



NXP low VF (MEGA)
Schottky rectifiers
in SOD123W and
SOD128

FlatPower Schottky rectifiers: Small on size. Big on power.

NXP's new FlatPower packages with clip-bond technology meet the demand for thinner products with high power capabilities. Today a range of 40 medium power Schottky rectifiers are housed in new SOD123W and SOD128. They offer high power ratings similar to standard SMA/SMB packages but occupy only half of the PCB area.

KEY FEATURES

- ▶ Very low forward voltage drop V_F
- ▶ High forward current capability I_F
- ▶ High power capability P_{tot} due to new clip-bonding technology and optimized die design
- ▶ High junction temperature up to 175 °C

KEY BENEFITS

- ▶ Highest values for power capability
- ▶ Highly energy efficient
- ▶ Very small dimensions / low profile for economical use of space
- ▶ Pad layout compatible with SMA/SMB for easy drop-in replacement
- ▶ AEC-Q101 qualified

BODY DIMENSIONS

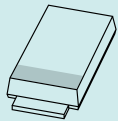
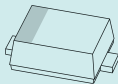
- ▶ SOD123W : 2.6 x 1.7 x 1.0 mm
- ▶ SOD128 : 3.8 x 2.5 x 1.0 mm

KEY APPLICATIONS

- ▶ Power management circuits, especially DC/DC converters
- ▶ Step-down and asynchronous converters
- ▶ Free-wheeling diodes for inductive loads in motors and relays
- ▶ Low power adapter → up to 7.5 W output power
- ▶ Automotive applications → ABS, Airbag, engine control
- ▶ LED Lighting
- ▶ Polarity protection



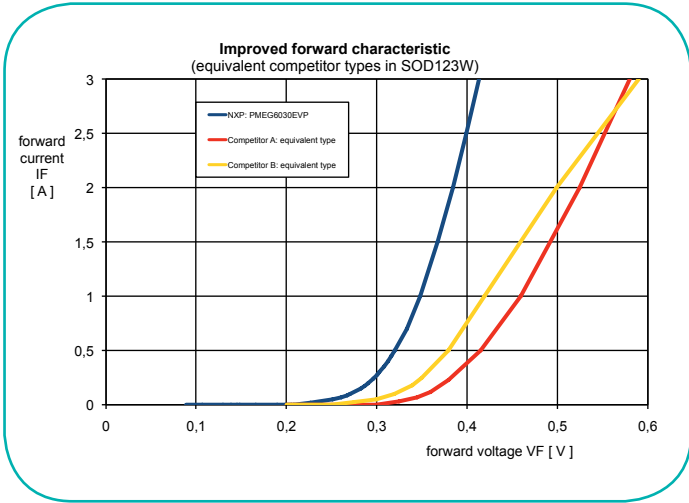
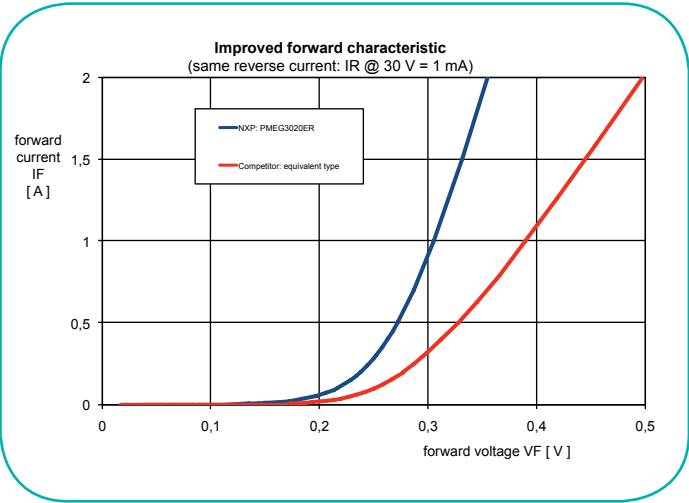
Medium power low V_F (MEGA) Schottky rectifiers, single

