CHANGE NOTIFICATION

Linear Technology Corporation
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(408) 432-1900

April 08, 2014

Dear Sir/Madam: PCN# 040814

Subject: Notification of Change to LTC6090 Die and Datasheet

Please be advised that Linear Technology Corporation has made minor changes to the die and datasheet of the subject product to improve the product performance.

In order to improve manufacturability, the datasheet has been changed and affected parameters are shown in the attached redlined specifications. In addition, we have changed the mask set to achieve the better data sheet performance, and in connection with releasing the new dual version LTC6091.

These changes were qualified by performing characterization over the full operating junction temperature range and through rigorous engineering bench evaluations. In addition, the product successfully completed 1000 hours of HTOL stress. Product built using the new die and tested to the updated specifications will be shipped after June 09, 2014.

Should you have any further questions, please feel free to contact me at 408-432-1900 ext. 2077, or by email at JASON.HU@LINEAR.COM. If I do not hear from you by June 09, 2014, we will consider this change to be approved by your company.

Sincerely,

Jason Hu
Quality Assurance Engineer

ORDER INFORMATION

LEAD FREE FINISH	TAPE AND REEL	PART MARKING*	PACKAGE DESCRIPTION	JUNCTION TEMPERATURE RANGE
LTC6090CS8E#PBF	LTC6090CS8E#TRPBF	6090	8-Lead Plastic SO	0°C to 70°C
LTC6090IS8E#PBF	LTC6090IS8E#TRPBF	6090	8-Lead Plastic SO	–40°C to 85°C
LTC6090HS8E#PBF	LTC6090HS8E#TRPBF	6090	8-Lead Plastic SO	–40°C to 125°C
LTC6090CFE#PBF	LTC6090CFE#TRPBF	6090FE	16-Lead Plastic TSSOP	0°C to 70°C
LTC6090IFE#PBF	LTC6090IFE#TRPBF	6090FE	16-Lead Plastic TSSOP	–40°C to 85°C
LTC6090HFE#PBF	LTC6090HFE#TRPBF	6090FE	16-Lead Plastic TSSOP	–40°C to 125°C

Consult LTC Marketing for parts specified with wider operating temperature ranges. *The temperature grade is identified by a label on the shipping container.
Consult LTC Marketing for information on non-standard lead based finish parts.

For more information on lead free part marking, go to: http://www.linear.com/leadfree/
For more information on tape and reel specifications, go to: http://www.linear.com/tapeandreel/

ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at T_J = 25°C. Test conditions are V^+ = 70V, V^- = –70V, V_{CM} = V_{OUT} = 0V, $V_{\overline{OD}}$ = Open unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS		C-, I-SUFFIXES MIN	C-, I-SUFFIXES TYP	C-, I-SUFFIXES MAX	H-SUFFIX MIN	H-SUFFIX TYP	H-SUFFIX MAX	UNITS
V_{OS}	Input Offset Voltage				±330	±1000		±330	±1000	µV
			●		±330	~~±1600~~ 1250		±330	~~±1600~~ 1250	µV
$\Delta V_{OS}/\Delta T$	Input Offset Voltage Drift	T_A = 25°C, ΔT_J = 70°C	✕	-5	~~4~~ ±3	5	-5	~~4~~ ±3	5	µV/°C
I_B	Input Bias Current (Note 6)	Supply Voltage = ±70V			3			3		pA
		Supply Voltage = ±15V			~~3~~ 0.3			~~3~~ 0.3		pA
		Supply Voltage = ±15V	●			50			800	pA
I_{OS}	Input Offset Current (Note 6)	Supply Voltage = ±15V			0.5			0.5		pA
			●			30			120	pA
e_n	Input Noise Voltage Density	f = 1kHz			14			14		nV/√Hz
		f = 10kHz			11			11		nV/√Hz
	Input Noise Voltage	0.1Hz to 10Hz			3.5			3.5		μV_{P-P}
i_n	Input Noise Current Density				1			1		fA/√Hz
V_{CM}	Input Common Mode Range	Guaranteed by CMRR			±68			±68		V
			●	V^-+3V		V^+–3V	V^-+3V		V^+–3V	V
C_{IN}	Common Mode Input Capacitance				9			9		pF
C_{DIFF}	Differential Input Capacitance				5			5		pF
CMRR	Common Mode Rejection Ratio	V_{CM} = –67V to 67V		~~105~~ 130	~~125~~ >140		~~105~~ 130	~~125~~ >140		dB
			●	~~100~~ 126			~~100~~ 126			dB
PSRR	Power Supply Rejection Ratio	V_S = ±4.75V to ±70V		~~105~~ 112	~~118~~ >120		~~105~~ 112	~~118~~ >120		dB
			●	~~100~~ 106			~~100~~ 106			dB
V_{OUT}	Output Voltage Swing High (Referred to V^+)	No Load	●		~~25~~ 10	~~50~~ 25		~~25~~ 10	~~50~~ 25	mV
		I_{SOURCE} = 1mA	●		~~100~~ 50	~~200~~ 140		~~100~~ 50	~~200~~ 140	mV
		I_{SOURCE} = 10mA	●		~~750~~ 450	~~1500~~ 1000		~~750~~ 450	~~1500~~ 1000	mV
	Output Voltage Swing Low (Referred to V^-)	No Load	●		10	25		10	25	mV
		I_{SINK} = 1mA	●		40	80		40	80	mV
		I_{SINK} = 10mA	●		250	600		250	600	mV
A_{VOL}	Large-Signal Voltage Gain	R_L = 10k,		~~500~~ ~~1000~~ ~~2000~~ >10000			~~500~~ ~~1000~~ ~~2000~~ >10000			V/mV
		V_{OUT} from –60V to 60V	●	~~400~~ 1000			~~400~~ 1000			V/mV

ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at T_J = 25°C. Test conditions are V^+ = 70V, V^- = –70V, V_{CM} = V_{OUT} = 0V, $V_{\overline{OD}}$ = Open unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS		C-, I-SUFFIXES MIN	C-, I-SUFFIXES TYP	C-, I-SUFFIXES MAX	H-SUFFIX MIN	H-SUFFIX TYP	H-SUFFIX MAX	UNITS
I_{SC}	Output Short-Circuit Current (Source and Sink)	Supply Voltage = ±70V Supply Voltage = ±15V	 ●	 ~~15~~ 20	~~50~~ 90 	 	 ~~15~~ 20	~~50~~ 90 	 	mA mA
SR	Slew Rate	A_V = –2, R_L = 10k	 ●	 ~~8~~ 10	~~19~~ 21	 	 ~~8~~ 9	~~19~~ 21	 	V/µs V/µs
GBW	Gain-Bandwidth Product	f_{TEST} = 20kHz, R_L = 10k	 ●	 ~~5~~ 5.5	~~10~~ 12	 	 ~~4~~ 5	~~10~~ 12	 	MHz MHz
Φ_M	Phase Margin	R_L = 10k, C_L = 50pF			~~52~~ 60			~~52~~ 60		Deg
FPBW	Full Power Bandwidth	V_O = 125V_{P-P}	 ●	~~25~~ 20	 40	 	~~25~~ ~~20~~ 18	 40	 	kHz kHz
t_S	Settling Time 0.1%	V_{STEP} = 1V, Av = 1, R_L = 10k			2			2		µs
I_S	Supply Current	No Load	 ●	 	~~2.7~~ 2.8 	3.9 ~~4.2~~ 4.3	 	~~2.7~~ 2.8 	3.9 ~~4.5~~ 4.3	mA mA
V_S	Supply Voltage Range	Guaranteed by the PSRR Test	●	9.5		140	9.5		140	V
$\overline{OD}_H$ $\overline{OD}_L$	$\overline{OD}$ Pin Voltage, Referenced to COM Pin	V_{IH} V_{IL}	● ●	COM+~~2.5~~V 1.8	 	 COM+0.65V	COM+~~2.5~~V 1.8	 	 COM+0.65V	V V
	Amplifier DC Output Impedance, Disabled	DC, $\overline{OD}$ = COM			~~450~~ >10			~~450~~ >10		M~~k~~Ω
COM_{CM}	COM Pin Voltage Range		●	V^-		V^+ – 5	V^-		V^+ – 5	V
COM_V	COM Pin Open Circuit Voltage		●	~~20~~ 17	21	~~22.5~~ 25	~~20~~ 17	21	~~22.5~~ 25	V
COM_R	COM Pin Resistance		●	500	665	850	500	665	850	kΩ
$TEMP_F$	Die Temperature Where $\overline{TFLAG}$ Is Active		✕		145			145		°C
$TEMP_{HYS}$	$\overline{TFLAG}$ Output Hysteresis		✕		5			5		°C
$I_{\overline{TFLAG}}$	$\overline{TFLAG}$ Pull-Down Current	$\overline{TFLAG}$ Output Voltage = 0V	●	70	~~120~~ 200	~~170~~ 330	70	~~120~~ 200	~~170~~ 330	µA

Note 1: Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. Exposure to any Absolute Maximum Rating condition for extended periods may affect device reliability and lifetime.

Note 2: A heat sink may be required to keep the junction temperature below the absolute maximum rating when the output is shorted indefinitely.

Note 3: The LTC6090C/LTC6090I are guaranteed functional over the operating junction temperature range –40°C to 85°C. The LTC6090H is guaranteed functional over the operating junction temperature range –40°C to 125°C. Specifying the junction temperature range as an operating condition is applicable for devices with potentially significant quiescent power dissipation.

Note 4: The LTC6090C is guaranteed to meet specified performance from 0°C to 70°C. The LTC6090C is designed, characterized, and expected to meet specified performance from –40°C to 85°C but is not tested or QA sampled at these temperatures. The LTC6090I is guaranteed to meet specified performance from –40°C to 85°C. The LTC6090H is guaranteed to meet specified performance from –40°C to 125°C.

Note 5: This device includes over temperature protection that is intended to protect the device during momentary overload conditions. Operation above the specified maximum operating junction temperature is not recommended.

Note 6: Input bias and offset current is production tested with ±15V supplies. See Typical Performance Characteristics curves of actual typical performance over full supply range.