward current (IF)
- Continuous package & portfolio innovation in CFP
- Secure supply in high volumes

CFP Package Features (vs. SMx):

- Smaller Size and Height, yet more powerful
- Improved Reliability due to the Clip Bond
- High Temperature: 175 C qualified
- AEC-Q101 qualified (2x AEC-Q101 reliability)
- Free from delamination
- Board Level Reliability compliant
- Reduced package resistance for better electrical performance
- Solid copper clip for high power dissipation
- Reduced package inductance - Better switching & Less parasitics
- Lead shapes are optimized for Optical Inspection (AOI)
- CFP can replace previous-generation SMx packaged parts





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EFFICIENCY WINS.

Power Schottky rectifiers - clip-bond packages

Types in **bold** represent new products

					Automotive-qualified					
				Package	CFP15 (SOT1289)	CFP15B (SOT1289B)	CFP5 (SOD128)	CFP3 (SOD123W)	CFP3-HP (SOD123HP)	CFP2-HP (SOD323HP)
										
				Size (mm)	5.8 x 4.3 x 0.78	5.8 x 4.3 x 0.95	3.8 x 2.5 x 1.0	2.6 x 1.7 x 1.0	2.8 x 1.8 x 0.9	2.2 x 1.3 x 0.68
				P_{tot} (mW) @ 1 cm²	2150	2150	1200	1150		1200
I_F max (A)	V_R max (V)	V_F max (mV) @ I_F max	I_R max (mA) @ V_R max	Optimization						
1	20	340	1	Low V_F				PMEG2010ER(-Q)		
		450	0.05	Low I_R				PMEG2010BER(-Q)		
2	20	520	25	low v_F				**PME2020CER(-Q)**		
3	20	580	25	low v_F				**PMEG2030CER(-Q)**		
1	30	360	1.5	Low V_F			PMEG3010EP(-Q)	PMEG3010ER(-Q)		
		450	0.05	Low I_R			PMEG3010BEP(-Q)	PMEG3010BER(-Q)	**PMEG3010EXE(-Q)**	
2	30	520	25	low v_F				**PMEG3020CER(-Q)**	**PMEG3020EXE(-Q)**	
3	30	580	25	low v_F				**PMEG3030CER(-Q)**	**PMEG3030EXE(-Q)**	
1	40	490	0.05	Low V_F			PMEG4010EP(-Q)	PMEG4010ER(-Q)	**PMEG4010EXE(-Q)**	
				Low V_F			PMEG4010ETP(-Q)	PMEG4010ETR(-Q)		
		460	0.022	Low V_F, Low Q_{rr}				PMEG40T10ER(-Q)[1]		
2	40	570	25	low v_F				**PMEG4020CER(-Q)**	**PMEG4020CER(-Q)**	
3	40	630	25	low v_F				**PMEG4030CER(-Q)**	**PMEG4030CER(-Q)**	
1	45	520	0.02	Low V_F, Low Q_{rr}						**PMEG45T10EXD(-Q)[1]**
	60	530	0.06	Low V_F			PMEG6010EP(-Q)	PMEG6010ER(-Q)	**PMEG6010EXE(-Q)**	
				Low V_F				PMEG6010ETR(-Q)		
		590	0.0008	Low I_R, Low Q_{rr}			PMEG60T10ELP(-Q)[1]			
		600	0.00065	Low I_R, Low Q_{rr}				PMEG60T10ELR(-Q)[1]		
		640	0.0004	Low I_R, Low Q_{rr}						**PMEG60T10ELXD(-Q)**
		660	0.0003	Low I_R				PMEG6010ELR(-Q)		
2	60	650	50	low v_F				**PMEG6020CER(-Q)**	**PMEG6020EXE(-Q)**	
3	60	760	5	low v_F				**PMEG6030CER(-Q)**	**PMEG6030EXE(-Q)**	
1	100	750	0.0009	Low I_R, Low Q_{rr}				PMEG100T10ELR(-Q)[1]		
		770	0.00015	Low I_R				PMEG10010ELR(-Q)	**PMEG10010ELXE(-Q)**	
		795	0.0005	Low I_R, Low Q_{rr}						**PMEG100T10ELXD(-Q)**
2	30	360	3	Low V_F			PMEG3020EP(-Q)			