I _F max (A)	V _F max (V)	V _F max (mV) @ I _F max	I _R max (mA) @ V _R max	Package	SOD128	SOD123W
						
				Size (mm)	3.8 x 2.5 x 1.0	2.6 x 1.7 x 1.0
				P _{tot} (mW)	1050	950
				Optimization		
1.0	20	340	1	low V _F		PMEG2010ER
		450	0.05	low I _R		PMEG2010BER
	30	360	1.5	low V _F	PMEG3010EP	PMEG3010ER
		450	0.05	low I _R	PMEG3010BEP	PMEG3010BER
	40	490	0.05	low V _F	PMEG4010EP/PMEG4010ETP*	PMEG4010ER/PMEG4010ETR*
2.0	30	530	0.06	low V _F	PMEG6010EP	PMEG6010ER/PMEG6010ETR*
		360	3.0	low V _F	PMEG3020EP	
		420	1.5	low V _F	PMEG3020CEP	PMEG3020ER
		450	0.1	low I _R	PMEG3020BEP	
	40	520	0.05	low I _R	PMEG3020DEP	PMEG3020BER
		490	0.1	low V _F	PMEG4020EP/PMEG4020ETP*	PMEG4020ER/PMEG4020ETR*
3.0	60	530	0.15	low V _F	PMEG6020EP	PMEG6020ER
		360	5.0	low V _F	PMEG3030EP	
	40	450	0.15	low I _R	PMEG3030BEP	
		490	0.2	low V _F	PMEG4030EP/PMEG4030ETP*	
		540	0.1	low I _R		PMEG4030ER
4.5	60	530	0.2	low V _F	PMEG6030EP/PMEG6030ETP*	
		530	4.0	low V _F	PMEG6045ETP*	
5.0	30	360	8.0	low V _F	PMEG3050EP	
		450	0.25	low I _R	PMEG3050BEP	
	40	490	0.3	low V _F	PMEG4050/PMEG4050ETP*	

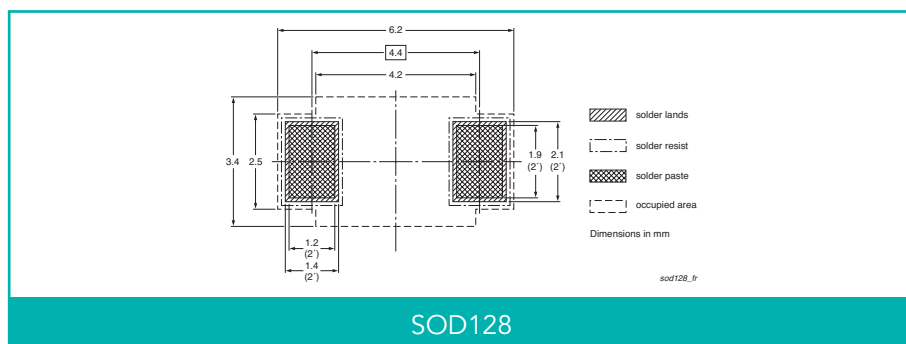
* Maximum junction temperature up to 175 °C

Improved forward characteristics of low V_F (MEGA) Schottky rectifiers

NXP low V_F Maximum Efficiency General Applications (MEGA) Schottky rectifiers in new FlatPower SOD123W compared to wire-bonded package.



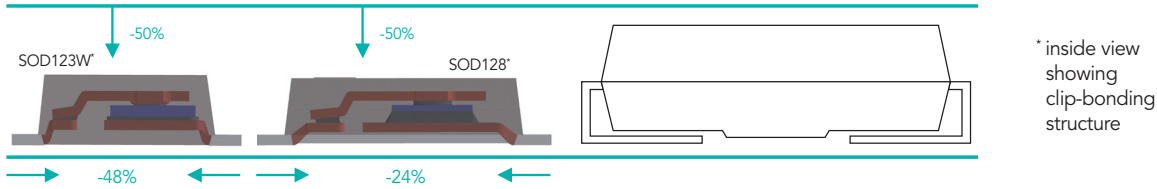
Minimized outline and reflow soldering footprint



