



INTEGRATED CIRCUIT

TECHNICAL DATA

TA7320P

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT
SILICON MONOLITHIC

BALANCED MODULATOR AND DEMODULATOR,

FREQUENCY MIXER,

SYNCHRONOUS DETECTOR,

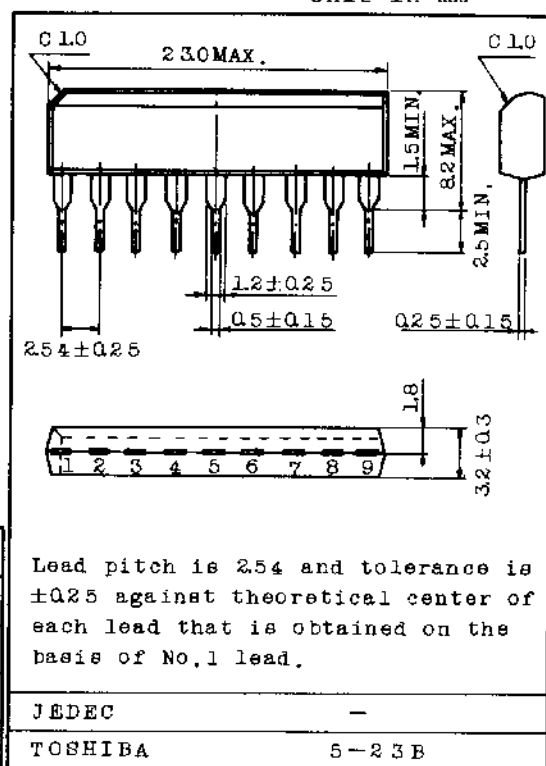
- . Excellent Carrier Suppression
- . Excellent Temperature Stability
- . Including Bias Circuit

MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$)

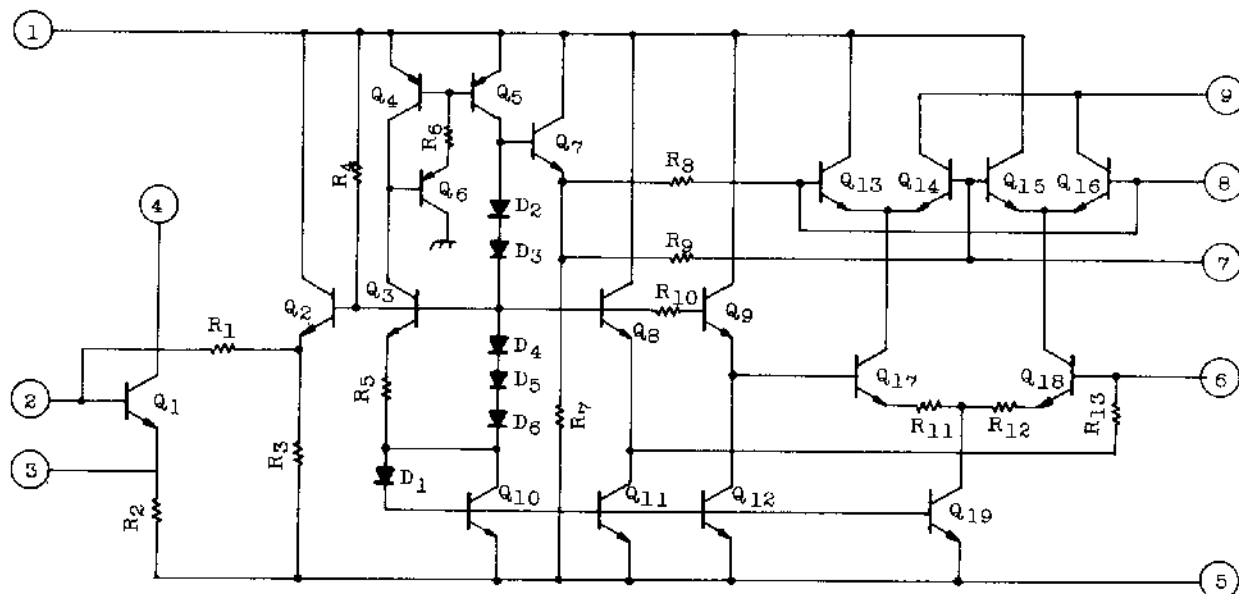
CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	15	V
4 pin Supply Voltage	V_4	20	V
9 pin Supply Voltage	V_9	20	V
Power Dissipation (Note)	P_D	750	mW
Operating Temperature	T_{opr}	$-30 \sim 75$	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	$-55 \sim 150$	$^{\circ}\text{C}$

