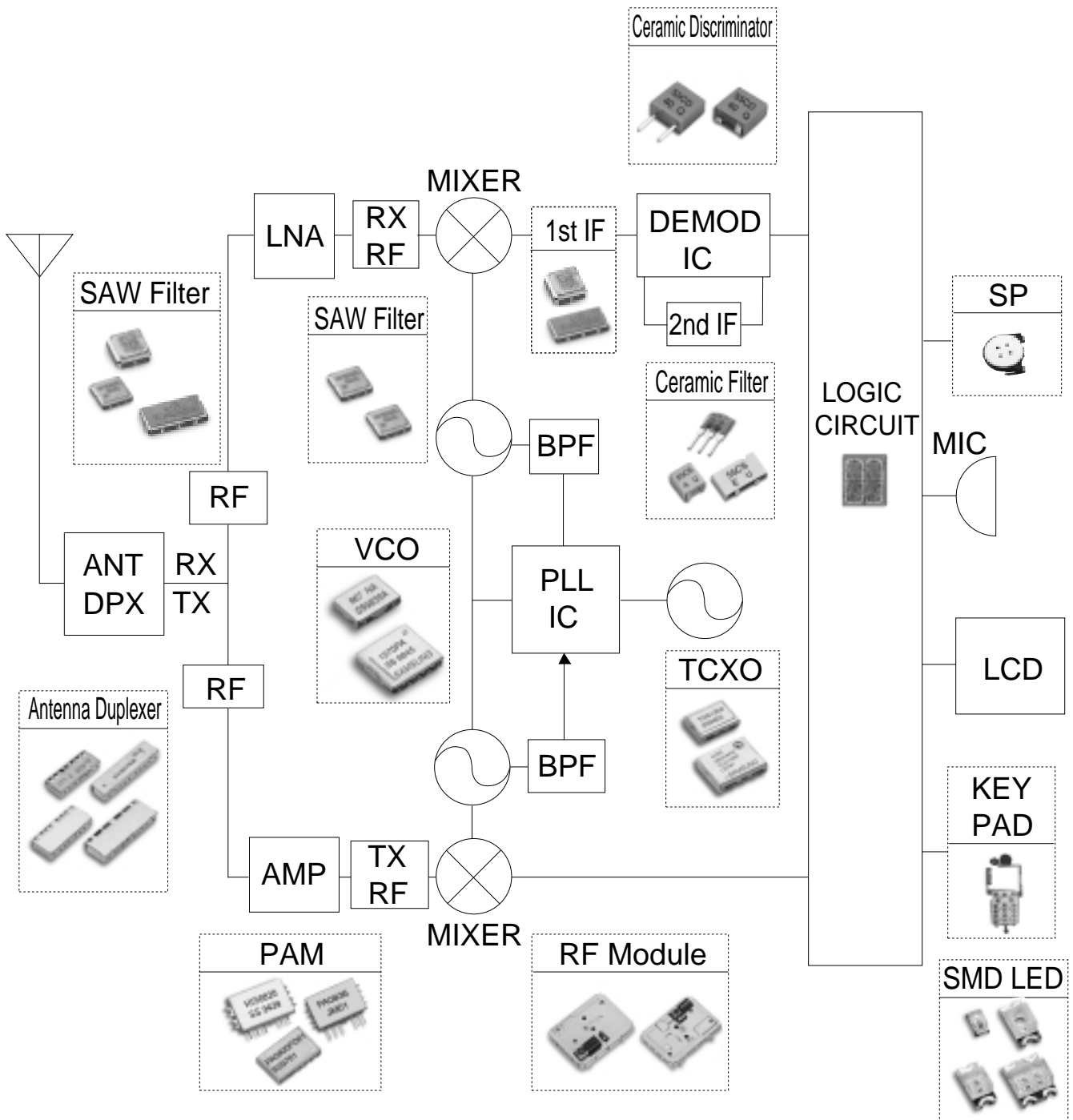


BLOCK DIAGRAM



APPLICATION GUIDE

APPLICATION PRODUCT	APPLICATION													Page
	Base Station	Cordless Telephone	GPS	HDD	Mobile Telephone	Pager	PCN / PCS	Portable Telephone	Remote Control	Satellite Communication	TRS	Wireless Modem	WLL	
VCO	○	○	○		○		○	○		○	○	○	○	6~7
VC-TCXO		○	○		○		○	○		○	○		○	9~10
RF Module		○	○		○		○	○		○	○	○	○	12~13
SAW Filter	○	○	○		○	○	○	○		○	○	○		14~19
Ceramic Filter	○	○	○		○	○	○	○		○	○	○		21~24
Ceramic Discriminator	○	○	○		○	○		○			○	○		23
Ceramic Resonator	○	○		○	○	○	○	○	○			○		23~27
Antenna Duplexer		○	○		○		○	○			○		○	28~31
Microwave Dielectric Filter	○	○	○		○		○	○			○		○	
Dielectric Resonator	○	○	○		○	○	○	○		○				32
SMD LED		○			○		○	○		○		○		33~34
PLL	○	○	○		○		○	○		○	○	○	○	8
CRYSTAL		○	○		○		○	○		○	○		○	11

FREQUENCY RANGE GUIDE

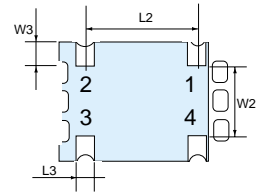
