



SM42/30/25
Metal Package

PLETRONICS SM42/30/25 Low Profile SMD Crystal

Features

- Pletronics' SM42-30-25 Series are low profile surface mount crystals.
- Package is ideal for automated surface mount assembly and reflow practices.
- Tape and Reel Packaging.
- AT Cut Crystal
- 3.2 MHz to 70 MHz

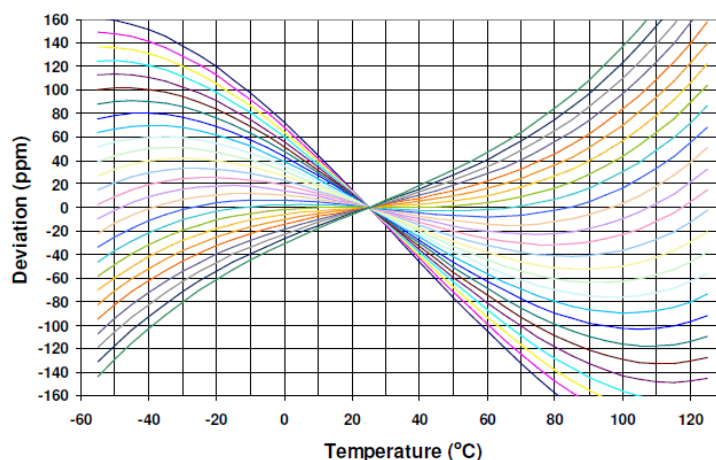
Applications

Bluetooth
WLAN
IoT
MPU

Electrical Characteristics

Parameter	Min	Typ	Max	Unit	Condition (Consult factory for other options)
Frequency Range	3.2	-	70	MHz	
Calibration Frequency Tolerance	±15	-	±50	ppm	at +25°C ± 3°C, See page 2 for available options
Frequency Stability	±10	-	±100	ppm	See page 2 for available options
Operating Temperature Range	-	-	-	°C	See page 2 for available options
Storage Temperature Range	-55	-	+125	°C	
Equivalent Series Resistance (ESR)	-	-	150 130 100 90 80 70 60 50 40 30 100 80	Ω	3.2 MHz ≤ Freq < 4 MHz (SM42) 4 MHz ≤ Freq ≤ 5 MHz (SM30/SM42) 5 MHz ≤ Freq < 6 MHz (SM30/SM42) 6 MHz ≤ Freq < 7 MHz (SM30/SM42) 7 MHz ≤ Freq < 9 MHz (SM30/SM42) 9 MHz ≤ Freq < 10 MHz (All versions) 10 MHz ≤ Freq < 13 MHz (All versions) 13 MHz ≤ Freq < 15 MHz (All versions) 15 MHz ≤ Freq < 27 MHz (All versions) 27 MHz ≤ Freq ≤ 36 MHz (All versions) 27 MHz ≤ Freq < 32 MHz (3rd Overtone) (All versions) 32 MHz ≤ Freq < 50 MHz (3rd Overtone) (All versions)
Drive Level	-	-	1	mW	Use 0.1mW for testing
Shunt Capacitance (C0)	-	-	7.0	pF	Pin to Pin Capacitance
Aging	-	-	±5	ppm	First year at +25°C ± 3°C

AT Cut Crystal Frequency versus Temperature Typical Performance:





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Electrical Characteristics

Series Model	Load Capacitance (C _{Load}) in pF	Frequency in MHz	Frequency Calibration Tolerance	Frequency Stability	AT Cut Crystal	Operating Temperature Range		Internal Code Or Blank
						Lowest	Highest	
SM42	-18	-25.0M	-20	H	1	G	G	-xx
SM42 SM30 SM25	Parallel Resonance from 06 to 32 pF SR = Series Resonance		(Typical Values Shown) 15 = ±15 ppm at 25°C ± 3°C 20 = ±20 ppm at 25°C ± 3°C (Standard) 25 = ±25 ppm at 25°C ± 3°C 50 = ±50 ppm at 25°C ± 3°C	See Table Below	1 = Fundamental 3 = 3rd OT	C = 0°C E = -10°C G = -20°C J = -30°C K = -35°C L = -40°C	C = +50°C E = +60°C G = +70°C H = +75°C J = +80°C K = +85°C	

