

# 9213LPJ Series

Clock oscillator, 5.0 x 3.2mm, LVPECL, LVDS, HCSL Output

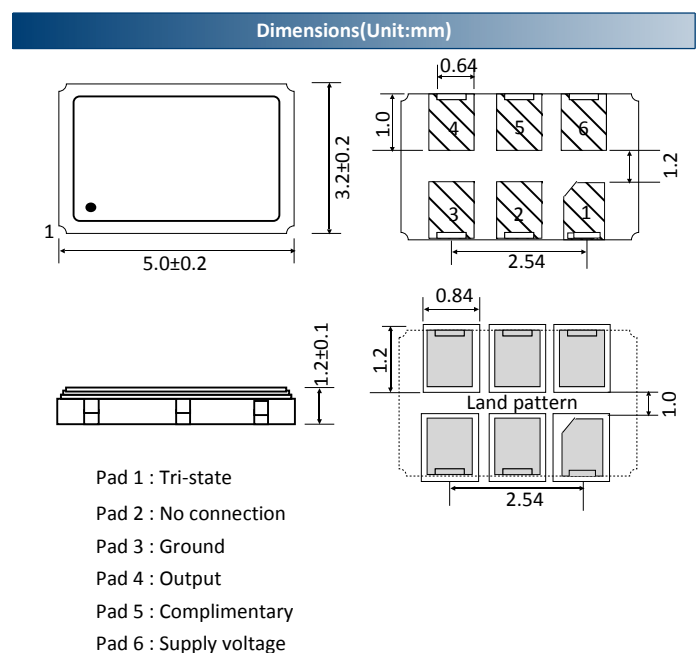


REACH and RoHS compliant  
Differential output (Non-PLL)  
Superior phase noise



Parameters	Specification		Remarks
Frequency range	F_nom	13.5MHz ~ 200.0MHz	
Supply voltage	Vcc	2.5V, 3.3V	±5% tolerance
Frequency stability	F_stb	±25.0ppm, ±50.0ppm, ±100.0ppm	Includes initial tolerance, stability over temperature, Load, Vcc
Aging	F_age	±3.0ppm max	For 1 <sup>st</sup> year
Operating temperature range (°C)	Topr	-10°C ~ +70°C, -40°C ~ +85°C	
Storage temperature (°C)	Tstg	-55°C ~ +150°C	
Output waveform		LVPECL, LVDS, HCSL	
Output load		Table 1	
Output voltage high	Voh	Table 1	
Output voltage low	Vol	Table 1	
Rise time	Tr	Table 1	
Fall time	Tf	Table 1	
Duty cycle		40%/60%, 45%/55%	
Current consumption	Icc	LVPECL : 30.0mA typical ; 50.0mA max	
		LVDS : 16 mA typical ; 27mA max	
		HCSL : 30.0mA typical ; 50.0mA Max	
Start-up time	T_str	1.0msec max, 5.0msec typical	
Tristate		Pad 1	
Phase noise		Table 2	
Phase jitter (RMS)		0.2ps typical ; 0.5ps max for 156.250MHz,3.3V	12kHz to 20MHz integrated
Moisture sensitive level	MSL	1	
ESD sensitive device		Yes	

		LVPECL	LVDS	HCSL
Output load		50Ω in to Vcc - 2V	100Ω between outputs	50Ω to GND on each output
Voh	Min	Vcc - 1.025	-	600mV
	Typ	Vcc - 0.950	1.43V	740mV
	Max	Vcc - 0.88	1.60V	850mV
Vol	Min	Vcc - 1.810	0.9V	-160mV
	Typ	Vcc - 1.700	1.1V	0mV
	Max	Vcc - 1.620	-	150mV
Output swing	3.3V	400mV min	350mV min	650mV
	2.5V	200mV min	250mV min	600mV
Tr/Tf	Typ	0.3nsec	0.2nsec	0.3nsec
	Max	0.5nsec	0.4nsec	0.5nsec



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(Phase noise ) dBc/Hz typical - LVPECL, 3.3V		
	62.5MHz	156.250MHz
10Hz	-50	-50
100Hz	-82	-80
1kHz	-116	-115
10kHz	-138	-135
100kHz	-144	-142
1MHz	-149	-147
10MHz	-155	-152

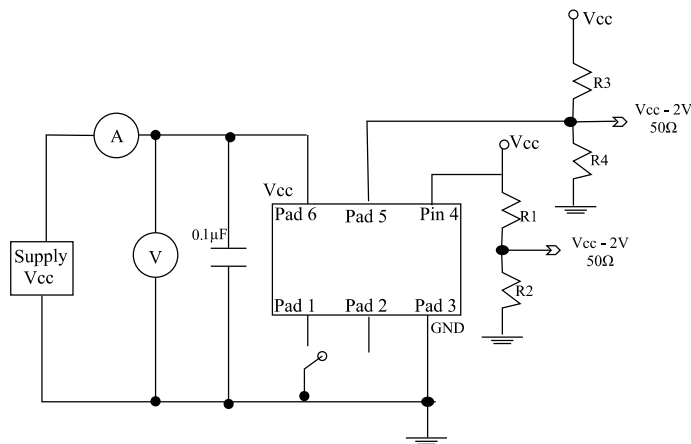
(Phase noise ) dBc/Hz typical - LVDS, 3.3V		
	62.5MHz	156.250MHz
10Hz	-50	-50
100Hz	-82	-80
1kHz	-116	-115
10kHz	-138	-135
100kHz	-144	-142
1MHz	-149	-147
10MHz	-155	-152