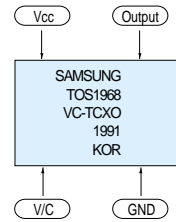
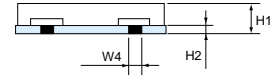
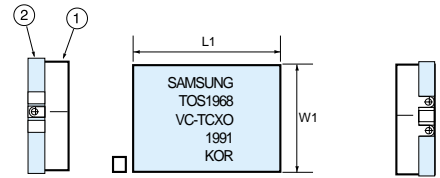
PRODUCT	Frequency Range					
	100kHz	1MHz	10MHz	100MHz	1GHz	10GHz
VCO				450MHz	2.4GHz	
TCXO			9.6MHz	26MHz		
RF Module			40MHz	2GHz		
SAW Filter			50MHz	2GHz		
Ceramic Filter	300kHz	11MHz				
Ceramic Discriminator	300kHz	800MHz				
Ceramic Resonator	300kHz	7MHz				
Antenna Duplexer				400MHz	15GHz	
Microwave Dielectric Filter				400MHz	15GHz	
Dielectric Resonator					3GHz	12.5GHz
Crystal			10MHz	80MHz		
PLL				450MHz	2.4GHz	

VC-TCXO MODULE APPLICATION & ELECTRICAL CHARACTERISTIC



FEATURES

- Available Frequency Range : 10MHz ~ 20MHz
- Operating Temperature Range : -30℃ to +75℃
- Storage Temperature Range : -40℃ to +85℃
- Current Drain : 2.0mA Max. (10kΩ//10pF±10% each)
- Load : 10kΩ//10pF 10% each



PIN CONNECTOR (TOP VIEW)

PIN CONNECTOR (BOTTOM VIEW)

