

SPACE PRODUCTS



DowKey® Microwave
CORPORATION

A **DOVER** COMPANY

Space Business Experts Always Like to Stress That the Three Most Important Factors in the Process of Supplier Selection Are:



700C76400 (TRANSFER) CRRES
700C76500 (TRANSFER) SCATHA
909C76400 (SPDT) SEASAT
909C76700 (SPDT) CRRES

33C21800 (WR-75) TELESTAR
300C70500 (TRANSFER) MAROTS
305C30500 (TRANSFER) SPACE SHUTTLE
707C71700 (TRANSFER) SPACE SHUTTLE
909C76100 (SPDT) MAROTS
919C75600 (SPDT) TIROS

818D30900-2 (SPDT) SYMPHONIE
909C72200 (SPDT) SYMPHONIE

33C12900 (WR-15) DCP
909C74900 (SPDT) METEOSAT

700C74900 (TRANSFER) METEOSAT

33C93500 (WR-75) TELECOM I
305C30600 (TRANSFER) SPACE SHUTTLE
700C77800-2 (TRANSFER) TELECOM I
800C33900-1 (SPDT) NAVSTAR GPS
808C30800-3 (SPDT) NAVSTAR GPS
818C30800 (SPDT) IUS
909C75100 (SPDT) GPS
909C78300 (SPDT) TELECOM I
959C71200 (DP3T) TELECOM I

33C14700 (WR-42) TV SAT
33C44300 (WR-112) NATO III
33C93800 (WR-75) ECS
406H-730332-2 (SPDT) IUS
707C78200 (TRANSFER) ECS
808C30800 (SPDT) IUS
818C30800 (SPDT) IUS
909C72600-2 (SPDT) TV SAT

33D43600 (WR-75) INTELSAT V
707C72200 (TRANSFER) INTELSAT V
707C73000 (TRANSFER) EXOSAT
707C76600 (TRANSFER) INTELSAT V
707C76700 (TRANSFER) INTELSAT V
707C90500 (TRANSFER) INTELSAT V
800C33900-1 (SPDT) INTELSAT V
909C76600 (SPDT) INTELSAT V
959C70500 (DT3T) INTELSAT V

33C92600 (WR-75) TDRSS
707C90500 (TRANSFER) TDRSS
707C73000-1 (TRANSFER) SATCOM
800C35300 (SPDT) INSAT
808C30800 (SPDT) TDRSS
808C31000 (SPDT) INSAT
909C72200 (SPDT) RADARSAT
909C72800-1 (SPDT) RADARSAT

300C70500-1 (TRANSFER) MAROTS
859C30500 (DP3T) INSAT
909C72600-1 (SPDT) ANIK D

1975

1970

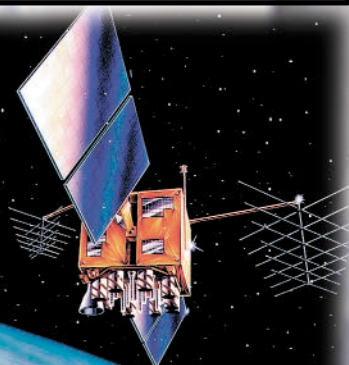
1980

1985

33C14700 (WR-42) TV SAT
33C44300 (WR-112) TV SAT
33C51200-1 (WR-90) ISPM
402H-197 (SPDT) GPS2F
707C71500-1 (TRANSFER) GIOTTO
800C33900-1 (SPDT) NAVSTAR GPS
909C72600-1 (SPDT) TV SAT
909C72900 (SPDT) TV SAT

