



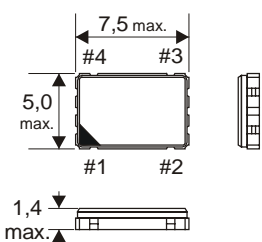
5x7,5mm CRYSTAL-OSCILLATORS low voltage LMQ1 / LMS1 / LMW1

FREQUENZSTABILITÄT FREQUENCY STABILITY		BETRIEBSBEDINGUNGEN OPERATING CONDITIONS		
Modell Model				
LM1Q1H/LM1S1H/LM1W1H	±100ppm/-10~+70°C	Betriebstemperatur operating temp.		-10~+70°C, -40~+85°C
LM2Q1H/LM2S1H/LM2W1H	±50ppm/-10~+70°C	Lagertemperatur storage temperature		-55~+125°C
LM3Q1H/LM3S1H/LM3W1H	±25ppm/-10~+70°C			
LM1Q1RH/LM1S1RH/LM1W1RH	±100ppm/-40~+85°C	Betriebsspannung V _{DD} supply voltage	LMQ1	+2,8V ±5%
LM2Q1RH/LM2S1RH/LM2W1RH	±50ppm/-40~+85°C		LMS1	+2,5V ±5%
LM3Q1RH/LM3S1RH/LM3W1RH	±25ppm/-40~+85°C		LMW1	+1,8V ±5%

Elektrische Daten electrical characteristics T _a = 25°C, V _{DD} = 2,8 V or 2,5 V or 1,8V, C _L = 15 pF					
Parameter parameter	Bedingungen conditions	Frequenzbereich frequ. range (MHz)	LMQ1	LMS1	LMW1
max. Stromaufnahme max. input current	I _{DD}	1,800 ~ 32,000 32,000* ~ 80,000 80,000* ~ 125,000 125,000* ~ 160,000	12 mA 20 mA 30 mA 40 mA	10 mA 18 mA 28 mA 38 mA	7 mA 15 mA 25 mA 35 mA
Frequenzstabilität frequency stability	über alles *) all conditions *)	1,800 ~ 160,000	±25 ppm ~ ±100 ppm		
Tastverhältnis symmetry	@50% V _{DD} @1,4 V	1,800 ~ 50,000 50,000* ~ 160,000	45/55 % 40/60 %		40/60 %
Ausgangsspannung output voltage	V _{OL} V _{OH}	"0" level "1" level	1,800 ~ 160,000	0,28 V max. 2,52 V min.	0,25 V max. 2,25 V min. 0,36 V max. 1,44 V min.
Anstiegszeit max. rise time max.	T _R	10% - 90% V _{DD}	1,800 ~ 80,000 80,000* ~ 125,000 125,000* ~ 160,000	5,0 ns 4,0 ns 3,0 ns	- - -
		20% - 80% V _{DD}	1,800 ~ 80,000 80,000* ~ 125,000 125,000* ~ 160,000	- - -	5,0 ns 3,5 ns 3,0 ns
Abfallzeit max. fall time max.	T _F	90% - 10% V _{DD}	1,800 ~ 80,000 80,000* ~ 125,000 125,000* ~ 160,000	5,0 ns 4,0 ns 3,0 ns	- - -
		20% - 80% V _{DD}	1,800 ~ 80,000 80,000* ~ 125,000 125,000* ~ 160,000	- - -	5,0 ns 3,5 ns 3,0 ns
Ausgangsstrom min. output current min.	I _{OL} I _{OH}	"0" level "1" level	4 mA 4 mA		2 mA 2 mA
Standbystrom max. standby current max.		1,800 ~ 160,000	10 µA		
max. Belastbarkeit max. driving ability	CMOS		15 pF		
Startzeit max. start-up time max.	0,0 V ~ V _{DD}	1,800 ~ 32,000 32,000* ~ 160,000	5 ms 10 ms		

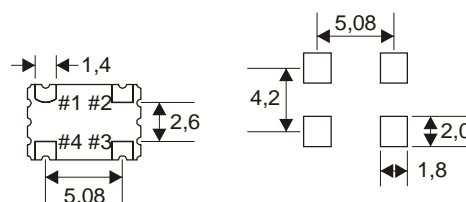
*) Anmerkung: inkl. Abgleichtoleranz, Temperaturgang, Spannungs- und Laständerung, Alterung, Schock und Vibration
note: incl. frequency and temperature tolerance, supply voltage and load change, aging, shock and vibration

Abmessungen in mm
dimensions in mm



lead-free/RoHS-conformal

empfohlenes Layout
recommended solder pad layout



Anschlußbelegung
pin connections

#1	E/D
#2	GND
#3	OUT
#4	V _{DD}

Funktionstabelle
enable /disable function

INH (pin #1)	output (pin #3)
open	active
"1" (V _{IH} ≥ 70% V _{DD})	active
"0" (V _{IL} ≤ 30% V _{DD})	high Z