THIS DOCUMENT IS FOR MAINTENANCE PURPOSES ONLY AND IS NOT RECOMMENDED FOR NEW DESIGNS

GEC PLESSEY
SEMICONDUCTORS

ADVANCE INFORMATION

DS3634 - 2.0

SL1640 IS FOR MAINTENANCE PURPOSES ONLY AND IS NOT RECOMMENDED FOR NEW DESIGNS

SL1640

DOUBLE BALANCED MODULATORS

The SL1640 is a double balanced modulator intended for use in radio systems at frequencies up to 75MHz. The SL1640 has an integral output load resistor (Pin 5) together with an emitter follower output (Pin 6).

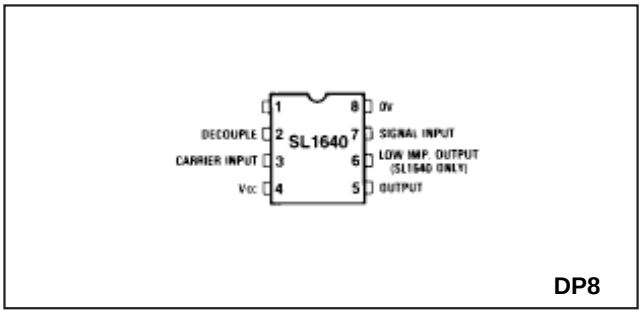

Fig.1 Pin connections (top view)

FEATURES

- No External Bias Networks Needed
- Easy Interfacing
- Choice of Voltage or Current Outputs

APPLICATIONS

- Mixers In Radio Transceivers
- Phase Comparators
- Modulators

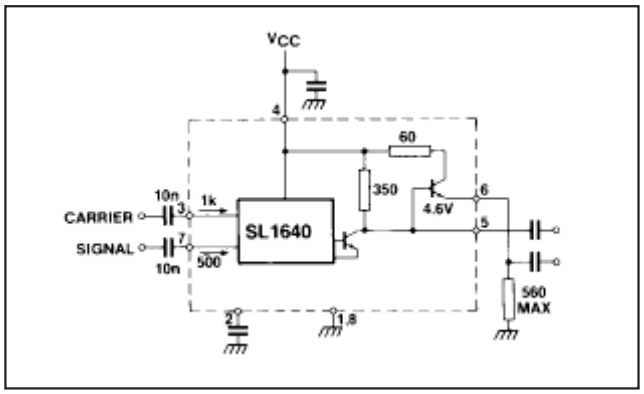

Fig.2 Block diagram (SL1640)

QUICK REFERENCE DATA

- Supply Voltage: 6V
- Conversion Gain: 0dB
- Maximum Inputs: 200mV rms

ABSOLUTE MAXIMUM RATINGS

Supply voltage:	9V
Storage temperature:	-55°C to +150°C
Operating temperature range:	0°C to +70°C
Chip operating temperature:	+150°C
Thermal resistance	
Chip-to-ambient	111°C/W
Chip-to-case	71°C/W

ORDERING INFORMATION

SL1640 C DP

ELECTRICAL CHARACTERISTICS

These characteristics are guaranteed over the following conditions (unless otherwise stated)

Supply voltage V_{CC}: 6V

Ambient temperature: 22°C ± 2°C

Characteristics	Circuit	Value			Units	Conditions
		Min.	Typ.	Max.		
Supply current	SL1640		12	17	mA	
Conversion gain	SL1640	-3	0	+3	dB	
Noise figure			10		dB	
Carrier input impedance			1		KΩ	
Signal input impedance	SL1640		500		Ω	
			210		KΩ	
Maximum input voltage	SL1640				mV rms	
Signal leak	SL1640		-30		dB	Signal: 70mVrms, 1.75MHz Carrier: 100mV rms, 28.25MHz Output: 30MHz
Signal leak	SL1640		-18		dB	Signal: 70mVrms, 30MHz Carrier: 100mV rms, 28.25MHz Output: 1.75MHz
Intermodulation products	SL1640		-45		dB	Signal 1: 42.5mVrms, 1.75MHz Signal 2: 42.5mV rms, 2MHz Carrier: 100mV rms, 28.25MHz Output: 29.75MHz

APPLICATION NOTES

The SL1640 requires input and output coupling capacitors which normally should be chosen to present a low reactance compared with the input and output impedances (see Electrical Characteristics). However, for minimum carrier leak at high frequencies the signal input should be driven from a low impedance source, in which case the signal input capacitor reactance should be comparable with the source impedance. Pin 2 must be decoupled to earth via a capacitor which presents the lowest possible impedance at both carrier and signal frequencies. The presence of these frequencies at Pin 2 would give rise to poor rejection figures and to distortion

There are two outputs from the SL1640: one is a voltage source of output impedance 350 ohms and 8pF and the other is the emitter of an emitter follower connected to the first output. The output on pin 6 requires a discrete load resistor of not less than 1500 ohms to ground. The emitter follower output should not be used to drive capacitive loads as emitter followers act as detectors under such circumstances with resultant distortion and harmonic generation. Frequency shaping components may be connected to the voltage output and the shaped signal taken from the emitter follower.

Signal and carrier leak may be reduced by altering the bias on the carrier and signal input pins, as shown in Fig.3. With carrier but no signal R1 is adjusted for minimum carrier leak A similar network is connected to the carrier input and with signal and carrier present, signal leak is minimised by means of R2.

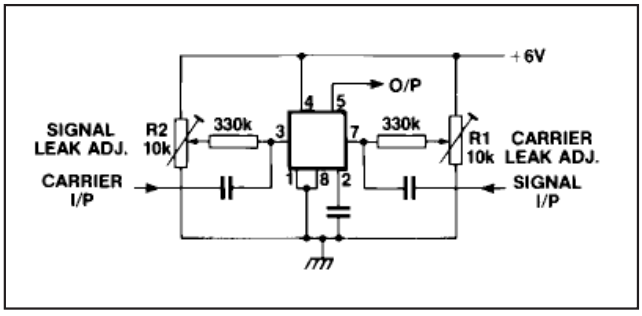

Fig.3 Signal and carrier leak adjustment

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