LED NO	CONNECTION
1	Vcc
2	OUTPUT
3	GND
4	Vcont

NO	PART NAME	MATERIAL
1	CASE	NICKEL SILVER PLATE, TO 0.15
2	SUBSTRATE	CERAMIC

UNIT: mm

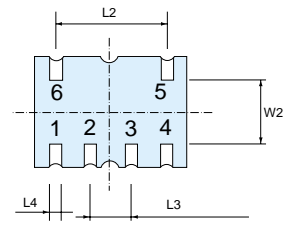
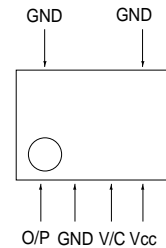
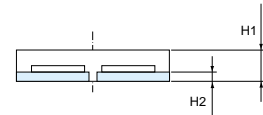
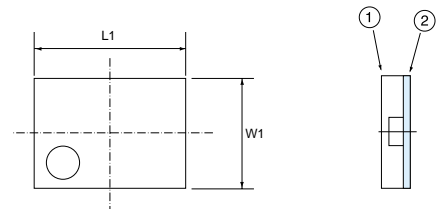
	L1	L2	L3	W1	W2	W3	H1	REMARK
0.12cc	9.0±0.3	5.08±0.3	1.4	7.0±0.3	4.6±0.3	1.3±0.2	2.0Max	
0.27cc	11.4±0.3	7.62±0.3	0.8	9.6±0.3	7.0±0.3	1.3±0.2	2.0Max	
0.07cc	7.0±0.3	5.08±0.3	1.4	5.0±0.3	4.6±0.3	1.3±0.2	2.0Max	One-Chip Type
0.77cc	7.0±0.3	5.08±0.3	1.4	7.0±0.3	4.6±0.3	1.3±0.2	2.0Max	Discrete Type

LED NO	CONNECTION
1	Vcc
2	OUTPUT
3,4,5	GND
4	Vcont

NO	PART NAME	MATERIAL
1	CASE	NICKEL SILVER PLATE, TO 0.15
2	SUBSTRATE	CERAMIC

UNIT: mm

	L1	L2	L3	L4	W1	W2	H1
0.25cc	11.4±0.3	7.62±0.3	2.54±0.3	0.8	9.6±0.3	7±0.3	2.25Max
0.27cc	11.4±0.3	7.62±0.3	2.54±0.3	0.8	9.6±0.3	7±0.3	2.6Max



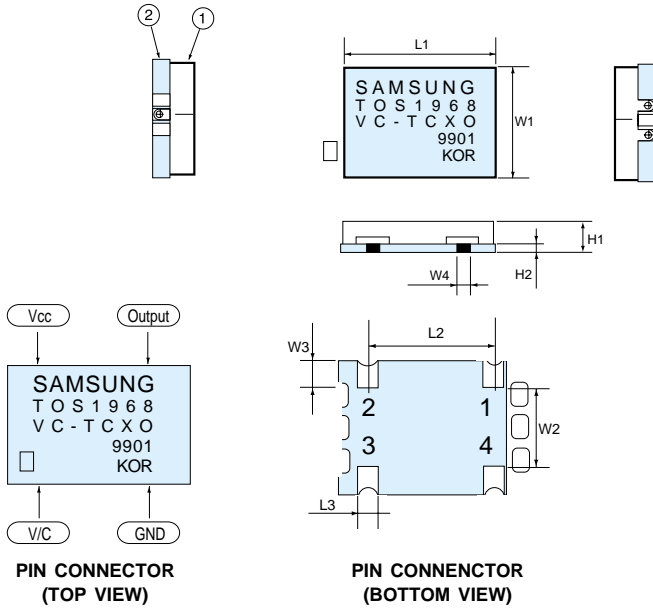
PIN CONNECTOR (TOP VIEW)

PIN CONNECTOR (BOTTOM VIEW)

SPECIFICATIONS

APPLICATION	TYPE	SIZE	MODEL	Freq (MHz)	Supply (Vcc)	Frequency Stability			Frequency Tolerance		Control Voltage (V)	P/N (dBc/Hz) @100kHz offset	DIMENSION(mm)		
						vs. Temp.	vs. Voltage	vs. Load /vs.Aging	Before Reflow	After Reflow			LENGTH	WIDTH	HEIGHT (Max)
CDMA/PCS	DIGITAL	0.07cc	TOA1968DAI4KRA	19.68	3.0	±2.5	±0.3	±0.2/±1.0	±1.0	±1.0	1.5±1.0	-120	7.0±0.3	5.2±0.3	2.0
		0.07cc	TOA1968VAI4KRA		7.0±0.3								5.2±0.3	2.0	
		0.12cc	TOS1968VA14KRA		9.0±0.3								7.0±0.3	2.0	
		0.12cc	TOS1968VA14KRE		9.0±0.3								7.0±0.3	2.0	
		0.27cc	TOU1968VAI6KRA		11.4±0.3								9.6±0.3	2.6	
		0.27cc	TOU1968VBH6KRA		11.4±0.3								9.6±0.3	2.6	
		0.27cc	TOU1968VBH6KRT		11.4±0.3								9.6±0.3	2.6	
GSM	ANALOG	0.07cc	TOA1300VAI4KRA	13.00	3.0								7.0±0.3	5.2±0.3	2.0
		0.12cc	TOS1300VPM4DKA		9.0±0.3								7.0±0.3	2.0	
		0.27cc	TOU1300VPM4DKA		11.4±0.3								9.6±0.3	2.6	
		0.27cc	TOU1280VPI4HKB		11.4±0.3								9.6±0.3	2.6	
AMPS	ANALOG	0.5cc	TOC1485VBM4KRA	14.85	3.3								11.4±0.3	11.4±0.3	4.0

