

## **SPECIFICATIONS & FUNCTIONAL DESCRIPTION**

### **MT-3 - TRANSMITTER**

#### **1.0 DESCRIPTION**

The MT-3 is a low-power hand held remote control device operating at a frequency of 318 MHz. The signal output is a binary-coded, pulse-position type A1D modulated transmission which has an information rate of approximately 167 bits per second (bps). It is coded by Megacode® formatted wireless data for the Linear Corporation garage door operators.

Actuating any of the three push buttons illuminates a light-emitting diode (LED) and activates the transmitter. Releasing the push-button immediately terminates transmission. Transmission time is limited to 30 seconds if button is held on.

#### **2.0 FUNCTIONAL DESCRIPTION**

The push-button switches, S1-3, applies power to the unit and activates L.E.D. (D1).

Digital encoding is a function of microprocessor, U1. An internally generated microcontroller clock runs at approximately 4MHz and creates the coding and timing sequence. There are over 1 million possible code combinations. Transmitter coding is done during manufacture and is not user accessible.

The RF oscillator Q1 functions as a tuned Colpitts oscillator / driver whose frequency control and feedback is determined by SAW resonator FR1 and R7. The frequency of oscillation is controlled by SAW resonator FR1. Q2 is the RF output amplifier. The inductive trace load E1 is configured on the circuit board as the principle-radiating element. Base bias resistors R8 & R9 in conjunction with the coupling capacitor C3 regulates the power output of the oscillator.

Because of the transmitter's small size, its radiation pattern is similar to that of an elementary dipole.

### 3.0 SPECIFICATIONS

Product Identification:	MT-3, Three channel garage door transmitter
Encoding Technique:	A1D Pulse position Modulation at 167 bits/sec.
Number of codes:	$> 1 \times 10^6$
RF Carrier Frequency:	318 MHz $\pm$ 125 KHz
Power Requirements:	6 VDC - 2 - 3 volt #2016 coin cell lithium batteries, 12 mA maximum current - operating, $< 1 \mu\text{A}$ standby
Operating Temperature Range:	0 to 50 °C Tested -30 to +70 °C
Timing:	30-second maximum transmission per activation
Size:	3.75" x 2.15" x 0.90" (approx.)

All specifications nominal unless specified.

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LINEAR CORPORATION

EFFECTIVITY DATE: ALL

S I N G L E L E V E L B I L L S O F

PARENT PART: ACP00897

F/G MT-3

UM

ERC: #

SRCE CODE: P TYPE: \*

ABC

ITEM NO	COMPONENT PART NUMBER/ UM PART DESCRIPTION-REMARKS	ERC	PRODUCT CODE	COMM CODE	S	T	S	A	P	EXTENDED QTY PER
0001	220532-01 EA ASSY,MECH,MT-3	#	NP	99	P	*	P	*	P	1
0002	220539 EA INSTR,INSTL,MT-3	#	NP	CE	P	*	P	*	P	1
0990	217122 EA F/G GT-30,3 PB,VISOR XMTR	B	NP	DC	P	*	P	*	P	0
0991	220535 EA SPECS,MT-3	#	NP	DC	P	*	P	*	P	0
0992	220536 EA BLOCK DIAGRAM,MT-3	#	NP	DC	P	*	P	*	P	0

NOTES:

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LINEAR CORPORATION

EFFECTIVITY DATE: ALL

S I N G L E L E V E L B I L L S O F

PARENT PART: 220532-01

ASSY,MECH,MT-3

UM

ERC: # SRCE CODE: P TYPE: \* ABC

ITEM NO	COMPONENT PART NUMBER/ UM PART DESCRIPTION-REMARKS	ERC	PRODUCT CODE	COMM CODE	S T S A P C Y P B L	EXTENDED QTY PER
0001	220534-01 EA ASSY,PCB,MT-3	#	NP	99	P * P * P	1
0002	217214-003 EA CASE,FRONT,3PB,VISOR XMTR,PMS11C	#	NP	DC	P * P * P	1
0003	217215-003 EA CASE,REAR,3PB,VISOR XMTR,PMS11C	#	NP	DC	P * P * P	1
0004	217216-002 EA BUTTON,3 PB,VISOR XMTR,WHITE	E	NP	DC	P * P * P	1
0005	217239 EA CLIP,BATTERY,2016	A	NP	DC	P * P * P	1
0006	214829 EA CLIP,VISOR,MULTICODE	A	99	CG	P * P * P	1
0007	213691 EA SCR,TF,TYP B,4X5/16,FLH,PH,S/BLK OX	B	NP	CG	P * P * P	1
0008	220540 EA LABEL,FCC/DOC,MT-3	#	NP	CE	P * P * P	1
0009	202732 EA BATT,3V,LITHIUM,2016	A	99		P * P * P	2
0010	217362 EA LABEL,BLOCK CODE,TX ID,CUSTOM	B	NP	BT1,2 CE	P * P * P	1
0011	202847 EA LABEL,WARR/DATE,1 YEAR,GRAY	C	99	CE	X * P * P	1
0990	217123 EA ASSY,MECH,GT-30,3 PB,VISOR XMTR	B	NP	DC	P * P * P	0
0991	220538 EA TEST PROC,MT-3	#	NP	REFERENCE ONLY DC	P * P * P	0
0992	216430 EA DIE-CUT,LABEL,FCC,MINI/MICRO	A	NP	REFERENCE ONLY CE	P * P * P	0
0993	217364 EA INSTR,BLOCK CODING,MT SERIES	C	NP	REFERENCE ONLY CE	P * P * P	0

