ESDA14V2-2BF3

ASD (Application Specific Devices)
Dual bidirectional TRANSIL™ array for ESD protection

Application

Where transient overvoltage protection in ESD sensitive equipment is required, such as :

- Computers
- Printers
- Communication systems and cellular phones
- Video equipment

This device is particularly adapted to the protection of symmetrical signals.

Description

The ESDA14V2-2BF3 is a monolithic array designed to protect 2 lines against ESD transients.

The device is ideal for applications where both reduced line capacitance and board space saving are required.

Features

- 2 Bidirectional Transil functions
- ESD Protection: IEC61000-4-2 level 4
- Stand off voltage: 12 V Min.
- Low leakage current
- Very small PCB area < 1.5 mm^2
- 400 microns pitch

Complies with the following standards:

IEC61000-4-2

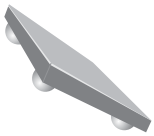
15 kV (air discharge)

8 kV (contact discharge)

MIL STD 883E- Method 3015-7: class3

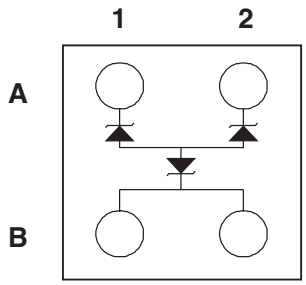
25 kV (human body model)

TM: TRANSIL is a trademark of STMicroelectronics

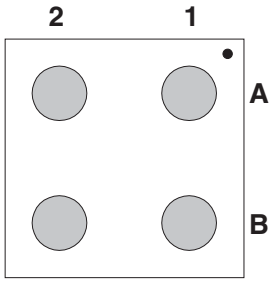


Flip-Chip
(4 bumps)

Configuration



Pin layout (bump side)



Order Code

Part number	Marking
ESDA14V2-2BF3	EG

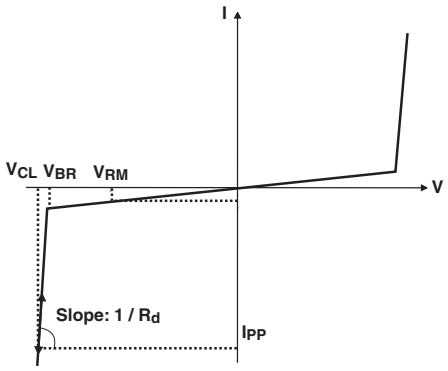
1 Characteristics

1.1 Absolute maximum ratings (T_{amb} = 25 °C)

Symbol	Parameter		Value	Unit
V_{PP}	ESD discharge	MIL STD 883E - Method 3015-7 IEC61000-4-2 air discharge IEC61000-4-2 contact discharge	± 25 ± 15 ± 8	kV
P_{PP}	Peak pulse power (8/20µs)		50	W
T_j	Junction temperature		125	°C
T_{stg}	Storage temperature range		-55 to +150	°C
T_L	Lead solder temperature (10 seconds duration)		260	°C
T_{op}	Operating temperature range		-40 to +125	°C

1.2 Electrical characteristics (T_{amb} = 25 °C)

Symbol	Parameter
V_{BR}	Breakdown voltage
I_{RM}	Leakage current @ V_{RM}
V_{RM}	Stand-off voltage
V_{CL}	Clamping voltage
R_d	Dynamic impedance
I_{PP}	Peak pulse current
αT	Voltage temperature coefficient
C	Capacitance



Part Number	V_{BR} @ I_R			I_{RM} @ V_{RM}		R_d	αT	C
	min.	max.		max.		typ.(1)	max.(2)	typ. 0V bias
	V	V	mA	µA	V	Ω	10^{-4}/°C	pF
ESDA14V2-2BF3	14.2	18	1	0.5	12	3.2	6.5	12
				0.1	3			

1. Square pulse, I_{PP} = 3A, tp = 2.5µs.
2. $\Delta V_{BR} = \alpha T$ (Tamb -25°C) x V_{BR} (25°C)

Figure 1. Relative variation of peak pulse power versus intial junction temperature

