

SERIES TT-SMD

● FEATURES

- AT CUT CRYSTAL PERFORMANCE
- THERMOPLASTIC PACKAGE SUITED FOR REFLOW SOLDERING



● SPECIFICATIONS

PARAMETER		VALUE
FREQUENCY RANGE		3.579545 MHz TO 60.000 MHz
MODE OF OSCILLATION	FUNDAMENTAL	3.579545 MHz TO 40.000 MHz
	THIRD OVERTONE	32.000 MHz TO 60.000 MHz
FREQUENCY TOLERANCE AT 25°C		±50 PPM MAXIMUM (±30 PPM AVAILABLE)
FREQUENCY STABILITY OVER TEMPERATURE		±50 PPM MAXIMUM (±30 PPM AVAILABLE)
OPERATING TEMPERATURE RANGE		-20°C TO +70°C STANDARD -40°C TO +85°C EXTENDED
STORAGE TEMPERATURE RANGE		-40°C TO +85°C
AGING		±5 PPM PER YEAR MAXIMUM
LOAD CAPACITANCE		12 pF to 32 pF OR SERIES
EQUIVALENT SERIES RESISTANCE		SEE TABLE 1
SHUNT CAPACITANCE		5.0 pF MAXIMUM
DRIVE LEVEL		100 µW MAX
SHOCK RESISTANCE		±5 PPM MAXIMUM 75 cm DROP TEST IN 3 AXES ON TO A HARD SURFACE
REFLOW CONDITIONS		260°C FOR 10s MAXIMUM



TABLE 1

FREQUENCY (MHz)	MODE	MAXIMUM ESR (OHMS)	FREQUENCY (MHz)	MODE	MAXIMUM ESR (OHMS)
3.579545 to 3.999	FUND	200	9.000 to 12.999	FUND	60
4.000 to 4.999	FUND	150	13.000 to 19.999	FUND	50
5.000 to 5.999	FUND	120	20.000 to 32.000	FUND	40
6.000 to 6.999	FUND	100	32.000 to 40.000	FUND / 3OT	40 / 100
7.000 to 8.999	FUND	80	40.000 to 60.000	3OT	100

■ PART NUMBERING SYSTEM

TYPE	-	FREQUENCY	-	LOAD CAPACITANCE	-	MODE	-
TT-SMD	-	IN MHz	-	12 TO 32 pF FOR PARALLEL S FOR SERIES	-	Blank FOR < 24.576 MHz F FOR ≥ 24.576 MHz 3OT THIRD OVERTONE	-

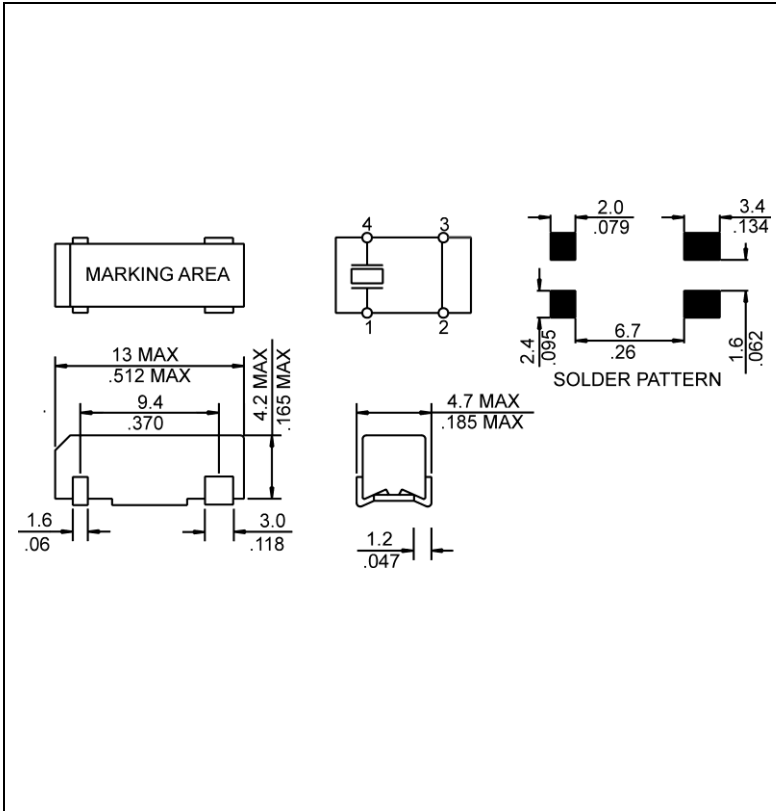
TOLERANCE/STABILITY (PPM/PPM)	-	EXTENDED TEMPERATURE	-	TAPE & REEL
Blank FOR MAXIMUM TOLERANCE/STABILITY PPMPM for OTHER VALUES Example: 3050, 3030	-	Blank FOR STANDARD EXT FOR EXTENDED	-	TR

