

MMIC 开关

Model	Description	Freq (GHz)	IL (dB)	ISO (dB)	P _{1dB} (dBm)	P _D (dBm)	Switch time(ns)
TGS8250-SCC	SPDT FET	DC-18	<2	39	21		
TGS8422-SCC	SP4T FET	DC-18	<2.5	37	19		
TGS2303-EEU	SP3T PIN	DC-20	<0.5	35			
TGS2304-SCC	SP4T PIN	DC-20	<0.6	38	23	23	
TGS4301-EPU	SPDT PIN	24- 43	<2	36	TBD	TBD	
TGS4302-EPU	SPDT PIN	27- 46	<0.9	36	38@15V	TBD	
P35-5200	SPST FET	1-50	<0.8	39			
P35-5201	SP2T FET	1-50	<2	40			
*EMEKaSW1	SPST PIN	0.05-50	<0.35	46,	30		
*EMEKaSW2	SP2T PIN	0.05-50	<0.7	33	30		
*EMMS2440-S	SPST PIN	24-40	<1	36	33		
*EMMS2435-S	SPST	24-35	1	42	33		
*EMMS2435-D	SPDT	24-35	1.2	30	36		
*EMMS3245-D	SPDT	32-45	0.8	30	33		
*EMMS2746-D	SPDT PIN	27-46	0.9	34	33@7.5V		

Switch Component

Model	Description	Freq (GHz)	IL (dB)	ISO (dB)	Power CW (W)	Power Peak(W)	Switch time(ns)
ESVH20-180	SPST, TYPE N	0.02-0.1	0.25	40	1300		
ESVH20-280	SPST, TYPE N	0.02-0.1	0.5	40	500		
ESUH22-301	SPST, TYPE N	0.50-1.0	1	40	500		
ESH22-202	SPDT, SMAF	2-4	1.2	40	80		
ESH23-203	SPDT, SMA	4-8	1.5	40	80	2000	2000
ESH43-403	SP4T, SMA	4-8	1.5	40	80		
ESH24-204	SPDT, SMA	8-12	1.5	40	80		
ESH44-404	SP4T, SMA	8-12	1.5	40	80		
ESH26-206	SPDT, SMA	6-18	2.5	40	80	2000	2000
ESH46-406	SP4T, TNC	6-18	3.5	40	80		
EHSD-1599	SPDT,coaxial	5.25-5.75	1.2			2000	
EHSD-1518	SPDT, coaxial	8-18	1.8	50	150		
ESI-12-03039	SPDT, coaxial	7-17.5	1.7	30	100		
ESI-12-03040	SPDT, coaxial	7-17.5	1.7	30	300		
ESTR-2 to 10*	SPDT-SP10T,coaxial	DC-26.5	1.0	>40	2		
ESR-2C to 12*	SPDT-SP12T, coaxial	DC-40	0.9	>45	1		
ESR-3 to 6MIN*	Multi, coaxial	DC-26.5	1.0	>50	1		
EWM-ABCD	Waveguide Switch	26.5-110	0.8	60	1		
EWZ-A*B*CD*	Electromechanical WG	26.5-110	0.8	60	1		
ESn-A*B*CD*E*F*	Single to Multi ,PIN WG	18-110	1.5	20 min	1		

12 x 12 Switch Matrix(Non-Blocking, Full-Access)

Frequency	0.5 to 18 GHz
Insertion Loss	22 dB max. @ 18 GHz, 16 dB max. @ 0.5 GHz
Loss Ripple	1.5dB max
VSWR	2:1 max@ 1.5 to 18 GHz; 2.2:1 max.@ 0.5 to 1.5 GHz
Input to Input isolation	80 dB min.
Input to Output (ON-OFF ratio) Isolation	80 dB min
Output to Output (deselected) Isolation	80 dB min
Isolation Output to Output (both selected, common input)	10 dB min
Switching Speed	5 usec min
Bias	+5 V @ 2 A max, 12 V @ 1.2 A max.
Control	TTL, 4 lines decoded per switch

Switch/Divider/Coupler/Detector

J1 to J6 Path	
Frequency	0.5- 18 GHz
Loss	5.5 dB max.
BIT Threshold	+2 to -4 dBm
J1 to J2-5 Paths	6-18 GHz
Frequency	14.0-18.0 GHz
Loss	J1-J6 loss +15 ±1 dB.
BIT Threshold	-13 to -19 dBm
Isolation	110 dB
VSWR	1.9:1 max., ON or OFF
Video	-90 dBm max., in-band
RF Speed	50 nsec max
BIT Speed	1 µsec max
Logic	TTL, 5 line
Operating Temperature	-40 to +85 °C
Bias	+12/+5/-5 VDC @ 100/150/150 mA max.

