



Facoltà d' Ingegneria
Dipartimento di Elettronica e Telecomunicazioni
Corso di Microelettronica

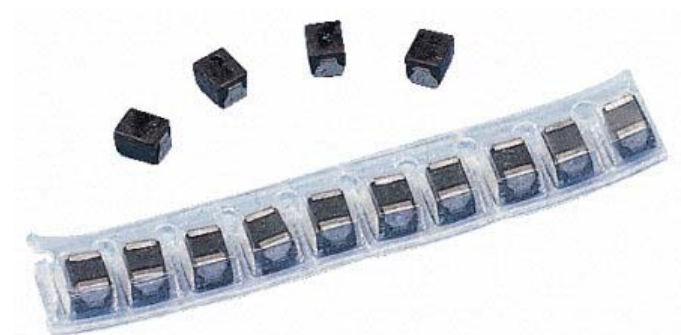
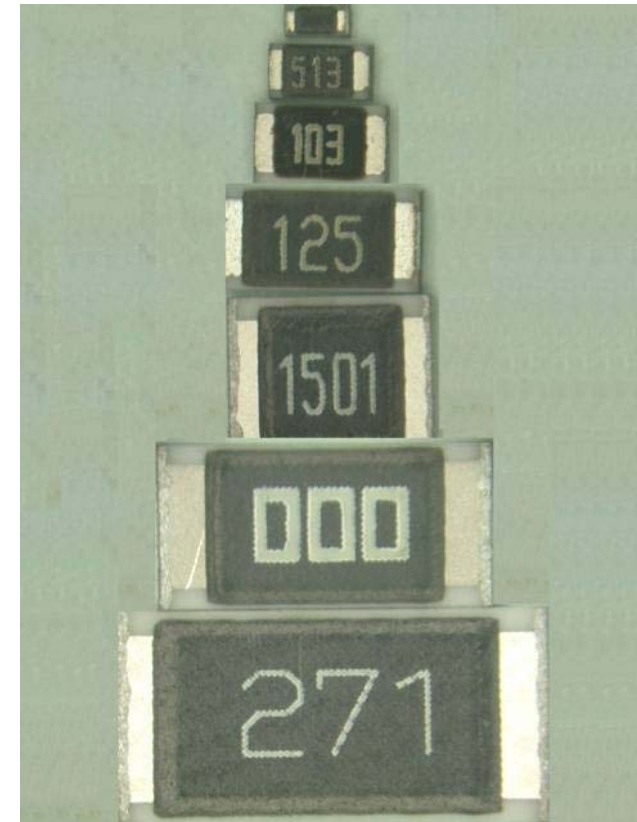
I Footprint SMD Standard

Ing. Matteo Fratini

Footprint per resistori, condensatori ceramici, induttori SMD

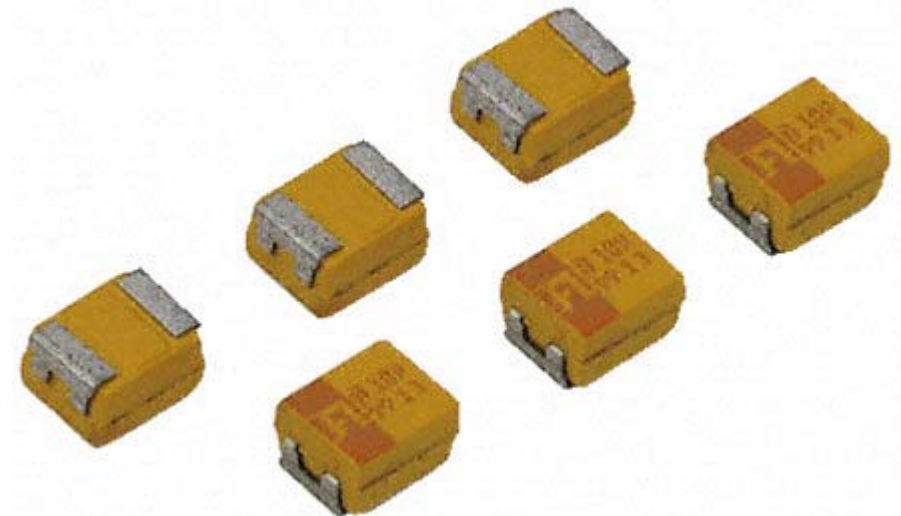
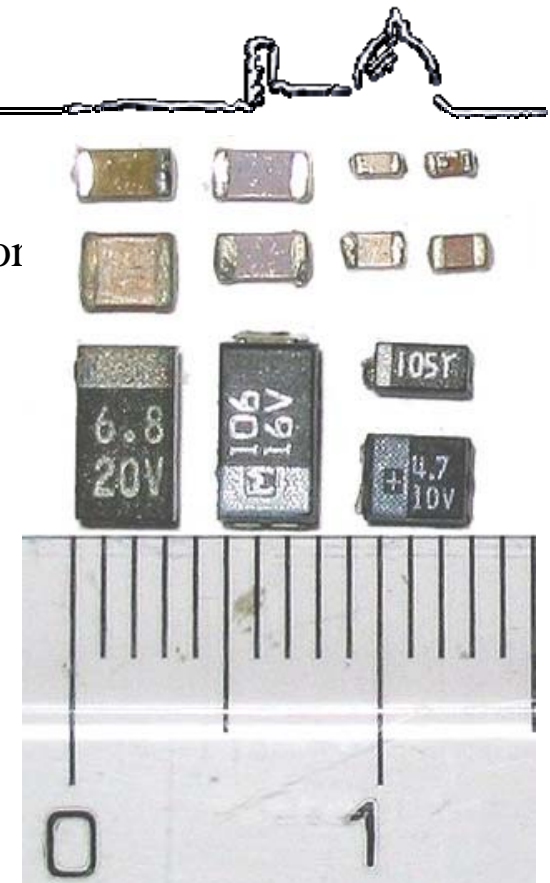


