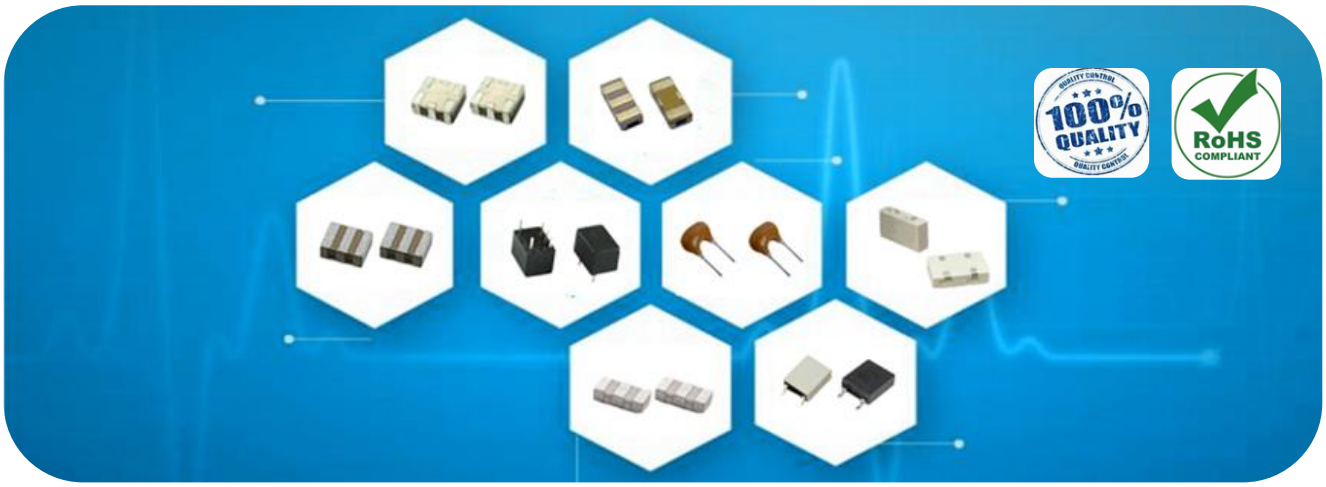


- *MHz SMD Ceramic Resonator*
- *MHz Thru Hole Ceramic Resonator*
- *KHz SMD Ceramic Resonator*
- *KHz Thru Hole Ceramic Resonator*
- *MHz SMD Discriminator*
- *KHz SMD Discriminator*
- *MHz SMD Ceramic Filter*
- *MHz Thru Hole Ceramic Filter*
- *KHz SMD Ceramic Filter*
- *KHz Thru Hole Ceramic Filter*

Crystals & Oscillators

MHz SMD Ceramic Resonators CRAW series

RFQ

Request For Quotation

L2.5*W2.0*H0.9mm

MAIN FEATURE

- Extra SMD Package, 2 pads
- Low Cost and short lead time

APPLICATION

- Clock oscillators for microprocessors
- Small electronic equipment and more

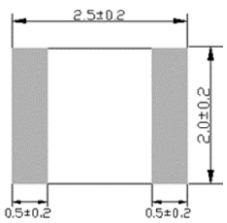
STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	20.00		60.00	MHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-25	-	+85	°C	
Storage Temperature Range	-55	-	+85	°C	
Capacitance (C1/C2)		-	-	pF	
		15	-		MX: 20.00~25.99MHz
	-	5	-		MX: 26.00~60.00MHz
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-25 °C ~+85 °C
Resonant Impedance	-	-	60	ohm	
Aging per year*	-	-	±0.3	%	From initial value
Withstanding Voltage		50		V	DC，5s Max.
Insulation Resistance Ri	500			MΩ	10V，1min
Rating Voltage UR		6		V	DC
		15		V	p-p AC
IC	MX: 1/6TC74HCU04				

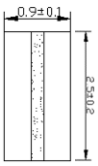
* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)

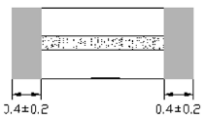
Top View



Side View

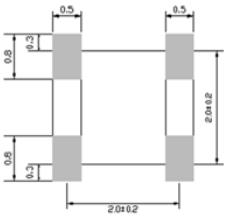


Bottom View



Connection
#1 In/Out
#2 Output/Input

Solder Pattern



PART NUMBER GUIDE

Example: TGS CRAW 30.0MX TLF

Part Number and Part Code Structure

TGS	CR	A	W	30.0	MX	T	LF XX
1	2	3	4	5	6	7	8 9

1) TGS: Company Code
2) CR: SMD Ceramic Resonator
3) A: Without Built-in Capacitance , 2 Pads
4) W: Outline Dimensions L2.5*W2.0*H0.9mm
5) 30.0: Frequency Range in MHz, 30.000MHz or Specify
6) MX: Design Mode for different Frequency range, MX: 20.00~60.00MHz
7) T: Package in Tape/Reel, 3000pcs/Reel
8) LF: RoHS Compliant
9) XX: Intenal Control Code; Blank: N/A

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MHz SMD Ceramic Resonators CRTW series

Crystals & Oscillators

RFQ

Request For Quotation

L2.5*W2.0*H1.1mm

MAIN FEATURE

- Extra SMD Package, 3 pads • Built-in Capacitance
- Low Cost and short lead time

APPLICATION

- Clock oscillators for microprocessors
- Small electronic equipment and more

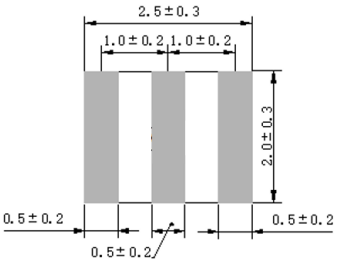
STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	20.00		60.00	MHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-25	-	+85	°C	
Storage Temperature Range	-55	-	+85	°C	
Built-in Capacitance		-	-	pF	-
		15	-		MX: 20.00~25.99MHz
	-	5	-		MX: 26.00~60.00MHz
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-25 °C ~+85 °C
Resonant Impedance	-	-	60	ohm	
Aging per year*	-	-	±0.3	%	From initial value
Withstanding Voltage		50		V	DC，5s Max.
Insulation Resistance Ri	500			MΩ	10V，1min
Rating Voltage UR		6		V	DC
		15		V	p-p AC
IC	MX: 1/6TC74HCU04				

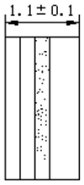
* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)

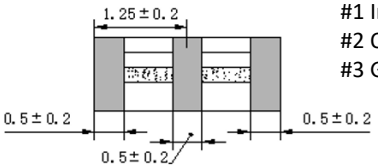
Top View



Side View

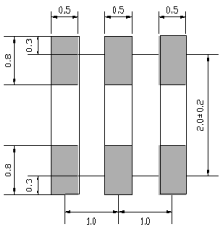


Bottom View



Connection
#1 In/Out
#2 Output/Input
#3 Ground

Solder Pattern



PART NUMBER GUIDE

Example: TGS CRTW 25.0MX TLF

Part Number and Part Code Structure

TGS	CR	T	W	25.0	MX	T	LF XX
1	2	3	4	5	6	7	8 9

1) TGS: Company Code
2) CR: SMD Ceramic Resonator
3) T: Built-in Capacitance , 3 Pads, different value pF for frequency range
4) W: Outline Dimensions L2.5*W2.0*H1.1mm
5) 25.0: Frequency Range in MHz, 25.000MHz or Specify
6) MX: Design Mode for different Frequency range, MX: 20.00~60.00MHz
7) T: Package in Tape/Reel, 3000pcs/Reel
8) LF: RoHS Compliant
9) XX: Intenal Control Code; Blank: N/A

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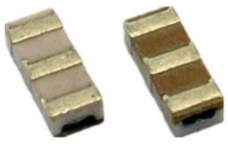
MHz SMD Ceramic Resonators CRTE series

Crystals & Oscillators

RFQ

Request For Quotation



L3.2*W1.3*H1.0mm

MAIN FEATURE

- Extra SMD Package, 3 pads • Built-in Capacitance
- Low Cost and short lead time

APPLICATION

- Clock oscillators for microprocessors
- Small electronic equipment and more

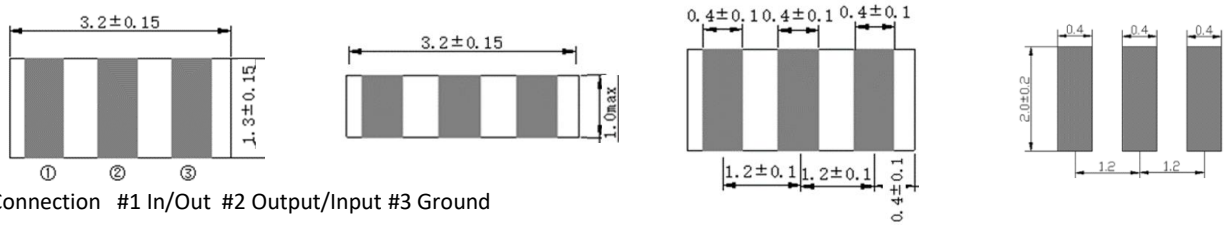
STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	8.00		12.00	MHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-25	-	+85	°C	
Storage Temperature Range	-55	-	+85	°C	
Built-in Capacitance		30	-	pF	MG: 8.00~12.00MHz
		-	-		-
	-	-	-		-
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-25 °C ~+85 °C
Resonant Impedance	-	-	40	ohm	
Aging per year*	-	-	±0.3	%	From initial value
Withstanding Voltage		50		V	DC，5s Max.
Insulation Resistance Ri	500			MΩ	10V，1min
Rating Voltage UR		6		V	DC
		15		V	p-p AC
IC	MG: 1/6TC4069UBP				

* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)

Top View **Side View** **Bottom View** **Solder Pattern**



Connection #1 In/Out #2 Output/Input #3 Ground

PART NUMBER GUIDE

Example: TGS CRTE 8.0MG TLF

Part Number and Part Code Structure

TGS	CR	T	E	8.0	MG	T	LF XX
1	2	3	4	5	6	7	8 9

1) TGS: Company Code
2) CR: SMD Ceramic Resonator
3) T: Built-in Capacitance , 3 Pads, different value pF for frequency range
4) E: Outline Dimensions L3.2*W1.3*H1.0mm
5) 8.0: Frequency Range in MHz, 8.000MHz or Specify
6) MG: Design Mode for different Frequency range, MG: 8.00~12.00MHz
7) T: Package in Tape/Reel, 3000pcs/Reel
8) LF: RoHS Compliant
9) XX: Intenal Control Code; Blank: N/A

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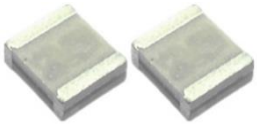
MHz SMD Ceramic Resonators CRAV series

