

SOLDERING PROCESS RECOMMENDATION GUIDE

AUGAT/ INTCON PRDT GP 49E D ■ 1095335 0001533 628 ■ AUIP ○

The majority of customers utilizing miniature or sub miniature switches in the industry today have a great concern about the switches capabilities during their soldering and cleaning cycles. This concern centers around the introduction of contaminants into the switch contact area which could cause the switch to experience various failure modes either immediately or during the life cycle of the switches usage. These failure modes can show in a number of manners. The following are just a few examples: high contact resistance, open contacts, low dielectric strength breakdown, and high actuation forces causing use related applications to malfunction. Since most fluxes become active with the introduction of the high temperatures used in all soldering techniques, the switch must either prevent these fluxes from entering into its contact area or allow cleaning techniques to carry flux particles out. It must be understood that switch contamination can occur during any procedure: from hand soldering to the new age Surface Mount systems using vapor phase, I.R., or Convection chambers for solder reflow.

We at Augat/Alcoswitch offer a wide range of switches to handle any soldering operations. However, certain soldering conditions will not apply to all switches. The following conditions and charts should help assist you in the soldering of our switches in your application. If you need additional information, feel free to contact the factory.

SOLDERING TYPES

A. Wave Soldering:

Top & Bottom board preheats: 200°F(93°C) for approximately 3 to 4 minutes.
Solder Temperature and Dwell Time: 500°F(260°C) for approximately 3 to 5 seconds.

B. Hand Soldering

1. 500°F-600°F(260°C-316°C)utilizing a controlled 40 Watt iron for 3 to 5 seconds maximum.
2. 500°F(260°C) utilizing a controlled 30 Watt iron for 10 seconds maximum.

C. Dip Soldering

Solder Temperature & Dwell Time: 500°F(260°C) for 10 seconds maximum.

D.Surface Mount

1. Convection IR
Zone 1 = 212°F(100°C) for 120 seconds maximum.
Zone 2 = 419°F(215°C) is reached in approximately 160 seconds after zone 1, and held at that temperature for approximately 10 seconds.
2. Radiant IR
Zones 1 & 2 combined = 330°F(166°C) maximum with a total run of 210°C(99°C) seconds.
Zone 3 & 4 combined = 460°F(238°C) is reached in approximately 30 seconds after zones 1 & 2 and held at that temperature for approximately 10 seconds.
3. Vapor Phase
Zone 1 = 140°F (60°C) for 15 seconds.
Zone 2 = 419°F(215°C) for 30 seconds.

CLEANING TYPES

- A. Solvent Wash (1.1.1 Trichlorethylene, T.M.S., T.M.C.)
- B. Vapor Degreasing
- C. Solvent Immersion
- D. Aqueous Cleaning

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

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9

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SWITCH SERIES	SOLDERING TYPE			SURFACE MOUNT PROCESS			CLEANING PROCESSES			
	Wave	Hand	Dip*	Convection I.R.	Radiant I.R.	Vapor Phase	Solvent Wash	Vapor Degrease	Solvent Immerse	Aqueous Clean
ALCO [®]										
AP, AT, AS SERIES	X	X	X				X			X
ALE,ATLE,ATE,APBE	X	X	X				X	X	X	X
ASE & F	X	X	X	X	X	X	X	X	X	X
COMMAND SERIES, PC	X	X								
COMMAND SERIES, LUGS		X								
CST/CSS SERIES	X	X	X				X	X	X	X
DIP ROT.: DR,RR &RA/C	X	X	X				X	X	X	X
DIP ROT.: DRS SERIES	X	X	X				X	X		X
DIPS:AD,AR,AA/C,ATT	X	X	X	X		X	X	X	X	X
DIPS:DP SERIES W/O TAPE		X	X				X			
DIPS:DP SERIES W/TAPE	X	X	X				X	X	X	X
DIPS:DTS WITH TAPE	X	X	X				X	X	X	X
DIPS:DTS,DYS W/O TAPE		X	X				X			
DIPS:S SERIES SIPS	X	X	X	X		X	X	X	X	X
DIPS:DPT WITH TAPE	X	X	X				X	X	X	X
DIPS:DPU WITHOUT TAPE		X	X							
DIPS:DSS101	X	X	X							
FSB1, FSB2		X	X							
FSM SERIES		X								
FT2D,FT1D	X	X	X				X	X	X	X
GEMINI: A SERIES	X	X	X				X			
GEMINI: AE SERIES	X	X	X				X	X	X	X
GREEN SERIES: ALL MT VERSIONS		X	X				X	X		
GREEN SERIES: ALL MT VERSIONS PC	X	X	X				X			
GREEN SERIES: MHV,MRV,MLD		X	X				X	X		
GREEN SERIES: MPA-6,MPG,MPN,MPE		X	X				X	X		
GREEN SERIES: MTE		X	X				X	X		
LVP/LHP SERIES	X	X	X							
MAS SERIES		X	X					X	X	
MHS SERIES	X	X	X				X	X	X	X
MKS SERIES	X	X	X				X	X	X	
MLP SERIES		X	X				X			
MM-9 SERIES		X	X							
MMS SERIES		X	X				X	X		
MPA-3 SERIES		X	X				X	X		
MPA-6 SERIES		X	X				X			
MPB SERIES		X	X				X	X		
MPN SERIES		X	X				X			
MPS SERIES		X	X				X	X		
MRBA SERIES		X	X				X	X		
MRC SERIES		X	X				X	X		
MRJ SERIES	X	X	X				X			
MRJE/MRJB SERIES	X	X	X				X	X	X	X
MRS SERIES	X	X	X				X	X		X

