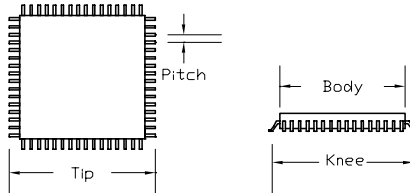# PA711D3-QFP Data Sheet
44 pin QFP socket/28 pin DIP 0.6" plug

Supported Device/Footprints

Using this adapter, the Motorola 68HC711D3 in the QFP package can be programmed on 28 pin DIP programmers.

Device			Footprint	
Mfgr	Device	Package	Device	Plug
Motorola	68HC711D3	QFP	27C256	28 pin DIP

The QFP socket accepts packages with the dimensions listed below:

Body	Knee	Tip	Pitch
10.0 mm typical	11.0 mm typical 11.6 maximum	12 mm typical 13.2 maximum	0.8 mm

Adapter Dimensions
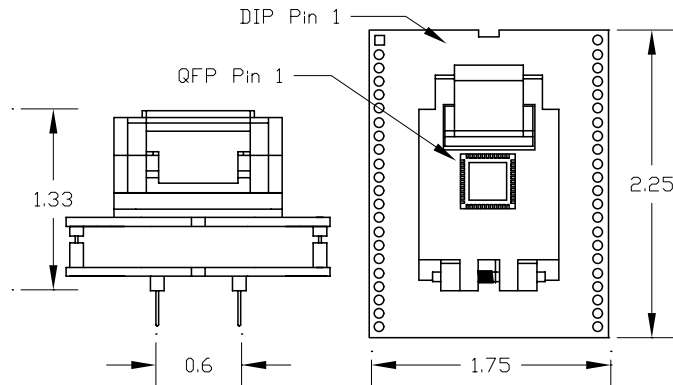
Adapter Construction

The adapter is made up of 3 sub-assemblies. They assemble via connectors making the adapter modular. This way the sub-assemblies can be replaced when they wear out.

When disassembling the adapter take care not to bend the pins. When reassembling the adapter note the pin 1 indicators to align the parts correctly.

Test Socket
QFP test socket:
   Enplas Part #: FPQ-44-0.8-06T   LSC Part #: 44QF-06T

44QFP-6T
Accepts the test socket and connects to the bottom board.

PA711D3
Performs the wiring shown in the Adapter Wiring section

Adapter Wiring

The following chart shows the connections from the QFP device to the adapter's DIP plug.

DEVICE	SIGNAL	PLUG
1	Gnd	14
2	Gnd	14
3	A6	4
4	A7	3
5	Vpp	1
6	D7	19
7	D6	18
8	Reset	14
9	CE-	20
10	D0	11
11	D1	12
12	D2	13
13	D3	15
14	D4	16
15	D5	17
16	Vcc	28
17	Gnd	14
18	N/C	-
19	N/C	-
20	N/C	-
21	Gnd	14
22	Gnd	14
23	Gnd	14
24	Gnd	14
25	N/C	-
26	OE-	22
27	Gnd	14
28	Gnd	14
29	A12	2
30	A11	23
31	A10	21
32	A9	24
33	A8	25
34	MODB	14
35	MODA	14
36	N/C	-
37	EXTAL	14
38	XTAL	-
39	Gnd	14
40	Gnd	14
41	A0	10
42	A1	9
43	A2	8
44	A3	7

PROG Mode Compatability

While PROG mode makes the 'D3 look like a 27C256, it is not a perfect emulation. If the EPROM programmer's algorithm does not accomodate the 'D3's requirements, programming errors will occur. In that case there are three solutions.

1.   A different programmer.
2.   The programmer's manufacturer could add or change an algorithm to accomodate the 'D3.
3.   The adapter may be returned for a refund.

The technical reason for this compatibility problem is that the 27C256 is a fully asynchronous device. Address and control signal inputs may change at any time.

The 'D3 is a synchronous device. It may be thought of as a 27C256 with internal address latches. The latches are updated when A0 or CE(OE on older die) changes. For example: if CE and OE are low and an address bit is changed a 27C256 would soon output the contents of a new address. The 'D3 would not. The 'D3 will not recognize the new address until the address latch is updated by a logic change at either A0 or the proper control signal (OE or CE).

Logical Systems has written a memo about this. It is intended to assist EPROM programmer manufacturers who wish to support the 68HC11 family. Copies are available, just ask for one.

EPROM Address Mapping

During normal operation the 4K bytes of EPROM in a 'D3 is accessed at addresses F000 through FFFF. In PROG MODE the same EPROM accessed by the programmer at addresses 0000 through 0FFF.

On the EPROM programmer, data for address F000 will have to be programmed into address 0000. When installed and run the 'D3 will fetch that byte from address F000.

The executable/load address translation may be made at compile/assemble time or during EPROM programming. Some assemblers and linkers provide a PHASE command to generate HEX files where the EPROM addresses and executable addresses are not the same. Most programmers either allow the HEX file to be loaded with an offset or the EPROM to be programmed from anywhere in the RAM. Either method will do.

In PROG MODE A12, A13, and A14 are don't cares. The programmer will access the same EPROM location in the 'D3 at addresses 0000, 1000, 2000, ... 7000. To prevent this from being a problem, limit the programming range to 0000 through 0FFF.

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Page 2 of 2