VC-TCXO MODULE OUTLINE (4PIN)



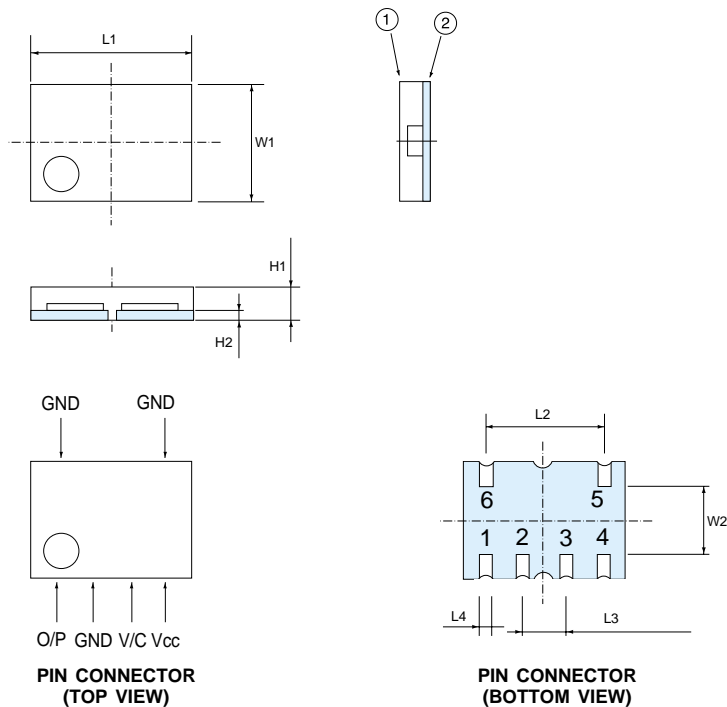
LED NO.	CONNECTION
1	Vcc
2	OUTPUT
3	GND
4	Vcont

NO.	PART NAME	MATERIAL
①	CASE	NICKEL SILVER PLATE, TO 0.15
②	SUBSTRATE	CERAMIC

UNIT: mm

	L1	L2	L3	W1	W2	W3	W4	H1	H2	Remark
0.12cc	9.0±0.3	5.08±0.3	1.4	7.0±0.3	4.6±0.3	1.3±0.2	0.55	2.0 Max.	0.50	
0.27cc	11.4±0.3	7.62±0.3	0.8	9.6±0.3	7.0±0.3	1.3±0.2	0.55	2.6 Max.	0.635	
0.07cc	7.0±0.3	5.08±0.3	1.4	5.0±0.3	4.6±0.3	1.3±0.2	0.55	2.0 Max.	0.40	One-Chip type
0.77cc	7.0±0.3	5.08±0.3	1.4	5.0±0.3	4.6±0.3	1.3±0.2		1.8 Max.		Discrete type

VC-TCXO MODULE OUTLINE (6PIN)