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	Wave	Hand	Dip*	Convection I.R.	Radiant I.R.	Vapor Phase	Solvent Wash	Vapor Degrease	Solvent Immerse	Aqueous Clean
MRS-RA SERIES	X	X	X				X	X		
MRSB SERIES	X	X	X				X	X	X	X
MRSK SERIES		X	X				X	X		
MSP-3 /MSPS SERIES		X	X							
MSP-5 SERIES		X	X				X	X		
MSPF SERIES		X	X				X	X		
MSPM SERIES		X	X				X	X		
MSS SERIES	X	X	X				X	X	X	X
MSSA SERIES	X	X	X				X	X	X	X
MSSA-01 & 04	X	X	X				X	X	X	X
PBL SERIES	X									X
PUSHWHEELS, CARD EDGE		X								
PUSHWHEELS, PC PINS	X	X	X							
QAS SERIES		X	X				X			
SC CIRCUIT BREAKERS	X	X								
SDS SERIES	X	X	X				X	X	X	X
SE SERIES	X	X	X				X	X	X	X
SKC SERIES		X								
SKF SERIES		X								
SKFC1		X	X				X	X		
SKFC2L		X								
SKT SERIES		X	X				X	X		
SL SERIES	X	X	X				X	X	X	
SLS/SLSA SERIES	X	X	X				X	X	X	
SMT/SMP:PC,PCV,RA,VRA	X	X	X				X	X	X	X
SMT/SMP:SPC,SRA,SRAB				X	X	X	X	X	X	X
SSA/SSJ SERIES	X	X	X				X	X		
SSB SERIES	X	X	X				X	X	X	X
SSM SERIES	X	X	X				X	X	X	X
STS SERIES	X	X	X				X	X	X	X
SWK SERIES		X								
TP SERIES: ALL PC/BLUE CASES	X									
TP SERIES:TP-ES	X	X	X				X	X	X	X
TP SERIES:W/TACT. FEEL & PROC. SEAL	X	X	X				X	X	X	X
TP SERIES:TPC,TPD,TPF,TP-N		X	X				X	X		
TP200 SERIES:TP1M,TP1L,TP2M,TP2L		X	X				X	X		
TR SERIES	X	X	X				X			
TRD	X	X	X				X			
TRD W/L.E.D.		X	X							
TS SERIES	X	X	X				X	X	X	X
TSS-PC, TSS-RA	X	X					X			
TT ALL PC/BLUE CASES	X	X					X			
TT,TTE-ES,TT-RA	X	X	X				X	X	X	X
TT,TTETT,TTE,TTN-WIRE LUG		X	X				X			
XR110, XR210, XRM		X								

