

# Tape & Reel Packaging For Surface Mount Devices

Automation of surface-mount assembly by the use of pick-and-place equipment to handle tiny components has been enhanced by evolutionary improvements in tape-and-reel systems which can accommodate as many as 4000 parts on a 13-inch reel. This results in less frequent component reloading and less downtime of the assembly equipment. Other advantages of tape feeders include versatility or the ability to handle a variety of parts.

Mini-Circuits has kept pace with the trend towards automated assembly and offers RF/Microwave signal-processing components in tape-and-reel format, in accordance with the specifications in the following tables. However, there are many situations where requirements are for smaller quantities. In these cases, Mini-Circuits offers small quantity reels of 20, 50, 100, 200 and 500 pcs for selected models. There is no extra charge and these reels are ready for placement on pick and place systems.

## ESD Protection:

Mini-Circuits uses industry recognized materials to ensure that all products are protected from ESD (Electro-Static Discharge) damage during handling and shipping. Carrier tapes meet or exceed requirements defined in EIA-481 and EIA-541 and are static dissipative.

Properties	Method	Performance
Surface Resistivity	ASTM D257 at 50% RH	$\geq 10^4$ Ohms per square $< 10^{12}$ Ohms per square
Electrostatic Discharge	FTMS 101, Method 4046	<.02 seconds

## Date Code Marking:

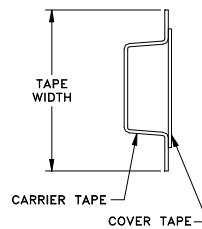
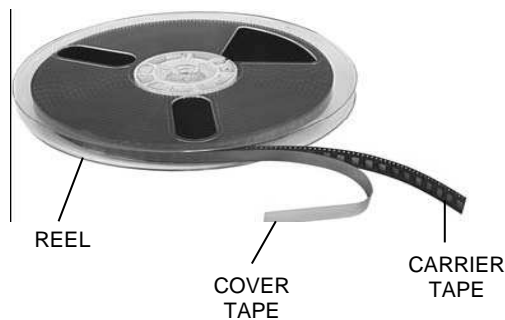
Mini-Circuits maintains device date code control per our ISO9001 and AS9100 documented procedures, in accordance with MIL-PRF-19500.

Product is verified based on the following:

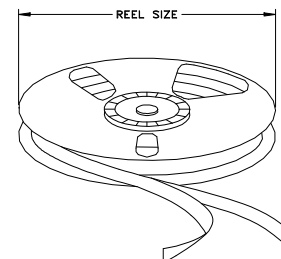
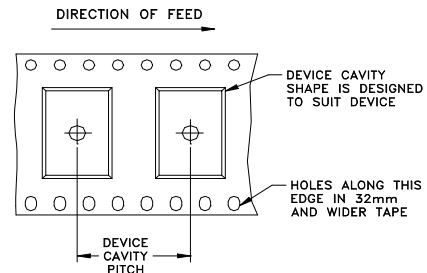
MODEL TYPE	PERIOD	TEST	SAMPLING	CRITERIA
Connector	5 years	Electrical Performance	AQL	100% Pass
Surface Mount	5 years	Electrical Performance	AQL	100% Pass
		Solderability	Per Lot Size	J-STD
Parts with PdAg and ENIG termination finish	3 years	Electrical Performance	AQL	100% Pass
		Solderability	Per Lot Size	J-STD
Parts with Silver Plated finish	Shelf life 12 month when kept in sealed bags. Unused parts are to be released to preserve shelf life for proper solderability			

After these expiration periods subsequent retest is required for 1 year extension. Acceptance date and approval shall appear on the package label. The device markings are for production lot control and identification. The date code marked on the reel or other package label is the date code for the parts contained therein.

Mini-Circuits' product warranty, as governed by our Terms and Conditions, starts at the date of shipment and is independent of reel label or device marking.



