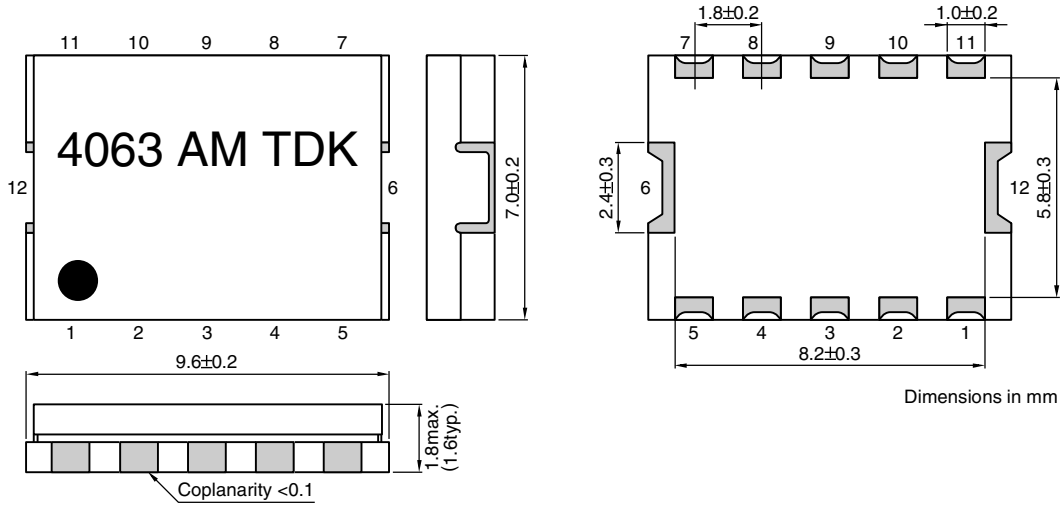
VCOs For Cellular Phone

QVC961747RT-4063 for GSM/DCS Tx

SHAPES AND DIMENSIONS



Dimensions in mm

TERMINAL FUNCTIONS

1	Power supply (DCS)
2	GND
3	Frequency tuning
4	GND
5	Power supply (GSM)
6	GND
7	Output (GSM)
8	V_{sw1}
9	GND
10	V_{sw2}
11	Output (DCS)
12	GND

SWITCHING LOGIC

SW logic	V_{sw1}	V_{sw2}
DCS band	High	Low
GSM band	Low	High
No oscillation	High	High

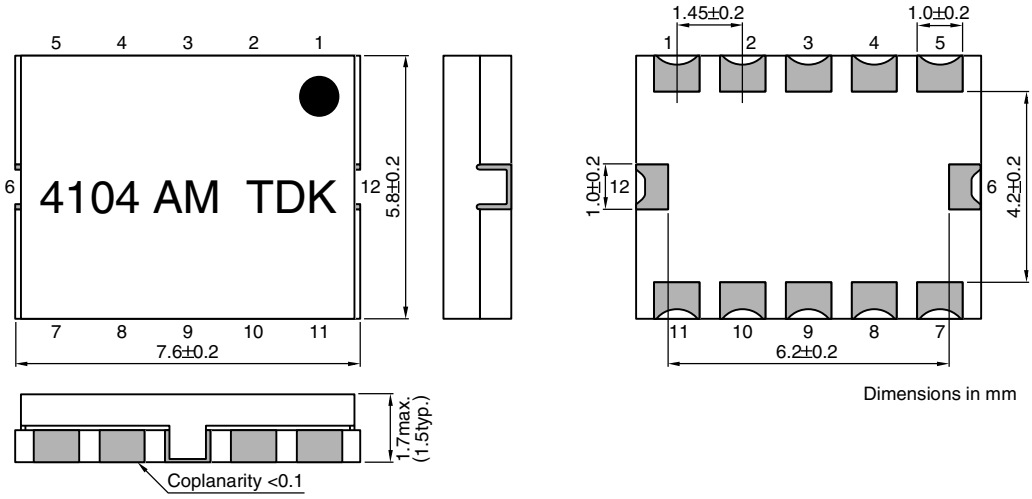
• DC level of logic: L=0 to 0.3V, H=2 to 2.8V

