

56F8013

Socket Board for Flash Programming
User Guide

56F8000
16-bit Digital Signal Controllers

56F8013SBUG
Rev. 0
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freescale.com



Document Revision History

Version History	Description of Change
Rev. 0	Initial Release

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Preface

This reference manual describes the hardware on the 56F8013 Socket Board in detail.

Audience

This document is intended for application developers or a production team who wish to program an application into the Flash memory on a Freescale 56F8013 part before it is mounted on a printed circuit board.

Organization

This manual is organized into two chapters and two appendixes.

- **Chapter 1, Introduction**, provides an overview of the 56F8013 Socket Board and its features.
- **Chapter 2, Technical Summary**, describes in detail the 56F8013 Socket Board's hardware.
- **Appendix A, 56F8013 Socket Board Schematics**, contains the schematics of the 56F8013 Socket Board.
- **Appendix B, 56F8013 Socket Board Bill of Material**, provides a list of the materials used on the 56F8013 Socket Board.

Suggested Reading

More documentation on the 56F8013 part may be found at URL:

www.freescale.com

Notation Conventions

This manual uses the following notational conventions:

Term or Value	Symbol	Examples	Exceptions
Active High Signals (Logic One)	No special symbol attached to the signal name	A0 CLKO	
Active Low Signals (Logic Zero)	Noted with an overbar in text and in most figures	$\overline{WE}$ OE	In schematic drawings, Active Low Signals may be noted by a backslash: /WE
Hexadecimal Values	Begin with a "\$" symbol	\$0FF0 \$80	
Decimal Values	No special symbol attached to the number	10 34	
Binary Values	Begin with the letter "b" attached to the number	b1010 b0011	
Numbers	Considered positive unless specifically noted as a negative value	5 -10	Voltage is often shown as positive: +3.3V
Blue Text	Linkable on-line	...refer to Chapter 7, License	
Bold	Reference sources, paths, emphasis	...see: http://www.freescale.com/	

Definitions, Acronyms, and Abbreviations

Definitions, acronyms and abbreviations for terms used in this document are defined below for reference.

EOnCE™	Enhanced On-Chip Emulation; a debug bus and port created to enable a designer to create a low-cost hardware interface for a professional-quality debug environment
JTAG	Joint Test Action Group; a bus protocol/interface used for test and debug
LED	Light Emitting Diode
56F8013	A Freescale controller with motor control peripherals.
OnCE™	On-Chip Emulation, a debug bus and port created to allow a means for low-cost hardware to provide a professional-quality debug environment
PCB	Printed Circuit Board
ZIF	Zero Insertion Force

References

The following sources were referenced to produce this manual:

- [1] *DSP56800E Reference Manual*, DSP56800ERM, Freescale Semiconductor, Inc.
- [2] *56F8000 Peripheral Reference Manual*, MC56F8000RM, Freescale Semiconductor, Inc.
- [3] *56F8013 Technical Data*, MC56F8013, Freescale Semiconductor, Inc.



Chapter 1

Introduction

The 56F8013 Socket Board provides a means to program the Flash memory in a 56F8013 controller, then allows the 56F8013 controller to be removed and placed onto another printed circuit board.

Some packages are not available at publication.

1.1 56F8013 Socket Board Architecture

The 56F8013 Socket Board contains a Zero Insertion Force LQFP-32 socket and a Zero Insertion Force PDIP-32 socket, as shown in [Figure 1-1](#). This combination of sockets allows both 56F8013 package types to be easily supported. Additionally, the PCB includes a JTAG connector, manual reset pushbutton switch and Daughter Card connector.

The 56F8013 Socket Board is designed to be used with a 56F8013 Demonstration Board. The power supply and JTAG interface POD used with the 56F8013 Demonstration Board are needed to provide an operational Flash programming platform.