## tape illustration



Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified

INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

## T & R Codes and Information (D4-D041)

T&R Code	Case Style	Tape Width (mm)	Device Cavity Pitch (mm)	Reel Size (inch)	QTY per Reel
F1	KK81	24	12	13	900
F2	TT100, TT240, TT597, TT1224, TT1224-2, TT1423, TT1491, TT1491-1, TT1491-2, TT1618	16	12	7	10, 20, 50, 100, 200, see note 2
				13	500, 1000, see note 2
F4	WW107, WW107-1	12	8	7	20, 50, 100, 500, 1000, see note 2
				13	2000, 4000
F5	BJ360 BK276, BK343 DT855 HF1138, HF1139 HF1317, HF1392 HF1458, HF1485 HF1485-1 JB1233-1 JW1441 MQ1770 QQQ569 YY101, YY161	32	16	13	400, 500
F6	HZ1198	32	16	13	500
F8	MMM168	8	4	7	3000
F9	NNN150	24	16	13	500
F10	QQQ130	24	16	7	10, 20, 50, 100, 200
	QQQ1358				
	BJ937, BJ937-1				
	BJ1051				
	BJ293, BJ293-1			13	500
	CJ608				
	CJ725				
	JQ1382				
SM34					
F11	BBB123	24	24	13	500
	RRR137	24	24	13	20, 50, 100, 200, 500, see note 2
	RRR137-1	12	8	7	
F12	TTT166, TTT166-1	24	12	7	10, 20, 50, 100, 200, see note 2
	TTT167, TTT167-1			13	500
	TTT881, TTT1289, TTT1732				
F14	AF190, AF190-1	12	8	7	20, 50, 100, 200, 500, 1000 see note 2
F15	AT790	12	8	13	2000
	AT1667, AT1667-1	12	8	7	20, 50, 100, 200
				13	500, 1000, 2000, see note 2
F16	HA1069	12	8	7	1000, 2500, see note 1
	XX211-1				1000, 2500
	XX211				20, 50, 100, 200, 500, 1000, 2500, see note 2
	XX746				1000, 2500, see note 1

T&R Code	Case Style	Tape Width (mm)	Device Cavity Pitch (mm)	Reel Size (inch)	QTY per Reel	
F17	AT1521, AT224 AT224-1	12	8	7	Small quantity standards (see note 2)	20
	50					
	13			Standard	100	
					200	
Non Standard	500					
	AT224-2					1000
	AT224-3					2000
	AT790-1					2500
F18	AN213	24	16	13	20, 50, 100, 200, 500, see note 2	
F19	XX112	16	8	7	500	
F20	VV105	12	12	13	1000, 2000	
F21	BG291 HU1186, HU1374	32	32	13	200	
F24	AT577-3 BH292 CB518, CB539	16	12	13	500	
F25	BG419 BL301	44	32	13	125	
F26	AF320	12	8	7	1000	
F27	JF1258	44	32	13	125	
F28	DK801, DK1042, DK1182, DK1171, DK1515 HD1131	32	20	13	500	
F29	BJ398 PQ2186	24	12	13	500	
F31	CA531, CA531-1	8	4	7	20, 50, 100, 200, 500, 1000 see note 2	
F34	CD541 CM624	16	12	13	1500	
	CD636 DZ883 DZ885, DZ885-2 DZ943, DZ943-G1 DZ943-GC1, DZ943-GC2 DZ944, DZ944-G1 DZ944-GC1, DZ944-2 DZ944-GC2 DZ1034 DZ1383-2 LZ1624 QA2224 SM1, SM1L, SM2, SM33, SM31	16	12	13	1000	
	PQ2186	16	12	13	500	
	CD542, CD636, DZ1650 TT1618-1, TT2315, MW1654	16	12	13	500, 1000, see note 2	
				7	20, 50, 100, 200, see note 2	
F36	CG581	24	12	13	500	

