

## RTXE-104EF133-C-12.000-TR

### ELECTRICAL SPECIFICATION

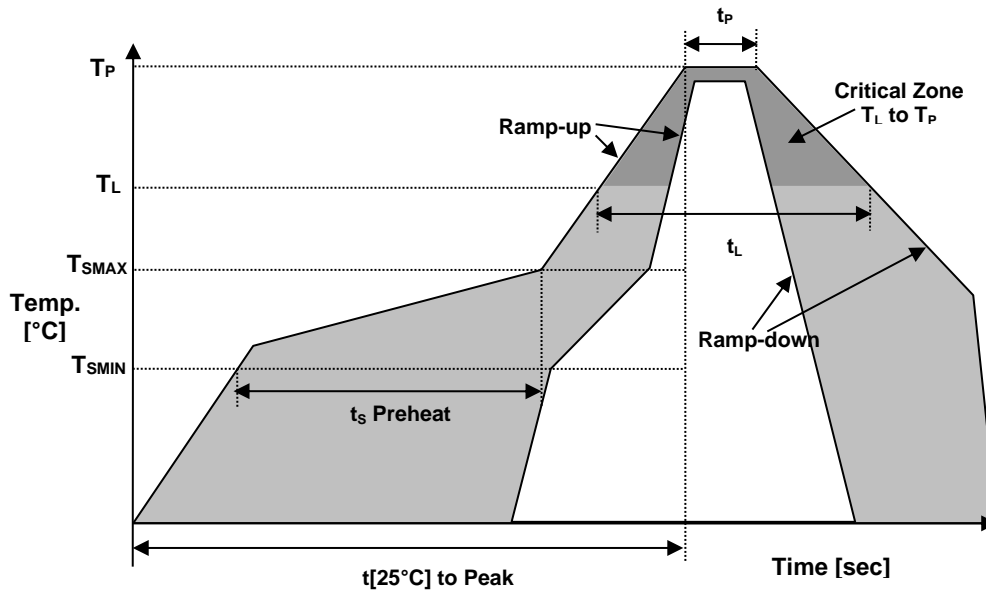
PARAMETER	SYMBOL	CONDITIONS	VALUE	UNIT
Nominal Frequency	$f_0$	$T_a=25^\circ\text{C}$	12.000	MHz
Supply Voltage	$V_{CC}$		3.3	VDC
Supply Current, max	$I_S$	$T_a=25^\circ\text{C}$	4.8	mA
Operating Temperature Range	$T_a$	---	-30 ~ +75	$^\circ\text{C}$
Storage Temperature Range	$T(\text{stg})$	Absolute max	-40 ~ +90	$^\circ\text{C}$
Frequency Stability vs. Temperature vs. Supply Voltage vs. Load vs. Aging Max	$\Delta f/f_0(T_a)$ $\Delta f/f_0(V)$ $\Delta f/f_0(I)$ $\Delta f/f_0(\text{year})$	Reference to +25 $^\circ\text{C}$ , over Temperature Range $V_{CC} \pm 5\% V$ (Inside 2.375 ~ 3.63 V) Load $\pm 10\%$ Per Year at +25 $^\circ\text{C} \pm 2^\circ\text{C}$	$\pm 2.5$ $\pm 0.3$ $\pm 0.2$ $\pm 1.0$	ppm ppm ppm ppm
Initial Frequency Calibration, max	$f_c$	Measured at 25 $^\circ\text{C}$ , before shipment	$\pm 1.0$	ppm
Reflow Shift, max		2 consecutive reflows, after 2 hours relaxation	$\pm 1.0$	ppm
Output Level, HCMOS	--	"0" Level, max	$0.1V_{CC}$	V
	--	"1" Level, min	$0.9V_{CC}$	V
Symmetry	--	at $\frac{1}{2} V_{CC}$ level	45 / 55	%
Enable Disable Function	$V_{IH}$	min	2.1	V
	$V_{IL}$	max	0.9	V
Load	$L$		15	pF
Rise and Fall Time, max	$t_r/t_f$	10% $V_{CC}$ to 90% $V_{CC}$	5	ns
Start-up time, max	$t_s$	$V_{OUT} \geq 90\% V_{P-P}$	10	ms
Phase noise @ freq. offset, typical.	$\mathcal{L}(\Delta f)$	$\Delta f=1\text{kHz}$	-135	dBc/Hz
	$\mathcal{L}(\Delta f)$	$\Delta f=10\text{kHz}$	-145	dBc/Hz
	$\mathcal{L}(\Delta f)$	$\Delta f=100\text{kHz}$	-150	dBc/Hz

### MECHANICAL SPECIFICATION

**PIN FUNCTIONS:**  
 [1] E/D  
 [2] GND  
 [3] OUTPUT  
 [4] VCC

A bypass 0.01 $\mu\text{F}$  bypass capacitor is recommended

### 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 $t[25°C]$ to Peak Temperature	$t[25°C]$ to Peak	480 sec.
Time	$t_L$	60-150 sec.

### ENVIRONMENTAL

PARAMETER	VALUE
MOISTURE SENSITIVITY LEVEL	1
RoHS	COMPLIANT
REACH-SVHC	COMPLIANT
HALOGEN-FREE	COMPLIANT
TERMINATION FINISH	Au



## RTXE-104EF133-C-12.000-TR

### MARKING

- Rx12.00
- EF3yw

x – Internal Production ID code  
 y – Year code  
 w – Week code

YEAR CODE	
Year	Code
2019	9
2020	0
2021	1
2022	2
2023	3
2024	4
2025	5
2026	6
2027	7
2028	8
2029	9

ALPHA WEEK CODE TABLE					
Week	Code	Week	Code	Week	Code
1	a	19	s	37	K
2	b	20	t	38	L
3	c	21	u	39	M
4	d	22	v	40	N
5	e	23	w	41	O
6	f	24	x	42	P
7	g	25	y	43	Q
8	h	26	z	44	R
9	i	27	A	45	S
10	j	28	B	46	T
11	k	29	C	47	U
12	l	30	D	48	V
13	m	31	E	49	W
14	n	32	F	50	X
15	o	33	G	51	Y
16	p	34	H	52	Z
17	q	35	I		
18	r	36	J		

### APPROVAL

RALTRON	
DRAWN BY:	YL, May 26, 2021
APPROVED BY:	CP, May 26, 2021
REVISION:	A, Initial Release

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