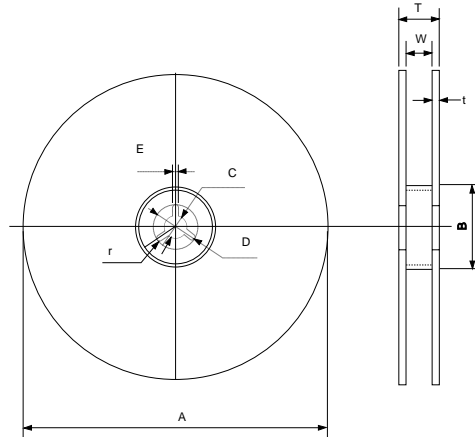
LED NO.	CONNECTION
1	Vcc
2	OUTPUT
3, 5, 6	GND
4	Vcont

NO.	PART NAME	MATERIAL
①	CASE	NICKEL SILVER PLATE, TO 0.15
②	SUBSTRATE	CERAMIC

UNIT: mm

	L1	L2	L3	L4	W1	W2	H1	H2
0.25cc	11.4±0.3	7.62±0.3	2.54±0.3	0.8	9.6±0.3	7±0.3	2.25 Max.	0.5
0.27cc	11.4±0.3	7.62±0.3	2.54±0.3	0.8	9.6±0.3	7±0.3	2.6 Max.	0.635

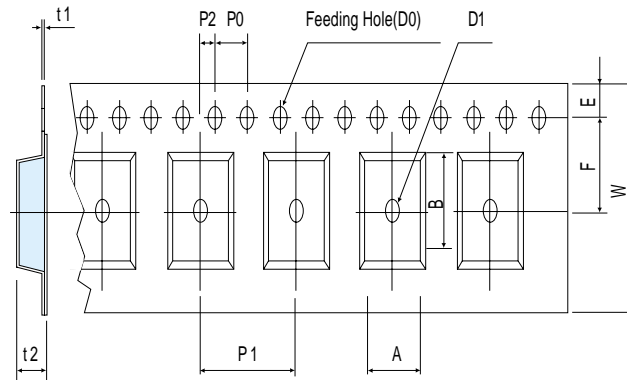
PACKAGE SPECIFICATION



Reel Tape

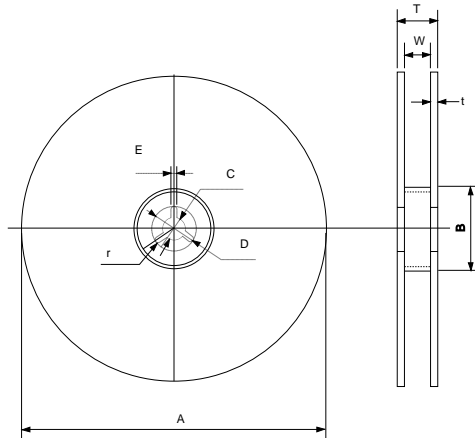
Product Name (Part Number)		Product's Thickness (mm)	Quantity(pcs.)			Reel Dimension(mm)				
			ϕ 178 mm Reel	ϕ 330 mm Reel	Bulk	ϕ A	ϕ B	ϕ C	W	t
VCO	VON	4		900		330	22.6	13	24.4	2.5
	VOM	2.5		2,000		330	22.6	13	16.4	2.5
	VOU	2		2,000		330	22.6	13	16.4	2.5
	VOS	1.8		2,000		330	22.6	13	16.4	2.5
VC-TCXO	TOM	4.0		1,000		330	22.6	13	16.4	2.5
	TOU	2.5		1,000		330	22.6	13	16.4	2.5
	TOS	2.0		○		○	○	○	○	○
RF Module	RU(15cc)	9.5			250					
	RU(10cc)	6.7			350					
SAW Filter (Pager)	SFS□□□PA	2.5			2,000					
	SFS□□□PC	1.2	1,000			178	60	13	13	2
	SFS930PC	1.5	1,000			178	60	13	13	2
SAW Filter (HHP IF)	SFH85PC	2.5		1,000		○	○	○	○	○
	SFH8□□□	2		1,000		330	100	13	17	2
	SFH130KC	1.6		1,000		330	100	13	17	2
	SFH150□□	2		1,000		330	100	13	17	2
	SFH210PC	1.75		1,000		330	100	13.8	24	2.5
	SFH215PC	1.6		1,000		330	100	13	17	2
	SFH220PC	1.75		1,000		330	100	13.8	24	2.5
	SFH246PC	1.6		1,000		330	100	13	17	2
SAW Filter (HHP RF)	SFH8□□AC	2	1,000			178	60	13	17	2
	SFH9□□AC	1.6, 1.75	1,000			178	60	13	17	2
SAW Filter (CLP)	SFC□□□AA	2.5			2,000					
	SFC254AA	1.2	1,000			178	60	13	13	2
	SFC380AC	1.2	1,000			178	60	13	13	2
	SFC□□□AC	1.5	1,000			178	60	13	13	2
SAW Filter (Package)	SC33 Package		1,000			178	60	13	13	2
	SC54 Package		1,000			178	60	13	13	2