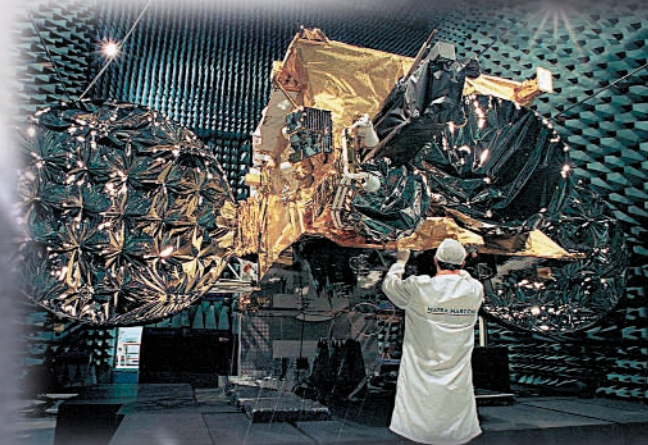
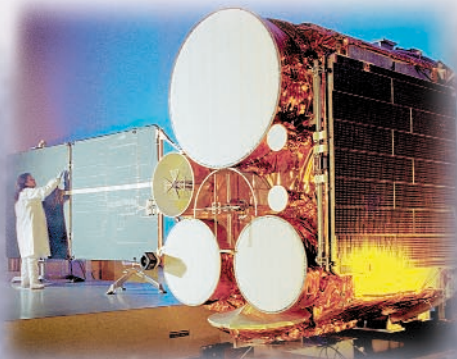
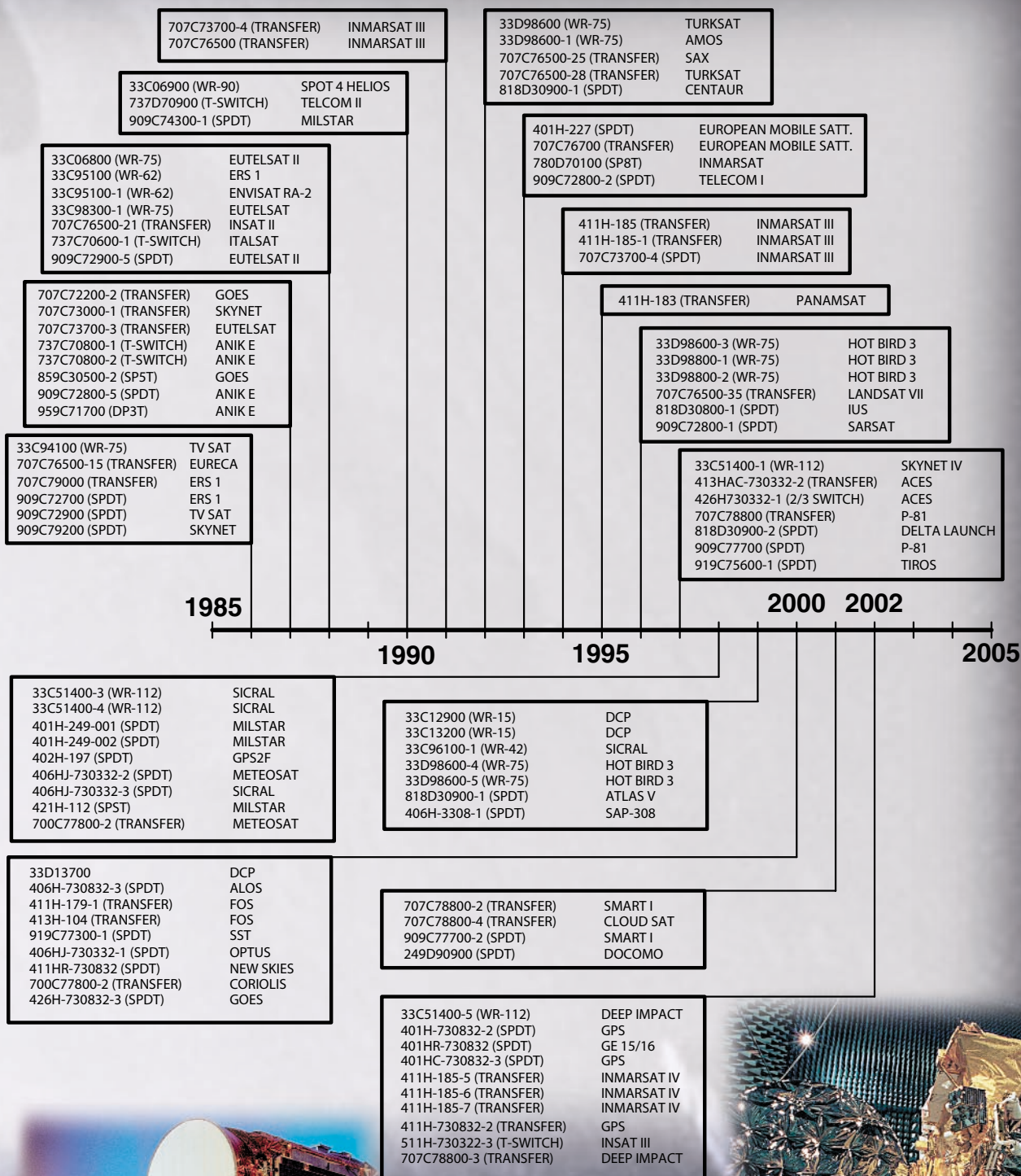
33C94100 (WR-75) TV SAT
33D43600 (WR-75) INTELSAT V
33D43600-1 (WR-75) IBS
700C77500 (TRANSFER) DSP 1
700C77700 (TRANSFER) METEOSAT
805C31300 (SPDT) SKYNET
808C30800-1 (SPDT) IUS
808C30800-3 (SPDT) IUS
818C30800-1 (SPDT) IUS
909C72600-2 (SPDT) METEOSAT
909C72600-3 (SPDT) METEOSAT
909C72800-2 (SPDT) LSAT
909C79200 (SPDT) SKYNET
909C79800 (SPDT) SKYNET
909C79800 (SPDT) SKYNET IV