EXAMPLE: TT-SMD-24.000-18-TR

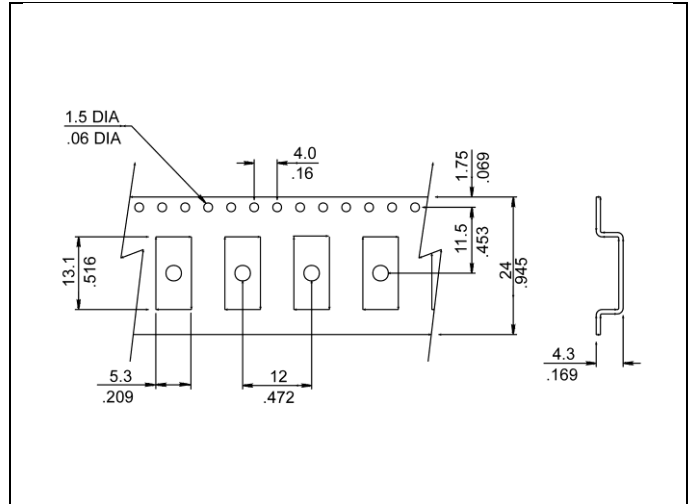
Surface Mount Microprocessor Crystal, 13.0 x 4.7 mm, 24.000 MHz, Fundamental mode, 18 pF load, ±50 ppm Tolerance, ±50 ppm Stability, from -20°C to +70°C, Tape and reel packaging

SERIES TT-SMD

MECHANICAL SPECIFICATION



CARRIER TAPE DIMENSIONS



NOTE: REFER TO EIA-481 FOR NON-SPECIFIED DIMENSIONS

PACKAGING

330 mm REEL DIAMETER
24 mm TAPE WIDTH, 12 mm PITCH
QUANTITY: 1000 PIECES PER REEL

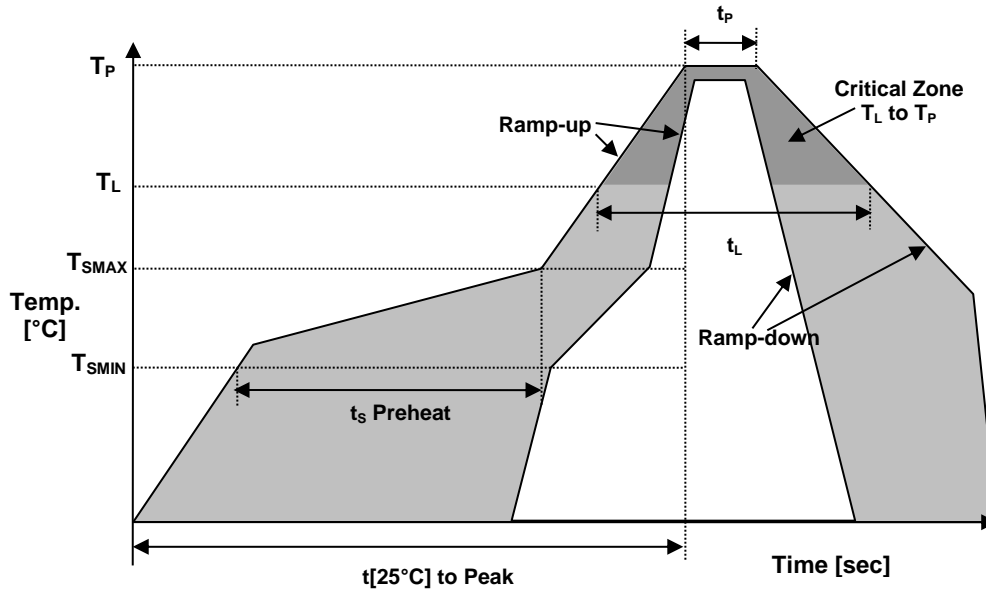
IN ACCORDANCE WITH EIA-481

ENVIRONMENTAL

PARAMETER	VALUE
MOISTURE SENSITIVITY LEVEL	1
RoHS 2	6/6 LEAD FREE
REACH SVHC	COMPLIANT
HALOGEN-FREE	COMPLIANT
ESD CLASSIFICATION LEVEL	N/A
TERMINATION FINISH	Sn / Ni
UNIT WEIGHT (GRAMS)	0.4654



● REFLOW PROFILE



Reflow profile		
Temperature Min Preheat	T_{SMIN}	150°C
Temperature Max Preheat	T_{SMAX}	200°C
Time (T_{SMIN} to T_{SMAX})	t_s	60-180 sec.
Temperature	T_L	217°C
Peak Temperature	T_P	260°C max
Ramp-up rate	R_{UP}	3°C/sec max.
Ramp-down rate	R_{DOWN}	6°C/sec max.
Time within 5°C of Peak Temperature	t_p	10 sec. max
Time $t[25^\circ\text{C}]$ to Peak Temperature	$t[25^\circ\text{C}]$ to Peak	480 sec.
Time	t_L	60-150 sec.