Available Frequency Stability versus Temperature in ppm

Operating Temperature Range		D	E	F	G	H	J
	CODE	±10	±15	±20	±30	±50	±100
0 to +50°C	CC	•	•	•	•	•	•
0 to +60°C	CE	•	•	•	•	•	•
0 to +70°C	CG	•	•	•	•	STD	•
-10 to +50°C	EC	•	•	•	•	•	•
-10 to +60°C	EE	•	•	•	•	•	•
-10 to +70°C	EH	•	•	•	•	•	•
-20 to +70°C	GG	•	•	•	•	•	•
-20 to +75°C	GH	•	•	•	•	•	•
-30 to +75°C	JH	•	•	•	•	•	•
-30 to +85°C	JK	•	•	•	•	•	•
-35 to +80°C	KJ		△	•	•	•	•
-40 to +85°C	LK		△	•	•	•	•

• = Available

△ = Check with Pletronics



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Device Marking



S = Model Code (S = SM42; Z = SM25; 5 = SM30)
FFFFFF = Crystal Frequency in MHz
x = Capacitance Code (See below)
P or L = Pletronics
YWW or YMD = Date code (Year-WeekWeek or Year-Month-Day; see chart below)
All other markings are internal factory codes

Specifications such as part number, frequency stability, supply voltage and operating temperature range, etc. are not identified from marking. External packaging labels and packing list will correctly identify the ordered Pletronics part number.

Codes for Date Code YMD (Year Month Day)

Code	2	3	4	5	6	Code	A	B	C	D	E	F	G	H	J	K	L	M
Year	2022	2023	2024	2025	2026	Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Code	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	U	V	W	X	Y	Z
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Codes for Load Capacitance

ode	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y
pF	10	12	13	8	15	18	20	22	24	26	28	30	32	34	36	27	Series	33	50	19	16	17	14

Package Labeling

P/N Label is 1" x 2.6" (25.4mm x 66.7mm)
Font is Courier New
Bar code is 39-Full ASCII

RoHS Label is 1" x 2.6" (25.4mm x 66.7mm)
Font is Arial



RoHS Compliant

2nd Lvl Interconnect

Category= e1

Max Safe Temp=260C for 10s 2X Max

Pletronics Inc. certifies this device is in accordance with the RoHS and REACH directives.

Pletronics Inc. guarantees the device does not contain the following: Cadmium, Hexavalent Chromium, Lead, Mercury, PBB's, PBDE's
Weight of the Device: 0.553 grams
Moisture Sensitivity Level: 1 As defined in J-STD-020D
Second Level Interconnect code: e1