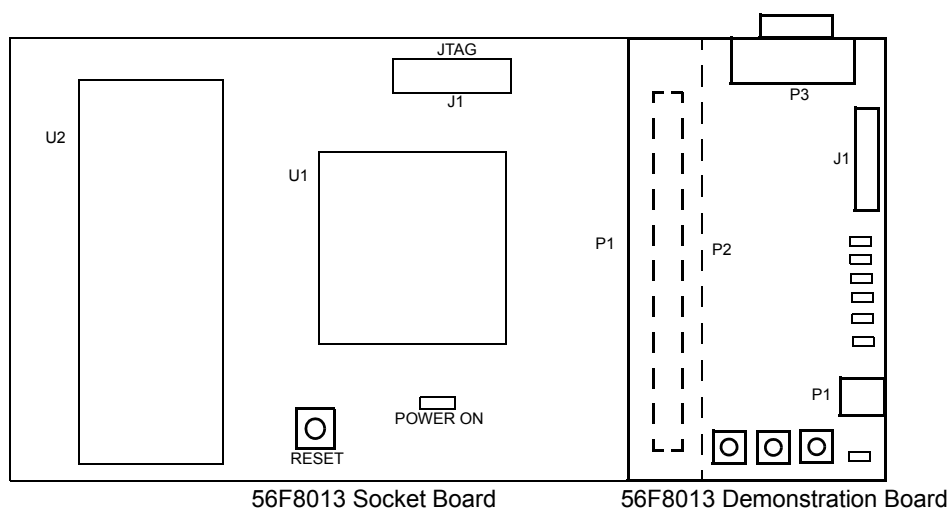


Figure 1-1. Connecting the 56F8013 Socket Board & 56F8013 Demonstration Board

An interconnection diagram is shown in [Figure 1-2](#), connecting the PC, the external +9.0V DC power supply, the 56F8013 Socket Board and the 56F8013 Demonstration Board.

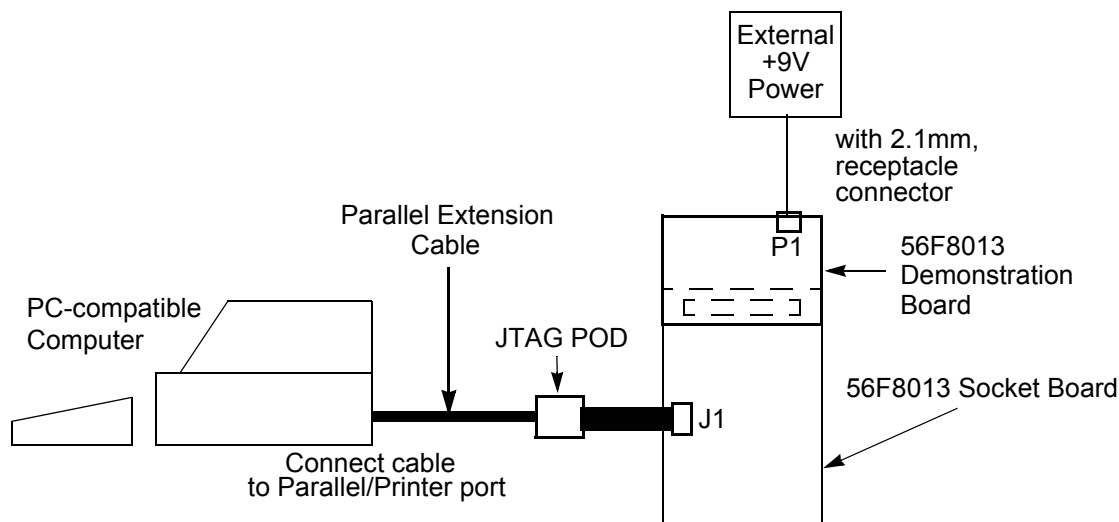


Figure 1-2. Connecting the 56F8013 Socket Board

Perform the following steps to connect the 56F8013 Socket Board:

1. Connect the 56F8013 Demonstration Board to the 56F8013 Socket Board by pressing the two boards together, using P2 on the 56F8013 Demonstration Board and P1 on the 56F8013 Socket Board.
2. Connect the parallel extension cable to the Parallel port of the host computer.
3. Connect the other end of the parallel extension cable to the JTAG interface POD.
 - Connect the ribbon cable from the JTAG interface POD to J1 on the 56F8013 Socket Board, shown in [Figure 1-2](#). This provides the connection which allows the host computer to download code to the 56F8013 part on the 56F8013 Socket Board.
4. Make sure that the external +9.0V DC, 450mA power supply is **not** plugged into a +120V AC power source.
5. Connect the 2.1mm output power plug from the external power supply into P1 on the 56F8013 Demonstration Board, shown in [Figure 1-2](#).
6. Apply power to the external power supply. The green Power-ON LED on the 56F8013 Demonstration Board, LED7, and LED1 on the 56F8013 Socket Board will illuminate when power is applied correctly.