700C78100 (TRANSFER) TOPEX
707C76500-12 (TRANSFER) HIPPARCOS
707C76500-13 (TRANSFER) HIPPARCOS
707C78200-1 (TRANSFER) DFS
707C78200-3 (TRANSFER) DFS
808C31000 (SPDT) SHUTTLE/CENTAUR
909C72900-2 (SPDT) DFS
909C72900-3 (SPDT) DFS



Heritage Heritage Heritage

SPACE HERITAGE 1985-2003



ADVANCED PRODUCTS - T - SWITCHES



**Medium Power T-Switch
511H - Series**



FREQ (GHz)	I/L (dB)	VSWR	ISOL (dB)
1.0 - 4.2	0.15	1.07:1	65
5.5 - 6.6	0.20	1.20:1	65
6.6 - 7.7	0.21	1.25:1	65
7.7 - 8.8	0.24	1.33:1	65

VDC	CONN	DIMENSION (INCHES)	WEIGHT (OUNCES)
28	SMA	2.35 X 1.95 X 1.30	2.5

FREQ (GHz)	I/L (dB)	VSWR	ISOL (dB)
2.5 - 4.0	0.15	1.20:1	65
4.0 - 4.8	0.20	1.25:1	60

VDC	CONN	DIMENSION (INCHES)	WEIGHT (OUNCES)
42	TNC	3.42 X 2.275 DIA	6.7

**High Power T-Switch
511H - Series**



STANDARD PRODUCTS

FIRST GENERATION OF SPACE QUALIFIED SPDT & TRANSFER SWITCHES

PART DESCRIPTION	ACTUATOR TYPE	FREQUENCY (GHz)	VOLTAGE (VDC)	CONNECTOR	DIMENSION (INCHES)	WEIGHT (OZ)
909 SERIES SPDT	PULSE LATCHING	0 - 18.0	20 - 30	SMA	1.34 X 1.96 X .50	1.5
	PULSE LATCHING W/IND	0 - 18.0	20 - 30	SMA	1.34 X 2.16 X .50	2.0
818 SERIES SPDT HI-PWR	FAILSAFE	0 - 12.4	20 - 30	TNC	2.97 X 2.63 X 1.09	8.0
	FAILSAFE W/IND	0 - 12.4	20 - 30	TNC	2.97 X 2.63 X 1.09	8.0
800 SERIES SPDT HI-PWR	PULSE LATCHING	0 - 12.4	20 - 30	TNC	3.54 X 3.05 X 1.03	8.5
	PULSE LATCHING W/IND	0 - 12.4	20 - 30	TNC	3.54 X 3.05 X 1.03	8.5
700 SERIES TRANSFER	PULSE LATCHING	0 - 18.0	20 - 30	SMA	2.16 X 2.50 X 1.37	3.5
	PULSE LATCHING W/IND	0 - 18.0	20 - 30	SMA	2.16 X 2.50 X 1.37	3.5
707 SERIES TRANSFER	PULSE LATCHING	0 - 18.0	20 - 30	SMA	2.16 X 2.64 X 1.37	3.5
	PULSE LATCHING W/IND	0 - 18.0	20 - 30	SMA	2.16 X 2.64 X 1.37	3.5

ADVANCED PRODUCTS - SWITCH BLOCKS

**Waveguide
Switch Block
Dow-Key PN 222D50600**



FREQ (GHz)	I/L (dB)	VSWR	ISOL (dB)
18.25 - 18.85	.08 / PATH	1.10:1	50
19.65 - 20.25	.08 / PATH	1.10:1	52.5

VDC	CONN	DIMENSION (INCHES)	WEIGHT (OUNCES)
28	WR-51	4.73 X 3.27 X 2.13	16.9

**Coaxial Switch Block
Dow-Key PN H9001**



FREQ (GHz)	INSERTION LOSS (dB)	VSWR	ISOL (dB)
1.525 - 1.559	.15 / SINGLE PATH	1.29:1	60
	.26 / THROUGH 2 PATHS	1.38:1	60

VDC	CONN	DIMENSION (INCHES)	WEIGHT (OUNCES)
28	SMA	12.5 X 3.05 X 4.00	23.9

STANDARD PRODUCTS

SECOND GENERATION OF SPACE QUALIFIED SPDT, 2/3 AND TRANSFER SWITCHES

PART DESCRIPTION	ACTUATOR TYPE	FREQUENCY (GHz)	VOLTAGE (VDC)	CONNECTOR	DIMENSION (INCHES)	WEIGHT (OZ)
401 SERIES SPDT LOW POWER	PULSE LATCHING	0 - 18.0	11.0 - 32.0	SMA	1.34 X 2.02 X .50	2.5
	PULSE LATCHING W/IND	0 - 18.0	11.0 - 32.0	SMA	1.34 X 2.02 X .50	2.5
406 SERIES SPDT HIGH POWER	PULSE LATCHING	0 - 18.0	24.0 - 30.0	SMA	1.34 X 2.78 X .60	2.0
	PULSE LATCHING W/IND	0 - 18.0	24.0 - 30.0	SMA	1.92 X 2.53 X .60	2.0
411 SERIES TRANSFER LOW POWER	FAILSAFE	0 - 18.0	11.0 - 32.0	SMA	2.16 X 2.40 X 1.32	4.0
	FAILSAFE W/IND	0 - 18.0	11.0 - 32.0	SMA	2.16 X 2.40 X 1.32	4.0
	PULSE LATCHING	0 - 18.0	11.0 - 32.0	SMA	2.16 X 2.40 X 1.32	4.0
	PULSE LATCHING W/IND	0 - 18.0	11.0 - 32.0	SMA	2.16 X 2.40 X 1.32	4.0
421 SERIES 2/3 SWITCH LOW POWER	PULSE LATCHING W/IND	12.3 - 13.7	15.0 - 34.0	GPO	2.25 X 2.65 X .51	4.0
426 SERIES 2/3 SWITCH HIGH POWER	PULSE LATCHING W/IND	1.6 - 1.7	23.0 - 36.0	TNC	3.84 X 2.76 X .69	4.2