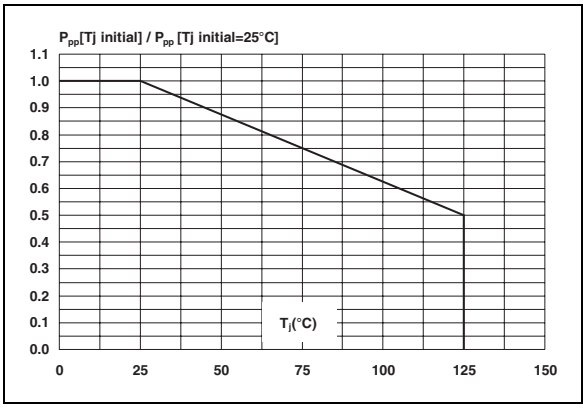


Figure 2. Peak pulse power versus exponential pulse duration

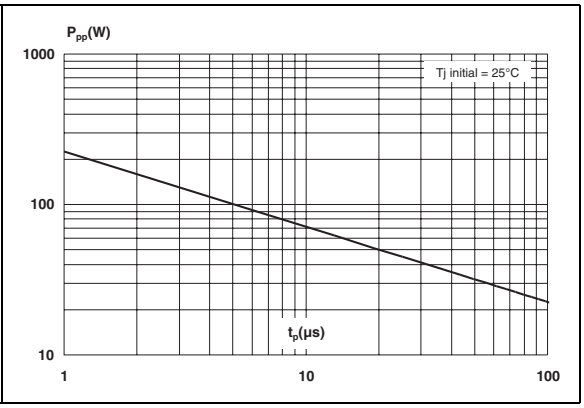


Figure 3. Clamping voltage versus peak pulse current (typical values, rectangular waveform)

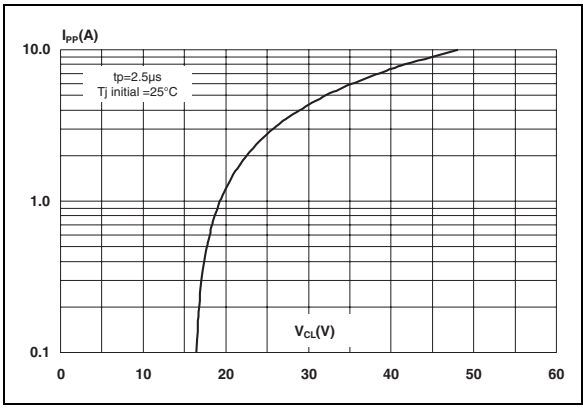


Figure 4. Junction capacitance versus reverse applied voltage (typical values)

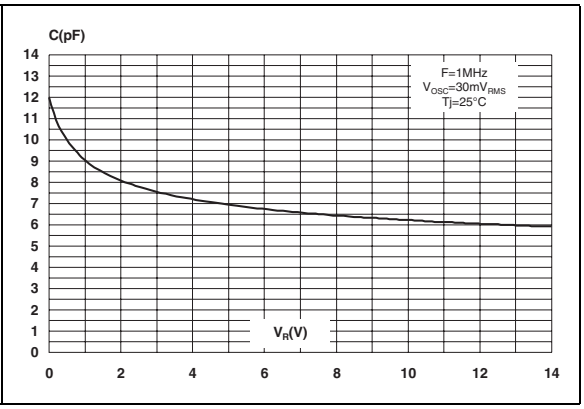


Figure 5. Relative variation of leakage current versus junction temperature (typical values)