Crystals & Oscillators

RFQ

Request For Quotation



L3.7*W3.1*H1.2mm

MAIN FEATURE

- Extra SMD Package, 2 pads
- Low Cost and short lead time

APPLICATION

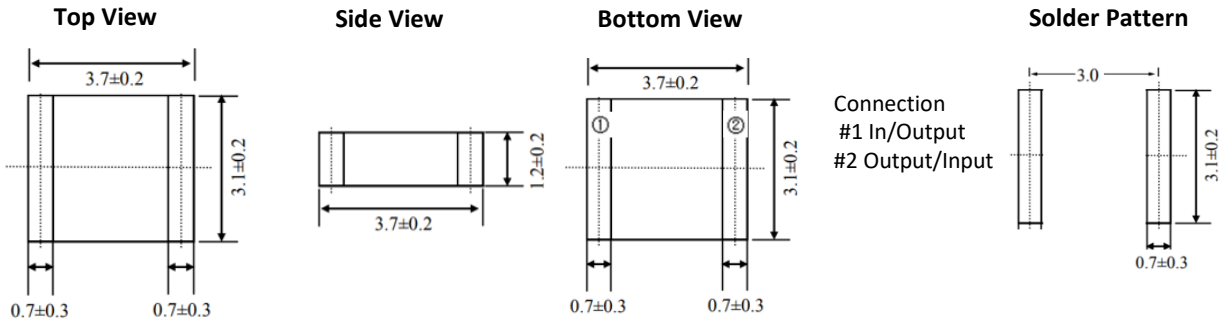
- Clock oscillators for microprocessors
- Small electronic equipment and more

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	8.00		60.00	MHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-25	-	+85	°C	
Storage Temperature Range	-55	-	+85	°C	
Capacitance (C1/C2)		N/A	-	pF	MT(8.00~13.00MHz)/MX (16.00~20.00MHz)
		-	-		MX: 20.01~25.99MHz
	-	-	-		MX: 26.00~60.00MHz
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-25 °C ~+85 °C
Resonant Impedance	-	-	40	ohm	
Aging per year*	-	-	±0.3	%	From initial value
Withstanding Voltage		50		V	DC，5s Max.
Insulation Resistance Ri	500			MΩ	10V，1min
Rating Voltage UR		6		V	DC
		15		V	p-p AC
IC	MX: 1/6TC74HCU04. MT: 1/6TC4069UBP				

* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)



PART NUMBER GUIDE

Example: TGS CRAV 8.0MT TLF

Part Number and Part Code Structure

TGS	CR	A	V	8.0	MT	T	LF XX
1	2	3	4	5	6	7	8 9

1) TGS: Company Code
2) CR: SMD Ceramic Resonator
3) A: Without Built-in Capacitance , 2 Pads
4) V: Outline Dimensions L3.7*W3.1*H1.2mm
5) 8.0: Frequency Range in MHz, 8.000MHz or Specify
6) MT: Design Mode for different Frequency range; MT: 8.00~13.00MHz; MX:16.00~60.00MHz
7) T: Package in Tape/Reel, 4000pcs/Reel
8) LF: RoHS Compliant
9) XX: Intenal Control Code; Blank: N/A

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MHz SMD Ceramic Resonators CRTV series

Crystals & Oscillators

RFQ

Request For Quotation

L3.7*W3.1*H1.5mm

MAIN FEATURE

- Extra SMD Package, 3 pads • Built-in Capacitance
- Low Cost and short lead time

APPLICATION

- Clock oscillators for microprocessors
- Small electronic equipment and more

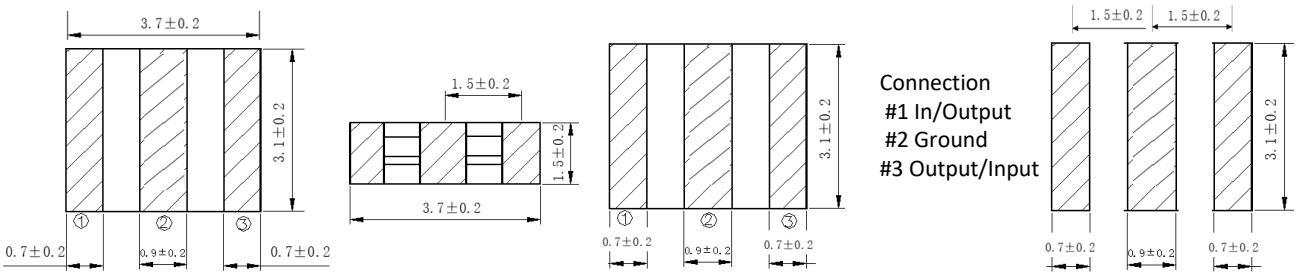
STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	8.00		60.00	MHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-25	-	+85	°C	
Storage Temperature Range	-55	-	+85	°C	
Built-in Capacitance		30	-	pF	MT(8.00~13.00MHz)/MX (16.00~20.00MHz)
		15	-		MX: 20.01~25.99MHz
	-	5	-		MX: 26.00~60.00MHz
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-25 °C ~+85 °C
Resonant Impedance	-	-	40	ohm	
Aging per year*	-	-	±0.3	%	From initial value
Withstanding Voltage		50		V	DC，5s Max.
Insulation Resistance Ri	500			MΩ	10V，1min
Rating Voltage UR		6		V	DC
		15		V	p-p AC
IC	MX: 1/6TC74HCU04. MT: 1/6TC4069UBP				

* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)

Top View **Side View** **Bottom View** **Solder Pattern**



PART NUMBER GUIDE

Example: TGS CRTV 16.0MX TLF

Part Number and Part Code Structure

TGS	CR	T	V	16.0	MX	T	LF XX
1	2	3	4	5	6	7	8 9

1) TGS: Company Code
2) CR: SMD Ceramic Resonator
3) T: Built-in Capacitance , 3 Pads, different value pF for frequency range
4) V: Outline Dimensions L3.7*W3.1*H1.5mm
5) 16.0: Frequency Range in MHz, 16.000MHz or Specify
6) MX: Design Mode for different Frequency range; MT: 8.00~13.00MHz; MX:16.00~60.00MHz
7) T: Package in Tape/Reel, 4000pcs/Reel
8) LF: RoHS Compliant
9) XX: Intenal Control Code; Blank: N/A

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Crystals & Oscillators

MHz SMD Ceramic Resonators CRAR series

RFQ

Request For Quotation

L4.5*W2.0*H1.2mm

MAIN FEATURE

- Extra SMD Package, 2 pads
- Low Cost and short lead time

APPLICATION

- Clock oscillators for microprocessors
- Small electronic equipment and more

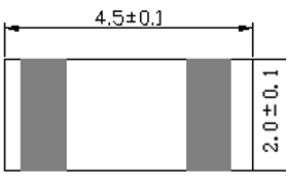
STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	4.00		8.00	MHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-25	-	+85	°C	
Storage Temperature Range	-55	-	+85	°C	
Capacitance (C1/C2)		30	-	pF	MG: 4.00~8.00MHz
		-	-		-
	-	-	-		-
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-25 °C ~+85 °C
Resonant Impedance	-	-	40	ohm	
Aging per year*	-	-	±0.3	%	From initial value
Withstanding Voltage		50		V	DC，5s Max.
Insulation Resistance Ri	500			MΩ	10V，1min
Rating Voltage UR		6		V	DC
		15		V	p-p AC
IC	MG: 1/6TC4069UBP				

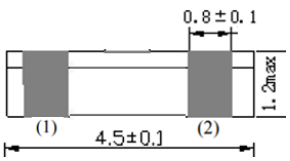
* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)

Top View

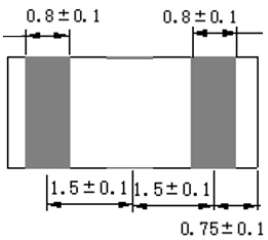


Side View

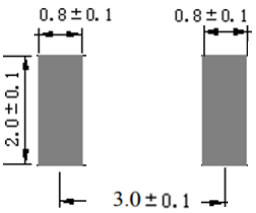


#1 In/Output
#2 Output/Input

Bottom View



Solder Pattern



PART NUMBER GUIDE

Example: TGS CRAR 8.0MG TLF

Part Number and Part Code Structure

TGS	CR	A	R	8.0	MG	T	LF XX
1	2	3	4	5	6	7	8 9

1) TGS: Company Code
2) CR: SMD Ceramic Resonator
3) A: Without Built-in Capacitance , 2 Pads
4) R: Outline Dimensions L4.5*W2.0*H1.2mm
5) 8.0: Frequency Range in MHz, 8.000MHz or Specify
6) MG: Design Mode for different Frequency range; MG: 4.00~8.00MHz
7) T: Package in Tape/Reel, 3000pcs/Reel
8) LF: RoHS Compliant
9) XX: Intenal Control Code; Blank: N/A

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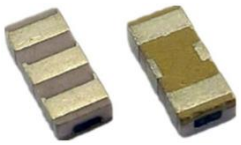
Crystals & Oscillators

MHz SMD Ceramic Resonators CRTR series

RFQ

Request For Quotation



L4.5*W2.0*H1.2mm

MAIN FEATURE

- Extra SMD Package, 3 pads • Built-in Capacitance
- Low Cost and short lead time

APPLICATION

- Clock oscillators for microprocessors
- Small electronic equipment and more

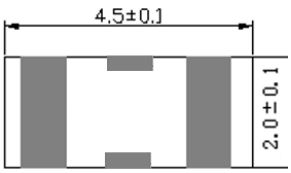
STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	4.00		8.00	MHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-25	-	+85	°C	
Storage Temperature Range	-55	-	+85	°C	
Built-in Capacitance		30	-	pF	MG: 4.00~8.00MHz
		-	-		-
	-	-	-		-
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-25 °C ~+85 °C
Resonant Impedance	-	-	40	ohm	
Aging per year*	-	-	±0.3	%	From initial value
Withstanding Voltage		50		V	DC，5s Max.
Insulation Resistance Ri	500			MΩ	10V，1min
Rating Voltage UR		6		V	DC
		15		V	p-p AC
IC	MG: 1/6TC4069UBP				

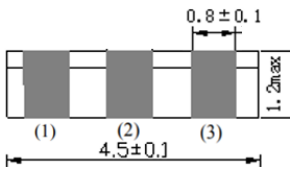
* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)

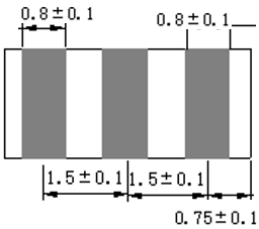
Top View



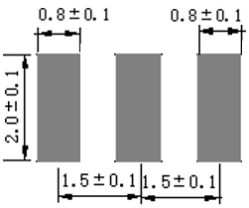
Side View



Bottom View



Solder Pattern



#1 In/Output #2 Ground #3 Output/Input

PART NUMBER GUIDE

Example: TGS CRTR 8.0MX TLF

Part Number and Part Code Structure

TGS	CR	T	R	8.0	MG	T	LF XX
1	2	3	4	5	6	7	8 9

1) TGS: Company Code
2) CR: SMD Ceramic Resonator
3) T: Built-in Capacitance , 3 Pads, different value pF for frequency range
4) R: Outline Dimensions L4.5*W2.0*H1.2mm
5) 8.0: Frequency Range in MHz, 16.000MHz or Specify
6) MG: Design Mode for different Frequency range; MG: 4.00~8.00MHz
7) T: Package in Tape/Reel, 3000pcs/Reel
8) LF: RoHS Compliant
9) XX: Intenal Control Code; Blank: N/A

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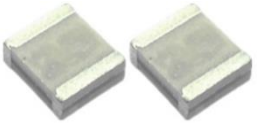
Crystals & Oscillators

