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

3,2x5mm SMT CRYSTAL-OSCILLATORS
GMPA / GMHA / GMLA / GMTA

FREQUENZSTABILITÄT *FREQUENCY STABILITY*	
Modell *Model*	
GM1PA/GM1LA/GM1HA/GM1TA	±100ppm/-10~+70°C
GM2PA/GM2LA/GM2HA/GM2TA	±50ppm/-10~+70°C
GM3PA/GM3LA/GM3HA/GM3TA	±25ppm/-10~+70°C
GM1PAR/GM1LAR/GM1HAR/GM1TAR	±100ppm/-40~+85°C
GM2PAR/GM2LAR/GM2HAR/GM2TAR	±50ppm/-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*	GMPA GMLA, GMHA, GMTA	+3,3V ±0,3V +5,0V ±0,5V

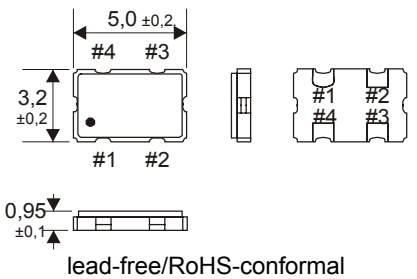
Elektrische Daten *electrical characteristics*

T_a = 25°C, V_{DD} = 3,3 V or 5,0 V, C_L = 15 pF (GMPA, GMLA), C_L=50 pF (GMHA), R_L=400 Ω (GMTA)

Parameter *parameter*		Bedingungen *conditions*	Frequenzbereich *frequ. range (MHz)*	GMPA	GMLA	GMHA	GMTA
max. Stromaufnahme *max. input current*	I_{DD}		1,800 ~ 50,000	20 mA	35 mA	45 mA	26 mA
Frequenzstabilität *frequency stability*		über alles *) all conditions *)		±25 ppm ~ ±100 ppm			
Tastverhältnis *symmetry*		@50% V_{DD} @1,4 V		40/60 % -			- 40/60 %
Ausgangsspannung *output voltage*	V_{OL} V_{OH}	"0" level "1" level		10% V_{DD} max. 90% V_{DD} min.	0,5 V max. 4,5 V min.		0,4 V max. 2,4 V min.
Anstiegszeit max. *rise time max.*	T_R	10% - 90% V_{DD} 0,5 - 4,5 V 0,4 - 2,4 V		7 ns - -	- 10 ns -	- 7 ns -	- - 5,0 ns
Abfallzeit max. *fall time max.*	T_F	90% - 10% V_{DD} 4,5 - 0,5 V 2,4 - 0,4 V		7 ns - -	- 10 ns -	- 7 ns -	- - 5,0 ns
Ausgangsstrom min. *output current min.*	I_{OL} I_{OH}	"0" level "1" level		2 mA 2 mA	4 mA 4 mA	16 mA 16 mA	16 mA 4 mA
Standbystrom max. *standby current max.*		$V_{IL} \leq 30\%\ V_{DD}$		10 µA	-		
max. Belastbarkeit *max. driving ability*		TTL		10 LS-TTL		10 N-TTL	
		HCMOS		15 pF	15 pF	50 pF	-
Startzeit max. *start-up time max.*		0,0 ~ V_{DD}		10 ms			

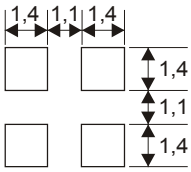
*) Anmerkung: inkl. Abgleichtoleranz, Temperaturgang, Spannungs- und Laständerung, Alterung, Schock und Vibration
note: incl. frequency and temperature tolerance, supply voltage and load change, aging, shock and vibration

Abmessungen in mm
dimensions in mm



lead-free/RoHS-conformal

empfohlenes Layout
recommended solder pad layout



RoHS 2002/95/EC

Anschlußbelegung *pin connections*	
#1	E/D
#2	GND
#3	OUT
#4	V_{DD}

Funktionstabelle *enable /disable function*		
GMLA/HA/TA	GMPA	
control (pin #1)	control (pin #1)	output (pin #3)
open	open	active
"1" ($V_{IH} \geq$ 2,2V)	"1" ($V_{IH} \geq$ 70% V_{DD})	active
"1" ($V_{IL} \leq$ 0,8V)	"0" ($V_{IL} \leq$ 30% V_{DD})	high Z