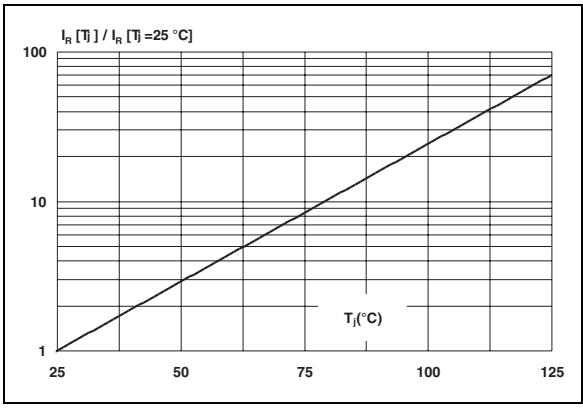


Figure 6. Analog crosstalk measurements

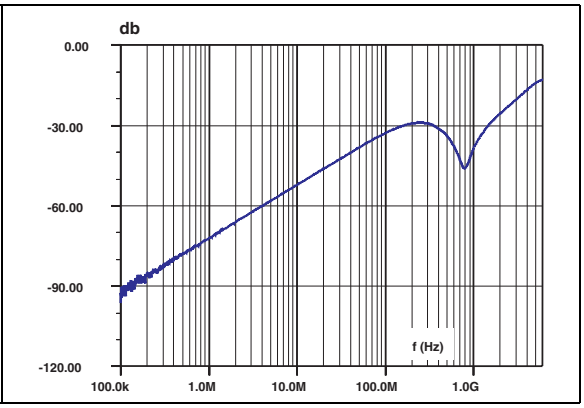


Figure 7. ESD response to IEC61000-4-2 (+15 kV air discharge)

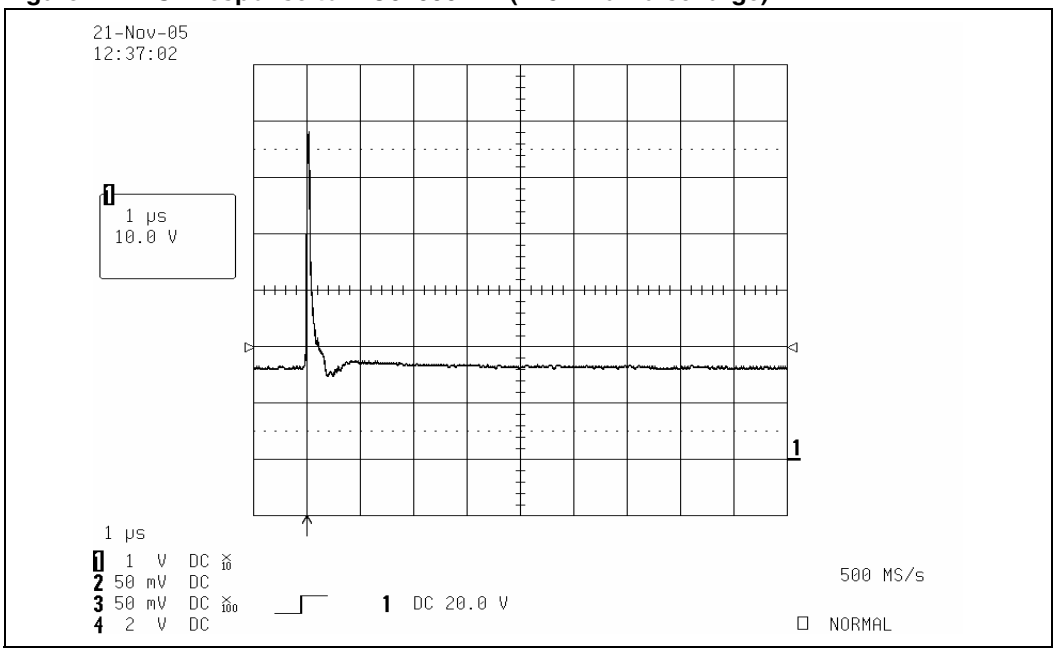


Figure 8. ESD response to IEC61000-4-2 (-15 kV air discharge)