* consult Elite for other integrated switches component such as switch filters and switch limiters.

Medium Power SPDT RF Switches

Preliminary Product Release

The medium power broadband SPDT series of switches are designed for reliable operation at power levels of 5 W, 10 W, 20 W, 50 W and 100 W Averages from 100 MHz to 18 GHz.

These are robust PIN diode switches with proven field reliability. Proprietary PIN diode architecture minimizes junction temperatures to assure long life under medium power conditions. Small size and weight, fast switching speed and low power consumption make this an ideal candidate for retrofit of ferrite or electro-mechanical designs.

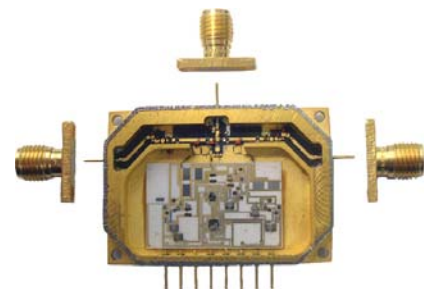
Typical applications include cross-sectional measurements, polarity selection, transmit/receive, filter banks, complex switch matrixes, and more.

Features

- State-of-the-Art PIN Diode Architecture
- Fast Switching Speeds
- Low Loss, High Isolation, Broadband

Specifications

Frequency/ Pkg. Style	Product Number	Average Power W / V	Insertion Loss dB (typical)	Isolation dB (minimum)	VSWR
0.1 GHz to 1 GHz SMA connectorized	ES0309-5	5 W, -15 V	0.9 dB	30 dB	1.3:1
	ES0309-10	10 W, -28 V	0.9 dB	30 dB	1.3:1
	ES0309-20	20 W, -28 V	0.9 dB	30 dB	1.3:1
	ES0309-50	50 W, -48 V	0.9 dB	30 dB	1.3:1
	ES0309-100	100 W, -100 V	0.9 dB	30 dB	1.3:1
500 MHz to 4 GHz SMA connectorized	ES0310-5	5 W, -15 V	1.3 dB	30 dB	1.35:1
	ES0310-10	10 W, -28 V	1.3 dB	30 dB	1.35:1
	ES0310-20	20 W, -28 V	1.3 dB	30 dB	1.35:1
	ES0310-50	50 W, -48 V	1.3 dB	30 dB	1.35:1
	ES0310-100	100 W, -100 V	1.3 dB	30 dB	1.35:1
2 GHz to 18 GHz SMA connectorized	ES0311-5	5 W, -15 V	2.2 dB	30 dB	1.5:1
	ES0311-10	10 W, -28 V	2.2 dB	30 dB	1.5:1
	ES0311-20	20 W, -28 V	2.2 dB	30 dB	1.5:1
	ES0311-50	50 W, -48 V	2.2 dB	30 dB	1.5:1
	ES0311-100	100 W, -100 V	2.2 dB	30 dB	1.5:1
0.1 GHz to 1 GHz Drop-in Removable SMA	ES0312-5	5 W, -15 V	0.9 dB	30 dB	1.3:1
	ES0312-10	10 W, -28 V	0.9 dB	30 dB	1.3:1
	ES0312-20	20 W, -28 V	0.9 dB	30 dB	1.3:1
	ES0312-50	50 W, -48 V	0.9 dB	30 dB	1.3:1
	ES0312-100	100 W, -100 V	0.9 dB	30 dB	1.3:1
500 MHz to 4 GHz Drop-in Removable SMA	ES0313-5	5 W, -15 V	1.3 dB	30 dB	1.35:1
	ES0313-10	10 W, -28 V	1.3 dB	30 dB	1.35:1
	ES0313-20	20 W, -28 V	1.3 dB	30 dB	1.35:1
	ES0313-50	50 W, -48 V	1.3 dB	30 dB	1.35:1
	ES0313-100	100 W, -100 V	1.3 dB	30 dB	1.35:1
2 GHz to 18 GHz Drop-in Removable SMA	ES0314-5	5 W, -15 V	2.2 dB	30 dB	1.5:1
	ES0314-10	10 W, -28 V	2.2 dB	30 dB	1.5:1
	ES0314-20	20 W, -28 V	2.2 dB	30 dB	1.5:1
	ES0314-50	50 W, -48 V	2.2 dB	30 dB	1.5:1
	ES0314-100	100 W, -100 V	2.2 dB	30 dB	1.5:1