<b>T&amp;R Code</b>	<b>Case Style</b>	<b>Tape Width (mm)</b>	<b>Device Cavity Pitch (mm)</b>	<b>Reel Size (inch)</b>	<b>QTY per Reel</b>
F37	CH513, CH549 CK605, CK605-1 CK605-4, CK829 CK1113, CK1246 CK1246-1, CK1746, CK-2335, CK2335-1 DV874, DV897, HE1135, HE1354 LW1611, CK605-5, LW1611-1	24	16	13	500
F43	CL620 CL620-1	16	8	7	20, 50, 100, 200, 500, see note2
	PQ2482	16	8	7	500
F46	CD637	16	12	13	900
F47	AT2367, DB714, DB1627	12	8	13	1000, 2000
				7	20, 50, 100, 200, 500, see note2
F48	SM18, PQ2099, PQ2099-1, PQ2099-2	24	12	13	1000
F50	TT241	24	12	13	500
F53	SM20A	32	16	13	500
F55	DF782	12	8	7	20, 50, 100, 200, 500, 1000 see note 2
F56	BJ850	32	16	13	1000
F57	QQQ828	24	12	13	1000
F58	DL805	12	8	7	1000
				13	2000, 4000
F59	DH820	12	8	7	1000
F60	CZ682, CZ2036	24	16	13	1000
F61	AH202, AH202-1, AH202-2, AH1415, AH1557	24	12	13	200
F66	DQ1225	8	4	7	2000
	DQ2962, LZ1736, LZ1737, MC1630-1, MC1631-1, MC3007, NF1846-1	8	4	7	20, 50, 100, 200, 500, 1000, 2000, 3000 see note 2
F66-1	DL1721	8	4	7	20, 50, 100, 200, 500, 1000, 2000 see note 2
F68	DL1020 MW1663-2	12	8	7	20, 50, 100, 200, 500, 1000, see note 2
	DG1677-1, DL1636, DG1677-2, JY1443, JY2179	12	8	7	20, 50, 100, 200, 500, 1000 see note 2
	DG1677			13	2000, 3000, 4000 see note 2
	FG873	12	8	7	20, 50, 100, 200, 500, 1000 see note 2
				13	2000, 3000, 4000
	DG1847, DG3006, WQ3359	12	8	7	20, 50, 100, 200, 500, 1000 see note 2
				13	2000, 3000, 4000
	FR933, FR933-1	12	8	7	1000
	GF981, GF995			13	2000, 3000, 4000
DG983, DG1886					
DG984, DG984-1					
F68-1	DG1677-10	12	8	7	10, 20, 50, 100, 200, 500, 1000 see note 2
				13	2000, 3000, 4000 see note 2

<b>T&amp;R Code</b>	<b>Case Style</b>	<b>Tape Width (mm)</b>	<b>Device Cavity Pitch (mm)</b>	<b>Reel Size (inch)</b>	<b>QTY per Reel</b>
F69	DU674	44	32	13	125
F70	DG1293	12	8	7	20, 50, 100, 200, 500, 1000 see note 2
				13	2000
F71	GE0805C-14 FV1206 FV1206-4 NL1008C NL1008C-1 NL1008C-4 NL1008C-8	8	4	7	20, 50, 100, 200, 500, 1000, 3000 see note 2
F72	FW856	12	8	13	2000, 4000
F73	AT577; AT577-2 AT577-4, DG1677-4	12	8	7	20,50,100,200,500
				13	1000,2000
F74	GE0805C-1AP, GE0805C-1, GE0805C-13, GU2939, JC0603C-8, JV1210C-1, JV1210C-2, JV1210C-3, JV1210C-4, JV1210C-5, JV1210C-6, JV1210C-7, JV1210C-8, JV1210C-9, JV1210C-10, JV1210C-11, JV1210C-13	8	4	7	20, 50, 100, 200, 500, 1000, 2000, 4000 see note 2
	GE0805C-2, JV1210C	8	4	7	2000
F75	FV1206-1, FV1206-3, FV1206-4, FV1206-5, FV1206-6, FV1206-7, FV1206-9, FV1206-12, JC0603C-1, NL1008C-6, NL1008C-9, NL1008C-10	8	4	7	20, 50, 100, 200, 500, 1000, 3000 see note 2
F76	AT1029	12	8	7	20, 50, 100, 200, 500, see note 2
				13	1000, 2000
	AT1030, AT1642			13	2000
F77	GU1604, GU1840, MZ4532C, NM1812C, NM1812C-1, NM1812C-2, NM3237, NM1812C-3, NM1812C-5	12	8	7	20, 50, 100, 200, 500, 1000 see note 2
	GU1041	12	8	13	2000
		12	8	13	2000
F78	FZ802, FZ990 GP731, GP1212 GQ1018	16	12	13	1000
	LZ1671, MW1654	16	12	13	500, 1000
				7	20, 50, 100, 200, see note 2
F79	AN1102	24	16	13	500
F80	HR1176, HR1843 PA2002, NU1620	44	40	13	100
F81	CA1389, HS1181	8	4	7	3000
F82	HV1195	12	8	7	500
F83	HQ1157, HQ1806	56	16	13	100
F84	JB1233, JB1233-1	32	12	13	500
F85	HV1278	12	8	TBD	TBD
F86	JH1286, JR1384	44	20	13	250
F87	DG983-1, DG983-2	12	8	7	20, 50, 100, 200, 500, 1000 see note 2
	DG1235, DG983-3			13	3000