Chapter 2

Technical Summary

Some packages are not available at publication.

The 56F8013 Socket Board is designed to be combined with the 56F8013 Demonstration Board. This combination provides a Flash programming platform for the 56F8013 part. The main features of the 56F8013 Socket Board, with board and schematic reference designators, include:

- 32-Pin LQFP ZIF Socket, an open-top, press-down, spring-loaded Zero Insertion Force socket by CTI/WELLS [U1]
- 32-Pin PDIP ZIF Socket, a lever-controlled Zero Insertion Force Socket by Aries [U2]
- JTAG interface connector [J1]
- Daughter Card connector, which allows the connection of the 56F8013 Demonstration Board [P1]
- LED power indicator [LED1]
- Manual reset pushbutton [S1]

2.1 32-Pin LQFP Socket

The 56F8013 Socket Board uses a CTI/WELLS 32-pin LQFP Zero Insertion Force (ZIF) socket, 7007-032-1-07, designated as U1 on the board. Pin 1 of the package should be aligned with pin 1 of the socket, which is positioned where the U1 reference designator is located. The socket is spring loaded, allowing the user to press down on the outer ring of the socket, forcing the contact pins to pull away from the package well area. The user then places the part requiring Flash memory programming into the socket's package well area. When the user releases the outer ring of the socket, the contact pins extend to press against the package pins, making an electrical contact with the part.

NOTE: Parts should only be installed or removed from the LQFP-32 socket when power is **not** present on the 56F8013 Socket Board. Also, only one socket should have a part present at one time.

2.2 32-Pin PDIP Socket

The 56F8013 Socket Board uses an ARIES 32-pin PDIP Universal Zero Insertion Force (ZIF) socket, 32-6554-11, designated as U2 on the board. The locking action of the socket is controlled by a lever arm on the side of the socket. When the lever arm is raised, the socket's contact pins are released, allowing the removal or insertion of the part. When the lever arm is lowered, the socket's contact pins press against the pins on the part, providing an electrical connection.

NOTE: Parts should only be installed or removed from the PDIP-32 socket when power is **not** present on the 56F8013 Socket Board. Also, only one socket should have a part present at one time.

2.3 JTAG Connector

The 56F8013 Socket Board provides a JTAG Connector, J1. This connector allows the PC to communicate with a 56F8013 part in the LQFP-32 socket or in the PDIP-32 socket.

2.4 Daughter Card Connector

The 56F8013 Socket Board uses a Daughter Card Connector, P1. This connector provides power to the 56F8013 Socket Board via the 56F8013 Demonstration Board. Power (+3.3V DC) is present on pin 1 of P1 and the ground is present on pin 3 of P1.

2.5 Power-On LED

The 56F8013 Socket Board provides a Power-On LED, LED1, which illuminates when power is applied to the 56F8013 Socket Board.

2.6 Manual Reset

The 56F8013 Socket Board provides a Manual Reset Pushbutton, S1, which allows the manual generation of a reset signal to the 56F8013 part in either the U1 or U2 socket.

2.7 Test Points

The 56F8013 Socket Board provides two power monitoring test points, TP1 and TP2. TP1 is connected to +3.3V and TP2 is connected to digital ground.