ELECTRICAL CHARACTERISTICS

Item				GSM band			DCS band		
				Minimum value	Typical value	Maximum value	Minimum value	Typical value	Maximum value
Supply voltage Vcc			(V)	2.7	2.8	2.9	2.7	2.8	2.9
Tuning voltage Vt			(V)	0.5	1.35	2.2	0.5	1.35	2.2
Temperature range	Operating		(°C)	–20	+25	+75	–20	+25	+75
	Storage		(°C)	–40	+25	+85	–40	+25	+85
Frequency range f_0			(MHz)	880	897.5	915	1710	1747.5	1785
Tuning voltage sensitivity		[Vt=0.5 to 2.2V average]	(MHz/V)	27	34	41	55	66	77
Current consumption			(mA)	—	15	25	—	20	25
Output power		[at f_0]	(dBm)	5.0	7.5	10.0	5.0	7.5	10.0
C/N		[Offset frequency=10kHz, B.W.=1Hz]	(dBc/Hz)	—	–101	–92	—	–94	–90
		[Offset frequency=400kHz, B.W.=1Hz]	(dBc/Hz)	—	–138	–122	—	–126	–120
		[Offset frequency=20MHz, B.W.=1Hz]	(dBc/Hz)	—	–166	–164	—	–159	–157
Frequency pushing		[Vcc=±0.1V]	(MHz)	—	±0.1	±1.5	—	±0.8	±2.5
Frequency pulling		[VSWR=2.0]	(MHz)	—	±1.5	±2.5	—	±2.0	±5.0
Harmonics			(dBc)	—	–25	–18	—	–25	–18

QVC761747RT-4104 for GSM/DCS Tx

SHAPES AND DIMENSIONS



Dimensions in mm

TERMINAL FUNCTIONS

1	Output (GSM)
2	V_{SW1}
3	GND
4	V_{SW2}
5	Output (DCS)
6	GND
7	No connect
8	Frequency tuning
9	GND
10	GND
11	Power supply
12	GND

SWITCHING LOGIC

SW logic	V_{SW1}	V_{SW2}
DCS band	High	Low
GSM band	Low	High
No oscillation	High	High

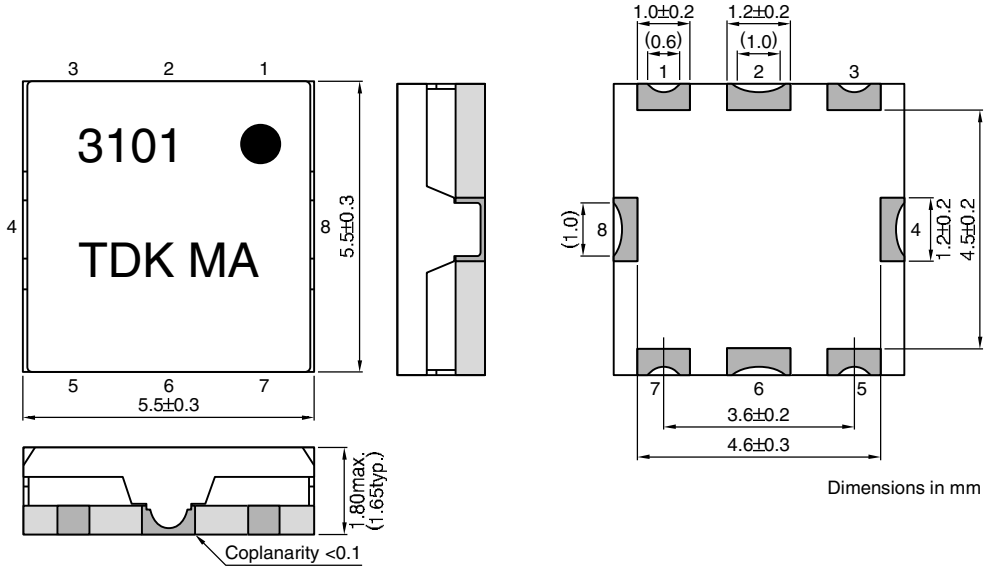
• DC level of logic: L=0 to 0.3V, H=2 to 2.9V

