



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

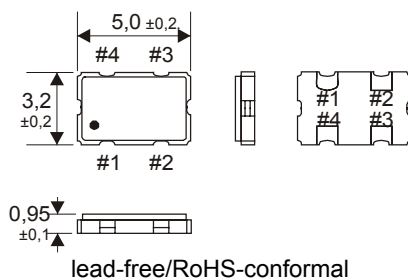


FREQUENZSTABILITÄT FREQUENCY STABILITY		BETRIEBSBEDINGUNGEN OPERATING CONDITIONS		
Modell Model				
GM1PA/GM1LA/GM1HA/GM1TA	±100ppm/-10~+70°C	Betriebstemperatur operating temp.	-10~+70°C, -40~+85°C	
GM2PA/GM2LA/GM2HA/GM2TA	±50ppm/-10~+70°C	Lagertemperatur storage temperature	-55~+125°C	
GM3PA/GM3LA/GM3HA/GM3TA	±25ppm/-10~+70°C			
GM1PAR/GM1LAR/GM1HAR/GM1TAR	±100ppm/-40~+85°C	Betriebsspannung V <sub>DD</sub> supply voltage	GMPA GMLA, GMHA, GMTA	+3,3V ±0,3V
GM2PAR/GM2LAR/GM2HAR/GM2TAR	±50ppm/-40~+85°C			+5,0V ±0,5V

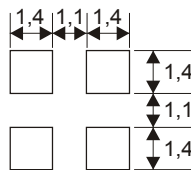
Elektrische Daten electrical characteristics							
T <sub>a</sub> = 25°C, V <sub>DD</sub> = 3,3 V or 5,0 V, C <sub>L</sub> = 15 pF (GMPA, GMLA), C <sub>L</sub> =50 pF (GMHA), R <sub>L</sub> =400 Ω (GMTA)							
Parameter parameter	Bedingungen conditions	Frequenzbereich frequ. range (MHz)	GMPA	GMLA	GMHA	GMTA	
max. Stromaufnahme max. input current	I <sub>DD</sub>	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 <sub>DD</sub> @1,4 V		40/60 %			-	40/60 %
Ausgangsspannung output voltage	V <sub>OL</sub> V <sub>OH</sub>		10% V <sub>DD</sub> max. 90% V <sub>DD</sub> min.	0,5 V max. 4,5 V min.		0,4 V max. 2,4 V min.	
Anstiegszeit max. rise time max.	T <sub>R</sub>		10% - 90% V <sub>DD</sub> 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 <sub>F</sub>		90% - 10% V <sub>DD</sub> 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 <sub>OL</sub> I <sub>OH</sub>		"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 <sub>IL</sub> ≤ 30% V <sub>DD</sub>	10 µA	-		
max. Belastbarkeit max. driving ability			TTL HCMOS	10 LS-TTL		10 N-TTL	
Startzeit max. start-up time max.			0,0 ~ V <sub>DD</sub>	15 pF	15 pF	50 pF	-
			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



Anschlußbelegung  
pin connections

#1	E/D
#2	GND
#3	OUT
#4	V <sub>DD</sub>

Funktionstabelle  
enable/disable function

GMLA/HA/TA	GMPA	
control (pin #1)	control (pin #1)	output (pin #3)
open	open	active
"1" (V <sub>IH</sub> ≥ 2,2V)	"1" (V <sub>IH</sub> ≥ 70% V <sub>DD</sub> )	active
"1" (V <sub>IL</sub> ≤ 0,8V)	"0" (V <sub>IL</sub> ≤ 30% V <sub>DD</sub> )	high Z