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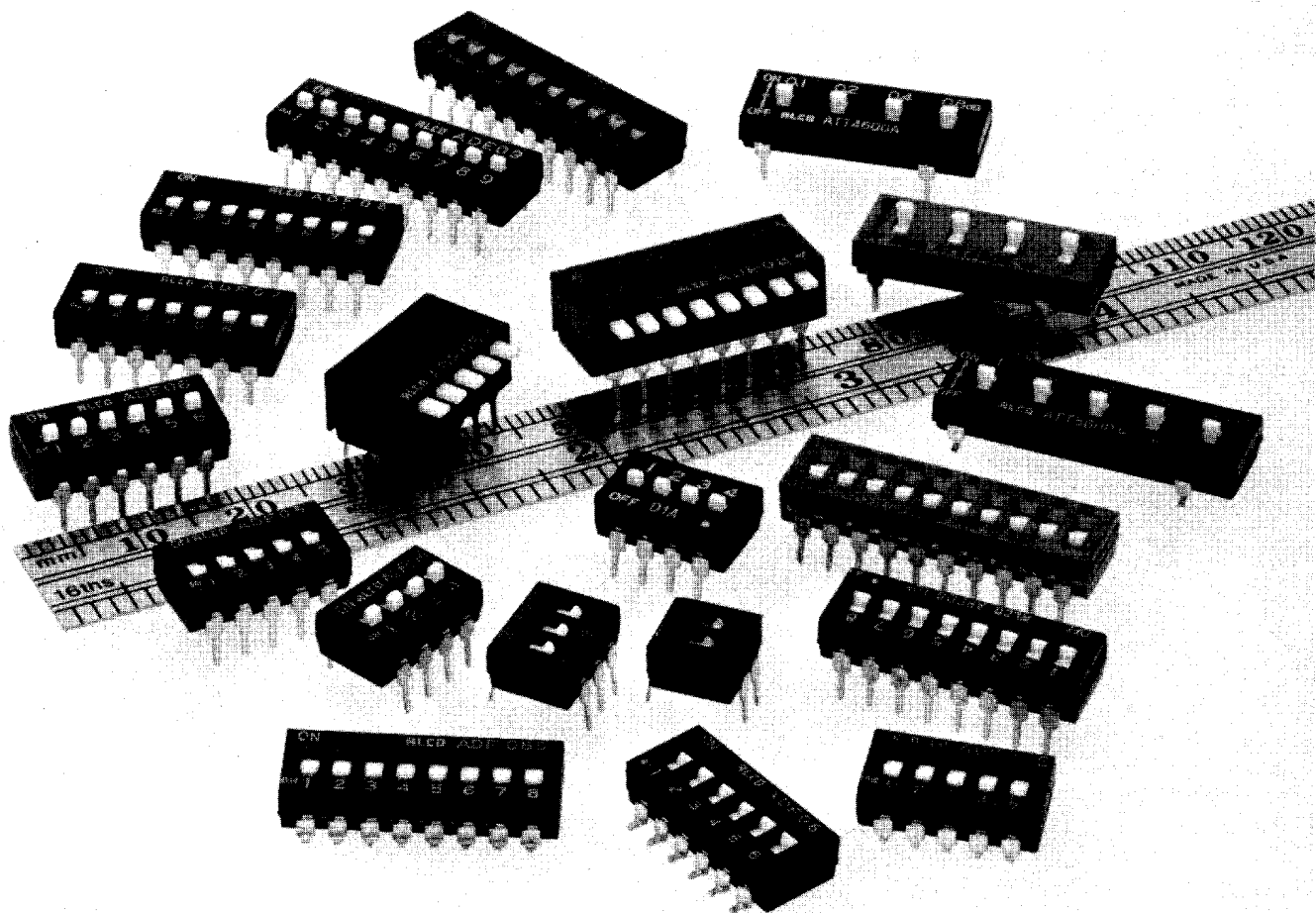
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11

LOW PROFILE DIP SWITCHES

A-25-31

AD Series/Low Profile DIP Switch - AR Series/DIP Switch with Integral Resistors
AA/C Series/Dip Switch Integral Diodes - ATT Series/Dip Switch with Integral Attenuator Network



SPECIFICATIONS

ELECTRICAL

Contact Rating:0.4VA at 20VDC max.
Initial Contact Resistance: 50 milliohms max.
Insulation Resistance: 1000 megohms min. at 100VDC
Dielectric Strength:500VAC RMS at sea level

MATERIALS

Base:PBT encapsulated ceramic
Cover: PBT 94 V-O
Actuator: PBT 94 V-O
Moving Contact: gold flashed Beryllium copper
Fixed Contact & Terminal: AD Series: solder coated brass
ATT & AA/C Series + Hybrid surface mount: gold flashed brass

MECHANICAL

Operating Force: less than 800 grams
Life Expectancy: 5,000 cycles
Actuator Travel: ... AD/R/C/A Series 1.30mm/.050" piano style 25°
ATT Series 1.50mm/.060"
Actuator Force: 800 grams max.