ELECTRICAL CHARACTERISTICS

Item			GSM band			DCS band		
			Minimum value	Typical value	Maximum value	Minimum value	Typical value	Maximum value
Supply voltage Vcc		(V)	2.5	2.7	2.9	2.5	2.7	2.9
Tuning voltage Vt		(V)	0.8	1.9	3.0	0.8	1.9	3.0
Temperature range	Operating	(°C)	–30	+25	+70	–30	+25	+70
	Storage	(°C)	–40	+25	+85	–40	+25	+85
Frequency range f_0		(MHz)	880	897.5	915	1710	1747.5	1785
Tuning voltage sensitivity	[Vt=0.8 to 3.0V average]	(MHz/V)	20	25	30	40	50	60
Current consumption		(mA)	—	15	20	—	20	25
Output power	[at f_0]	(dBm)	4.0	6.5	9.0	4.0	6.5	9.0
C/N	[Offset frequency=600kHz, B.W.=1Hz]	(dBc/Hz)	—	–140	–133	—	–132	–129
	[Offset frequency=20MHz, B.W.=1Hz]	(dBc/Hz)	—	–166	–162	—	–159	–157
Frequency pushing	[Vcc=±0.2V]	(MHz)	—	±0.1	±1.5	—	±0.5	±2.0
Frequency pulling	[VSWR=2.0, ref.=50Ω]	(MHz)	—	±0.5	±2.0	—	±2.0	±3.5
Harmonics		(dBc)	—	–20	–15	—	–20	–15

QVC501861RT-3101 for GSM/DCS Rx

SHAPES AND DIMENSIONS



Dimensions in mm

TERMINAL FUNCTIONS

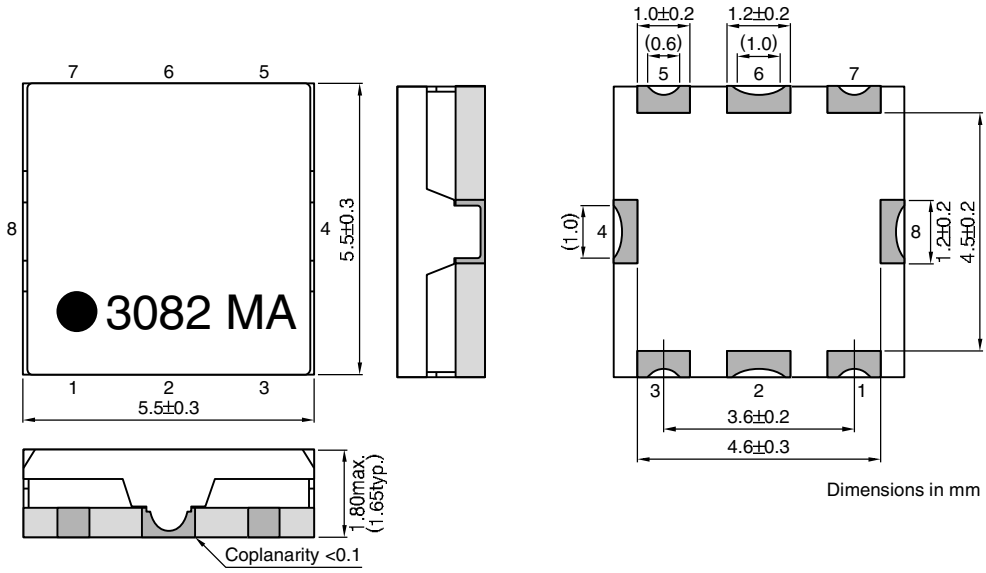
1	Output
2	GND
3	GND
4	GND
5	Frequency tuning
6	GND
7	Power supply
8	GND

ELECTRICAL CHARACTERISTICS

Item				Minimum value	Typical value	Maximum value
Supply voltage Vcc			(V)	2.5	2.7	2.9
Tuning voltage Vt			(V)	0.6	1.45	2.3
Temperature range	Operating		(°C)	–30	+25	+70
	Storage		(°C)	–40	+25	+85
Frequency range f_0			(MHz)	1801	1861	1921
Tuning voltage sensitivity		[Vt=0.6 to 2.3V average]	(MHz/V)	80	90	100
Current consumption			(mA)	—	6.0	8.0
Output power		[at f_0]	(dBm)	–6.0	–3.0	0.0
C/N		[Offset frequency=3MHz, B.W.=1Hz]	(dBc/Hz)	—	–144	–140
Frequency pushing		[Vcc=±0.2V]	(kHz)	—	±800	±1500
Frequency pulling		[VSWR=2.0, ref.=50Ω]	(kHz)	—	±1000	±2000
Harmonics			(dBc)	—	–20	–15