ADVANCED PRODUCTS - SPECIAL REQUIREMENTS

**Isolator- Switch
Dow-Key PN 249D90900**



FREQ (GHz)	I/L (dB)	VSWR	ISOL (dB)
2.660 - 2.690	0.30	1.25:1	70

VDC	CONN	DIMENSION (INCHES)	WEIGHT (OUNCES)
28	SMA PINS	1.60 X 2.26 X 1.90	4.0

**High Power SPDT
406H-Series**



FREQ (GHz)	I/L (dB)	VSWR	ISOL (dB)
.045 - 1.720	0.20	1.15:1	65

VDC	CONN	DIMENSION (INCHES)	WEIGHT (OUNCES)
28	TNC	2.78 X 2.50 X .69	3.5



STANDARD PRODUCTS

SPACE QUALIFIED WAVEGUIDE SWITCHES

PART DESCRIPTION	ACTUATOR TYPE	FREQUENCY (GHz)	VOLTAGE (VDC)	WAVEGUIDE SIZE	DIMENSION (INCHES)	WEIGHT (LBS)
33C12900	LATCHING (4 PORTS)	56.0 - 64.0	28	WR 15	2.225 X 3.765 X 1.850	14.4 MAX
33C13200	LATCHING (R TYPE)	56.0 - 64.0	28	WR 15	2.225 X 3.765 X 1.850	12.8 MAX
33C98100	LATCHING (4 PORTS)	27.5 - 30.0	28	WR 28	2.045 X 3.035 X 2.045	5.6 MAX
33C96600	LATCHING (4 PORTS)	22.0 - 32.0	28	WR 34	1.510 X 2.510 X 1.510	4.3 MAX
33D51500	LATCHING (R TYPE)	17.7 - 20.2	28	WR 42	2.590 X 4.130 X 2.241	12.4 MAX
33C96100-1	LATCHING (4 PORTS)	20.2 - 21.2	28	WR 42	2.042 X 3.424 X 2.042	4.3 MAX
33C95100	LATCHING (4 PORTS)	13.6 - 14.0	28	WR 62	1.810 X 3.414 X 1.810	7.1 MAX
33C21800	LATCHING (3 PORTS)	11.7 - 12.2	28	WR 75	2.100 X 4.250 X 2.100	11.5 MAX
33C94100	LATCHING (4 PORTS)	10.0 - 15.0	28	WR 75	2.640 X 4.060 X 1.880	13.9 MAX
33C50900	LATCHING (R TYPE)	11.7 - 14.5	28	WR 75	.937 X 3.970 X .937	10.4 MAX
33D43600-1	LATCHING (4 PORTS)	10.95 - 12.75	28	WR 75	1.840 X 4.030 X 1.840	18.1 MAX
33C51200	LATCHING (4 PORTS)	8.2 - 8.5	28	WR 90	2.637 X 3.900 X 1.875	16.2 MAX
33C51400-4	LATCHING (4 PORTS)	7.2 - 8.4	28	WR 112	2.173 X 4.400 X 2.173	14.3 MAX

SUMMARY

We have been a leading supplier of space products for the last few decades, and have delivered space hardware ranging from a basic SPDT switch to fully integrated switch blocks.