MHz SMD Ceramic Resonators CRAS series

RFQ

Request For Quotation



L4.7*W4.1*H1.7mm

MAIN FEATURE

- Extra SMD Package, 2 pads
- Low Cost and short lead time

APPLICATION

- Clock oscillators for microprocessors
- Small electronic equipment and more

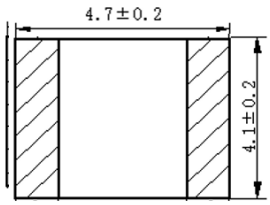
STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	6.00		60.00	MHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-25	-	+85	°C	
Storage Temperature Range	-55	-	+85	°C	
Capacitance (C1/C2)		30	-	pF	MT(6.00~13.00MHz)/MX (13.01~20.00MHz)
		15	-		MX: 20.01~25.99MHz
	-	5	-		MX: 26.00~60.00MHz
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-25 °C ~+85 °C
Resonant Impedance	-	-	40	ohm	
Aging per year*	-	-	±0.3	%	From initial value
Withstanding Voltage		50		V	DC，5s Max.
Insulation Resistance Ri	500			MΩ	10V，1min
Rating Voltage UR		6		V	DC
		15		V	p-p AC
IC	MX: 1/6TC74HCU04. MT: 1/6TC4069UBP				

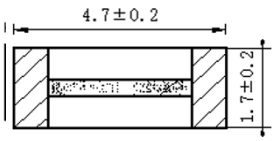
* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)

Top View

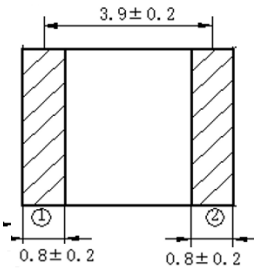


Side View

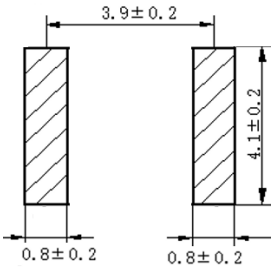


#1 In/Output #2 Output/Input

Bottom View



Solder Pattern



PART NUMBER GUIDE

Example: TGS CRAS 16.0MG TLF

Part Number and Part Code Structure

TGS	CR	A	S	16.0	MX	T	LF XX
1	2	3	4	5	6	7	8 9

1) TGS: Company Code
2) CR: SMD Ceramic Resonator
3) A: Without Built-in Capacitance , 2 Pads
4) S: Outline Dimensions L4.7*W4.1*H1.7mm
5) 16.0: Frequency Range in MHz, 16.000MHz or Specify
6) MX: Design Mode for different Frequency range; MT: 6.00~13.00MHz; MX: 13.01~60.00MHz
7) T: Package in Tape/Reel, 1000pcs/Reel
8) LF: RoHS Compliant
9) XX: Intenal Control Code; Blank: N/A

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Crystals & Oscillators

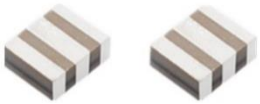
MHz SMD Ceramic Resonators CRTS series

RFQ

Request For Quotation

MAIN FEATURE

- Extra SMD Package, 3 pads • Built-in Capacitance
- Low Cost and short lead time



L4.7*W4.1*H1.8mm

APPLICATION

- Communication and more

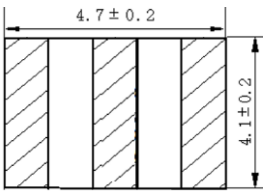
STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	6.00		60.00	MHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-25	-	+85	°C	
Storage Temperature Range	-55	-	+85	°C	
Built-in Capacitance		30	-	pF	MT(6.00~13.00MHz)/MX (13.01~20.00MHz)
		15	-		MX: 20.01~25.99MHz
	-	5	-		MX: 26.00~60.00MHz
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-25 °C ~+85 °C
Resonant Impedance	-	-	40	ohm	
Aging per year*	-	-	±0.3	%	From initial value
Withstanding Voltage		50		V	DC，5s Max.
Insulation Resistance Ri	500			MΩ	10V，1min
Rating Voltage UR		6		V	DC
		15		V	p-p AC
IC	MX: 1/6TC74HCU04. MT: 1/6TC4069UBP				

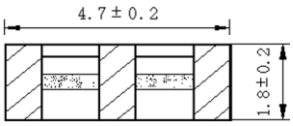
* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)

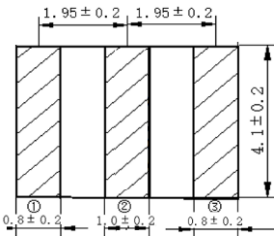
Top View



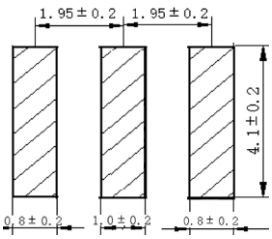
Side View



Bottom View



Solder Pattern



#1 In/Output #2 Ground #3 Output/Input

PART NUMBER GUIDE

Example: TGS CRTS 16.0MX TLF

Part Number and Part Code Structure

TGS	CR	T	S	16.0	MX	T	LF XX
1	2	3	4	5	6	7	8 9

1) TGS: Company Code
2) CR: SMD Ceramic Resonator
3) T: Built-in Capacitance , 3 Pads, different value pF for frequency range
4) S: Outline Dimensions L4.7*W4.1*H1.8mm
5) 16.0: Frequency Range in MHz, 16.000MHz or Specify
6) MX: Design Mode for different Frequency range; MT: 6.00~13.00MHz; MX: 13.01~60.00MHz
7) T: Package in Tape/Reel, 1000pcs/Reel
8) LF: RoHS Compliant
9) XX: Intenal Control Code; Blank: N/A

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MHz SMD Ceramic Resonators CRAP series

Crystals & Oscillators

RFQ

Request For Quotation

MAIN FEATURE

- Extra SMD Package, 2 pads
- Low Cost and short lead time

L6.0*W3.0*H1.4mm

APPLICATION

- Communication and more

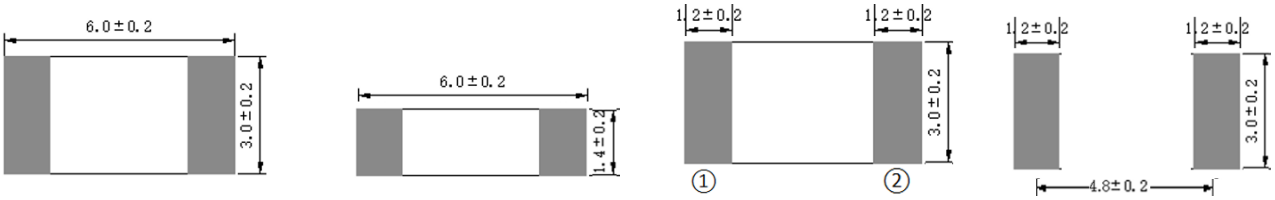
STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	2.00		12.00	MHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-25	-	+85	°C	
Storage Temperature Range	-55	-	+85	°C	
Capacitance (C1/C2)		30	-	pF	MG: 2.00~12.00MHz
		-	-		-
	-	-	-		-
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-25 °C ~+85 °C
Resonant Impedance	-	-	30	ohm	
Aging per year*	-	-	±0.3	%	From initial value
Withstanding Voltage		50		V	DC，5s Max.
Insulation Resistance Ri	500			MΩ	10V，1min
Rating Voltage UR		6		V	DC
		15		V	p-p AC
IC	MG: 1/6TC4069UBP				

* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)

Top View **Side View** **Bottom View** **Solder Pattern**



#1 In/Output #2 Output/Input

PART NUMBER GUIDE

Example: TGS CRAP 8.0MG TLF

Part Number and Part Code Structure

TGS	CR	A	P	8.0	MG	T	LF XX
1	2	3	4	5	6	7	8 9

1) TGS: Company Code
2) CR: SMD Ceramic Resonator
3) A: Without Built-in Capacitance , 2 Pads
4) P: Outline Dimensions L6.0*W3.0*H1.4mm
5) 8.0: Frequency Range in MHz, 8.000MHz or Specify
6) MG: Design Mode for different Frequency range; MG: 2.00~12.00MHz
7) T: Package in Tape/Reel, 4000pcs/Reel
8) LF: RoHS Compliant
9) XX: Intenal Control Code; Blank: N/A

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MHz SMD Ceramic Resonators CRTP series

Crystals & Oscillators

RFQ

Request For Quotation

MAIN FEATURE

- Extra SMD Package, 3 pads • Built-in Capacitance
- Low Cost and short lead time

APPLICATION

- Communication and more

L6.0*W3.0*H1.5mm

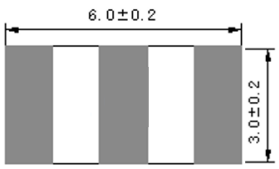
STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	6.00		60.00	MHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-25	-	+85	°C	
Storage Temperature Range	-55	-	+85	°C	
Built-in Capacitance		30	-	pF	MG: 2.00~12.00MHz
		-	-		-
	-	-	-		-
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-25 °C ~+85 °C
Resonant Impedance	-	-	40	ohm	
Aging per year*	-	-	±0.3	%	From initial value
Withstanding Voltage		50		V	DC，5s Max.
Insulation Resistance Ri	500			MΩ	10V，1min
Rating Voltage UR		6		V	DC
		15		V	p-p AC
IC	MG: 1/6TC4069UBP				

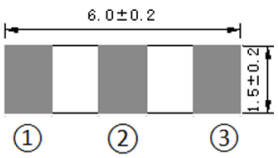
* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)

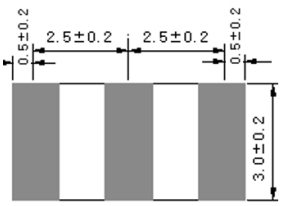
Top View



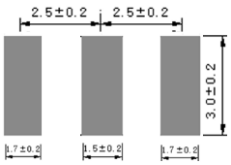
Side View



Bottom View



Solder Pattern



#1 In/Output #2 Ground #3 Output/Input

PART NUMBER GUIDE

Example: TGS CRTP 8.0MG TLF

Part Number and Part Code Structure

TGS	CR	T	P	8.0	MG	T	LF XX
1	2	3	4	5	6	7	8 9

1) TGS: Company Code
2) CR: SMD Ceramic Resonator
3) T: Built-in Capacitance, 3 Pads, different value pF for frequency range
4) P: Outline Dimensions L6.0*W3.0*H1.5mm
5) 8.0: Frequency Range in MHz, 8.000MHz or Specify
6) MG: Design Mode for different Frequency range; MG: 2.00~12.00MHz
7) T: Package in Tape/Reel, 1000pcs/Reel
8) LF: RoHS Compliant
9) XX: Intenal Control Code; Blank: N/A

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MHz Thru Hole Ceramic Resonators CRA series

Crystals & Oscillators

RFQ
Request For Quotation

Legacy Part- Not Recommended for New Designs

MAIN FEATURE

- Thru Hole type, 2 pins • Height for different frequency range
- Low Cost and short lead time