QVC503730RT-3082 for GSM/DCS Rx

SHAPES AND DIMENSIONS



Dimensions in mm

TERMINAL FUNCTIONS

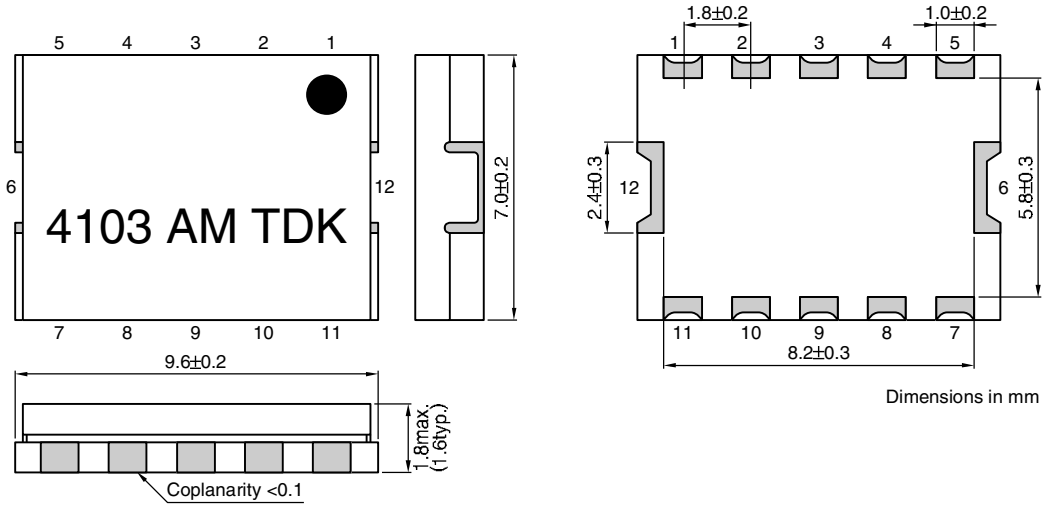
1	Output
2	GND
3	GND
4	GND
5	Frequency tuning
6	GND
7	Power supply
8	GND

ELECTRICAL CHARACTERISTICS

Item				Minimum value	Typical value	Maximum value
Supply voltage Vcc			(V)	2.565	2.7	2.835
Tuning voltage Vt			(V)	0.5	1.3	2.1
Temperature range	Operating		(°C)	–20	+25	+75
	Storage		(°C)	–40	+25	+90
Frequency range f_0			(MHz)	3600	3730	3860
Tuning voltage sensitivity		[Vt=0.5 to 2.1V average]	(MHz/V)	187	220	253
Current consumption			(mA)	—	10.0	18.0
Output power		[at f_0]	(dBm)	–6.0	–1.5	3.0
C/N		[Offset frequency=3MHz, B.W.=1Hz]	(dBc/Hz)	—	–138	–133
Frequency pushing		[Vcc=±0.135V]	(kHz)	—	±1500	±3500
Frequency pulling		[VSWR=2.0, ref.=50Ω]	(kHz)	—	±3000	±6000
Harmonics			(dBc)	—	–20	–10

QVC961880RT-4103 for GSM850/PCS

SHAPES AND DIMENSIONS



Dimensions in mm

TERMINAL FUNCTIONS

1	Output (GSM850)
2	V_{SW1}
3	GND
4	V_{SW2}
5	Output (PCS)
6	GND
7	Power supply (PCS)
8	GND
9	Frequency tuning
10	GND
11	Power supply (GSM850)
12	GND

SWITCHING LOGIC

SW logic	V_{SW1}	V_{SW2}
PCS band	High	Low
GSM850 band	Low	High
No oscillation	High	High