Appendix A

56F8013 Socket Board Schematics

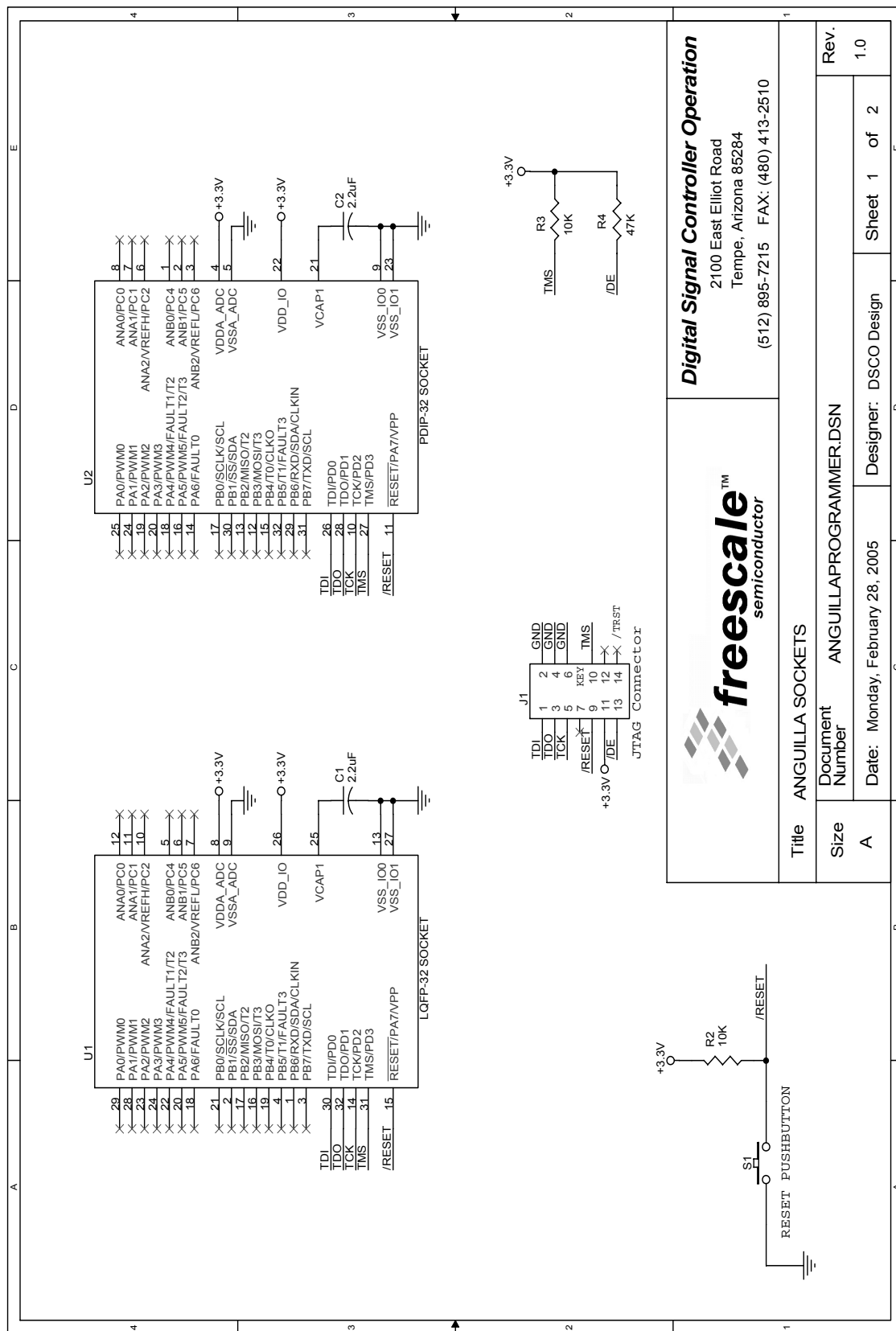


Figure A-1. 32-Pin Sockets

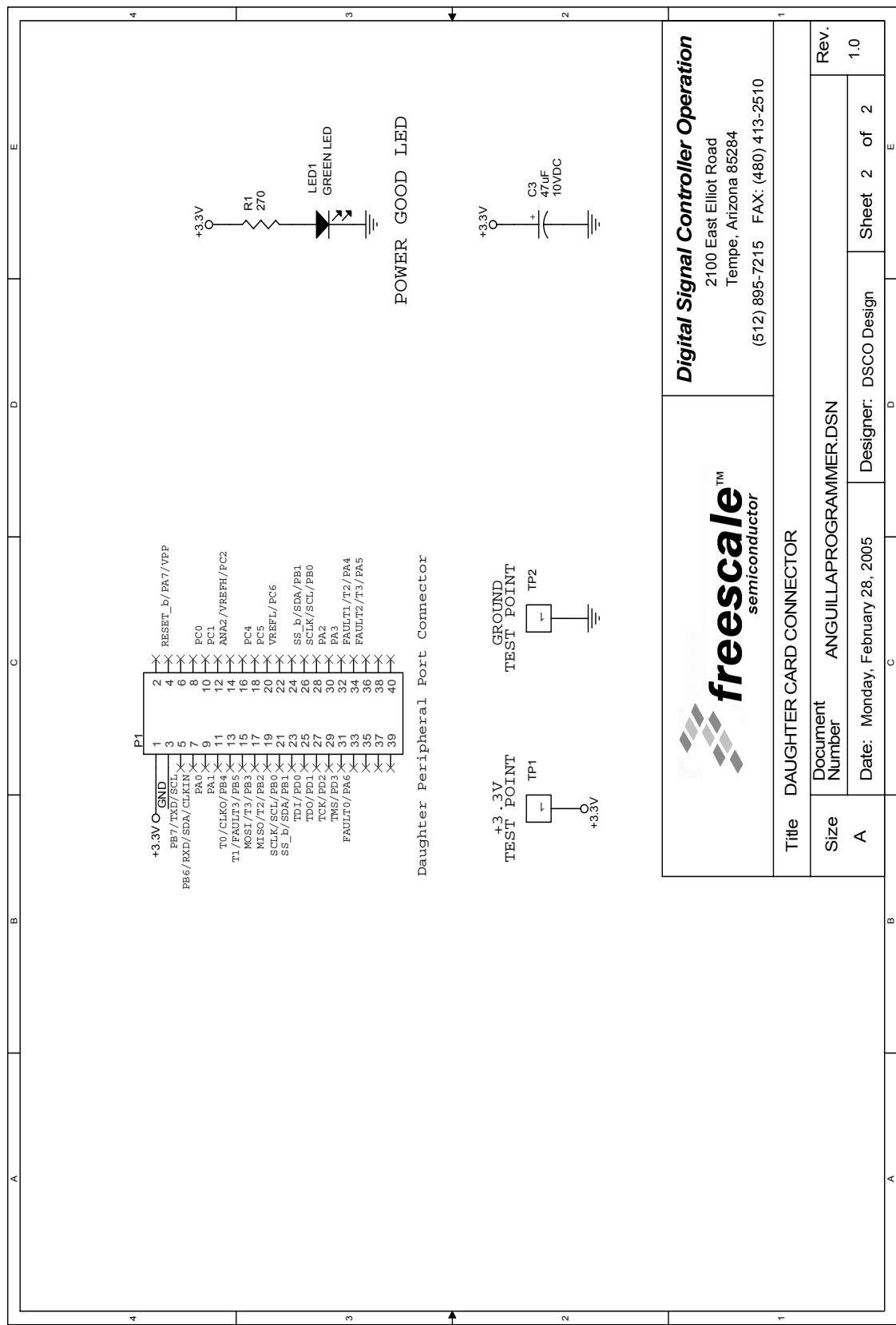


Figure A-2. Daughter Card Connector



Appendix B

56F8013 Socket Board Bill of Material

Qty	Description	Ref. Designators	Vendor Part #
Sockets			
1	32-Pin LQFP Socket	U1	CTI/WELLS, 7007-032-1-07
1	32-Pin PDIP Socket	U2	ARIES, 32-6554-11
Resistors			
1	270 Ω , 5%, 0805	R1	SMEC, RC73L2A271JT
2	10K Ω , 5%, 0805	R2, R3	SMEC, RC73L2A103JT
1	47K Ω , 5%, 0805	R4	SMEC, RC73L2A473JT
Switches			
1	Pushbutton Switch	S1	Panasonic, EVQ-PAD07K
LEDs			
1	Green LED, 1206	LED1	Agilent, HSMG-C650
Capacitors			
1	47 μ F, 16V DC,ELECT-C	C1	Panasonic, ECE-V1CA470WR
Connectors			
1	40x2 Header	P1	SAMTEC, TSW-140-07-S-D
1	7x2 JTAG Header	J1	SAMTEC, TSW-107-07-S-D
Test Points			
1	+3.3V Test Point	TP1	KEYSTONE, 5000, RED
1	GND Test Point	TP2	KEYSTONE, 5001, BLACK
Miscellaneous			
4	Rubber Feet		3M SJ5018BLKC

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