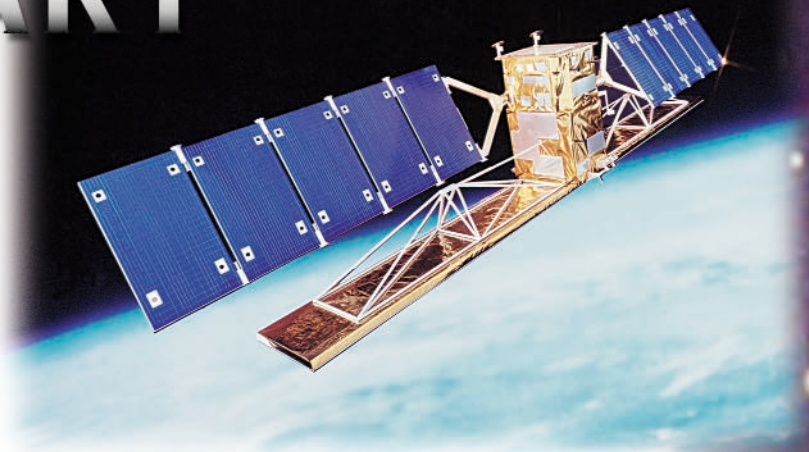
We have a dedicated staff of highly skilled and experienced engineers and technicians who, through their robust and mature knowledge, make possible our excellent reputation for performance.

We are completely facilitated with a modern in-place space infrastructure that can meet the most stringent requirements of our customers. With our extensive electromechanical switch production capability, we have the synergism to optimally blend our standard production capability into our space infrastructure to meet the rapid delivery and high quantity of products required for the satellite communications marketplace.

Our new and advanced capability includes an 800 sq. ft clean room facility, environmental facilities and thermal vacuum capability. Only a brief, and far from inclusive, sampling of the space products in which we have been active participants over the years, is presented in this short summary. If you do not see a product that specifically meets your requirements, don't hesitate to contact us and we will provide you with a prompt answer to your needs.

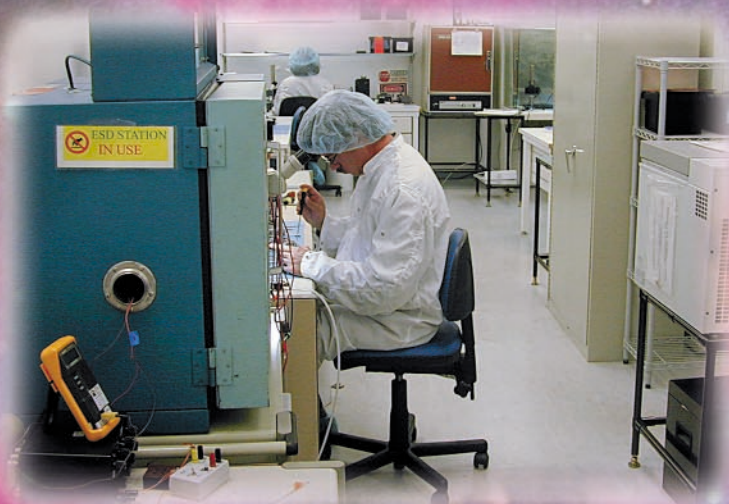
Through years of working with the space industry, Dow-Key has developed a product offering that extends from the simplest to the most complex electromechanical switch solutions that support space-level systems. At one end of this spectrum are the industry standard SPDT and Transfer Switches. At the other end are T-Switches, High Power Switches, Switch Blocks, and Integrated Assemblies. All of our Switches are designed, manufactured and screened in accordance with space level criteria and are supported by a unique team of program professionals inclusive of its own design engineering staff, data analysis, parts control program and dedicated manufacturing areas.

Dow-Key continues its strong commitment to the space market by implementing new products and services, as well as working closely with our customers as older designs are transitioned to include new technologies for higher levels of performance, reliability, mission success, and cost efficiencies.



FACILITY

400 sq. ft Class 100 area with controlled humidity and temperature is allocated for the most critical assembly processes.



400 sq. ft Class 100,000 area with controlled humidity and temperature is allocated for the the final assembly processes and in-process testing.

Environmental Lab fully Equipped with four ThermoVac chambers, and the sophisticated Vibration Table fully equipped to perform random and sine vibration and limited level of mechanical shock



DowKey® Microwave
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