

I. ORDERING INFORMATION

Contact the sales office or distributor in your area for ordering information. Visit www.linear.com/contact for a complete list.

Apply for credit and purchase through Linear Express at www.linear.com/purchase or buy directly on-line with a credit card.

II. RoHS COMPLIANCE AND LEAD (Pb) FREE PRODUCTS

Visit www.linear.com/leadfree for more information.

- a. In compliance with international Reduction of Hazardous Substances (RoHS) mandates, Linear Technology supplies Lead-Free Matte Tin terminal plated products on all Plastic Packages (Excluding Hermetic Packages). Devices with Lead Free terminal plating will have the same basic part numbers with the suffix #PBF (lead-free) or #TRPBF (tape-and-reel lead-free)) on the container labels. Matte Tin is LTC's standard terminal finish, although solder plated products will continue to be available for the foreseeable future.
- b. Lead (Pb) Free ordering examples.

Example 1.

Ordering a part in shipping tubes with a Lead (Pb) Free lead finish:

Lead (Pb) Free Part	Solder Plated Part
LT3481EMSE#PBF	LT3481EMSE

Example 2.

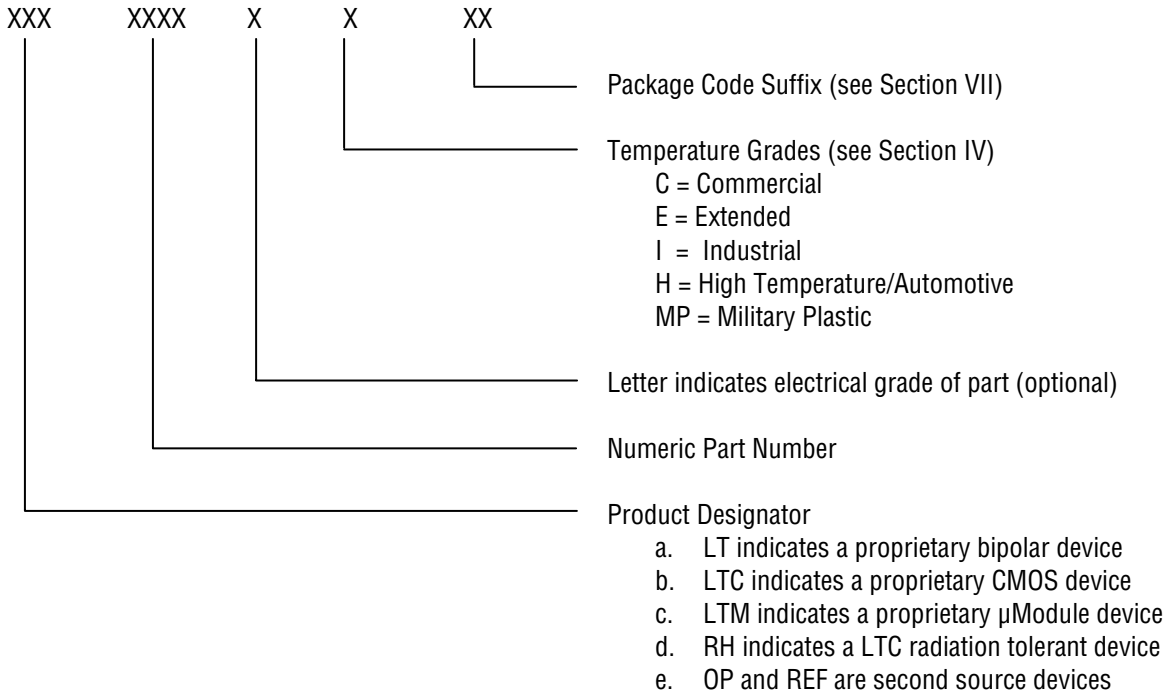
Ordering a part in tape and reel with a Lead (Pb) Free lead finish:

Lead (Pb) Free Part	Solder Plated Part
LT3481EMSE#TRPBF	LT3481EMSE#TR

- c. Lead (Pb) Free Markings
JEDEC Standard JESD97 defines various Lead (Pb) Free categories with symbols e1 through e7. The symbol e3 applies to products with a Matte Tin (Sn) terminal finish. Since LTC Lead (Pb) Free products have a Matte Tin (Sn) terminal finish, the symbol e3 is added to the product top marking of larger packages, where space permits. On packages that are too small to accommodate the e3, a "<" symbol is added to the device at the pin 1 location. Lead (Pb) free 2mm x 2mm and 3mm x 2mm packages are identified by rearranging the trace code marking of the device. These Lead (Pb) Free marking indicators were implemented starting with datecode 0514. However, we will continue to ship Pb-Free product, from our existing stock, which was marked prior to 0514 without the indicator.

GENERAL ORDERING INFORMATION

III. PART NUMBER EXPLANATION



IV. TEMPERATURE GRADES

Temperature Grade	Temperature Range T_{MIN} to T_{MAX}	Room Temp Test (25°C)	Cold Temp Test at T_{MIN}	Hot Temp Test at T_{MAX}
C – Commercial	0°C to 70°C	100%	Sample	Sample
E – Extended	-40°C to 85°C	100%	Sample	Sample
I – Industrial	-40°C to 85°C	100%	Larger Sample	Larger Sample
H – High Temperature/ Automotive	-40°C up to 140°C	100%	Larger Sample, or 100%	100%
MP – Military Plastic	-55°C to 125°C	100%	100%	100%

Please refer to the data sheet for exact temperature ranges and additional 100% testing guarantees.