APPLICATION

- Communication and more

L10.0*W5.0*H

H: Different Height for Freq. Range

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	1.79		60.00	MHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-25	-	+85	°C	
Storage Temperature Range	-55	-	+85	°C	
Capacitance (C1/C2)		30	-	pF	MG/MT/MX(12.00~23.99MHz)
		15	-		MX: 24.00~31.99MHz
	-	5	-		MX: 32.00~60.00MHz
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-25 °C ~+85 °C
Resonant Impedance	25	30	80	ohm	
Aging per year*	-	-	±0.3	%	From initial value
Withstanding Voltage		50		V	DC，5s Max.
Insulation Resistance Ri	500			MΩ	10V，1min
Rating Voltage UR		6		V	DC
		15		V	p-p AC
IC	MG/MT: 1/6TC4069UBP, MX: 1/6TC74HCU04				

* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)

Side View

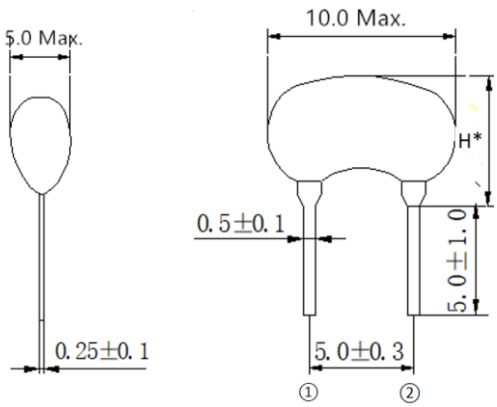

Table 1

H* (mm)	Design Mode	Frequency Range (MHz)
7.5 Max	MG	1.7900~6.000
10.0 Max.	MT	6.010~13.00
10.0 Max.	MX	12.00~23.99
7.5 Max.	MX	24.00~31.99
6.5 Max.	MX	32.00~60.00

#1 In/Output
#2 Output/Input

PART NUMBER GUIDE

Example: TGS CRA 18.4MX BLF

Part Number and Part Code Structure

TGS	CRA	18.4	MX	B	LF XX
1	2	3	4	5	6 7

1) TGS: Company Code
2) CRA: Ceramic Resonator, Without Built-in Capacitance, 2 Pins
4) 18.4: Frequency Range in MHz, 18.40MHz or specify
5) MX: Design Mode for different Frequency range, see table 1
6) B: Package in BULK, 500pcs/Plastic Bag
7) LF: RoHS Compliant
8) XX: Internal Control Code- 2 letter or digits; Blank: N/A

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Crystals & Oscillators

MHz Thru Hole Ceramic Resonators CRT series

RFQ
Request For Quotation

Legacy Part- Not Recommended for New Designs

L10.0*W5.0*H

H: Different Height for Freq. Range

MAIN FEATURE

- Thru Hole type, 3 pins • Height for different frequency range
- Low Cost and short lead time
- Tape/box package option

APPLICATION

- Communication and more

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	2.00		60.00	MHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-25	-	+85	°C	
Storage Temperature Range	-55	-	+85	°C	
Built-in Capacitance		30	-	pF	MG/MT(8.01~13.0MHz)/MX(13.01~20.0MHz)
		15	-		MX: 20.01~25.99MHz
	-	5	-		MX: 26.00~60.00MHz
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-25 °C ~+85 °C
Resonant Impedance	25	30	80	ohm	
Aging per year*	-	-	±0.3	%	From initial value
Withstanding Voltage		50		V	DC, 5s Max.
Insulation Resistance Ri	500			MΩ	10V, 1min
Rating Voltage UR		6		V	DC
		15		V	p-p AC
IC	MG/MT: 1/6TC4069UBP, MX: 1/6TC74HCU04				

* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)

Side View

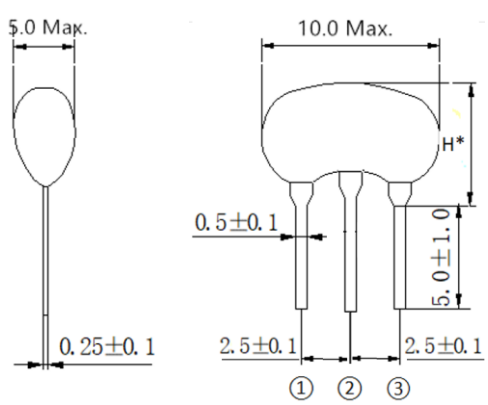

Table 1

H* (mm)	Design Mode	Frequency Range (MHz)
7.5 Max	MG	2.000~8.000
10.0 Max.	MT	8.010~13.00
10.0 Max.	MX	13.01~60.00

#1 In/Output
#2 Ground
#3 Output/Input

PART NUMBER GUIDE

Example: TGS CRT 18.4MX BLF

Part Number and Part Code Structure

TGS	CRT	18.4	MX	B	LF XX
1	2	3	4	5	6 7

1) TGS: Company Code
2) CRT: Ceramic Resonator Built-in Capacitance, 3 Pins
4) 18.4: Frequency Range in MHz, 18.40MHz or specify
5) MX: Design Mode for different Frequency range, see table 1
6) B: Package in BULK, 500pcs/Plastic Bag
7) LF: RoHS Compliant
8) XX: Internal Control Code- 2 letter or digits ; Blank: N/A

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MHz Thru Hole Ceramic Resonators CRAWS series

Crystals & Oscillators

RFQ
Request For Quotation

Legacy Part- Not Recommended for New Designs

L9.5*W4.0*H5.5

MAIN FEATURE

- Thru Hole type, 2 pins • Height for different frequency range
- Low Cost and short lead time
- Tape/box package option

APPLICATION

- Communication and more

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	2.00		6.00	MHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-25	-	+85	°C	
Storage Temperature Range	-55	-	+85	°C	
Capacitance (C1/C2)		30	-	pF	MG:2.00~6.00MHz
		-	-		
	-	-	-		
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-25 °C ~+85 °C
Resonant Impedance			30	ohm	
Aging per year*	-	-	±0.3	%	From initial value
Withstanding Voltage		50		V	DC，5s Max.
Insulation Resistance Ri	500			MΩ	10V，1min
Rating Voltage UR		6		V	DC
		15		V	p-p AC
IC	MG/: 1/6TC4069UBP				

* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)

Side View

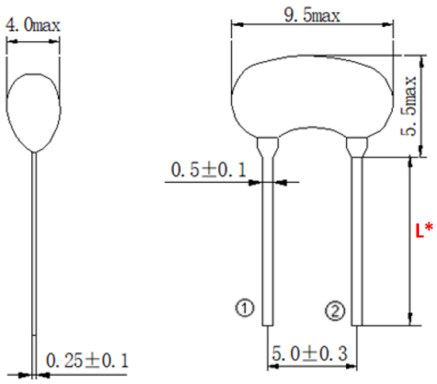

Table 1

L* (mm)	Package	Frequency Range (MHz)
13.5 Max	Tape/Box	2.000~6.000
5.0 Max.	In Bulk	2.000~6.000

#1 In/Output
#2 Output/Input

PART NUMBER GUIDE

Example: TGS CRA 4.0MG BLF

Part Number and Part Code Structure

TGS	CRA	4.0	MG	B	LF XX
1	2	3	4	5	6 7

1) TGS: Company Code
2) CRA: Ceramic Resonator, Without Built-in Capacitance, 2 Pins
4) 4.0: Frequency Range in MHz, 18.40MHz or specify
5) MG: Design Mode for different Frequency range. MG: 2.00~6.00MHz
6) B: Package in Bulk, 500pcs/Plastic Bag; T: Packed in Tape/Box, 2000pcs/Tape
7) LF: RoHS Compliant
8) XX: Internal Control Code- 2 letter or digits; Blank: N/A

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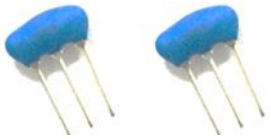
MHz Thru Hole Ceramic Resonators CRTWS series

Crystals & Oscillators

RFQ
Request For Quotation

Legacy Part- Not Recommended for New Designs



L9.5*W4.0*H5.5

MAIN FEATURE

- Thru Hole type, 3 pins • Height for different frequency range
- Low Cost and short lead time
- Tape/box package option

APPLICATION

- Communication and more

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	2.00		6.00	MHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-25	-	+85	°C	
Storage Temperature Range	-55	-	+85	°C	
Built-in Capacitance		30	-	pF	MG: 2.00~6.00MHz
			-		
	-		-		
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-25 °C ~+85 °C
Resonant Impedance	25	30	80	ohm	
Aging per year*	-	-	±0.3	%	From initial value
Withstanding Voltage		50		V	DC，5s Max.
Insulation Resistance Ri	500			MΩ	10V，1min
Rating Voltage UR		6		V	DC
		15		V	p-p AC
IC	MG: 1/6TC4069UBP				

* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)

Side View

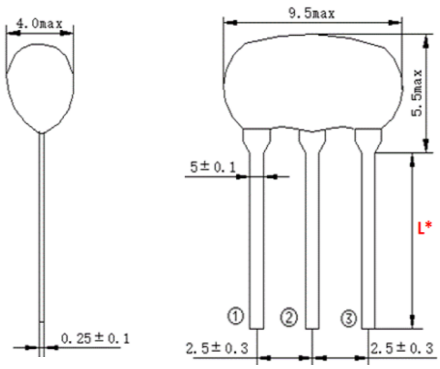


Table 1

L* (mm)	Package	Frequency Range (MHz)
13.5 Max	Tape/Box	2.000~6.000
5.0 Max.	In Bulk	2.000~6.000

#1 In/Output
#2 Ground
#3 Output/Input

PART NUMBER GUIDE

Example: TGS CRT 4.0MG TLF

Part Number and Part Code Structure

TGS	CRT	4.0	MG	T	LF XX
1	2	3	4	5	6 7

1) TGS: Company Code
2) CRT: Ceramic Resonator Built-in Capacitance, 3 Pins
4) 4.0: Frequency Range in MHz, 4.00MHz or specify
5) MG: Design Mode for different Frequency range. MG: 2.00~6.00MHz
6) T: Package in Bulk, 500pcs/Plastic Bag; T: Packed in Tape/Box, 2000pcs/Tape
7) LF: RoHS Compliant
8) XX: Internal Control Code- 2 letter or digits ; Blank: N/A

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KHz SMD Ceramic Resonators CRBM series

Crystals & Oscillators

RFQ
Request For Quotation

Legacy Part- Not Recommended for New Designs

L7.0*W3.5*H9.0mm
Varies with Frequency Range

MAIN FEATURE

- SMD Package, 2 Pins, Lead Formed
- Compatible to Murata CSBFB
- Low Cost and short lead time
- Varies with Frequency Range

APPLICATION

- Communication and more

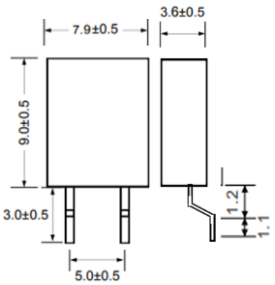
STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequeny Range	375	455	1250	KHz	see p/n guide or Specify
Frequency Accuracy		±0.5		%	@25 °C
Operating Temperture Range	-20	-	+85	°C	
Storage Temperature Range	-35	-	+85	°C	
Capacitance (C1/C2)	-	120/470	-	pF	C1: 120; C2: 470 for 375~429 KHz
		100	-		430~1250 KHz
	-		-		-
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-20 °C ~+85 °C
Resonant Impedance	-	-	100	ohm	See table 1
Aging per year*	-	-	±0.5	%	From initial value
Withstanding Voltage		100		V	DC，5s Max.
Insulation Resistance Ri	100			MΩ	10V，1min
Rating Voltage UR		50		V	DC
		15		V	p-p AC
IC	1/6CD4069UBE				