		420	1.5	Low V_F			PMEG3020CEP(-Q)	PMEG3020ER(-Q)		
		450	0.1	Low I_R			PMEG3020BEP(-Q)			
		520	0.05	Low I_R			PMEG3020DEP(-Q)	PMEG3020BER(-Q)		
	40	490	0.1	Low V_F			PMEG4020EP(-Q)	PMEG4020ER(-Q)		
				Low V_F			PMEG4020ETP(-Q)	PMEG4020ETR(-Q)		
		515	0.022	Low V_F, Low Q_{rr}			PMEG40T20EP(-Q)[1]	PMEG40T20ER(-Q)[1]		
	45	560	0.025	Low V_F, Low Q_{rr}						**PMEG45T20EXD(-Q)[1]**
	60	530	0.2	Low V_F			PMEG6020EP(-Q)	PMEG6020ER(-Q)		
				Low V_F			PMEG6020ETP(-Q)	PMEG6020ETR(-Q)		
		620	0.0012	Low I_R, Low Q_{rr}			PMEG60T20ELP(-Q)[1]	PMEG60T20ELR(-Q)[1]		
		670	0.0007	Low I_R			PMEG6020AELP(-Q)	PMEG6020AELR(-Q)		
		700	0.00047	Low I_R, Low Q_{rr}						**PMEG60T20ELXD(-Q)**
		760	0.0003	Low I_R				PMEG6020ELR(-Q)		
	100	800	0.00125	Low I_R, Low Q_{rr}			**PMEG100T20ELP(-Q)[1]**	PMEG100T20ELR(-Q)[1]		
		770	0.0003	Low I_R			PMEG10020AELP(-Q)	PMEG10020AELR(-Q)		
		830	0.00015	Low I_R				PMEG10020ELR(-Q)	PMEG10020ELXE(-Q)	
		880	0.0006	Low I_R, Low Q_{rr}						**PMEG100T20ELXD(-Q)**
3	30	360	5	Low V_F			PMEG3030EP(-Q)			
		450	0.15	Low I_R		**PMEG030V030EPE(-Q)**	PMEG3030BEP(-Q)			
	40	490	0.12	Low V_F		**PMEG040V030EPE(-Q)**				
			0.2	Low V_F			PMEG4030EP(-Q)			
				Low V_F			PMEG4030ETP(-Q)			
		525	0.028	Low V_F, Low Q_{rr}			PMEG40T30EP(-Q)[1]	PMEG40T30ER(-Q)[1]		
		540	0.1	Low I_R				PMEG4030ER(-Q)		
				Low I_R				**PMEG4030ETR(-Q)**		
	45	480	0.044	Low V_F, Low Q_{rr}	PMEG045T030EPD[1]					
	50	530	0.1	Low V_F		**PMEG050V030EPE(-Q)**				
	60	475	0.4	Low V_F			PMEG6030EVP(-Q)			
		530	0.2	Low V_F		**PMEG060V030EPE(-Q)**	PMEG6030EP(-Q)			
				Low V_F			PMEG6030ETP(-Q)			
		620	0.0018			PMEG060T030ELPE(-Q)[1]	PMEG60T30ELP(-Q)[1]	PMEG60T30ELR(-Q)[1]		
		670	0.001	Low I_R			PMEG6030ELP(-Q)			
	100	800	0.00175	Low I_R, Low Q_{rr}			**PMEG100T30ELP(-Q)[1]**	PMEG100T30ELR(-Q)[1]		
		770	0.00045	Low I_R			PMEG10030ELP(-Q)			
		710	0.0025	Low I_R, Low Q_{rr}		PMEG100T030ELPE(-Q)[1]				
2x2	60	620	0.0012	Low I_R, Low Q_{rr}		PMEG060T040CLPE(-Q)[1]				
4.5	60	530	0.4	Low V_F			PMEG6045ETP(-Q)			
5	30	360	8	Low V_F			PMEG3050EP(-Q)			
		450	0.25	Low I_R			PMEG3050BEP(-Q)			
		500	0.15	Low V_F		**PMEG030V050EPE(-Q)**				
	40	490	0.3	Low V_F			PMEG4050EP(-Q)			
			0.3	Low V_F			PMEG4050ETP(-Q)			
		520	0.12	Low V_F		**PMEG040V050EPE(-Q)**				
		525	0.041	Low V_F, Low Q_{rr}			PMEG40T50EP(-Q)1)			
	45	490	0.3	Low V_F		**PMEG045V050EPE(-Q)**				
		525	0.044	Low V_F, Low Q_{rr}	PMEG045T050EPD[1]					
	60	560	0.4	Low V_F		**PMEG060V050EPE(-Q)**				
		690	0.0018	Low I_R, Low Q_{rr}		PMEG060T050ELPE(-Q)[1]	PMEG60T50ELP(-Q)[1]			
		895	0.00175	Low I_R, Low Q_{rr}			**PMEG100T50ELP(-Q)[1]**			
	100	810	0.0025	Low I_R, Low Q_{rr}		PMEG100T050ELPE(-Q)[1]				