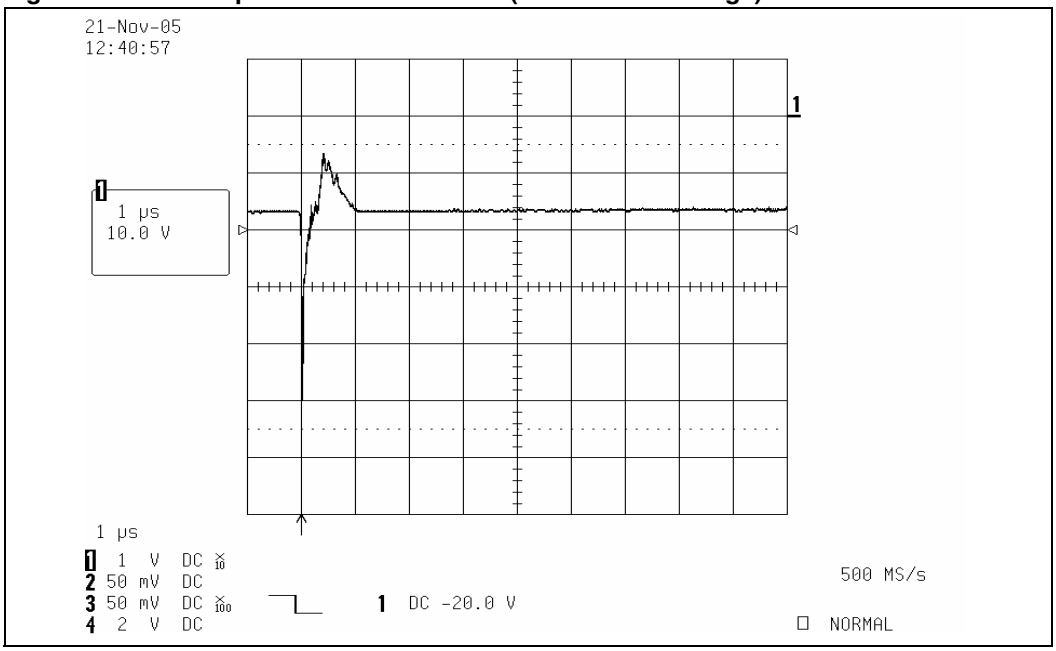


Figure 9. Digital crosstalk measurements