PACKAGE SPECIFICATION



Product Name (Part Number)		Tape Dimension(mm)											
		A	B	W	E	F	P0	P1	P2	$\phi D0$	$\phi D1$	t1	t2
VCO	VON	10.8	14.5	24	1.75	11.5	4	16	2	1.5	1.5	0.3	4.4
	VOM	7.4	10.4	16	1.75	7.5	4	12	2	1.5	1.5	0.3	3.0
	VOU	8.7	6.3	16	1.75	7.5	4	12	2	1.5	1.5	0.3	2.3
	VOS	7.0	5.8	16	1.75	7.5	4	12	2	1.5	1.5	0.3	2.3
VC-TCXO	TOM	11.8	12.2	24	1.75	11.5	4	16	2	1.5	1.5	0.3	3.1
	TOU	10	11.8	24	1.75	11.5	4	16	2	1.5	1.5	0.3	4.5
	TOS	○	○	○	○	○	○	○	○	○	○	○	○
RF Module	RU(15cc)												
	RU(10cc)												
SAW Filter (Pager)	SFS□□□PA												
	SFS□□□PC	5.3	5.7	12	1.75	5.5	12	8	6	1.5	1.5	0.31	1.45
	SFS930PC	4.0	4.0	12	1.75	5.5	12	8	6	1.5	1.5	0.31	1.30
SAW Filter (HHP IF)	SFH85PC	○	○	○	○	○	○	○	○	○	○	○	○
	SFH8□□□	5.5	11.9	24	1.75	11.5	12	8	6	1.5	1.5	0.33	2.5
	SFH130KC	5.5	7.5	16	1.75	7.5	12	8	6	1.5	1.5	0.33	2.2
	SFH150□□	5.5	11.9	24	1.75	11.5	12	8	6	1.5	1.5	0.33	2.5
	SFH210PC	6.9	13.7	24	1.75	11.5	12	12	6	1.5	1.5	0.33	2.0
	SFH215PC	5.5	7.5	16	1.75	7.5	12	8	6	1.5	1.5	0.33	2.2
	SFH220PC	6.9	13.7	24	1.75	11.5	12	12	6	1.5	1.5	0.33	2.0
	SFH246PC	5.5	7.5	16	1.75	7.5	12	8	6	1.5	1.5	0.33	2.2
SAW Filter (HHP RF)	SFH8□□□AC	5.5	11.9	24	1.75	11.5	12	8	6	1.5	1.5	0.33	2.5
	SFH9□□□AC	6.9	13.7	24	1.75	11.5	12	12	6	1.5	1.5	0.33	2.0
SAW Filter (CLP)	SFC□□□AA												
	SFC254AA	5.3	5.7	12	1.75	5.5	12	8	6	1.5	1.5	0.31	1.45
	SFC380AC	5.3	5.7	12	1.75	5.5	12	8	6	1.5	1.5	0.31	1.45
	SFC□□□AC	4.0	4.0	12	1.75	5.5	12	8	6	1.5	1.5	0.31	1.30
SAW Filter (Package)	SC33 Package	4.0	4.0	12	1.75	5.5	12	8	6	1.5	1.5	0.31	1.30
	SC54 Package	5.3	5.7	12	1.75	5.5	12	8	6	1.5	1.5	0.31	1.45