[1] Trench Schottky technology

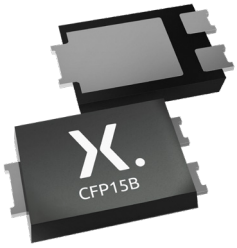
Four packages for the right space / performance ratio

CFP2-HP (SOD323HP)
2.2 x 1.3 x 0.68 mm*
$R_{th(j-sp)}$ = 6 K/W

CFP3-HP (SOD123HP)
2.8 x 1.8 x 0.9 mm*
$R_{th(j-sp)}$ = 6 K/W

CFP3 (SOD123W)
2.6 x 1.7 x 1.0 mm*
$R_{th(j-sp)}$ = 18 K/W

CFP5 (SOD128)
3.8 x 2.5 x 1.0 mm*
$R_{th(j-sp)}$ = 12 K/W

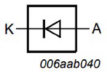
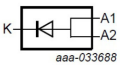
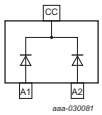
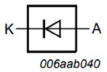


CFP15B (SOT1289B)
5.8 x 4.3 x 0.78 mm*
$R_{th(j-sp)}$ = 3 K/W

*Body size (l x w x h)

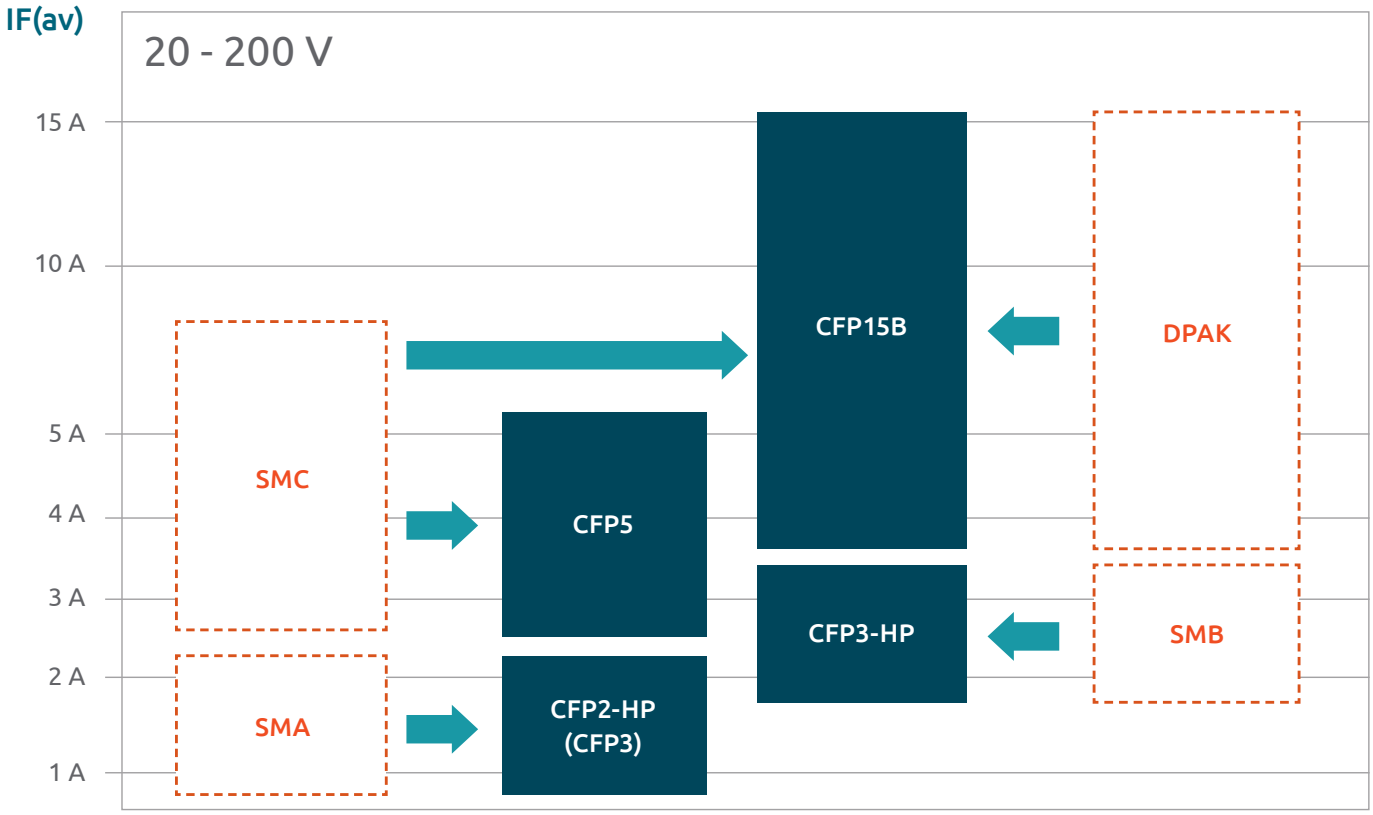
Recovery rectifiers

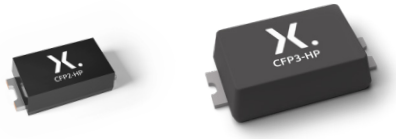
Types in **bold** represent new products

								Automotive-qualified		
V_R max (V)	V_F max (V)	(@) I_F (A)	I_R max (µA)	(@) V_R (V)	trr max (ns)	Package	CFP2-HP (SOD323HP)	CFP3 (SOD123W)	CFP5 (SOD128)	CFP15B (SOT1289B)
										
						Size (mm)	2.2 x 1.3 x 0.68	2.6 x 1.7 x 1.0	3.8 x 2.5 x 1.0	5.8 x 4.3 x 0.95
						P_{tot} (mW) @ 1cm²	1200	1150	1200	2150
200	1.02	1	0.075	200	25		PNE20010EXD (-Q)			