- Tolleranze resistori 1%, 2%, 5%
- Tolleranze condensatori 5%, 10%
- Tolleranze induttori 10%
- Valore Resistenza a 3 cifre (xyz = xy E z)
- Valore Resistenza a 4 cifre (xywz = xyw E z)
- Valore Capacità solitamente non specificato
- Valore Induttanza solitamente non specificato
- Dissipazione termica resistori : 0.1, 0.25, 0.5, 1W...
- Nome del FOOTPRINT : CHP (Chip)
- Dimensioni in mil
 - Tipici : **0402** = 40 x 20 mil
 - : **0603** = 60 x 30 mil
 - : **0805** = 80 x 50 mil
 - : **1206** = 120x60 mil
 - : **1210** = 120x100 mil
 - : **1812** = 180x120 mil
 - : **2512** = 250x120 mil
 - : **2520** = 250x200 mil



Footprint per CONDENSATORI al TANTALIO

- Tolleranze 5%, 10%
- Valore Capacitivo specificato in modo diverso dai diversi produttori
- Nome del FOOTPRINT : CHP (Chip)
- Dimensioni in millimetri
- Tipici : EIA **3216-12** = 3.2 x 1.6 x 1.2 mm
: EIA **3216-18** = 3.2 x 1.6 x 1.8 mm
: EIA **3528-12** = 3.5 x 2.8 x 1.2 mm
: EIA **3528-21** = 3.5 x 2.8 x 2.1 mm
: EIA **6032-15** = 6.0 x 3.2 x 1.5 mm
: EIA **6032-28** = 6.0 x 3.2 x 2.8 mm
: EIA **7260-38** = 7.2 x 6.0 x 3.8 mm
: EIA **7343-20** = 7.3 x 4.3 x 2.0 mm
: EIA **7343-31** = 7.3 x 4.3 x 3.1 mm
: EIA **7343-43** = 7.3 x 4.3 x 4.3 mm
- Altri Footprint : MLD (Molded Body)



Footprint per CONDENSATORI ELETTROLITICI



- Tolleranze 20%
- Valore Capacitivo specificato in modo diverso dai diversi produttori
- Nome del FOOTPRINT : CAE (Aluminum Electrolytic Capacitor)
- Dimensioni in millimetri o mil
- Sigle footprint standard poco comuni

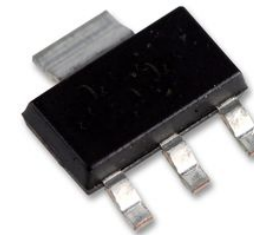


Footprint per DIODI e TRANSISTOR

- Più Footprint utilizzati
 - : MLD (Molded Body)
 - : MELF (Metal Electrode Face)
 - : CHP (Chip) ... Utilizzati per LED
 - : SOD (Small Outline Diode)
 - : SOT (Small Outline Transistor)
 - : TO (Transistor Outline)