NOTES:

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LINEAR CORPORATION

EFFECTIVITY DATE: ALL

S I N G L E L E V E L B I L L S O F

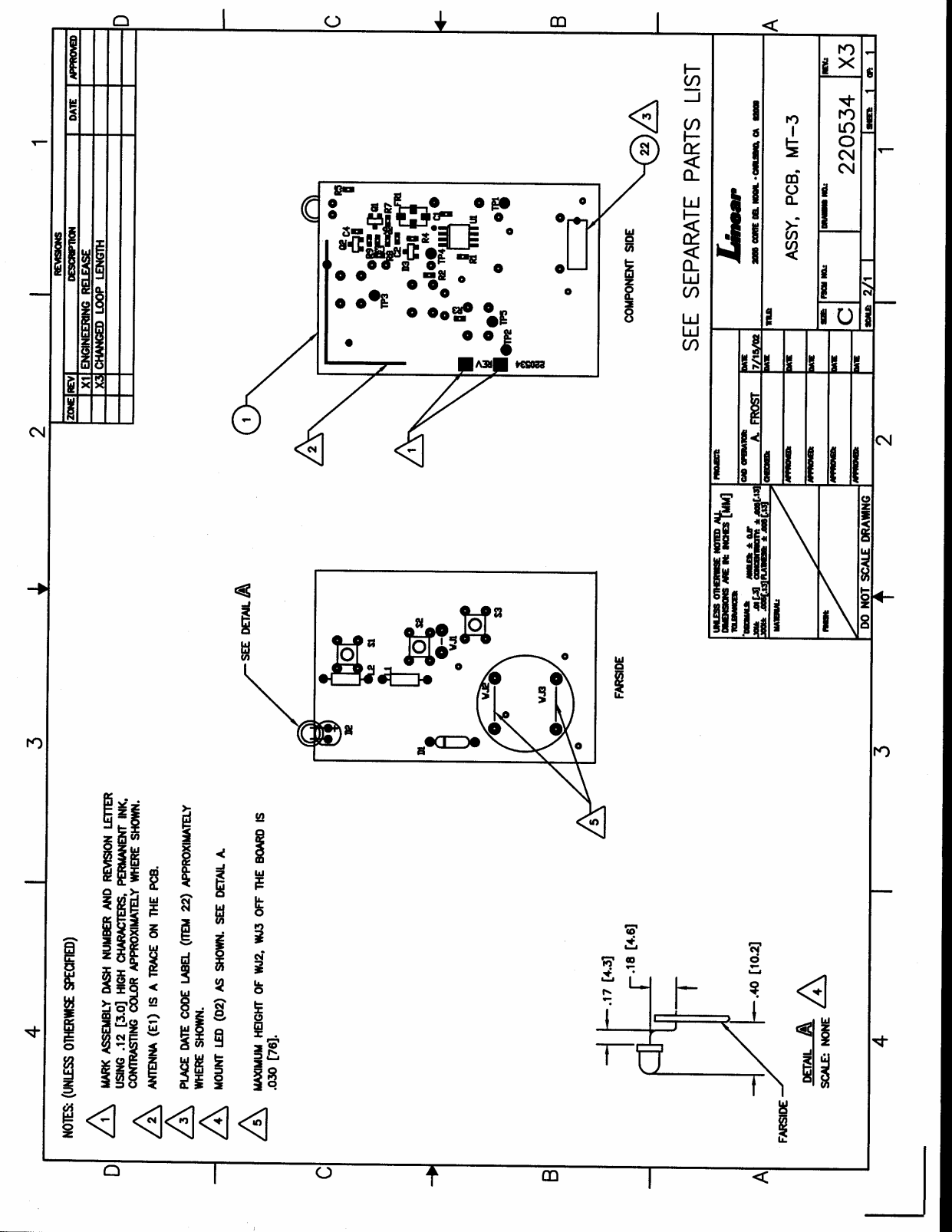
PARENT PART: 220534-01

ASSY,PCB,MT-3

ERC: # SRCE CODE: P TYPE: \* UM ABC

ITEM NO	COMPONENT PART NUMBER/UM PART DESCRIPTION-REMARKS	ERC	PRODUCT CODE	COMM CODE	S	T	S	A	P	EXTENDED QTY PER
					C	Y	P	B	L	
0001	220533 EA PCB,MT-3	#	NP	DB	P	*	P	*	P	1
0002	220541-01 EA ASSY,UP,MT-3	#	NP	99	P	*	P	*	P	1
0003	200691 EA LABEL,DATE CODE,PRODUCTION,.5"X.2"	B	99	CE	X	1	S	C	P	1
0005	101894 EA LED,RED,T-1,TIL209A,HI INTENSITY	A	99	CM	P	*	P	C	P	1
0006	101199 EA DIODE,1N5817,SCHOTTKY,20V,DO-41	E	99	BF	P	1	P	C	P	1
0007	213402 EA SWITCH,PUSH,MOM,SMD,260GF	A	NP	EG	P	*	P	*	P	3
0008	205011-001 EA DIODE,MMBD914,SWITCH,SOT-23	D	99	BF	P	1	P	C	P	1
0009	212977 EA RSONATR,318 MHZ,RO,SM-2	B	99	EV	P	*	P	*	P	1
0010	203687 EA XSTR,NPN,MMBTH10,SOT-23	A	99	EN	P	*	P	C	P	1
0011	219134 EA XSTR,NPN,BFR92A,SOT-23	A	NP	EN	P	*	P	*	P	1
0012	109295-103 EA INDCTR,10UH,CER FERRITE,SMD,1008LS	B	99	BQ	P	*	P	C	P	1
0013	212267 EA INDCTR,.18UH,ENCAP,10%	A	99	BR	P	*	P	*	P	1
0014	213383-475 EA RES,CHIP,1/16W,4.7M,0603,5%	A	NP	DQ	P	*	P	*	P	3
0015	213383-182 EA RES,CHIP,1/16W,1.8K,0603,5%	A	NP	DQ	P	*	P	*	P	1
0016	213383-471 EA RES,CHIP,1/16W,470,0603,5%	A	NP	DQ	P	*	P	*	P	1