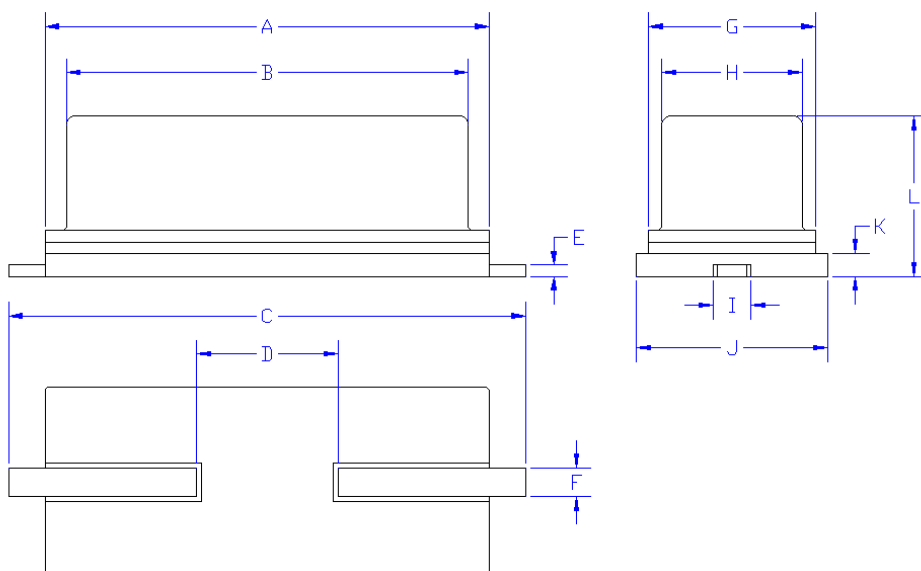
Reliability

Parameter	Condition
Mechanical Shock	MIL-STD-883, Method 2002, Condition B
Vibration	MIL-STD-883, Method 2007, Condition A
Solderability	IPC J-STD-002
Thermal Cycle	MIL-STD-883 Method 1010, Condition B

Mechanical Dimensions

	Inches	mm
A	0.457 max	11.6 max
B	0.415 max	10.5 max
C	0.532 max	13.5 max
D	0.192 ± 0.008	4.88 ± 0.2
E	0.012 ± 0.004	0.3 ± 0.1
F	0.03 ± 0.008	0.75 ± 0.2
G	0.197 max	5.0 max
H	0.145 max	3.68 max
I	0.04 max	1.0 max
J	0.197 max	5.0 max
K¹	0.016	0.4
L (SM42)	0.182 max	4.6 max
L (SM30)	0.138 max	3.5 max
L (SM25)	0.114 max	2.9 max

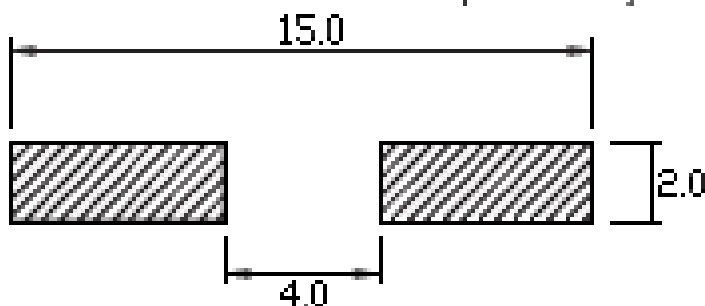
¹ Typical dimension



(Not to Scale)

Termination Coating: Three types are possible: matte Sn; SnCu; SnAgCu (SAC)