Drop-in SPDT module shown above with removable SMA connectors



SPDT module shown above with SMA connectors

Common Switch Specifications

Specification	5 W Series	10 W Series	20 W Series	50 W Series	100 W Series
TTL Control Rate:	1 MHz	0.5 MHz	0.5 MHz	0.250 MHz	0.1 MHz
Switching Speed:	100 ns	250 ns	250 ns	500 ns	750 ns
Supply (Positive)	+5	+5	+5	+5	+5
Supply (Negative)	-15	-28	-28	-48	-100
Operating Temp:	-55 to +85°C	-55 to +85°C	-55 to +85°C	-55 to +85°C	-55 to +85°C
Storage Temp:	-55 to 125°C	-55 to 125°C	-55 to 125°C	-55 to 125°C	-55 to 125°C
Seal:	Hermetic	Hermetic	Hermetic	Hermetic	Hermetic
Altitude:	50,000 ft.	50,000 ft.	50,000 ft.	50,000 ft.	50,000 ft.

2 kw peak, 80 w average spdt switches specifications

- State-of-the-Art PIN Diode Architecture
- Fast Switching Speeds
- Small Size & Weight
- Low Loss, High Isolation, Broadband

Product Number	Freq. Band GHz	Peak Power W	Average Power W	Insertion Loss, dB	Isolation dB (min)	Transition Time uS. (max)
ES0005	0.5-1	2000	80	0.5	55	2.0
ES0006	1.0-2.0	2000	80	0.6	55	2.0
ES0007	2.0-4.0	2000	80	0.8	50	2.0
ES0008	4.0-8.0	2000	80	1.6	45	2.0
ES0009	8.0-12.0	2000	80	1.8	45	2.0
ES0010	12.0-18.0	2000	80	2.2	40	2.0

Common Switch Specifications

- VSWR:** 1.8:1 maximum, except for ES0010: VSWR is 2.2:1 max.
- TTL Control Rate:** 100 kHz maximum
- Logic:** TTL, unbalanced, E1 logic input.
- Control:** E1 TTL Lo J1 to J2, E1 TTL H1 J1 to J3
- Configuration:** SPDT, Reflecting
- Switching:** "Cold", RF must be gated off during switching.
- Switching Speed:** Measured 10 to 90% / 90 to 10% of the detected RF signal.
- Supply: Positive:** V 5% @ 300 mA maximum.
- Negative:** - 70 V 2% @ 100 mA maximum, except for ES0005 which is - 250v 2% @ 40 mA maximum.
- Connectors:** RF / Control: SMA - F, Bias: ,Solder Pins.
- RF Pulse Width:** 10 us. maximum.
- Mechanical:** 2.30 x 1.55 x 0.50 (inches).
- Outline:**
- Mounting:** 0.125 diameter thru, 4 places (inches).
- Operating Temperature:** -55 to +85 degrees C.
- Storage Temperature:** -55 to +125 degrees C.
- Seal:** Unit is hermetically sealed.
- Altitude:** 50000 feet maximum.

1200 wcw, two, three and four throw switches

Product Number	Frequency	INS. Loss dB (max.)	Isolation dB (min)	VSWR	CW Power
ES0210	20-130 MHz	.5	45	1.4:1	1200
ES0213	100-500 MHz	.5	45	1.4:1	1000
ES0232	500-1000 MHz	.5	45	1.4:1	1000
ES0195	1.0-2.0 GHz	.5	40	1.4:1	150
ES0196	1.9-3 GHz	.7	40	1.4:1	100

Common Switch Specifications

TTL Control 2 KHz maximum
Rate:
Logic Control: RS422 Balanced
Switching 40us Measured 50% control to 10/90% detected
Speed: RF signal
Supply: Positive: +5V +/-5% @ 1.5mA maximum
Negative: - 3.75 V +/- 2% @ 50 mA maximum
Connectors: RF / Control: N — F, DB Subminiature
Temperature: Operating: 0 to 60 degrees C.
Storage: -40 to +75 degrees C.
Seal: Units are environmentally sealed
Altitude: 10,000 feet. maximum

300 w power, 2 mhz switching rate, spdt switches Specifications

Product Number	Freq. Band GHz	Peak Power W	Average Power W	Insertion Loss,dB (maximum)	Isolation dB (min)	Transition Time ns. (max)
ES0011	2.0-4.0	300	40	1.0	50	80
ES0012	4.0-8.0	300	40	1.3	50	80
ES0013	8-18	300	40	2.2	45	80