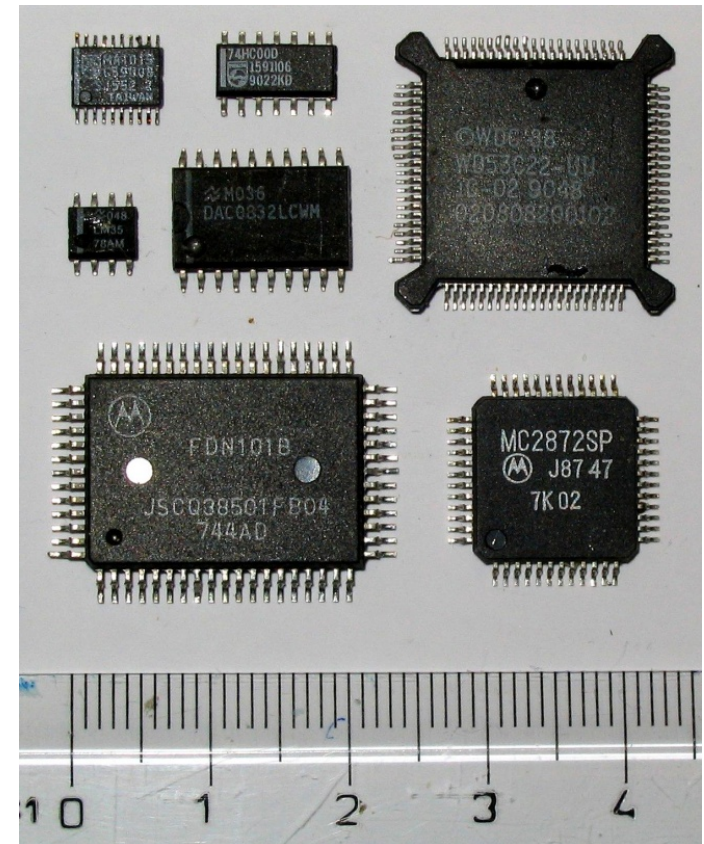
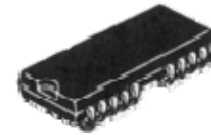
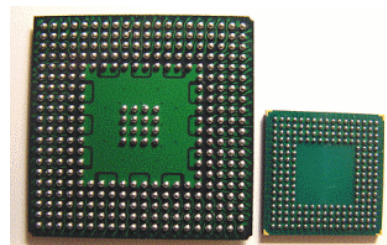
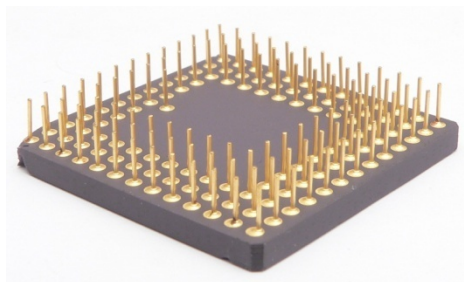
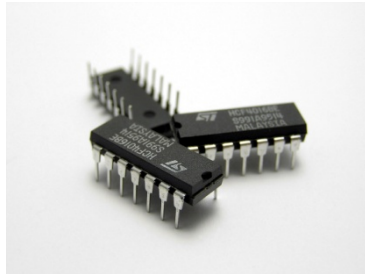
Dimensioni in millimetri o in mil

- Tipici
 - : SOD80-C
 - : JEDEC DO214-AA
 - : JEDEC DO214-AB
 - : JEDEC DO214-AC
 - : JEDEC DO214-BA
 - : JEDEC DO215-AB
 - : SOD-123
 - : SOD-323
 - : 0603
 - : 0805
 - : 1206
 - : SOT29
 - : SOT23
 - : SOT323



Footprint per circuiti integrati

- MOLTI Footprint : **DIP (Dual Inline Package)**
- : **SOIC (Small Outline Integrated Circuit)**
- : **SOJ (Small Outline J-Lead)**
- : **SON (Small Outline No Lead)**
- : **SSOP (Shrink Small Outline Package)**
- : **TSSOP (Thin Shrink Small Outline Package)**
- : **PLCC (Plastic Leaded Chip Carrier)**
- : **QFP (Quad Flat Pack)**
- : **TQFP (Thin Quad Flat Pack)**
- : **QFN (Quad Flat Pack No Lead)**
- : **PGA (Pin Grid Array)**
- : **BGA (Ball Grid Array)**
- : **LGA (Land Grid Array)**
- : **LCC (Leadless Chip Carrier)**
- : **CFP (Ceramic Flat Pack)**
- : **CQFP (Ceramic Quad Flat Pack)**
- : **LGA (Land Grid Array)**



Fonti Internet varie per Footprint e PCB

- NXP Semiconductor

<http://www.standardics.nxp.com/packaging/>

- Analog Devices

http://www.analog.com/Analog_Root/Packages/Packages_Home/0,2299,,00.html

- Fairchild Semiconductor

<http://www.fairchildsemi.com/packaging/>

- PCB Libraries (Strumenti vari per PCB)

<http://www.pcblibraries.com/>

- IPC (Standard PCB)

<http://www.ipc.org/>