



DID YOU KNOW?

ESD PROTECTION DIODES WITH CHIP LEVEL PACKAGE (CLP) TECHNOLOGY SAVE SPACE

Vishay now offers ESD protection diodes in the ultra compact CLP0603 and CLP1007 packages. The single-line and 4-line ESD protection diodes offer a working range of ± 3.3 V to ± 10 V and low leakage current of < 0.1 μ A. The devices are ideal for ESD protection of high speed interfaces in smartphones, digital cameras, and gaming systems.

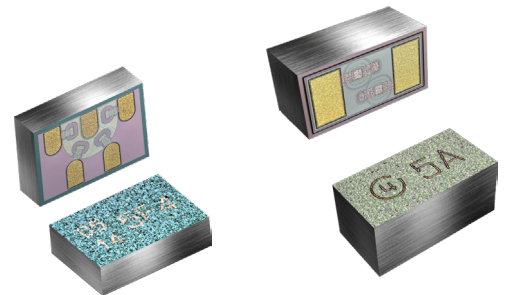
CLP Technology

CLPs are devices without an exterior package; the bare silicon chip itself is the finished device that can be mounted on the PCB. CLP technology is offered in bare die, flip chip, and silicon package formats. When choosing CLP silicon packages (i.e. CLP0603 and CLP1007), no special equipment is needed for soldering to the PCB, as these devices have all their terminations on one side of the chip and can be soldered in the same way as normal SMD packages of a similar size.

Benefits of CLP Technology

Compared to normal SMD plastic package technology, CLP technology offers:

- Smaller footprint (lower than 1 mm x 0.6 mm)
- Low profile
- Lower cost
- Standard solder process



ESD Protection Diodes in CLP Series

Vishay’s single-line and 4-line ESD protection devices clamp positive and negative overvoltage transients to ground. Connected between the signal or data line and the ground, these devices offer high isolation (low leakage current, low capacitance) within the specified working range. Due to the short leads and the small size of the ultra compact CLP series packages, the line inductance is so low that fast transients like an ESD strike can be clamped with minimal over- or undershoots. The ultra compact CLP series packages utilize up to 70 % less board space than previous-generation solutions without sacrificing performance.

Part Number	V_{RWM} (V)		I_R (μ A)	C_D (pF)	Contact Discharge (kV) ⁽¹⁾	Air Discharge (kV) ⁽¹⁾	Package
	Unidirectional	Bidirectional					
VBUS03B1-SD0	-	± 3.3	< 0.05	0.29 typ.	± 16	± 16	CLP0603
VBUS05B1-SD0	-	± 5.5	< 0.05	0.29 typ.	± 16	± 16	CLP0603
VBUS54FD-SD1	-	± 5.5	< 0.1	0.9 typ.	± 15	± 15	CLP1007
VCUT03E1-SD0	-	± 3.3	< 0.1	< 14	± 30	± 30	CLP0603
VCUT05E1-SD0	5.5	-	< 0.1	< 14	± 30	± 30	CLP0603
VCUT10A1-SD0	-	± 10	< 0.1	< 9	± 24	± 24	CLP0603

Note

⁽¹⁾ According to IEC 61000-4-2

For more information on ESD protection diodes in CLP series, please visit:

- Product Sheet “[ESD Protection Diodes in CLP Series](#)”
- Infograph “[ESD Protection Diodes in Ultra Compact Chip Level Package \(CLP\)](#)”

For more information on CLP technology, please visit:

- Application Note “[Soldering Recommendations for Chip Level Package \(CLP\)](#)”
- Technical Note “[CLP Package Technology](#)”