SCOPE: CMOS TTL COMPATIBLE ANALOG SWITCHES

ORDERING INFORMATION

Device Type	Generic Number	SMD	Circuit Function
01	IH5040MJE/883B	8100601EA	One Channel, 75Ω SPST switch
02	IH5041MJE/883B	8100602EA	Two Channel, 75Ω Dual SPST
03	IH5042MJE/883B	8100603EA	One Channel, 75Ω SPDT
04	IH5043MJE/883B	8100604EA	Two Channel, 75Ω Dual SPDT
05	IH5044MJE/883B	8100605EA	One Channel, 75Ω DPST
06	IH5045MFD/883B	8100606XC	Two Channel, 75Ω Dual DPST
06	IH5045MJE/883B	8100606EA	Two Channel, 75Ω Dual DPST
08	IH5047MJE/883B	8100608EA	One Channel, 75Ω 4 PST
09	IH5140MJE/883B	8100609EA	One Channel, 75Ω SPST switch
10	IH5141MJE/883B	8100610EA	Two Channel, 75Ω Dual SPST
11	IH5142MJE/883B	8100611EA	One Channel, 75Ω SPDT
12	IH5143MJE/883B	8100612EA	Two Channel, 30Ω Dual SPDT
13	IH5144MJE/883B	8100613EA	One Channel, 30Ω DPST
14	IH5145MJE/883B	8100614EA	Two Channel, 75Ω Dual DPST
16	IH5047MJE/883B	8100616EA	One Channel, 75Ω 4 PST
20	IH5149MJE/883B	8100620EA	Two Channel, 30Ω DPST
21	IH5150MJE/883B	8100621EA	One Channel, 30Ω SPDT
22	IH5151MJE/883B	8100622EA	Two Channel, 30Ω Dual SPDT

Case Outline(s). The case outlines shall be designated in Mil-Std-1835 and as follows:

Outline Letter		Mil-Std-1835	Case Outline	Package Code
Maxim	SMD			
JE	E	GDIP1-T16 or CDIP2-T16	16 LEAD CERDIP	J16
FD	X	CDFP3-F14	14 LEAD CERDIP	F14

Absolute Maximum Ratings:

V^+ to V^- 33V
V^+ to V_D 30V
V_D to V^- 30V
V_D to V_S ..... ±22V
V_L to V^- 33V
V_L to V_{IN} 30V
V_L to V_R 20V
V_{IN} to V_R 20V
V_R to V- 33V
V_R to V_{IN} 2V
Continuous Current, Any terminal (except S or D)..... 30mA
Peak Current, S or D (Pulsed at 1ms, 10% duty cycle max) 80mA
Lead Temperature (soldering, 10 seconds) ..... +300°C
Storage Temperature ..... -65°C to +150°C
Continuous Power Dissipation ..... T_A=+70°C
16 lead CERDIP (derate 10.0mW/°C above +70°C) 800mW
14 lead Flatpack (derate 5.7mW/°C above +70°C) 457mW
Junction Temperature T_J ..... +150°C
Thermal Resistance, Junction to Case, ΘJC:
Case Outline 16 lead CERDIP..... 50°C/W
Case Outline 14 lead Flatpack ..... 70°C/W
Thermal Resistance, Junction to Ambient, ΘJA:
Case Outline 16 lead CERDIP..... 100°C/W
Case Outline 14 lead Flatpack ..... 175°C/W

Recommended Operating Conditions

Ambient Operating Range (T_A) ..... -55°C to +125°C
Positive Supply Voltage (V^+) ..... +15V
Negative Supply Voltage (V^-) ..... -15V
V_R 0V
V_L ..... 5 V

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TABLE 1. ELECTRICAL TESTS:

TEST	Symbol	CONDITIONS -55 °C <=T_A<= +125°C V^+=+15V, V^-=-15V, GND=0V V_{AH}=2.4V, V_{AL}=0.8V, V_L=5V Unless otherwise specified	Group A Subgroup	Device type	Limits Min	Limits Max	Units
INPUT							
Input Current, Input Voltage High	I_{IH}	V_{IN}=2.4V, 5V	1,3 2	All	-1 -1	1 10	µA
Input Current, Input Voltage Low	I_{IL}	V_{IN}=0.0V	1,3 2	All	-1 -10	1 1	µA
SWITCH							
Drain-Source ON Resistance	$r_{DS(ON)}$	I_S =±10mA, V_D=±10V,	1,3 2	01 - 16		75 150	Ω
Drain-Source ON Resistance	$r_{DS(ON)}$	I_S =±10mA, V_S=±10V,	1,3 2	17 - 22		45 50	Ω
Drain-Source ON Resistance	$r_{DS(ON)}$	I_S =±10mA, V_D=±7.5V, NOTE 2 V_{CC}=±10V	1,3 2	All		75 150	Ω
Source- OFF Leakage Current	$I_{S(OFF)}$	V_S=±10V, V_D=±10V, V_{IN}=3/	1 2,3	All		±1 ±100	nA
Drain- OFF Leakage Current	$I_{D(OFF)}$	V_S=±10V, V_D=±10V, V_{IN}=3/	1 2,3	All		±1 ±100	nA
Channel-On Leakage Current	$I_{D(ON)}$	V_D=V_S=±10V, V_{IN}=3/	1 2,3	All		±2 ±200	nA
SUPPLY							
Positive Supply Current	I+	V_{IN}=0V, 5V	1,3 2	01-08		10 100	µA
Positive Supply Current	I+	V_{IN}=0V, 5V	1 2,3	09-22		200 300	µA
Negative Supply Current	I-	V_A=0V, 5V	1,3 2	01-08	-10 -100		µA
Negative Supply Current	I-	V_{IN}=0V, 5V	1 2,3	09-22	-200 -300		µA
Logic Supply Current	I_L+	V_{IN}=0V, 5V	1,3 2	01-08		10 100	µA
Logic Supply Current	I_L+	V_{IN}=0V, 5V	1 2,3	09-22		-200 -300	µA
Reference Supply Current	I-	V_A=0V, 5V	1,3 2	01-08	-10 -100		µA
Reference Supply Current	I-	V_{IN}=0V, 5V	1 2,3	09-22	-200 -300		µA