ENVIRONMENTAL

Operating Temperatures: -30°C to 85°C
Storage Temperature: -45°C to 100°C
Solder Heat Resistance: 245°C± 5°C with switch in "off" position
30 seconds when mounted on a .060" thick PCB
Cleaning: Aqueous solution or solvent

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A3

AR SERIES

Low Profile • Hybrid Dip Switches

A-25-31

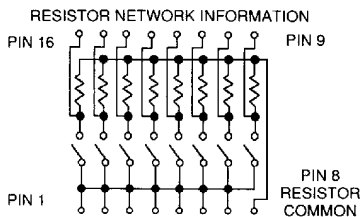
AUTO-INSERTABLE* DIP SWITCH WITH INTEGRAL RESISTORS

* Flush actuator versions

AR SERIES FEATURES

All the features of the AD SERIES - PLUS

- Thick film pull-up resistors molded into the base of the switch.
- Replaces discrete resistor network plus DIP Switch with one component.
- Available with 3.3K ohms or 10K ohms resistors.
- Ceramic substrate allows soldering temperatures of 245°C for up to 30 seconds.
- Custom resistor values available.



RATED PWR.	RESISTANCE	TOLERANCE	MAX. VOLTAGE
125mW	3.3K Ohms (red)	±5% at 85°C	24V
"	10K Ohms (green)	"	"

HOW TO ORDER

SERIES _____
 AUTO-DIP WITH RESISTORS

ACTUATOR STYLE _____
 E = EXTENDED
 F = FLUSH
 P = PIANO (ON DOWN)
 PA = PIANO (ON UP)

NO. OF POSITIONS _____
 02, 04, 06, 08, 10

RESISTOR VALUE _____
 10K OHMS (GREEN CASE) 3.3K OHMS(STD.) (RED CASE)
 CUSTOM VALUES ARE AVAILABLE ON SPECIAL ORDER

TERMINATIONS _____
 BLANK = PC
 S = OUTSIDE "L"
 SA = INSIDE "L" SURFACE MOUNT
 SB = BUTT

SEAL TYPE _____
 BLANK = NO SEAL
 T = TAPE (FLUSH ACTUATOR ONLY)

EXAMPLE: ARF 06 10KST = AUTO-DIP WITH RESISTORS
 FLUSH ACTUATOR
 06 POSITIONS
 10K OHM RESISTORS
 OUTSIDE "L" TERMINATIONS
 & TAPE SEAL

AA/C SERIES

Low Profile • Hybrid Dip Switches

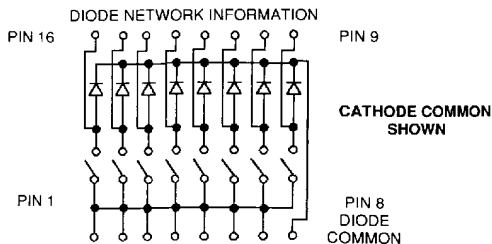
AUTO-INSERTABLE* DIP SWITCH WITH INTEGRAL DIODES

* Flush actuator versions

AA/C SERIES FEATURES

All the features of the AD SERIES-PLUS:

- Diodes molded into the base of the switch.
- Replaces individual discrete diodes plus DIP Switch with one component.
- Available in both Cathode-Common and Anode-Common versions.
- Ceramic substrate allows soldering temperatures of 245°C for up to 30 seconds.



APPLICATION	ABSOLUTE MAXIMUM RATING (25°C)						ELECTRIC CHARACTERISTICS					
	VRH	VR	IFSM	IFM	IO	T	VF, (V)	VF, (V)	VF, (V)	IR (µA)	C (PF)	trr (ns)
	(V)	(V)	(A)	(mA)	(mA)	(°C)	MAX/1F 10mA	MAX/1F 50mA	MAX/1F 100mA	MAX/VR (V)	MAX	MAX
HIGH SPEED SWITCHING	75	50	40	300	100	125	1.0	1.0	1.2	0.1/50	4.0	4.0

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HOW TO ORDER

SERIES _____
 AUTO-DIP WITH DIODE

DIODE INDICATOR _____
 A = ANODE COMMON (BROWN CASE)
 C = CATHODE COMMON (BLUE CASE)

ACTUATOR STYLE _____
 E = EXTENDED
 F = FLUSH
 P = PIANO (ON DOWN)
 PA = PIANO (ON UP)

NO. OF POSITIONS _____
 04, 06(STD.) (OTHER SIZES ARE AVAILABLE)

TERMINATIONS _____
 BLANK = PC
 S = OUTSIDE "L"
 SA = INSIDE "L" SURFACE MOUNT
 SB = BUTT

SEAL TYPE _____
 BLANK = NO SEAL
 T = TAPE (FLUSH ACUATOR ONLY)

EXAMPLE: ACE 08 = AUTO-DIP WITH DIODE
 CATHODE COMMON
 EXTENDED ACTUATORS
 08 POSITIONS
 PC TERMINATIONS
 & NO SEAL



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A5