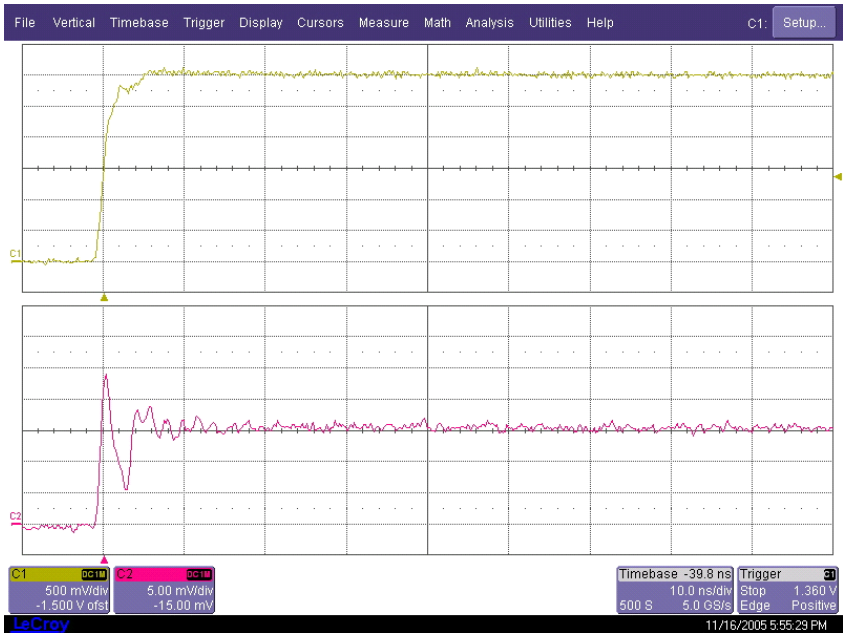
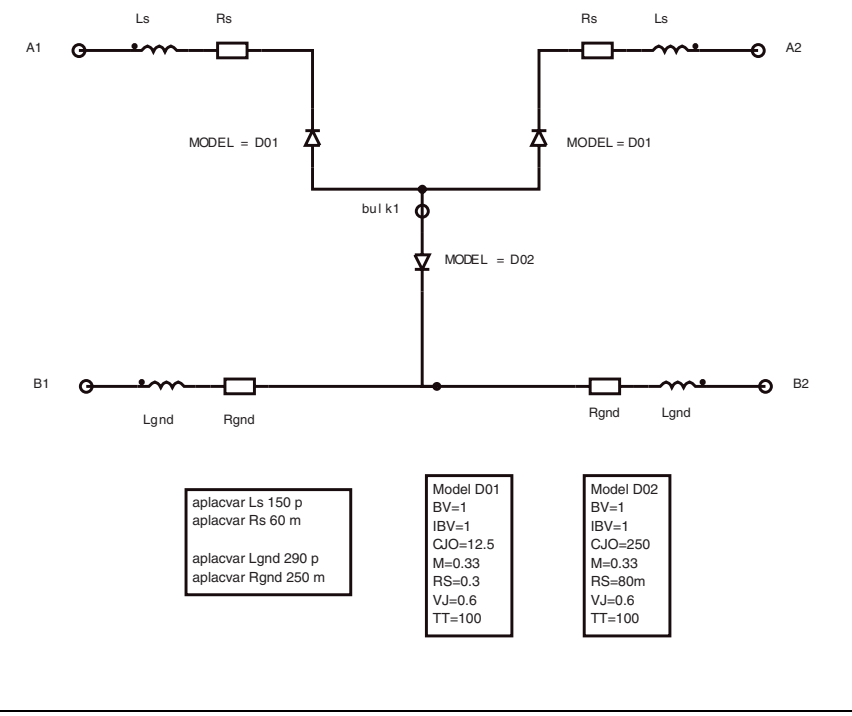
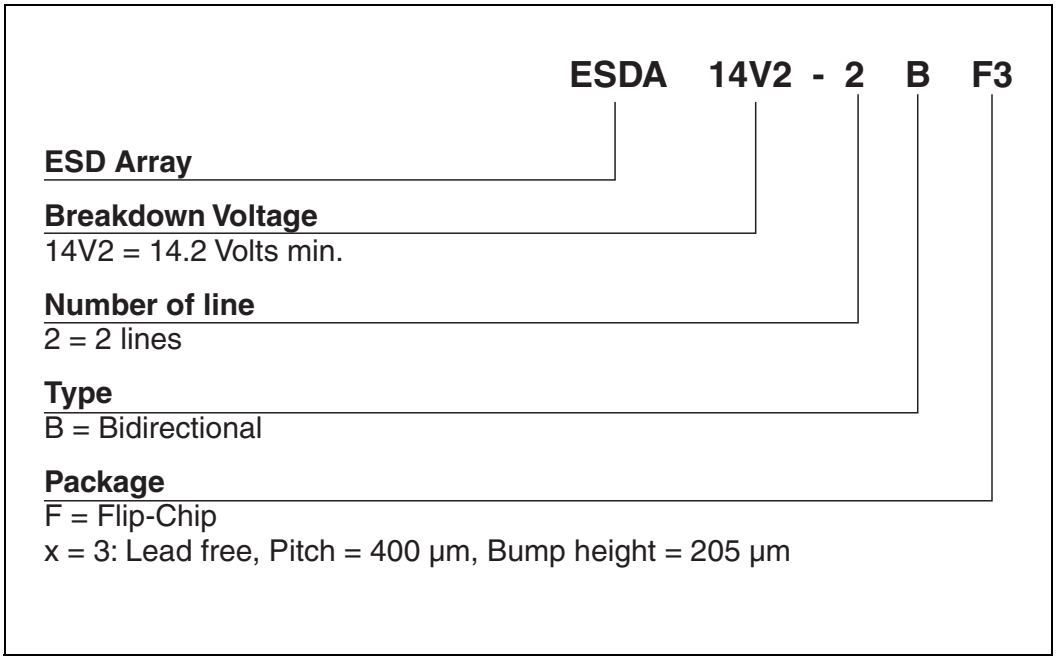