Recommended solder pad layout



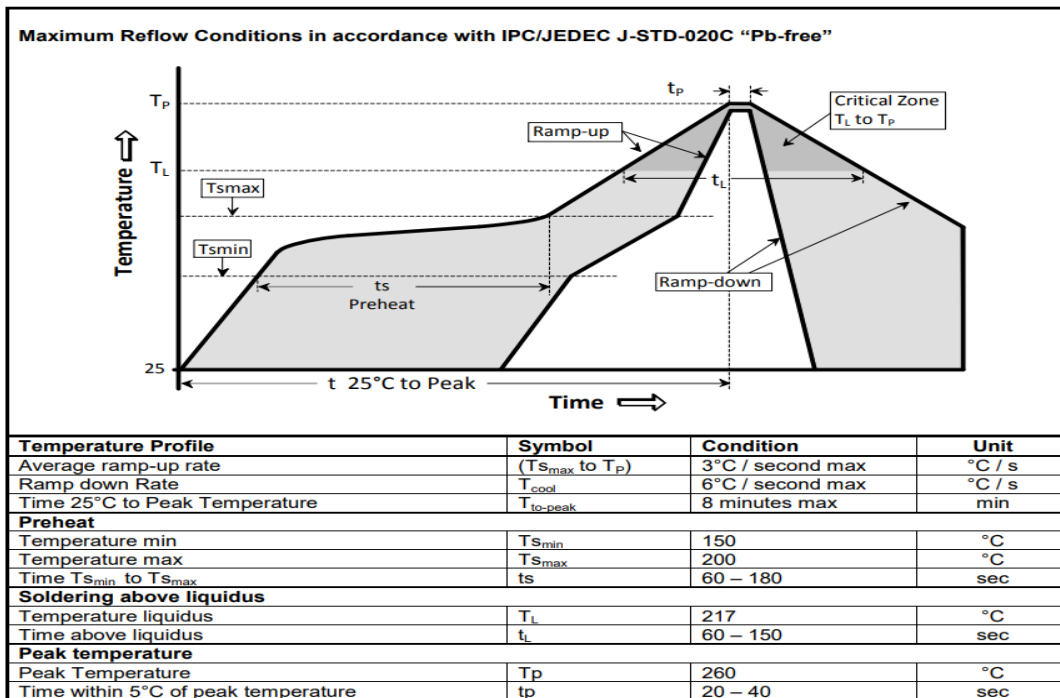
Pad Layout

Disclaimer: Recommended layout shown. Adjust layout as needed for individual process requirements.

For Optimum Jitter Performance, Pletronics recommends:

- Trace lengths to the crystal should be kept as short as possible.
- The crystal connections are sensitive to noise.

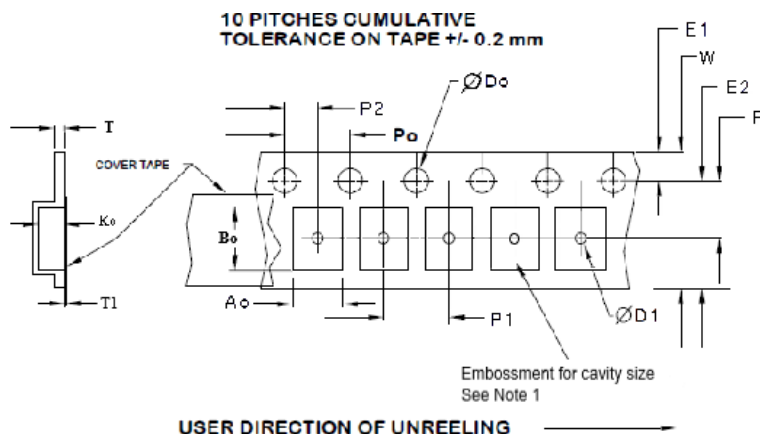
Reflow Cycle



The part may be reflowed 2 times without degradation (typical for lead free processing).

Tape and Reel

Tape and Reel available for quantities of 250 to 1000 per reel, cut tape for < 1000. 24mm tape, 12mm pitch.



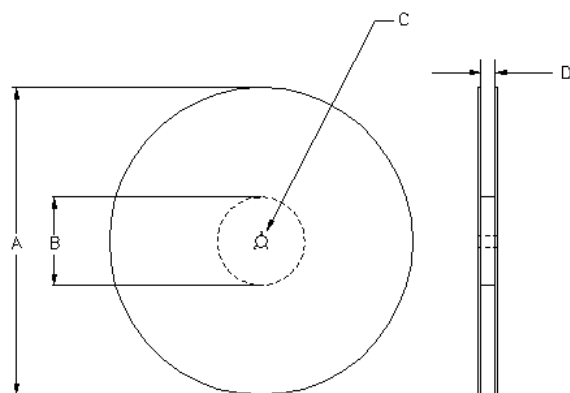
Tape Constant Dimensions Table 1							
Tape Size	Do	D1 typ	E1	Po	P2	T	T1
24mm	1.5 +0.1 -0.0	1.5	1.75 ±0.1	4.0 ±0.1	2.0 ±0.1	0.5	0.1

Tape Variable Dimensions Table 2					
Tape Size	E2 typ	F	P1	W max	Ao, Bo & Ko
24mm	22.25	11.5 ±0.1	12.0 ±0.1	24.3	Note 1

Dimensions in mm Drawing

Not to scale

Note 1: Embossed cavity to conform to EIA- 481-B



Reel Dimensions (may vary) Table 3						
Reel Size	A		B		C	D
	Inches	mm	Inches	mm	mm	mm
13	13.0	330	3.75	95.3	13.0 +0.5 -0.2	Tape size +0.4 +2.0 -0.0



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