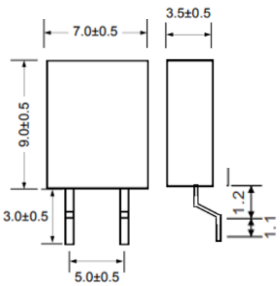
* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)

CRBMA



CRBMB



CRBMC

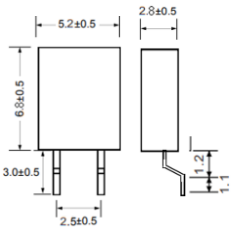


Table 1

Series No.	ESR (ohm) Max.	Frequency Range (KHz)
CRBMA	20	375~400
CRBMB	20	401~509
CRBMB	30	510~699
CRBMC	50	700~900
CRBMC	70	901~999
CRBMC	100	1000~1250

#1 In/Output #2 Output/Input

PART NUMBER GUIDE

Example: TGS CRBMB 455 TLF

Part Number and Part Code Structure

TGS	CR	B	M	B	455	T	LF XX
1	2	3	4	5	6	7	8 9

1) TGS: Company Code
2) CR: Ceramic Resonator
3) B: 2 Pins
4) M: SMD Package , Lead Formed
5) B: Outline dimension, A: L7.9*W3.6*H9.0mm, B: L7.0*W3.5*H9.0mm; C: L5.2*W2.8*H6.8mm
6) 455: Frequency range; 455: 455KHz or specify
7) T: Package in Tape/Reel, 1000pcs/Reel
8) LF: RoHS Compliant
9) XX: Internal Control Code; Blank: N/A

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KHz Thru Hole Ceramic Resonators CRB series

Crystals & Oscillators

RFQ
Request For Quotation

Legacy Part- Not Recommended for New Designs

L7.0*W3.5*H9.0mm
Varies with Frequency Range

MAIN FEATURE

- Thru Hole Type, 2 Pins
- Low Cost and short lead time
- Varies with Frequency Range
- Compatible to Murata CSB Series

APPLICATION

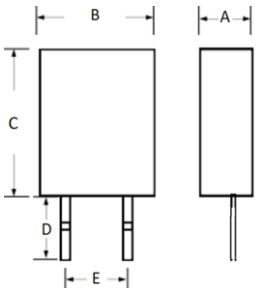
- Communication and more

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequency Range	190	455	1250	KHz	see p/n guide or Specify
Frequency Accuracy		±1.0		KHz	@25 °C , see table 1
Operating Temperature Range	-20	-	+85	°C	
Storage Temperature Range	-35	-	+85	°C	
Capacitance (C1/C2)	-	330/470	-	pF	330/470: 190~249KHz
		-	-		220/470: 250~374KHz; 120/470: 275~429KHz
	-	100	-		430~1250KHz
Temperature Coefficient	-	±0.3	-	%	Oscillation Freq. drift @-20 °C ~+85 °C
Resonant Impedance	-	-	100	ohm	See table 1
Aging per year*	-	-	±0.5	%	From initial value
Withstanding Voltage		100		V	DC，5s Max.
Insulation Resistance Ri	100			MΩ	10V，1min
Rating Voltage UR		50		V	DC
		15		V	p-p AC
IC	1/6CD4069UBE				

* Parts shall be left in a chamber of +85 °C ±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

DIMENSION (mm)



#1 In/Output
#2 Output/Input

Table 1

Frequency Range (KHz)	Dimension (+/-0.3mm)					ESR (ohm) Max.	Frequency Tolerance @25 °C
	A	B	C	D	E		
190~249	3.8	13.5	14.7	8.0	10.0	20	+/-1.0KHz
250~374	3.8	11.0	12.2	7.0	7.7	20	
375~449	3.6	7.9	9.3	6.0	5.0	20	+/-2.0KHz
450~699	3.5	7.0	9.0	5.0	5.0	40	
700~1250	2.2	5.0	6.0	3.5	2.5	100	+/-0.5%

PART NUMBER GUIDE

Example: TGS CRB 455E BLF

Part Number and Part Code Structure

TGS	CR	B	455	E	B	LF	XX
1	2	3	4	5	6	7	8

1) TGS: Company Code
2) CR: Ceramic Resonator
3) B: 2 Pins
4) 455: Frequency range; 455: 455KHz or specify
5) E: Grade for different frequency range
6) B: Packed in Bulk
7) LF: RoHS Compliant
8) XX: Internal Control Code; Blank: N/A

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RFQ

Request For Quotation

MAIN FEATURE

- Extra SMD Package, 2 pads, 10.7000MHz
- Low Cost and short lead time • Compatible to Murata CDACC Series

L3.7*W3.1*H1.4mm

APPLICATION

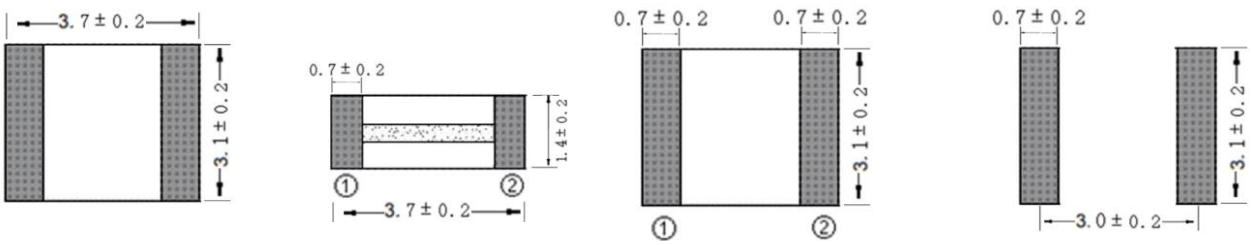
- Clock oscillators for microprocessors
- Small electronic equipment and more

STANDARD SPECIFICATION

Part Number	Demodulation Output at F0 mv (Min.)	Distortion Factor at F0% (max.)	3dB Band Width kHz (max.)	Applicable IC Model No.
TGS CDCV 10.7MG1 TLF	25	1.0	345	CX-2009, CX-20111
TGS CDCV 10.7MG3 TLF	650	1.0	±150	TA7303P,TA7130, PC1028H,LA1150
TGS CDCV 10.7MG16 TLF	60-90	0.9	300	TA8122AN
TGS CDCV 10.7MG18 TLF	60-90	0.9	300	TA8132N
TGS CDCV 10.7MG33 TLF	45	0.7	250	TA2007
TGS CDCV 10.7MG80 TLF	65	1.0	300	TA2104AFN
TGS CDCV 10.7MG82 TLF	90	0.8	320	TA2099N
TGS CDCV 10.7MG92 TLF	60	1.0	300	TA2132P
TGS CDCV 10.7MC1 TLF	35	1.0	242	CXA1019M,CX-20091

DIMENSION (mm)

Top View **Side View** **Bottom View** **Solder Pattern**



#1 In/Output #2 Output/Input

PART NUMBER GUIDE

Example: TGS CDCV10.7MG1 TLF

Part Number and Part Code Structure

TGS	CD	CV	10.7M	G1	T	LF	XX
1	2	3	4	5	6	7	8

1) TGS: Company Code
2) CD: Ceramic Discriminators
3) CV: SMD type, Outline Dimensions L3.7*W3.1*H1.4mm
4) 10.7M: Frequency Range in MHz, 10.70MHz
5) G1: Design Mode for IC
6) T: Packed in Tape/Reel, 3000pcs/Reel
7) LF: RoHS Compliant
8) XX: Internal Control Code; Blank: N/A

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KHz SMD Discriminators CDBC series

Crystals & Oscillators

RFQ

Request For Quotation

L6.2*W6.0*H3.1mm

MAIN FEATURE

- SMD Package, 2 pads, 450KHz & 455KHz
- Low Cost and short lead time • Compatible to Murata CDBKB Series

APPLICATION

- Communication and more

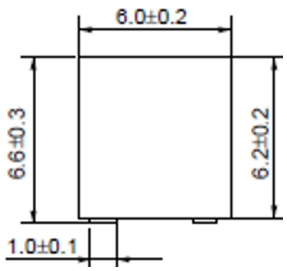
STANDARD SPECIFICATION

Short Part Number	*Freq. (f0) ± 1.0 (KHz)	Bandwidth Min. (KHz)	Output Min. (mV)	Factor @f0 Max. (%)	IC Model No.
TGS CDBC455C07 TLF	455.00	±4.0	350 ± 60	3.0	MC3357
TGS CDBC455C09 TLF	455.00	±4.0	120 ± 40	1.5	NE604N
TGS CDBC455C13 TLF	455.00	±4.0	330 ± 50	4.0	CXA1003BM
TGS CDBC455C16 TLF	455.00	±4.0	175 ± 40	2.0	MC3372
TGS CDBC455C24 TLF	455.00	±4.0	100 ± 40	2.0	TA31136
TGS CDBC455C27 TLF	455.00	±4.0	90 ± 30	2.0	TK10487
TGS CDBC455C28 TLF	455.00	±4.0	40 ± 20	3.0	TA31142F
TGS CDBC455C29 TLF	455.00	±4.0	100 ± 30	2.5	NE605
TGS CDBC455C35 TLF	455.00	±4.0	100 ± 40	2.5	TK10930
TGS CDBC455C36 TLF	455.00	±13.0	90 ± 30	2.5	NE(SA)606
TGS CDBC455C39 TLF	455.00	±11.0	130 ± 20	2.5	NE607/NE617
TGS CDBC455C40 TLF	455.00	±4.0	40 ± 20	3.5	TA31145
TGS CDBC455C49 TLF	455.00	±4.0	45 ± 10	3.0	MC3361
TGS CDBC455C50 TLF	455.00	±4.0	64 ± 6.4	4.0	CXA3117N
TGS CDBC455C66 TLF	455.00	±4.2	40 ± 10	4.0	NJM2590
TGS CDBC455C70 TLF	455.00	±5.0	85 ± 10	4.5	NJM2591V(JRC)
TGS CDBC455C71 TLF	455.00	±5.0	90 ± 30	5.0	NJM2590-2597
TGS CDBC455C72 TLF	455.00	±5.0	100 ± 40	3.0	NJM2590-2597

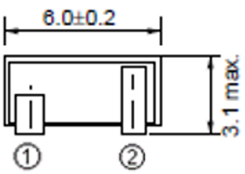
*Center Frequency Range 450.000KHz is also available

DIMENSION (mm)

Front View

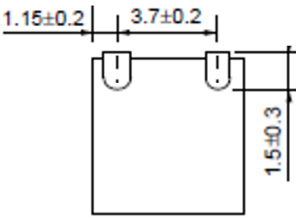


Side View

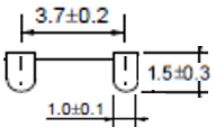


#1 In/Output #2 Output/Input

Bottom View



Solder Pattern



PART NUMBER GUIDE

Example: TGS CDBC455C24TLF

Part Number and Part Code Structure

TGS	CD	BC	455	C24	T	LF	XX
1	2	3	4	5	6	7	8

1) TGS: Company Code 2) CD: Ceramic Discriminators 3) BC: SMD Type, Outline Dimensions, L6.5*W6.0*H2.8mm