TEST	Symbol	CONDITIONS -55 °C <=T_A<= +125°C V^+=+15V, V^-=-15V, GND=0V V_{AH}=2.4V, V_{AL}=0.8V, V_L=5V Unless otherwise specified	Group A Subgroup	Device type	Limits Min	Limits Max	Units
Turn-On Time	t_{ON}	Figure 1	9 10 11	01-08		450 550 375	ns
Turn-On Time	t_{ON}	Figure 1	9 10 11	09-22		500 800 450	ns
Turn-Off Time	t_{OFF}	Figure 1	9,11 10	01-08		250 400	ns
Turn-Off Time	t_{OFF}	Figure 1	9 10 11	09-22		450 600 350	ns
Single channel Isolation	V_{ISO}	R_L=100Ω, f=100kHz, V_{IN}=2Vp-p, CL=5pF, NOTE 2	9	All	60		dB
Crosstalk between channel	V_{CT}	R_L=100Ω, f=100kHz, V_{IN}=2Vp-p, CL=5pF, NOTE 2	9	All	60		dB
Charge Transfer Error	V_{CTE}	V_{IN}=0V, CL=10nF, NOTE 2	9	All		30	mV
Break before Make Time Delay	t_D	NOTE 2	9	03, 05	5		
Driver Input Capacitance	C_A	V_{IN}=0V, NOTE 2	9	All		45	pF
Switch Input Capacitance	C_{IS}	Switch OFF, NOTE 2	9	All		60	pF
Switch Output Capacitance	C_{OS}	Switch OFF, NOTE 2	9	All		60	pF

NOTE 1: The listed resistance limits correspond to the following voltage values:
45Ω and 75Ω = ±9.25V, ±6.75V
50Ω and 150Ω = ±8.55V, ±6.0V

NOTE 2: Guaranteed if not tested to the limits specified.

NOTE 3:

Device Types	V_{IN}	Channels ON	Channels OFF
01, 09	2.4V 0.8V	1	 1
02, 10	2.4V 0.8V	1, 2	 1, 2
03, 05, 11, 13	2.4V 0.8V	1 2	2 1
04, 12	2.4V 0.8V	1, 2 3, 4	3, 4 1, 2
21	2.4V 0.8V	2, 3 1, 4	1,4 2,3
06, 08, 14, 16, 20, 22	2.4V 0.8V	1, 2, 3, 4	 1, 2, 3, 4

Figure 1. Switching Time: See Commercial Data Sheet.

TERMINAL CONNECTIONS

TERMINAL NUMBER	01, 09 IH5040 IH5140	02, 10 IH5041 IH5141	03,11,21 IH5042 IH5142 IH5150	04,12,22 IH5043 IH5143 IH5151	05, 13 IH5044 IH5144	06 IH5045	06,14,20 IH5045 IH5145 IH5149	08,16 IH5047	08,16 IH5047
0	J16	J16	J16	J16	J16	F14	J16	F14	J16
1	D	D1	D1	D1	D1	D1	D1	D2	D2
2						S3		S1	
3			D2	D3	D2	D3	D3	D1	D1
4			S2	S3	S2	D4	S3	D4	S1
5				S4		S4	S4	S4	S4
6				D4		D2	D4	D3	D4
7						S2		S3	
8		D2		D2		IN2	D2		D3
9		S2		S2		V+	S2	V+	S3
10		IN2		IN2		VL	IN2	VL	
11	V+	V+	V+	V+	V+	VR	V+	VR	V+
12	VL	VL	VL	VL	VL	V-	VL	V-	VL
13	VR	VR	VR	VR	VR	IN1	VR	IN	VR
14	V-	V-	V-	V-	V-	S1	V-	S2	V-
15	IN	IN1	IN	IN1	IN		IN1		IN1
16	S	S1	S1	S1	S1		S1		S2

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QUALITY ASSURANCE

Sampling and inspection procedures shall be in accordance with MIL-Prf-38535, Appendix A as specified in Mil-Std-883.

Screening shall be in accordance with Method 5004 of Mil-Std-883. Burn-in test Method 1015:

1. Test Condition, A, B, C, or D.
2. TA = +125°C minimum.
3. Interim and final electrical test requirements shall be specified in Table 2.

Quality conformance inspection shall be in accordance with Method 5005 of Mil-Std-883, including Groups A, B, C, and D inspection.

Group A inspection:

1. Tests as specified in Table 2.
2. Selected subgroups in Table 1, Method 5005 of Mil-Std-883 shall be omitted.

Group C and D inspections:

a. End-point electrical parameters shall be specified in Table 1.
b. Steady-state life test, Method 1005 of Mil-Std-883:
   1. Test condition A, B, C, D.
   2. TA = +125°C, minimum.
   3. Test duration, 1000 hours, except as permitted by Method 1005 of Mil-Std-883.

TABLE 2. ELECTRICAL TEST REQUIREMENTS

Mil-Std-883 Test Requirements	Subgroups per Method 5005, Table 1
Interim Electric Parameters Method 5004	1
Final Electrical Parameters Method 5005	1*, 2, 3, 9
Group A Test Requirements Method 5005	1, 2, 3, 9, 10, 11
Group C and D End-Point Electrical Parameters Method 5005	1

* PDA applies to Subgroup 1 only.