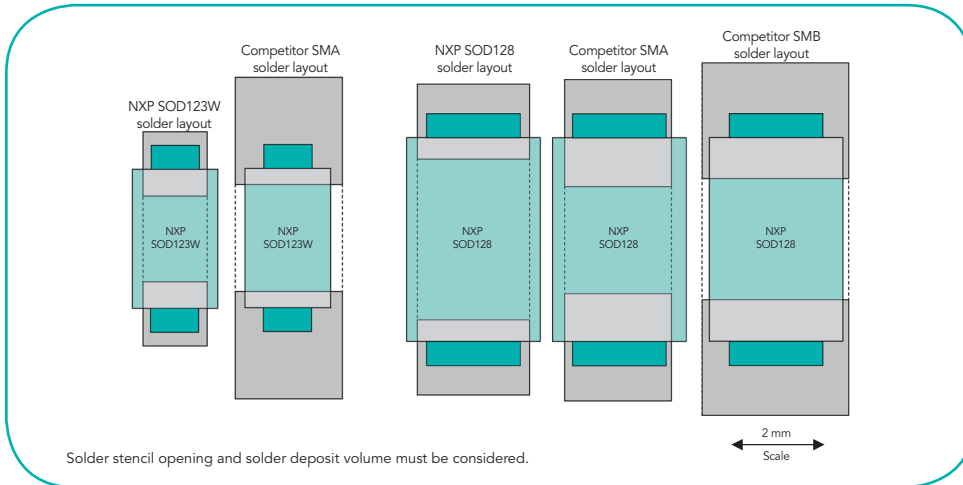
→ NXP advantage: broad forward current range combined with low V_F

FlatPower versus SMA/SMB packages: easy drop-in replacements

Typical deviation from SMA/SMB



Footprint comparison: NXP SOD123W/128 on recommended solder pad



Market comparison

NXP low V_F (MEGA) Schottky rectifier in SOD123W/128 compared with rectifiers in SMA/SMB packages

Supplier	Type range in SOD123W/128/SMA package	I_F max (A)	V_R max (V)	Body dimensions (mm)
NXP	PMEGxER/BER	1, 2, 3	20, 30, 40, 60	2.6 x 1.7 x 1.0
NXP	PMEGxEP/BEP	1, 2, 3, 5	30, 40, 60	3.8 x 2.5 x 1.0
Diodes Inc.	B1x / B2x0A / B3xA	1, 2, 3	20, 30, 40, 60	4.3 x 2.6 x 2.15
MCC	SSx-LT / SK3xA-LT			4.3 x 2.58 x 2.22
ON Semi	MBRA1x / SS16 / BRAx			4.32 x 2.6 x 2.17
ROHM	RSXx / RBx			4.5 x 2.6 x 2.0
Vishay	Bx(L)A / SS(A)x	1, 3	30, 40, 60	4.25 x 2.6 x 2.1
Diotec	SK1x / SK3xSMA			4.6 x 2.7 x 2.1
Fairchild	SS1x / FMKAx	1	30, 40, 60	4.38 x 2.73 x 2.05
KEC	SMAB3x	3	30, 40, 60	4.5 x 2.6 x 2.0

Supplier	Type range in SOD128/SMB package	I_F max (A)	V_R max (V)	Body dimensions (mm)
NXP	PMEGxEP/BEP	1, 2, 3, 5	30, 40, 60	3.8 x 2.5 x 1.0
Diodes Inc.	B340LB	3	40	4.32 x 3.62 x 2.31
ON Semi	MBRSx/SS26	1, 2	30, 40, 60	4.32 x 3.56 x 2.13
Vishay	SL23/SS2x/B3x(L)B	2, 3	30, 40, 60	4.32 x 3.62 x 2.29
Fairchild	SSx/MBRS140	1, 2	30, 40, 60	4.4 x 3.63 x 2.18

→ NXP advantage: Smallest package with same electrical characteristics compared to SMA and SMB products.