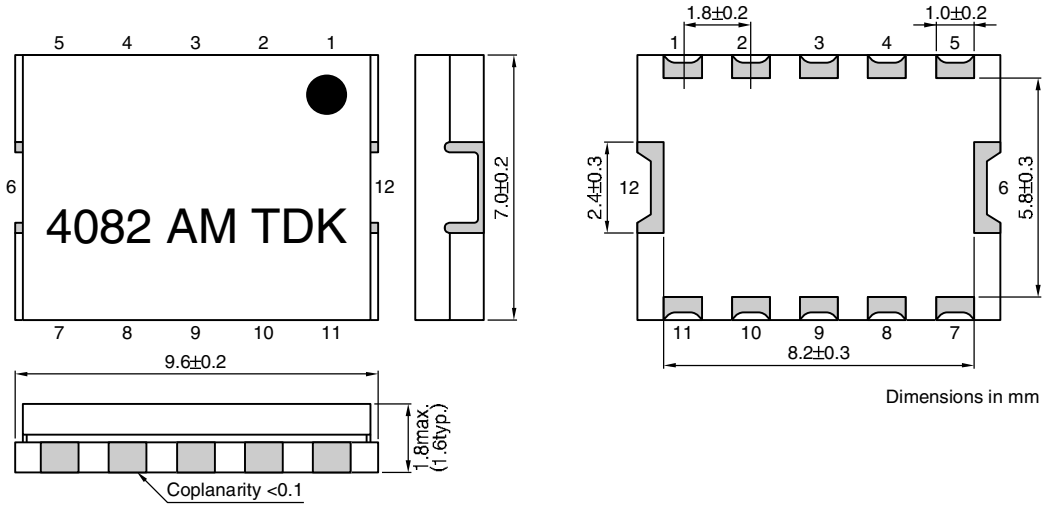
• DC level of logic: L=0 to 0.3V, H=1.9 to 2.9V

ELECTRICAL CHARACTERISTICS

Item			GSM850 band			PCS band		
			Minimum value	Typical value	Maximum value	Minimum value	Typical value	Maximum value
Supply voltage Vcc		(V)	2.5	2.7	2.9	2.5	2.7	2.9
Tuning voltage Vt		(V)	0.4	1.3	2.2	0.4	1.3	2.2
Temperature range	Operating	(°C)	–20	+25	+75	–20	+25	+75
	Storage	(°C)	–40	+25	+85	–40	+25	+85
Frequency range f_0		(MHz)	824	836.5	849	1850	1880	1910
Tuning voltage sensitivity	[Vt=0.4 to 2.2V average]	(MHz/V)	25	30	35	50	60	70
Current consumption		(mA)	—	15	25	—	20	30
Output power	[at f_0]	(dBm)	3.5	7.0	10.5	3.5	7.0	10.5
C/N	[Offset frequency=100kHz, B.W.=1Hz]	(dBc/Hz)	—	–120	–110	—	–112	–105
	[Offset frequency=400kHz, B.W.=1Hz]	(dBc/Hz)	—	–133	–123	—	–125	–120
	[Offset frequency=20MHz, B.W.=1Hz]	(dBc/Hz)	—	–165	–162	—	–159	–154
Frequency pushing	[Vcc=±0.2V]	(MHz)	—	±0.1	±1.0	—	±1.5	±2.5
Frequency pulling	[VSWR=2.0]	(MHz)	—	±1.5	±2.5	—	±2.0	±4.0
Harmonics		dBc	—	–25	–10	—	–25	–10

QVC961880RT-4082 for GSM/DCS/PCS

SHAPES AND DIMENSIONS



Dimensions in mm

TERMINAL FUNCTIONS

1	Output (GSM)
2	V_{SW1}
3	GND
4	V_{SW2}
5	Output (DCS/PCS)
6	GND
7	Power supply (DCS/PCS)
8	GND
9	Frequency tuning
10	GND
11	Power supply (GSM)
12	GND

SWITCHING LOGIC

SW logic	V_{SW1}	V_{SW2}
DCS/PCS band	High	Low
GSM band	Low	High
No oscillation	High	High

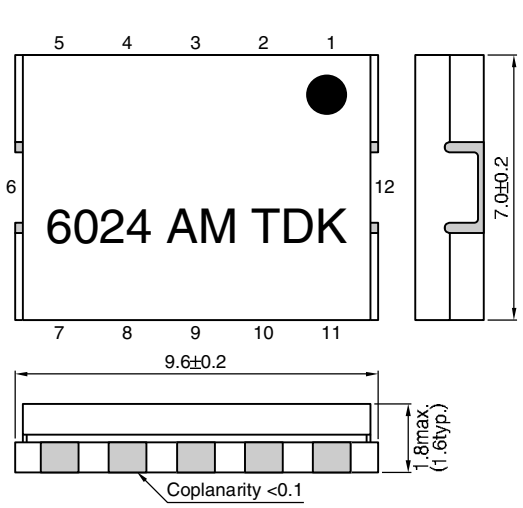
• DC level of logic: L=0 to 0.3V, H=2 to 2.9V