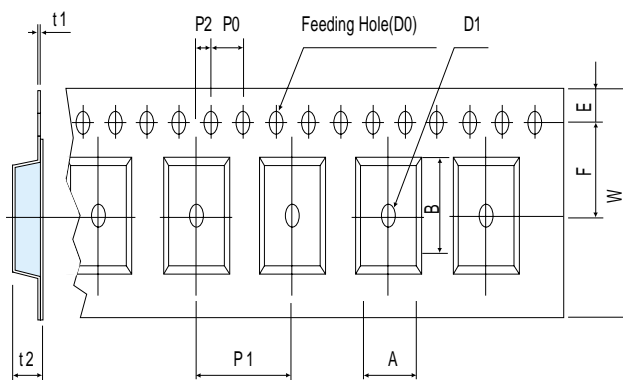
PACKAGE SPECIFICATION



Reel Tape

Product Name (Part Number)		Product's Thickness (mm)	Quantity(pcs.)			Reel Dimension(mm)				
			ϕ 178 mm Reel	ϕ 330 mm Reel	Bulk	ϕ A	ϕ B	ϕ C	W	t
Ceramic Filter	CN455□	8.4			200					
	CNS455□	6.9			200					
	CN455□4	8.0			200					
	CM455□	6.3			200					
	CM455□4	6.3			200					
	CS455□4	4.1	500			178	80	13	22.5	2.5
	CS455□	3.1	400			178	62	13	30.5	2.5
	FE□□□MJ	3			500					
Ceramic Discriminator	CDK	6.0			500					
	CDS	3.5	500			178	80	13	20	2.5
Ceramic Resonator	RJ□□□B	9.0			500					
	RF456F□	9.0			500					
	RA□□□MG	5			500					
	RT□□□MG	5			500					
Antenna Duplexer	DFD□□□F	4		900		330	100	13	17	2
	DFD□□□G	3.9			1,500					
	DFD□□□H	4.2			1,500					
Microwave Dielectric Filter	DFM2R□B	4.5			2,000					
	DFM2R□C	4			2,000					
	DFM3R	4			2,000					
	DFM4R	3.8			2,000					
SMD LED	101Series	0.8	4,000			178	60	13	9	1.2
	201, 202 Series	1.4	3,000			178	60	13	9	1.2
	301, 302 Series	1.4	3,000			178	60	13	9	1.2

PACKAGE SPECIFICATION



Tape Running Direction →

Carrier Tape

Product Name (Part Number)		Tape Dimension(mm)											
		A	B	W	E	F	P0	P1	P2	φ D0	φ D1	t1	t2
Ceramic Filter	CN455□												
	CNS455□												
	CN455□4												
	CM455□												
	CM455□4												
	CS455□4	6.7	8.1	16	1.75	7.5	4	8	4	1.5	-	0.4	3.2
	CS455□	8.1	12.2	24	1.75	11.5	4	12	6	1.5	-	0.4	3.2
	FE□□□MJ												
Ceramic Discriminator	CDK												
	CDS	6.7	7.7	12	1.75	6.75	4	8	4	1.5	-	0.4	3.2
Ceramic Resonator	RJ□□□B												
	RF456F□												
	RA□□□MG												
	RT□□□MG												
Antenna Duplexer	DFD□□□F	6.6	10	16	1.75	7.5	4	12	2	1.5	-	0.4	3.6
	DFD□□□G												
	DFD□□□H												
Microwave Dielectric Filter	DFM2R□B												
	DFM2R□C												
	DFM3R												
	DFM4R												
SMD LED	101Series	1.1	1.9	8	1.75	3.5	4	4	2	1.5	-	0.2	1.2
	201, 202 Series	1.6	3.1	8	1.75	3.5	4	4	2	1.5	-	0.2	1.9
	301, 302 Series	2.6	3.1	8	1.75	3.5	4	4	2	1.5	-	0.2	1.9