0017	213383-223 EA RES,CHIP,1/16W,22K,0603,5%	A	NP	DQ	P	*	P	*	P	1
0018	213383-103 EA RES,CHIP,1/16W,10K,0603,5%	A	NP	DQ	P	*	P	*	P	1
0019	213383-332 EA RES,CHIP,1/16W,3.3K,0603,5%	A	NP	DQ	P	*	P	*	P	1
0020	213786 EA CAP,CER,C,25V104P,Y5V,+80-20%,0603	C	NP	AO	P	*	P	*	P	1
0021	213391 EA CAP,CER,C,50V102P,X7R,10%,0603	B	NP	AO	P	*	P	*	P	1
0022	213430-056 EA CAP,CER,C,50V5R6P,COG,.5PF,0603	B	NP	AO	P	*	P	*	P	1
0023	213390 EA CAP,CER,C,50V103P,X7R,10%,0603	B	NP	AO	P	*	P	*	P	1
0024	213383-102 EA RES,CHIP,1/16W,1.0K,0603,5%	A	NP	DQ	P	*	P	*	P	1
0025	104242 FT WIRE,22,SLD,BARE,BULK	E	99	ES	X	1	P	C	P	0

WJ1-3  
FLOOR STOCK



NOTES: (UNLESS OTHERWISE SPECIFIED)

- 1 MARK ASSEMBLY DASH NUMBER AND REVISION LETTER USING .12 [3.0] HIGH CHARACTERS, PERMANENT INK, CONTRASTING COLOR APPROXIMATELY WHERE SHOWN.
- 2 ANTENNA (E1) IS A TRACE ON THE PCB.
- 3 PLACE DATE CODE LABEL (ITEM 22) APPROXIMATELY WHERE SHOWN.
- 4 MOUNT LED (D2) AS SHOWN. SEE DETAIL A.
- 5 MAXIMUM HEIGHT OF W12, W13 OFF THE BOARD IS .030 [76].

SEE SEPARATE PARTS LIST

UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN MILLIMETERS (IN PARENTHESES)		PROJECT:	
DATE	DATE	DATE	DATE
7/19/02	7/19/02		
DESIGNED BY: A. FROST	APPROVED:	DATE:	DATE:
CHECKED BY:	APPROVED:	DATE:	DATE:
	APPROVED:	DATE:	DATE:
	APPROVED:	DATE:	DATE:
	APPROVED:	DATE:	DATE:
TITLE: ASSY, PCB, MT-3		SCALE: 2/1	
SHEET NO.: 220534		SHEET 1 OF 1	