<b>T&amp;R Code</b>	<b>Case Style</b>	<b>Tape Width (mm)</b>	<b>Device Cavity Pitch (mm)</b>	<b>Reel Size (inch)</b>	<b>QTY per Reel</b>
F88	JK1226, TS2825	44	24	13	100, 200 see note 2
F89	BL1543, BL1543-1, HP1156	56	32	13	100
F90	MMM1362, TE2769	8	4	7	20, 50, 100, 200, 500, 1000, 2000, 3000, see note 2
F91	JS1370	16	12	13	2000
F92	JM1360	16	8	7	1000
F93	JZ1436	12	4	7	1000
				13	3000
F94	KA1444	12	8	7	1000
				13	3000
F95	KJ1367, KJ1373, SN2595	24	24	13	20, 50, 100, 200, 500 see note 2
F96	KN1368, KN2445	56	40	13	100
F97	KL942, KL1294 KV1710	44	32	13	100, 150, 200
F99	JG1228, JG1835	44	32	13	125
F100	KM1479	24	24	13	500
F101	CA1389	8	4	7	20, 50, 100, 200, 500, 1000, 2000 see note 2
F102	AT1740, GU1414	12	8	13	20, 50, 100, 200, 500, 1000 see note 2
F103	AH1503	32	16	13	200
F104	DQ849, JV2579, MC2601, DQ3005	8	4	7	20, 50, 100, 200, 500, 1000, 2000 see note 2
F105	KR1508	56	24	13	150
F106	KS1509 KU1513 KV1514 NT1997 KV1974 VT3269	44	24	13	250
F107	AH1596 BK377	32	20	13	200
	PD1647-3, SEE NOTE 3 PE1259				
F108	MC1631, MT1817, MT1818, MT2140	12	4	7	20, 50, 100, 200, 500, 1000, 3000 see note 2
	MC1630, LZ1737				20, 50, 100, 200, 500, 1000, 2000 see note 2
F109	AH1647	32	16	13	200
F110	DL1807 AAE3610, AAE3610-1	12	8	7	20, 50, 100, 200, 500 see note 2
				13	1000, 2000, 3000 see note 2
F111	MP1766	32	24	13	250
F113	NC1916 NY2000	24	20	13	400
F114	GE0805-1, GE0805C-2, GE0805C-3, GE0805C-4, GE0805C-5, GE0805C-6, GE0805C-7, GE0805C-8, GE0805C-11, GE0805C-12, GE0805C-9, GE0805C-10, GE0805C-15, JV1210C-1, JC0603C, JC0603C-1, JC0603C-2, JC0603C-3, JC0603C-4, JC0603C-5, JC0603C-6, JC0603C-7	8	4	7	20, 50, 100, 200, 500, 1000, 4000 see note 2

T&R Code	Case Style	Tape Width (mm)	Device Cavity Pitch (mm)	Reel Size (inch)	QTY per Reel
F114-1	NK0402C NK0402C-1 SC0202C	8	2	7	20, 50, 100, 200, 500, 1000, 4000 see note 2 4000
F115	PD1647-1	32	20	7	25, see note 3
				13	200, see note 3
				13	10, 20, 50, 100, 200, 500 see note 2
F117	PQ2074, PQ2074-1	44	32	13	500
F118	PQ2098, PQ2098-1, PQ2098-2, PQ2185	44	20	13	500
F119	PQ2100	56	32	13	500
F120	PQ2181	72	16	13	500
F121	HQ2299, HQ2218	56	20	13	100, 250
F122	RZ2511 WA3176 WA3176-1 VS2537	32	20	13	400
F002	TJ2826-1	24	16	13	200
F003	UC2731	16	12	7	10
					20
					50
					100
					200
				13	500
					1000
F004	VG3044	24	12	7	10
					20
					50
					100
					200
				13	500
					1000
F005	KV1514-1	44	28	13	200
F007	YR3342	56	12	13	10, 20, 50, 100
F008	ZH3433	24	20	13	500
F010	ZV3471	44	12	13	10, 20, 50, 100, 250

**Notes:**

1. BP, MSW. MSWA models available in 13" reel only.
2. Consult individual model datasheet to determine device per reel availability.
3. For packaging only, not for pick and place operation.

**IMPORTANT NOTICE**

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