4) 455: Frequency Range in KHz, 455KHz or specify 5) C24: Design mode code

6) T: Package in Tape/Reel, 1000pcs/Reel 7) LF: RoHS compliant 8) XX: Internal Control Code- 2 letter or digital ; Blank: N/A

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MHz SMD Ceramic Filter CF33 series

Crystals & Oscillators

RFQ

Request For Quotation

L3.45*W3.1*H1.4mm

MAIN FEATURE

- SMD Package, 4 pads, 10.70MHz
- Low Cost and short lead time
- Compatible to Murata SFECF/SFECV Series

APPLICATION

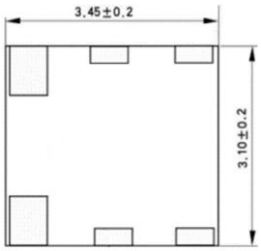
- Communication and more

STANDARD SPECIFICATION

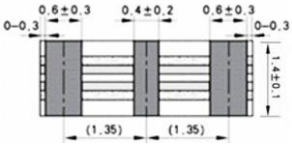
Short Part Number	Unit	CF33 10.7MS3	CF33 10.7MS2	CF33 10.7MSA5	CF33 10.7MSA20
3dB Band Width kHz (Min.)	KHz	180±40	230±50	280±50	330±50
20dB Band Width kHz (Max.)	KHz	470	510	590	700
Insertion Loss (Max.)	dB	4.5±2.0	3.5±2.0	3.0±2.0	3.0±2.0
Spurious Attenuation (9-12MHz)	dB	30	30	30	30
Operating Temp. Range	°C	-20~+85			
Storage Temp. Range	°C	-40~+85			
Ripple Max.	dB	1.0			
Temp. Coefficient of Freq. Max.	ppm/°C	±50 '@-20 ~ +80 °C			
Input/Output Impedance typ.	ohm	330			
Insulation Resistance Min.	Mohm	100 @DC 10V 1 minute+/-5 sec.			
Withstand DC Voltage Max.	V	50 @ 1 min			

DIMENSION (mm)

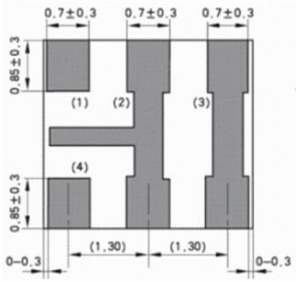
Top View



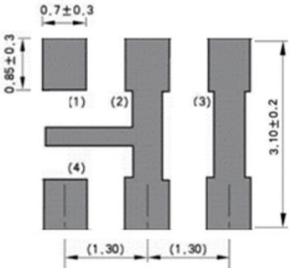
Side View



Bottom View



Solder Pattern



① Input ② Ground ③ N/A ④ Output

PART NUMBER GUIDE

Example: TGS CF33 10.7M SA5TLF

Part Number and Part Code Structure

TGS	CF 33	10.7M SA5	T	LF	XX
1	2	3 4	5	6	7

1) TGS: Company Code
2) CF33: Ceramic Filter, SMD Type L3.45*W3.1*H1.4mm
3) 10.7M: Frequency Range in MHz, 10.70MHz
4) SA5: Design Mode Code or Specify
5) T: Package in Tape/Reel, 4000pcs/Reel
6) LF: RoHS Compliant
7) XX: Internal Control Code- 2 letter or digits ; Blank: N/A

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MHz SMD Ceramic Filter CF73 series

Crystals & Oscillators

RFQ

Request For Quotation

L7.0*W3.0*H1.5mm

MAIN FEATURE

- SMD Package, 3 pads, 10.70MHz
- Low Cost and short lead time
- Compatible to Murata SFECF/SFECV Series

APPLICATION

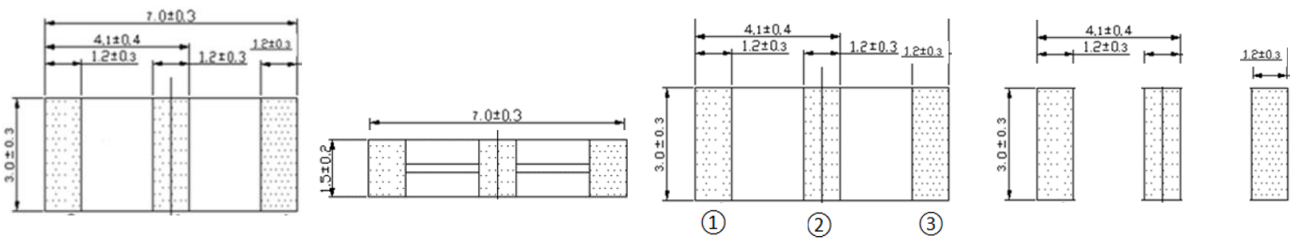
- Communication and more

STANDARD SPECIFICATION

Short Part Number	3dB Band Width	20dB Band Width	Insertion Loss	Spurious Attenuation (9-12MHz)	Operating Temp. Range	Storage Temp.	Ripple	Temp. Coefficient of Freq.	Input/ Output Impedance	Insulation Resistance	Withstand DC Voltage
	KHz Min	KHz Min	dB Max.	dB	°C	°C	dB Max.	ppm/°C Max.	ohm	Mohm Min.	V Max.
CF7310.7MAJ	150±40	430	≤10.0	30	-20~+85	-40~+85	1.0	±50	330	100 @DC 10V 1 minute +/-5 sec.	50 @ 1 min
CF7310.7MVJ	150±40	380	5.5±2.0	35							
CF7310.7MAS3	180±40	520	≤6.0	30							
CF7310.7MVS3	180±40	470	4.0±2.0	35							
CF7310.7MAS2	230±40	570	≤6.0	30							
CF7310.7MVS2	230±40	510	3.5±2.0	35							
CF7310.7MAA5	280±40	650	≤6.0	30							
CF7310.7MVA5	280±40	590	3.0±2.0	35							
CF7310.7MVA20	330±40	700	3.0±2.0	30							
CF7310.7MVA19	Fn±175.	950	3.0±2.0	20 (5-15MHz)					470		

DIMENSION (mm)

Top View **Side View** **Bottom View** **Solder Pattern**



① Input ② Ground ③ Output

PART NUMBER GUIDE

Example: TGS CF73 10.7MAA5 TLF

Part Number and Part Code Structure

TGS	CF73	10.7M	AA5	T	LF	XX
1	2	3	4	4	4	7

1) TGS: Company Code
2) CF73: Ceramic Filter, SMD Type L7.0*W3.0*H1.5mm
3) 10.7M: Frequency Range in MHz, 10.70MHz
4) AA5: Design Mode Code or specify
5) T: Package in Tape/Reel, 4000pcs/Reel
6) LF: RoHS Compliant
7) XX: Internal Control Code- 2 letter or digits ; Blank: N/A

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MHz Thru Hole Ceramic Filter CF series

Crystals & Oscillators

RFQ
Request For Quotation

Legacy Part- Not Recommended for New Designs

MAIN FEATURE

- SMD Package, 3 pins, 10.70MHz
- Low Cost and short lead time
- Compatible to Murata SFECF/SFECV Series

APPLICATION

- Communication and more

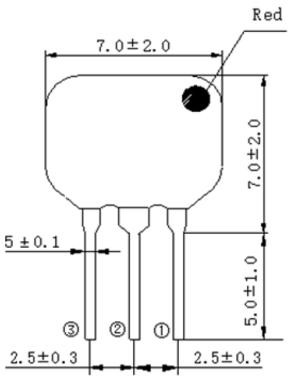
L7.0*W4.0*H7.0mm

STANDARD SPECIFICATION

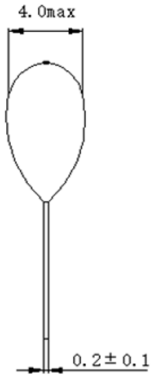
Part Number	3dB Band Width	20dB Band Width	Insertion Loss	Spurious Attenuation (9-12MHz)	Operating Temp. Range	Storage Temp. Range	Ripple	Temp. Coefficient of Freq.	Input/Output Impedance	Insulation Resistance	Withstand DC Voltage
	KHz Min	KHz Min	dB Max.	dB	°C	°C	dB Max.	ppm/°C Max.	ohm	Mohm Min.	V Max.
CF10.7MA5	280±50	650	6.0	30	-20~+85	-40~+85	1.0	±50	330	100 @DC 10V 1 minute +/-5 sec.	50 @ 1 min
CF10.7MS2	230±50	600	6.0	40							
CF10.7MS3	180±40	520	7.0	40							
CF10.7MA5A10	280±50	591	2.5±2.0	30							
CF10.7MS2A10	230±50	520	3.0±2.0	35							
CF10.7MS3A10	180±40	470	3.5±2.0	35							
CF10.7MJA10	150±40	360	4.5±2.0	35							
CF10.7MA21	400 min.	950	3.0±2.0	20							
CF10.7MA19	±170	950	3.0±2.0	20							
CF10.7MA20	330±50	680	4.0±2.0	30							
CF10.7MHY	110±30	350	5.5±2.0	30							
CF10.7MFP	20 Min.	95	6.0 Max.	24							
CF10.7MA5L	280±50	650	6.0	30							
CF10.7MS2L	230±50	600	6.0	40							
CF10.7MS3L	180±40	520	7.0	40							
CF10.7MJL	150±40	400	10.0	40							
CF10.7MA5LA10	280±50	590	2.5±1.5	30							
CF10.7MS2LA10	230±50	520	3.±2.0	35							
CF10.7MS3LA10	180±40	470	3.5±1.5	35							
CF10.7MJLA10	150±40	360	5.5±2.0	35							

DIMENSION (mm)

Top View



Side View



① Input
② Ground
③ Output

PART NUMBER GUIDE

Example: TGS CF 10.7MS3 BLF

Part Number and Part Code Structure

TGS	CF	10.7M	S3	B	LF	XX
1	2	3	4	5	6	7

1) TGS: Company Code
2) CF: Ceramic Filter, 3 pins, L7.0*W4.0*H7.0mm
3) 10.7M: Frequency Range in MHz, 10.70MHz
4) S3: Design Mode Code
5) B: Package in BULK, 500pcs/Plastic Bag
6) LF: RoHS Compliant
7) XX: Internal Control Code- 2 letter or digits ; Blank: N/A

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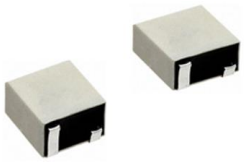
Crystals & Oscillators

KHz SMD Ceramic Filter CFTC U series

RFQ

Request For Quotation



L6.5*W6.0*H4.2mm

MAIN FEATURE

- SMD Package, 3 Pads, 455KHz & 450KHz
- Compatible to Murata CFUK Series • Low Cost and short lead time