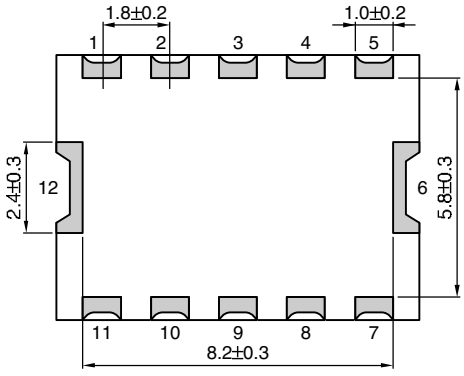
ELECTRICAL CHARACTERISTICS

Item			GSM band			DCS/PCS band		
			Minimum value	Typical value	Maximum value	Minimum value	Typical value	Maximum value
Supply voltage Vcc		(V)	2.6	2.75	2.9	2.6	2.75	2.9
Tuning voltage Vt		(V)	0.5	1.35	2.2	0.5	1.35	2.2
Temperature range	Operating	(°C)	–20	+25	+75	–20	+25	+75
	Storage	(°C)	–40	+25	+85	–40	+25	+85
Frequency range f_0		(MHz)	880	897.5	915	1710	1810	1910
Tuning voltage sensitivity	[Vt=0.5 to 2.2V average]	(MHz/V)	58	68	78	127	150	173
Current consumption		(mA)	—	18	30	—	25	35
Output power	[at f_0]	(dBm)	5.0	8.0	11.0	5.0	8.0	11.0
C/N	[Offset frequency=400kHz, B.W.=1Hz]	(dBc/Hz)	—	–135	–122	—	–123	–120
	[Offset frequency=20MHz, B.W.=1Hz]	(dBc/Hz)	—	–168	–162	—	–160	–154
Frequency pushing	[Vcc=±0.15V]	(MHz)	—	±0.3	±1.5	—	±1.0	±2.5
Frequency pulling	[VSWR=2.0, ref.=50Ω]	(MHz)	—	±1.5	±2.5	—	±2.5	±5.0
Harmonics		(dBc)	—	–25	–15	—	–15	–10

QVC961880RT-6024 for GSM/DCS/PCS

SHAPES AND DIMENSIONS





Dimensions in mm

TERMINAL FUNCTIONS

1	Output (GSM)
2	V_{SW1}
3	V_{SW2}
4	GND
5	Output (DCS/PCS)
6	GND
7	V_{SW3}
8	GND
9	Frequency tuning
10	No connect
11	Power supply
12	GND

SWITCHING LOGIC

SW logic	V_{SW1}	V_{SW2}	V_{SW3}
GSM band	Low	High	Low
DCS band	High	Low	Low
PCS band	High	Low	High
No oscillation	High	High	Low or High

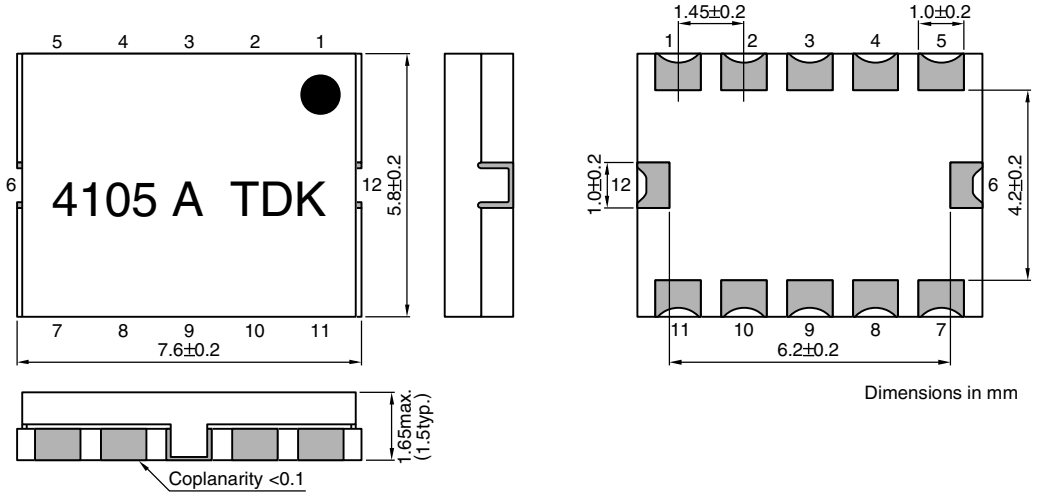
• DC level of logic: L=0 to 0.5V(Only V_{SW3}=0 to 0.2V), H=1.9 to 2.9V