	0.93	1	0.2	200	25			PNE20010ER **(-Q)**		
	0.98	2	0.2	200	25			PNE20020ER **(-Q)**		
	0.95	2	1	200	25				PNE20020EP **(-Q)**	
	0.98	3	1	200	30				PNE20030EP **(-Q)**	
	0.93	4	1	200	30				PNE20040EP (-Q)	
	0.95	5	1	200	30				PNE20050EP (-Q)	
	0.93	4	1	200	30					PNE20040EPE (-Q)
	0.94	6	1	200	30					PNE20060EPE (-Q)
	0.95	8	1	200	30					PNE20080EPE (-Q)
	0.96	10	1	200	30					PNE200100EPE (-Q)
	0.98	2x2	1	200	25					PNE20040CPE (-Q)
	0.94	2x3	1	200	30					PNE20060CPE (-Q)
	0.93	2x4	1	200	30					PNE20080CPE (-Q)
	0.95	2x5	1	200	30					PNE200100CPE (-Q)
400	1.1	1	1	400	1800			PNS40010ER		
650	1.2	1	1	650	65			**PNU65010ER (-Q)**		
	1.2	1	1	650	65				**PNU65010EP (-Q)**	
	1.2	2	1	650	65				**PNU65020EP (-Q)**	
	1.2	3	1	650	70				**PNU65030EP (-Q)**	

Power Package Recommendations | Silicon Rectifiers

Recommended package replacements





CFP2-HP and CFP3-HP
Clip-bonded packages featuring an exposed heatsink for improved thermal connection to the PCB.

CFP15B
Improved version of CFP15 featuring lead ends which are optimized for AOI.

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