Common Switch Specifications

- VSWR:** 1.8:1 maximum, with the exception of ES0013 which is 2:1 maximum.
- TTL Control Rate:** 2 MHz maximum.
- Logic:** TTL, unbalanced. E1 Logic input.
- Control:** E1 TTL LO J1 to J2, E1 TTL HI J1 to J3.
- Configuration:** SPDT, Reflecting.
- Switching:** "Cold", RF must be gated off during switching.
- Transition Time:** Measured from the 10% falling edge of the off going RF Path to the 90% of the rising edge of the on going RF Path.
- Switching Speed:** 150 ns maximum. Measured from the 10% to 90% and the 90% to 10% of the detected RF signal.
- Supply Positive:** +5 V +/- 5% @ 350 mA maximum.
- Negative:** - 28 V +/- 2% @ 150 mA maximum.
- Connectors:** RF / Control: SMA - F,
- RF Pulse Width:** 10 us. maximum.
- Outline:** 2.30 x 1.55 x 0.50 (inches).
- Mounting:** 0.125 diameter thru, 4 places (inches).
- Temperature:** Operating: -55 to +85 degrees C.
- Storage:** -55 to +125 degrees C.
- Seal:** Units are hermetically sealed
- Altitude:** 50000 feet. maximum.

10 wcw, 2 mhz hot switching spdt switches Specifications

Product Number	Freq.	Insertion	Isolation	VSWR
	Band GHz	Loss dB (typ)	dB (min)	
ES0129	2.0 - 4.0	0.7	50	1.8:1
ES0130	4.0 - 8.0	<1	50	1.8:1
ES0133	8-18	<2	45	2.0:1

Common Switch Specifications

TTL Control Rate: 2 MHz maximum.

Logic: TTL, unbalanced. E1 Logic input.

Control: E1 TTL LO J1 to J2, E1 TTL HI J1 to J3.

Configuration: SPDT, Reflecting.

Switching: "Hot" switching.

Switching Speed: 40 ns Measured 50% control to the 10 / 90% detected RF signal.

Supply: Positive: +5 V +/- 5% @ 125 mA maximum.

Negative: - 15 V +/- 2% @ 50 mA maximum.

Connectors: RF / Control: SMA - F,

Outline: 2.30 x 1.55 x 0.50 (inches).

Mounting: 0.125 diameter thru, 4 places (inches).

Temperature: Operating: -55 to +85 degrees C.

Storage: -55 to +125 degrees C.

Seal: Units are hermetically sealed

Altitude: 50000 feet. maximum

Waveguide pin diode switches specifications

Product Number	Frequency Band GHz	Power	Insertion	Isolation	Switching	VSWR Config.	
		Peak/Ave. Watts	Loss dB (max)	dB (min)	Speed us. (max)		
EG0045	8.0 - 12.4	100/4	1.0	45	0.3	1.8	SPDT
EG0046	8.0 - 12.4	2000/80	1.0	40	1.8	1.8	SPDT
EG0047	12.4 - 18	100/4	1.0	40	0.3	1.8	SPDT
EG0048	12.4 - 18	2000/80	1.6	40	1.8	2.0	SPDT
EG0049	9.3 - 10	1000/50	0.5	45	1.0	1.4	SPDT
EG0069	2.7 - 2.9	300/10	0.7	40	0.3	1.3	SPDT
EG0118	9.0 - 9.2	75/5	0.4	60	0.2	1.6	SPST
EG0134	10.2 - 10.5	165/50	0.5	40	1.0	1.8	SPST

Common Switch Specifications

- TTL Control Rate:* 100 kHz maximum, Higher switching rates are available upon request
- Logic:* RS422, except EG0114 which is TTL.
- Configuration:* SPNT, Reflecting
- Switching:* "Cold", RF must be gated off during switching.
- Switching Speed:* Measured from the 10% to 90% and the 90% to 10% of the detected RF signal.
- Supply: Positive:* 5% @ 300 mA max.,
- Negative:* -28V 2% @ 40 mA max. except EG0046, EG0048 which are -70 V
- Connectors:* Control / Bias: DEM-9, EG0118 solder pins
- RF:* WR-90, WR-62
- RF Pulse Width:* 10 us maximum
- Mechanical:* consult factory
- Operating Temperature:* -55 to +85 degrees C
- Storage Temperature:* -55 to +125 degrees C

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