ELECTRICAL CHARACTERISTICS

Item			GSM band			DCS band			PCS band		
			Minimum value	Typical value	Maximum value	Minimum value	Typical value	Maximum value	Minimum value	Typical value	Maximum value
Supply voltage Vcc		(V)	2.6	2.75	2.9	2.6	2.75	2.9	2.6	2.75	2.9
Tuning voltage Vt		(V)	0.5	1.35	2.2	0.5	1.35	2.2	0.5	1.35	2.2
Temperature range	Operating	(°C)	–20	+25	+75	–20	+25	+75	–20	+25	+75
	Storage	(°C)	–40	+25	+85	–40	+25	+85	–40	+25	+85
Frequency range f_0		(MHz)	880	897.5	915	1710	1748	1785	1850	1880	1910
Tuning voltage sensitivity [Vt=0.5 to 2.2V average]		(MHz/V)	43	51	59	97	115	133	106	125	144
Current consumption		(mA)	—	18	27	—	25	42	—	25	42
Output power	[at f_0]	(dBm)	5.0	7.5	10.0	5.0	7.5	10.0	5.0	7.5	10.0
C/N	[Offset frequency=10kHz, B.W.=1Hz]	(dBc/Hz)	—	–104	–90	—	–94	–90	—	–94	–90
	[Offset frequency=20MHz, B.W.=1Hz]	(dBc/Hz)	—	–166	–164	—	–159	–155	—	–159	–155
Frequency pushing	[Vcc=±5%]	(MHz)	—	±0.5	±1.5	—	±1.0	±1.5	—	±1.0	±1.5
Frequency pulling	[VSWR=2.0, ref.=50Ω]	(MHz)	—	±1.0	±2.0	—	±2.0	±4.0	—	±2.0	±4.0
Harmonics		(dBc)	—	–20	–15	—	–20	–15	—	–20	–15

QVC761810RT-4105 for GSM850/GSM/DCS/PCS

SHAPES AND DIMENSIONS



Dimensions in mm

TERMINAL FUNCTIONS

1	Output (Low band)
2	V_{SW1}
3	GND
4	V_{SW2}
5	Output (High band)
6	GND
7	No connect or Power Supply
8	Frequency tuning
9	GND
10	No connect
11	Power supply
12	GND

SWITCHING LOGIC

SW logic	V_{SW1}	V_{SW2}
High	High	Low
Low	Low	High
No oscillation	High	High

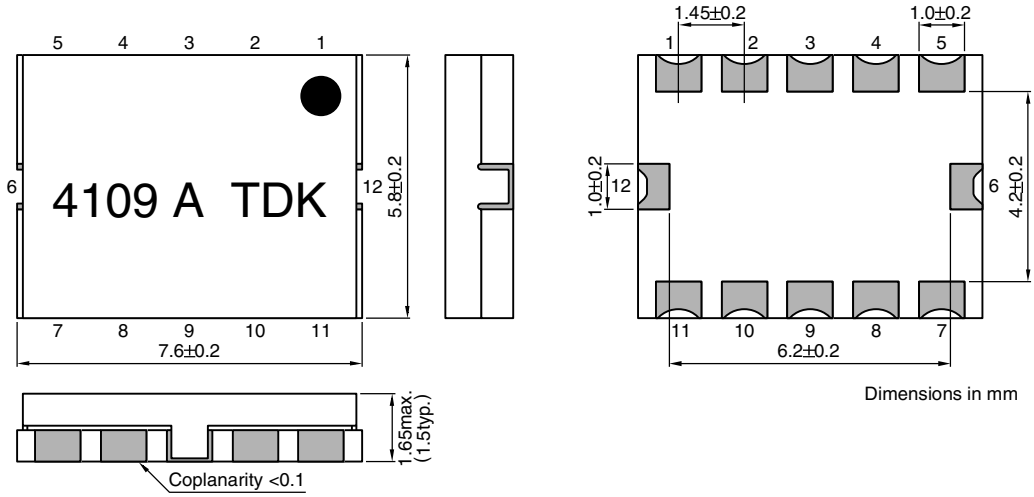
• DC level of logic: L=0 to 0.3V, H=2 to 2.8V