APPLICATION

- Communication and more

STANDARD SPECIFICATION- 455KHz

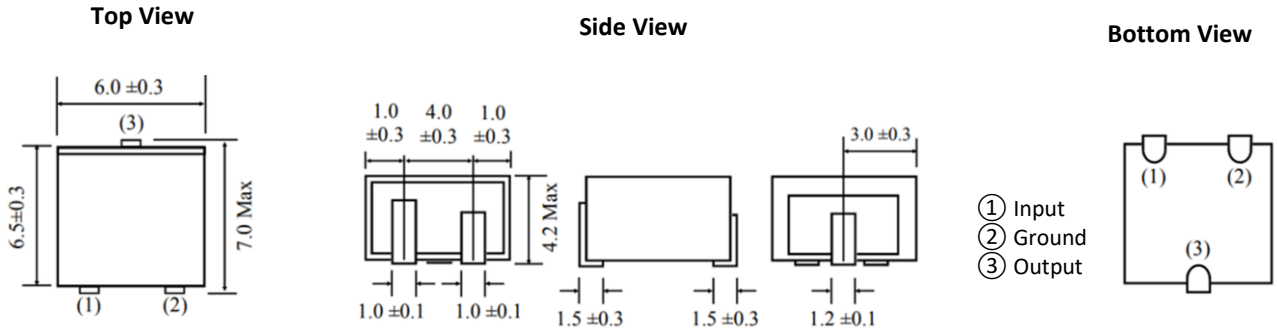
Table 1

Short Part Number	Insertion Loss	6dB Band width	40dB Band width	GDT Deviation	Ripple	Spurious	Input/ Output	Temp. Stability	Insulation Resistance	Operating Temp. Range	Storage Temp.
	dB Max.	KHz Max.	KHz Max.	µs Max.	dB Max.	dB	K ohm	%	M ohm Min.	°C	°C
CFTC455AU	2.0	20.0	40.0	N/A	1.0	20	1000	±0.5	100 @DC 10V 1 minute +/-5 sec.	-20~+85	-40~+85
CFTC455BU	2.0	15.0	30.0								
CFTC455CU	2.0	12.5	24.0								
CFTC455DU	2.0	10.0	20.0		2.0		1500				
CFTC455EU	6.0	7.5	15.0		1.0						
CFTC 455FU	2.0	6.0	12.5								
CFTC455GU	2.0	4.5	10.0								
CFTC455HU	2.0	3.0	9.0								
CFTC455IU	4.0	2.0	7.5								
CFTC455JUT	6.0	1.5	7.5								
CFTC455KU	8.0	1.0	6.0								
CFTC455LU	2.0	24.0	48.0				1000				
CFTC455KAU	2.0	20.0	48.0	50							
CFTC455KBU	2.0	15.0	40.0								
CFTC455KCU	2.0	12.5	30.0								
CFTC455KDU	2.0	10.0	24.0				1500				
CFTC455KEU	2.0	7.5	20.0								
CFTC455KFU	2.0	6.0	15.0								
CFTC455KGU	2.0	4.5	12.5								
CFTC455KHU	2.0	3.0	10.0								
CFTC455KIU	4.0	2.0	9.0								
CFTC455KJU	6.0	1.5	7.5								
CFTC455KKU	8.0	1.0	6.0								
CFTC455KLU	2.0	24.0	60.0				1000				
CFTC455KAU	2.0	20.0	48.0	15							
CFTC455KBU	2.0	15.0	40.0								
CFTC455KCU	2.0	12.5	30.0								
CFTC455KDU	2.0	10.0	24.0	20			1500				
CFTC455KEU	2.0	7.5	20.0	25							
CFTC455KFU	2.0	6.0	15.0								
CFTC455KGU	2.0	4.5	12.5								
CFTC455KHU	2.0	3.0	10.0								
CFTC455KIU	4.0	2.0	10.0								
CFTC455KJU	6.0	1.5	9.0								
CFTC455KKU	8.0	1.0	7.5								
CFTC455KLU	2.0	24.0	60.0	15			1000				

RFQ

Request For Quotation

DIMENSION (mm)



PART NUMBER GUIDE

Example: TGS CFTC 455KDU TLF

Part Number and Part Code Structure

TGS	CFTC	455	K	D	U	T	LF	XX
1	2	3	4	5	6	7	8	9

1) TGS: Company Code
2) CFTC: KHz SMD Ceramic Filter,
3) 455: Frequency range 455KHz; 450: 450.000KHz
4) K: K: GTD Deviation version; Blank: N/A
5) D: D: +/-10.0KHz Max. @6 dB; Please see Table 1 for A~L's different value
6) U: 3 pads, L6.5*W6.0*H4.2mm
7) T: Package in Tape/Reel, 1000pcs/Reel
8) LF: RoHS compliant
9) XX: Blank: N/A; XX: Internal Control Code- 2 letter or digits

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Crystals & Oscillators

KHz SMD Ceramic Filter CFTC W series

RFQ

Request For Quotation

L12.0*W6.5*H3.0mm

MAIN FEATURE

- SMD Package, 4 Pads, 455KHz & 450KHz
- Compatible to Murata CFWK Series • Low Cost and short lead time

APPLICATION

- Communication and more

STANDARD SPECIFICATION- 455KHz

Table 1

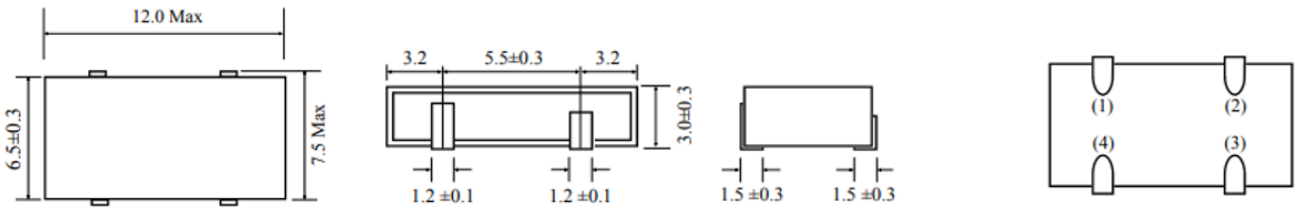
Short Part Number	Insertion Loss	6dB Band width	40dB Band width	GDT Deviation	Ripple	Spurious	Input/ Output	Temp. Stability	Insulation Resistance	Operating Temp. Range	Storage Temp.
	dB Max.	KHz Max.	KHz Max.	µs Max.	dB Max.	dB	K ohm	%	M ohm Min.	°C	°C
CFTC455AW	2.0	20.0	40.0	N/A	1.0	20	1000	±0.5	100 @DC 10V 1 minute +/-5 sec.	-20~+85	-40~+85
CFTC455BW	2.0	15.0	30.0								
CFTC455CW	2.0	12.5	24.0								
CFTC455DW	2.0	10.0	20.0		2.0		1500				
CFTC455EW	6.0	7.5	15.0		1.0						
CFTC 455FW	2.0	6.0	12.5								
CFTC455GW	2.0	4.5	10.0								
CFTC455HW	2.0	3.0	9.0								
CFTC455IW	4.0	2.0	7.5								
CFTC455JW	6.0	1.5	7.5								
CFTC455KW	8.0	1.0	6.0								
CFTC455LW	2.0	24.0	48.0				1000				
CFTC455KAW	2.0	20.0	48.0	50							
CFTC455KBW	2.0	15.0	40.0								
CFTC455KCW	2.0	12.5	30.0								
CFTC455KDW	2.0	10.0	24.0				1500				
CFTC455KEW	2.0	7.5	20.0								
CFTC455KFW	2.0	6.0	15.0								
CFTC455KGW	2.0	4.5	12.5								
CFTC455KHW	2.0	3.0	10.0								
CFTC455KIW	4.0	2.0	9.0								
CFTC455KJW	6.0	1.5	7.5								
CFTC455KKW	8.0	1.0	6.0								
CFTC455KLW	2.0	24.0	60.0				1000				
CFTC455KAW	2.0	20.0	48.0	15							
CFTC455KBW	2.0	15.0	40.0								
CFTC455KCW	2.0	12.5	30.0								
CFTC455KDW	2.0	10.0	24.0	20			1500				
CFTC455KEW	2.0	7.5	20.0	25							
CFTC455KFW	2.0	6.0	15.0								
CFTC455KGW	2.0	4.5	12.5								
CFTC455KHW	2.0	3.0	10.0								
CFTC455KIW	4.0	2.0	10.0								
CFTC455KJW	6.0	1.5	9.0								
CFTC455KKW	8.0	1.0	7.5								
CFTC455KLW	2.0	24.0	60.0	15			1000				

RFQ

Request For Quotation

DIMENSION (mm)

Top View **Side View** **Bottom View**



① Input
② Output
③④ Ground

PART NUMBER GUIDE

Example: TGS CFTC 455KDU TLF

Part Number and Part Code Structure

TGS	CF TC	455	K	D	W	T	LF	XX
1	2	3	4	5	6	7	8	9

1) TGS: Company Code
2) CFTC: KHz SMD Ceramic Filter
3) 455: Frequency range 455KHz; 450: 450.000KHz
4) K: K: GTD Deviation version; Blank: N/A
5) D: D: +/-10.0KHz Max. @6 dB; Please see Table 1 for A~L's different value
6) W: 4 Pads, L12.0*W6.5*H3.0mm
7) T: Package in Tape/Reel, 1000pcs/Reel
8) LF: RoHS compliant
9) XX: Blank: N/A; XX: Internal Control Code- 2 letter or digits

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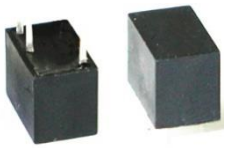
Crystals & Oscillators

KHz Thru Hole Ceramic Filter CF U series

RFQ
Request For Quotation

Legacy Part- Not Recommended for New Designs



L8.0*W7.0*H8.0mm

MAIN FEATURE

- Thru Hole Package, 3 Pads, 455KHz & 450KHz
- Compatible to Murata CFU Series
- Low Cost and short lead time

APPLICATION

- Communication and more

STANDARD SPECIFICATION- 455KHz

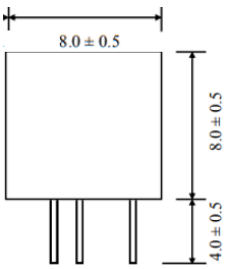
Table 1

Short Part Number	Center* Freq.	Insertion Loss	6 dB Band width	50 dB Band width	Ripple	Input/ Output	Temp. Stability	Insulation Resistance	Operating Temp. Range	Storage Temp.
	KHz	dB Max.	KHz Max.	KHz Max.	dB Max.	K ohm	%	M ohm Min.	°C	°C
CF455BU	455±2.0	4.0	±15.0	±30.0	2.0	1500	±0.5	100 @DC 10V 1 minute +/-5 sec.	-20~+85	-40~+85
CF455CU	455±2.0	4.0	±12.5	±24.0		1500				
CF455DU	455±1.5	4.0	±10.0	±20.0		1500				
CF455EU	455±1.5	6.0	±7.5	±15.0		1500				
CF455FU	455±1.5	4.0	±6.0	±12.5		2000				
CF455GU	455±1.5	6.0	±4.5	±10.0		2000				
CF455HU	455±1.0	6.0	±3.0	±9.0		2000				
CF455IU	455±1.0	6.0	±2.0	±7.5		2000				
CF455HTU	455±1.0	6.0	±3.0	±9.0		2000				
CF455ITU	455±1.0	6.0	±2.0	±7.5		2000				

