Wolfgang Knap
Gesellschaft m.b.H. & Co.KG

A-1130 Wien
Lilienberggasse 13
Tel.: +43-1-403 08 12
Fax: +43-1-408 72 13
e-mail: info@knap.at
http://www.knap.at

5x7,5mm SMT CRYSTAL-OSCILLATORS
NMSOL3 / NMSOL5 3,3V / 5,0V 15pF

FREQUENZSTABILITÄT *FREQUENCY STABILITY*	
Modell *Model*	
NM1SOL3 / NM1SOL5	±100ppm/-10~+70°C
NM2SOL3 / NM2SOL5	±50ppm/-10~+70°C
NM3SOL3 / NM3SOL5	±25ppm/-10~+70°C
NM4SOL3 / NM4SOL5	±20ppm/-10~+70°C
NM1SOL3R / NM1SOL5R	±100ppm/-40~+85°C
NM2SOL3R / NM2SOL5R	±50ppm/-40~+85°C
NM3SOL3R / NM3SOL5R	±25ppm/-40~+85°C

BETRIEBSBEDINGUNGEN *OPERATING CONDITIONS*	
Betriebstemperatur *operating temp.*	-10~+70°C, -40~+85°C
Lagertemperatur *storage temperature*	-55~+125°C
Betriebsspannung V_{DD} *supply voltage*	+3,3V ±0,3V +5,0V ±0,5V
Feuchteempfindlichkeit *MSL*	1

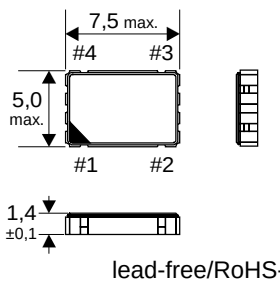
nicht alle Toleranzen sind bei Frequenzen über 70 MHz möglich
not all tolerances are available at frequencies above 70 MHz

Elektrische Daten *electrical characteristics*
T_a = 25°C, V_{DD} = 3,3 V / 5,0 V, C_L = 15 pF

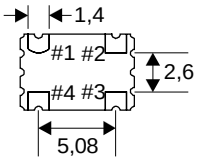
Parameter *parameter*		Bedingungen *conditions*	Frequenzbereich *frequ. range*	NMSOL3	NMSOL5
max. Stromaufnahme *max. input current*	I_{DD}		12 kHz ~ 32,000 MHz 32,000+ ~ 50,000 MHz 50,000+ ~ 67,000 MHz 67,000+ ~ 125,000 MHz 125,000+ ~ 170,000 MHz	12 mA 16,5 mA 18 mA 40 mA 50 mA	18 mA 20 mA 50 mA 80 mA 90 mA
Frequenzstabilität *frequency stability*		über alles *) all conditions *)	12 kHz ~ 170,000 MHz	±20 ppm ~ ±100 ppm	
Tastverhältnis *symmetry*		@50% V_{DD}	12 kHz ~ 50,000 MHz 50,000+ ~ 170,000 MHz	45/55 % 40/60 %	40/60 % 40/60 %
Ausgangsspannung *output voltage*	V_{OL} V_{OH}	"0" level "1" level	12 kHz ~ 170,000 MHz	10% V_{DD} max. 90% V_{DD} min.	
Anstiegszeit max. *rise time max.*	T_R	10% - 90% V_{DD}	12 kHz ~ 79,999 MHz 80,000 ~ 25,000 MHz 125,000+ ~ 170,000 MHz	6 ns 4 ns 3 ns	6 ns 4 ns 3 ns
Abfallzeit max. *fall time max.*	T_F	90% - 10% V_{DD}	12 kHz ~ 79,999 MHz 80,000 ~ 125,000 MHz 125,000+ ~ 170,000 MHz	6 ns 4 ns 3 ns	6 ns 4 ns 3 ns
Ausgangsstrom min. *output current min.*	I_{OL} I_{OH}	"0" level "1" level	12 kHz ~ 170,000 MHz	2 mA 2 mA	
standby current max.		$V_{IL} \leq$ 30% V_{DD}	12 kHz ~ 170,000 MHz	10 µA	
max. Belastbarkeit *max. driving ability*		TTL	12 kHz ~ 170,000 MHz	10 LS-TTL	
		HCMOS	12 kHz ~ 170,000 MHz	15 pF	
Startzeit max. *start-up time max.*		0,0 - V_{DD}	12 kHz ~ 32,000 MHz 32,000+ ~ 170,000 MHz	5 ms 10 ms	

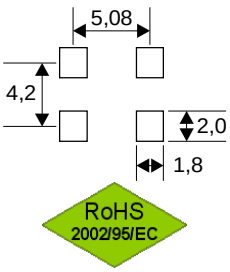
*) Anmerkung: inkl. Abgleichtoleranz, Temperaturgang, Spannungs- und Laständerung, Alterung, Schock und Vibration
note: incl. frequency and temperature tolerance, supply voltage and load change, aging, shock and vibration

Abmessungen in mm
dimensions in mm



empfohlenes Layout
recommended solder pad layout





lead-free/RoHS-conformal

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" ($V_{IH} \geq$ 70% V_{DD})	active
"0" ($V_{IL} \leq$ 30% V_{DD})	high Z