Note: Derated above $T_a=25^{\circ}\text{C}$ in the proportion of $4\text{mW}/^{\circ}\text{C}$.

Unit in mm



EQUIVALENT CIRCUIT





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ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$, $V_{CC}=7.5\text{V}$)

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Supply Current		I _{CC}	1	-		17.0	-	30.0	mA
4 pin Supply Current		I ₄	1	-		0.9	-	1.8	mA
9 pin Supply Current		I ₉	1	-		3.0	-	5.8	mA
Carrier Leak Voltage		V _{CL}	2	f _C =10MHz, V _C =100mV _{rms}		-	-	15	mV _{rms}
Voltage Gain		G _V	3	f _S =1kHz, V _S =100mV _{rms}		1	-	6	dB
Carrier Suppression Ratio		V _{CS}	4	-		-	35	-	dB
Q ₁ Input Impedance	2pin Parallel Input Resistance	R _{ip} 2	5	V ₄ =7.5V, f=10MHz		-	12	-	kΩ
	2pin Parallel Input Capacitance	C _{ip} 2				-	2.3	-	pF
Q ₁ Output Impedance	4pin Parallel Output Resistance	R _{op} 4	6	V ₄ =7.5V, f=10MHz		-	14	-	kΩ
	4pin Parallel Output Capacitance	C _{op} 4				-	2.2	-	pF
Doubly Balanced Input Impedance	6pin Parallel Input Resistance	R _{ip} 6	7	V ₉ =7.5V, f=10MHz		-	1.5	-	kΩ
	6pin Parallel Input Capacitance	C _{ip} 6				-	3.8	-	pF
Doubly Balanced Output Impedance	9pin Parallel Output Resistance	R _{op} 9	8	V ₉ =7.5V,	f=10MHz	-	14	-	kΩ
					f=27MHz	-	4.4	-	
	9pin Parallel Output Capacitance	C _{op} 9			f=10MHz	-	5.5	-	pF
					f=27MHz	-	4.8	-	



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9 pin Supply Current		I ₉	1	-		3.0	-	5.8	mA
Carrier Leak Voltage		V _{CL}	2	f _C =10MHz, V _C =100mV _{rms}		-	-	15	mV _{rms}
Voltage Gain		G _V	3	f _S =1kHz, V _S =100mV _{rms}		1	-	6	dB
Carrier Suppression Ratio		V _{CS}	4	-		-	35	-	dB
Q ₁ Input Impedance	2pin Parallel Input Resistance	R _{ip} 2	5	V ₄ =7.5V, f=10MHz		-	12	-	kΩ
	2pin Parallel Input Capacitance	C _{ip} 2				-	2.3	-	pF
Q ₁ Output Impedance	4pin Parallel Output Resistance	R _{op} 4	6	V ₄ =7.5V, f=10MHz		-	14	-	kΩ
	4pin Parallel Output Capacitance	C _{op} 4				-	2.2	-	pF
Doubly Balanced Input Impedance	6pin Parallel Input Resistance	R _{ip} 6	7	V ₉ =7.5V, f=10MHz		-	1.5	-	kΩ
	6pin Parallel Input Capacitance	C _{ip} 6				-	3.8	-	pF
Doubly Balanced Output Impedance	9pin Parallel Output Resistance	R _{op} 9	8	V ₉ =7.5V,	f=10MHz	-	14	-	kΩ
					f=27MHz	-	4.4	-	
	9pin Parallel Output Capacitance	C _{op} 9			f=10MHz	-	5.5	-	pF
					f=27MHz	-	4.8	-	