ELECTRICAL CHARACTERISTICS

Item				Low band			High band		
				Minimum value	Typical value	Maximum value	Minimum value	Typical value	Maximum value
Supply voltage Vcc			(V)	2.6	2.7	2.8	2.6	2.7	2.8
Tuning voltage Vt			(V)	0.5	1.75	3.0	0.5	1.75	3.0
Temperature range	Operating		(°C)	–30	+25	+75	–30	+25	+75
	Storage		(°C)	–40	+25	+85	–40	+25	+85
Frequency range f_0			(MHz)	824	869.5	915	1710	1810	1910
Tuning voltage sensitivity		[Vt=0.5 to 3.0V average]	(MHz/V)	44	55	66	92	115	138
Current consumption			(mA)	—	15	25	—	25	30
Output power		[at f_0]	(dBm)	3.0	6.0	9.0	3.0	6.0	9.0
C/N		[Offset frequency=10kHz, B.W.=1Hz]	(dBc/Hz)	—	–106	–90	—	–103	–90
		[Offset frequency=400kHz, B.W.=1Hz]	(dBc/Hz)	—	–130	–128	—	–127	–125
		[Offset frequency=20MHz, B.W.=1Hz]	(dBc/Hz)	—	–166	–162	—	–159	–154
Frequency pushing		[Vcc=±0.1V]	(MHz)	—	±0.3	±1.0	—	±0.3	±2.0
Frequency pulling		[VSWR=2.0]	(MHz)	—	±0.5	±2.0	—	±1.5	±4.0
Harmonics			(dBc)	—	–25	–15	—	–30	–15

QVC761810RT-4109 for GSM850/GSM/DCS/PCS

SHAPES AND DIMENSIONS



Dimensions in mm

TERMINAL FUNCTIONS

1	Out2 (Low band)
2	V_{SW1}
3	GND
4	V_{SW2}
5	Out1 (High band)
6	GND
7	VB1 (High band)
8	VC
9	GND
10	No connect
11	VB2 (Low band)
12	GND

ELECTRICAL CHARACTERISTICS

COMMON

Item			Min. value	Typ. Value	Max. value
Supply voltage VB		(V)	2.6	2.7	2.8
Tuning voltage Vc		(V)	0.5	1.35	2.2
Load impedance		(Ω)	—	50	—
Temperature range	Operating	(°C)	–20	—	+85
	Storage	(°C)	–40	—	+85

SWITCHING LOGIC

SW logic	V_{SW1}	V_{SW2}
High band	High	Low
Low band	Low	High
No oscillation	High	High

- DC level of logic: L=0 to 0.3V, H=1.9 to 3.0V
- Switch current: –100 to +100µA

Item			Low band		High band	
			Minimum value	Maximum value	Minimum value	Maximum value
Frequency range		(MHz)	824	915	1710	1910
Tuning voltage sensitivity	[Vc=0.5 to 2.2V average]	(MHz/V)	65	89	140	190
Current consumption		(mA)	—	25	—	33
Output power	[VB=2.7V]	(dBm)	4	10	4	10
C/N	[Offset frequency=10kHz, B.W.=1Hz, VB=2.7V]	(dBc/Hz)	—	–90	—	–90
	[Offset frequency=400kHz, B.W.=1Hz, VB=2.7V]	(dBc/Hz)	—	–128	—	–123
	[Offset frequency=20MHz, B.W.=1Hz, VB=2.7V]	(dBc/Hz)	—	–162	—	–154
Frequency pushing	[VB=2.7±0.1V, ref.=2.7V]	(MHz)	—	±1	—	±2
Frequency pulling	[VSWR=2.0, ref.=50Ω]	(MHz)	—	±2	—	±4
Harmonics	[2f_0, 3f_0]	(dBc)	—	–15	—	–15