V. RELIABILITY PROGRAMS

Linear Technology Corporation currently offers the following reliability programs:

- QML/JAN S devices processed to 38510 slash sheets
- “R-Flow” burn-in programs for commercial temperature devices (contact factory)
- Radiation tolerant products using LTC’s proprietary radiation hardening process (RHXXXX)

GENERAL ORDERING INFORMATION

VI. TAPE AND REEL

For more information visit www.linear.com/tapeandreeel

Tape and Reel packaging is ordered with a '#TRPBF' suffix for lead free finish parts, or a '#TR' suffix for lead based finish parts. See the Tape and Reel document for reel quantities by package type. Some packages are available in 500 unit reels through designated sales channels. These packages are noted in the document. 500 unit reels are ordered with a '#TRMPBF' or '#TRM' suffix.

VII. PACKAGE CODE SUFFIXES

Suffix Designator	Package Name	Number of Leads	Package Dimensions
DC	DFN	3, 4, 6 or 8	2mm x 2mm
DCB	DFN	6 or 8	2mm x 3mm
DD	DFN	8, 10 or 12	3mm x 3mm
DDB	DFN	8, 10 or 12	3mm x 2mm
DE	DFN	12 or 14	4mm x 3mm
DH	DFN	16	5mm x 5mm
DHC	DFN	16	5mm x 3mm
DHD	DFN	16	5mm x 4mm
DJC	DFN	22	6mm x 3mm
F	TSSOP	14	4.9mm x 4.4mm
F	TSSOP	20	6.4mm x 4.4mm
FE	TSSOP, exposed pad	16	4.9mm x 4.4mm
FE	TSSOP, exposed pad	20	6.4mm x 4.4mm
FE	TSSOP, exposed pad	28	9.6mm x 4.4mm
FW	TSSOP	48	12.4mm x 6.1mm
FW	TSSOP	56	13.9mm x 6.1mm
G	SSOP	16, 20	5.9mm x 5.3mm
G	SSOP	24	7.9mm x 5.3mm
G	SSOP	28	9.9mm x 5.3mm

Suffix Designator	Package Name	Number of Leads	Package Dimensions
G	SSOP	36	12.5mm x 5.3mm
GN	SSOP	16	4.8mm x 3.8mm (150 mils)
GN	SSOP	20, 24	8.6mm x 3.8mm
GN	SSOP	28	9.8mm x 3.8mm
GW	SSOP	36	15.3mm x 7.6mm (300mils)
GW	SSOP	48	17.7mm x 7.6mm
H	TO-52, TO-39 or TO-46 Metal Can	2, 3 or 4	
H	TO-5 Metal Can	8 or 10	
L	LLC (Leadless Chip Carrier)	20	7.1mm x 10.7mm
LS	LLC (Leadless Chip Carrier)	20	8.9mm x 8.9mm
M	DD Pak	3	
MS	MSOP	8 or 10	3mm x 3mm
MSE	MSOP, exposed pad	8 or 10	3mm x 3mm

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Suffix Designator	Package Name	Number of Leads	Package Dimensions
N	DIP	20	26.9mm x 7.6mm
N	DIP	14,16	19.6mm x 7.6mm
N	DIP	18	23.4mm x 7.6mm
N	DIP	24	32.5mm x 7.6mm
N8	DIP	8	10.2mm x 7.6mm (300mils)
NW	DIP	36	37mm x 15.2mm (600mils)
P	TO-3P	3	Similar to TO-247
Q	DD Pak	5	
R	DD Pak	7	
S	SOIC	8	4.8mm x 3.8mm (150 mils)
S	SOIC	14	8.6mm x 3.8mm
S	SOIC	16	9.8mm x 3.8mm
S3	SOT-23	3	2.1mm x 2.8mm*
S4	SOT-23	4	2.1mm x 2.8mm*
S5	ThinSOT	5	2.8mm x 2.9mm*
S6	ThinSOT	6	2.8mm x 2.9mm*
SC	SC-70	6 or 8	1.8mm x 1.8mm
ST	SOT-223	3	6.3mm x 6.7mm

Suffix Designator	Package Name	Number of Leads	Package Dimensions
SW	Wide SOIC	16	10.1mm x 7.6mm (300mils)
SW	Wide SOIC	18	11.4mm x 7.6mm
SW	Wide SOIC	20	12.6mm x 7.6mm
SW	Wide SOIC	24	15.2mm x 7.6mm
SW	Wide SOIC	28	17.7mm x 7.6mm
T	TO-220	3, 5 or 7	
TS	ThinSOT	8	2.8mm x 2.9mm*
UD	QFN	16 or 20	3mm x 3mm
UDC	QFN	20 OR 24	3mm x 4mm
UE	DFN	12	4mm x 3mm
UF	QFN	16, 20, 24 or 28	4mm x 4mm
UFD	QFN	20, 24 or 28	4mm x 5mm
UFE	QFN	38	4mm x 6mm
UH	QFN	32	5mm x 5mm
UHE	QFN	36	5mm x 6mm
UHF	QFN	38	5mm x 7mm
UHH	QFN	56	5mm x 9mm
UJ	QFN	40	6mm x 6mm
UK	QFN	48	7mm x 7mm
UKG	QFN	52	7mm x 8mm
UP	QFN	64	9mm x 9mm
V	LGA	**	**
Z	TO-92	3	

*Includes leads

** See data sheet for number of LGA pads and package dimensions