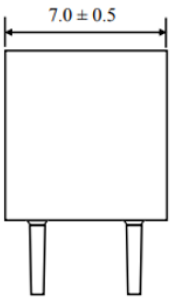
*Center Frequency Range 450.000KHz is also available

DIMENSION (mm)

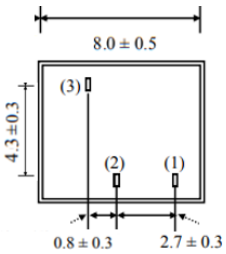
Side View



Side View



Bottom View



① Input
② Output
③ Ground

PART NUMBER GUIDE

Example: TGS CF455EU BLF

Part Number and Part Code Structure

TGS	CF	455	E	U	B	LF	XX
1	2	3	4	5	6	7	8

1) TGS: Company Code
2) CF: Ceramic Filter
3) 455: Frequency Range 455: 455KHz; 450: 450KHz
4) E: Design Mode Code
5) U: 3 Pins, L8.0*W7.0*H8.0mm
6) B: Package in Bulk
7) LF: RoHS compliant
8) XX: Internal Control Code- 2 letter or digital ; Blank: N/A

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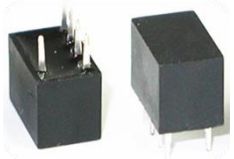
KHz Thru Hole Ceramic Filter CF W series

Crystals & Oscillators

RFQ
Request For Quotation

Legacy Part- Not Recommended for New Designs



L11.0*W7.0*H8.0mm

MAIN FEATURE

- Thru Hole Package, 5 Pads, 455KHz & 450KHz
- Compatible to Murata CFW Series • Low Cost and short lead time

APPLICATION

- Communication and more

STANDARD SPECIFICATION- 455KHz

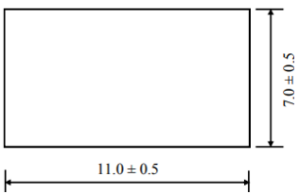
Table 1

Short Part Number	Center* Freq.	Insertion Loss	6 dB Band width	50 dB Band width	Ripple	Input/ Output	Temp. Stability	Insulation Resistance	Operating Temp. Range	Storage Temp.
	KHz	dB Max.	KHz Max.	KHz Max.	dB Max.	K ohm	%	M ohm Min.	°C	°C
CF455BW	455±2.0	4.0	±15.0	±30.0	2.0	1500	±0.5	100 @DC 10V 1 minute +/-5 sec.	-20~+85	-40~+85
CF455CW	455±2.0	4.0	±12.5	±24.0		1500				
CF455DW	455±1.5	4.0	±10.0	±20.0		1500				
CF455EW	455±1.5	6.0	±7.5	±15.0		1500				
CF455FW	455±1.5	4.0	±6.0	±12.5		2000				
CF455GW	455±1.5	6.0	±4.5	±10.0		2000				
CF455HW	455±1.0	6.0	±3.0	±9.0		2000				
CF455IW	455±1.0	6.0	±2.0	±7.5		2000				
CF455HTW	455±1.0	6.0	±3.0	±9.0		2000				
CF455ITW	455±1.0	6.0	±2.0	±7.5		2000				

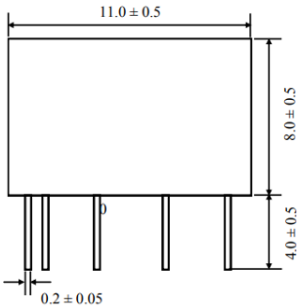
*Center Frequency Range 450.000KHz is also available

DIMENSION (mm)

Top View

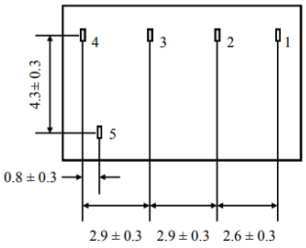


Side View



① Input
②③④ Ground
⑤ Output

Bottom View



PART NUMBER GUIDE

Example: TGS CF455EW BLF

Part Number and Part Code Structure

TGS	CF	455	E	W	B	LF	XX
1	2	3	4	5	6	7	8

1) TGS: Company Code
2) CF: Ceramic Filter
3) 455: Frequency Range 455: 455KHz; 450: 450KHz
4) E: Design Mode Code
5) W: 3 Pins, L11.0*W7.0*H8.0mm
6) B: Package in Bulk
7) LF: RoHS compliant
8) XX: Internal Control Code- 2 letter or digital ; Blank: N/A

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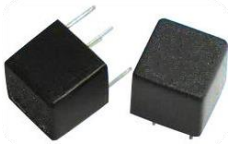
Crystals & Oscillators

KHz Thru Hole Ceramic Filter CFM U series

RFQ
Request For Quotation

Legacy Part- Not Recommended for New Designs



L6.5*W6.5*H6.3mm

MAIN FEATURE

- Thru Hole Package, 4 Pads, 455KHz & 450KHz
- Compatible to Murata CFMU Series
- Low Cost and short lead time

APPLICATION

- Communication and more

STANDARD SPECIFICATION- 455KHz

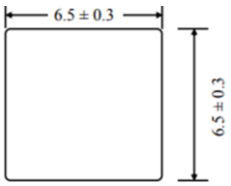
Table 1

Short Part Number	Center* Freq.	Insertion Loss	6 dB Band width	50 dB Band width	Ripple	Input/ Output	Temp. Stability	Insulation Resistance	Operating Temp. Range	Storage Temp.
	KHz	dB Max.	KHz Max.	KHz Max.	dB Max.	K ohm	%	M ohm Min.	°C	°C
CFM455BU	455±2.0	4.0	±15.0	±30.0	2.0	1500	±0.5	100 @DC 10V 1 minute +/-5 sec.	-20~+85	-40~+85
CFM455CU	455±2.0	4.0	±12.5	±24.0		1500				
CFM455DU	455±1.5	4.0	±10.0	±20.0		1500				
CFM455EU	455±1.5	6.0	±7.5	±15.0		1500				
CFM455FU	455±1.5	4.0	±6.0	±12.5		2000				
CFM455GU	455±1.5	6.0	±4.5	±10.0		2000				
CFM455HU	455±1.0	6.0	±3.0	±9.0		2000				
CFM455IU	455±1.0	6.0	±2.0	±7.5		2000				
CFM455HTU	455±1.0	6.0	±3.0	±9.0		2000				
CFM455ITU	455±1.0	6.0	±2.0	±7.5		2000				

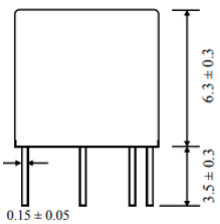
*Center Frequency Range 450.000KHz is also available

DIMENSION (mm)

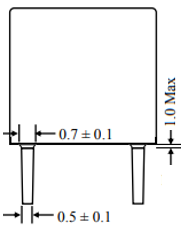
Top View



Side View

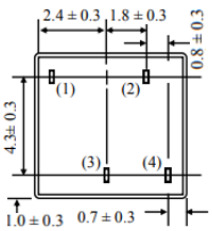


Side View



① Input
② Output
③④ Ground

Bottom View



PART NUMBER GUIDE

Example: TGS CFM455EU BLF

Part Number and Part Code Structure

TGS	CFM	455	E	U	B	LF	XX
1	2	3	4	5	6	7	8

1) TGS: Company Code
2) CFM: Ceramic Filter, M type, L6.5*W6.5*H6.3mm
3) 455: Frequency Range 455: 455KHz; 450: 450KHz
4) E: Design Mode Code
5) U: 3 Pins
6) B: Package in Bulk
7) LF: RoHS compliant
8) XX: Internal Control Code- 2 letter or digital ; Blank: N/A

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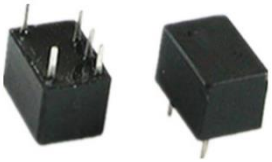
KHz Thru Hole Ceramic Filter CFM W series

Crystals & Oscillators

RFQ
Request For Quotation

Legacy Part- Not Recommended for New Designs



L9.5*W6.5*H6.3mm

MAIN FEATURE

- Thru Hole Package, 5 Pads, 455KHz & 450KHz
- Compatible to Murata CFMW Series
- Low Cost and short lead time

APPLICATION

- Communication and more

STANDARD SPECIFICATION- 455KHz

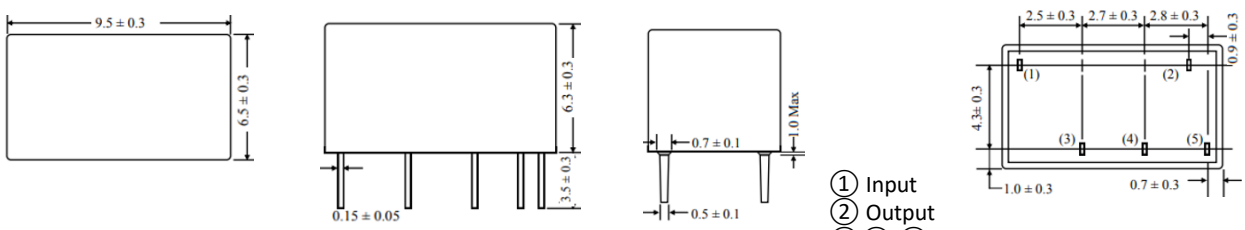
Table 1

Short Part Number	Center* Freq.	Insertion Loss	6 dB Band width	50 dB Band width	Ripple	Input/ Output	Temp. Stability	Insulation Resistance	Operating Temp. Range	Storage Temp.
	KHz	dB Max.	KHz Max.	KHz Max.	dB Max.	K ohm	%	M ohm Min.	°C	°C
CFM455BW	455±2.0	4.0	±15.0	±30.0	2.0	1500	±0.5	100 @DC 10V 1 minute +/-5 sec.	-20~+85	-40~+85
CFM455CW	455±2.0	4.0	±12.5	±24.0		1500				
CFM455DW	455±1.5	4.0	±10.0	±20.0		1500				
CFM455EW	455±1.5	6.0	±7.5	±15.0		1500				
CFM455FW	455±1.5	4.0	±6.0	±12.5		2000				
CFM455GW	455±1.5	6.0	±4.5	±10.0		2000				
CFM455HW	455±1.0	6.0	±3.0	±9.0		2000				
CFM455IW	455±1.0	6.0	±2.0	±7.5		2000				
CFM455HTW	455±1.0	6.0	±3.0	±9.0		2000				
CFM455ITW	455±1.0	6.0	±2.0	±7.5		2000				

*Center Frequency Range 450.000KHz is also available

DIMENSION (mm)

Top View **Side View** **Side View** **Bottom View**



① Input
② Output
③④⑤ Ground

PART NUMBER GUIDE

Example: TGS CFM455EW BLF

Part Number and Part Code Structure

TGS	CFM	455	E	W	B	LF	XX
1	2	3	4	5	6	7	8

1) TGS: Company Code
2) CFM: Ceramic Filter, M type, L9.5*W6.5*H6.3mm
3) 455: Frequency Range 455: 455KHz; 450: 450KHz
4) E: Design Mode Code
5) W: 5 Pins
6) B: Package in Bulk
7) LF: RoHS compliant
8) XX: Internal Control Code- 2 letter or digital ; Blank: N/A

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