Figure 10. Aplac model



2 Ordering information scheme



3 Package information

Figure 11. Mechanical data

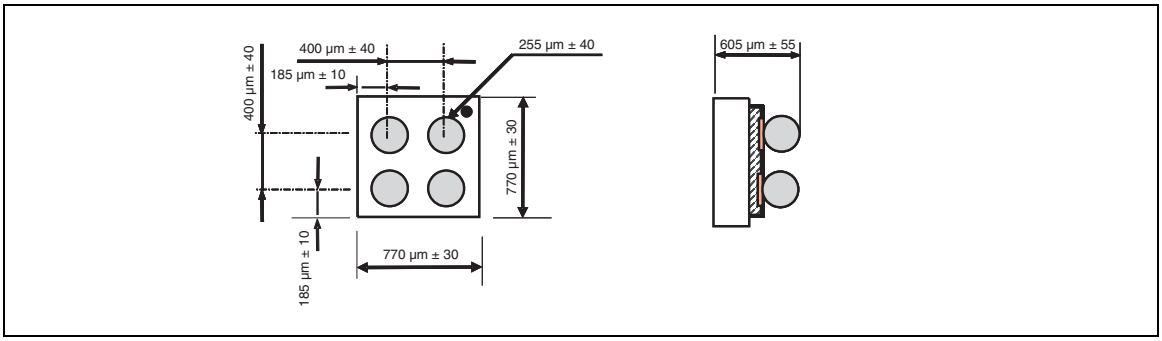


Figure 12. Footprint recommendations

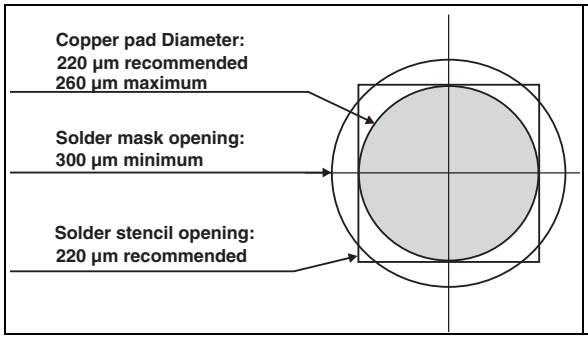


Figure 13. Marking

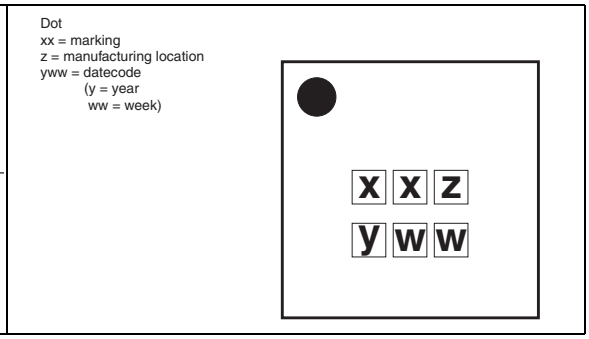
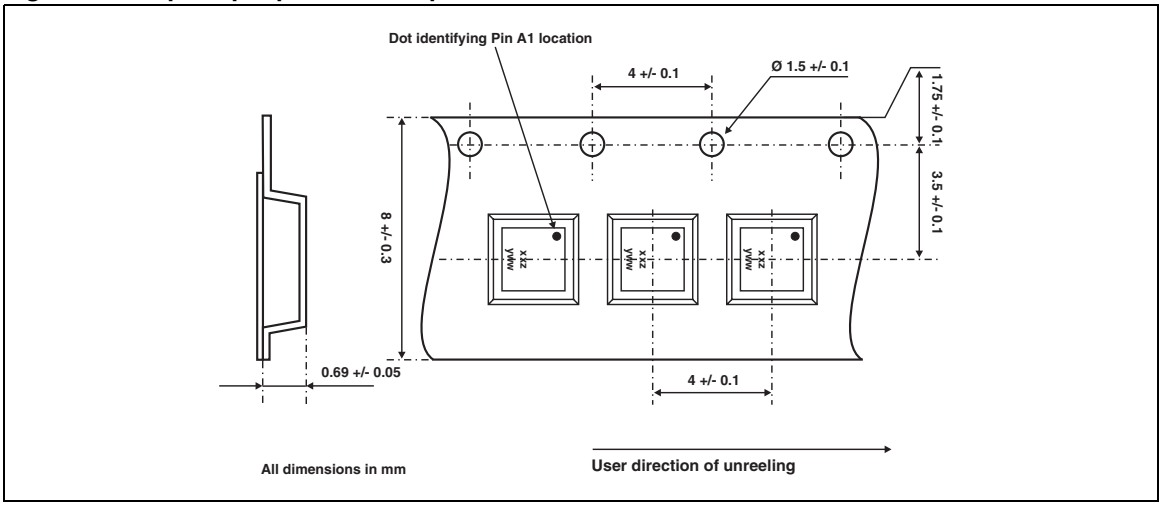


Figure 14. Flip-Chip tape and reel specifications



Note: more information is available in the application notes:
AN1235: "Flip Chip: Package description and recommendations for use"
AN1751: "EMI Filters: Recommebdations and measurements"

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

4 Ordering information

Part number	Marking	Package	Weight	Base qty	Delivery mode
ESDA14V2-2BF3	EG	Flip-Chip	0.79 mg	5000	Tape and reel 7”

5 Revision history

Date	Revision	Changes
02-Dec-2005	1	Initial release.
15-Dec-2005	2	Ordering information changed.