(Phase noise ) dBc/Hz typical - HCSL, 3.3V		
	125MHz	156.250MHz
10Hz	-50	-50
100Hz	-82	-80
1kHz	-116	-115
10kHz	-138	-135
100kHz	-144	-142
1MHz	-149	-147
10MHz	-155	-152

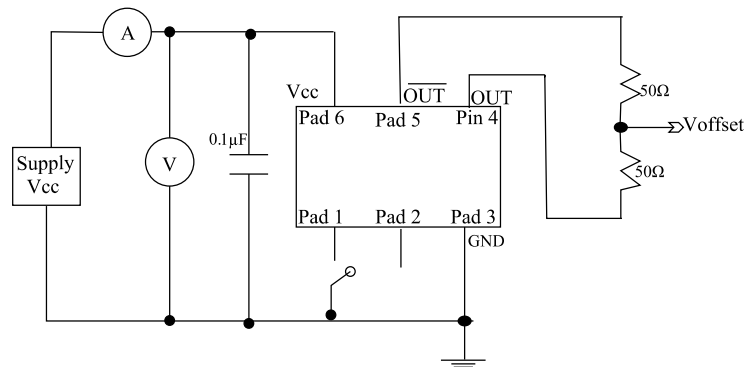
Part number generation									
RLR	2600	B	B	I	S	E	P	L	-PF
ACT series Code	Frequency (MHz)	Frequency stability ( $\pm$ ppm)	Supply voltage (V)	Operating temp. range ( $^{\circ}$ C)	Duty Cycle (%/%)	Output wave	Tristate	Tape & Reel	RoHS Code
RLR	< 100MHz First 4 digit of frequency  > 100MHz First 5 digit of frequency Ex. 26.00MHz = 2600 8.00MHz = 0800 14.7456MHz = 1474 156.250MHz = 15625	25 = C 50 = B 100 = A	2.5 = C 3.3 = B	-10 ~ +70 = C -40 ~ +85 = I	40/60 = S 45/55 = H	LVPECL = M LVDS = K HCSL = S	Tristate = P	Loose = L 1000 = C 3000 = D	-PF

Note: It is important to suffix the above part number with full frequency required to give a completed part number as illustrated below.  
Full Example part number : **RLR2600BBISML-PF [26MHz]**, **RLR1474BBISML-PF [14.7456MHz]**

### LVPECL Test circuit



### LVDS Test circuit



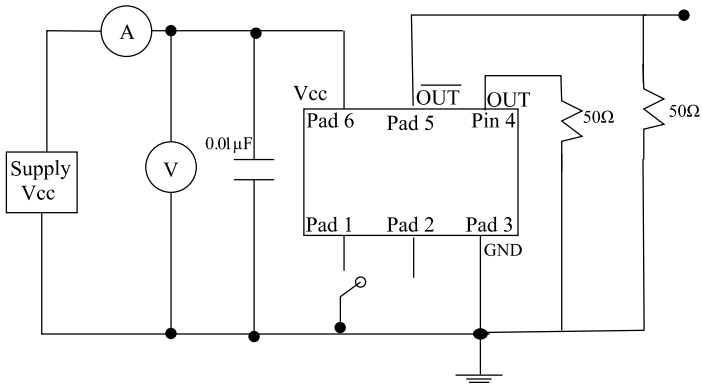
LVPECL Resistor values		
Vcc	R1, R3	R2, R4
+3.3V	127 $\Omega$	82.5 $\Omega$
+2.5V	250 $\Omega$	62.5 $\Omega$

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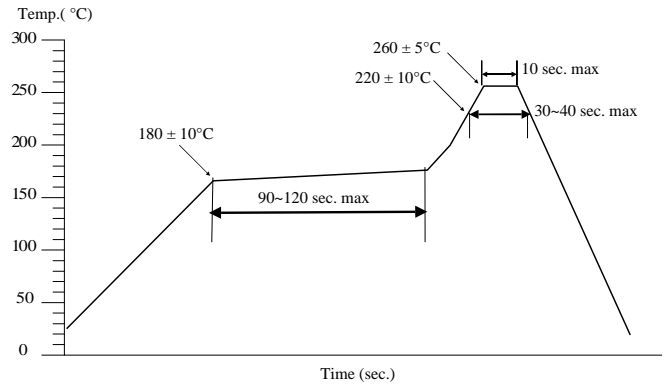
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HCSL Test circuit



Solder reflow profile



Drawing control: (Internal use only)  
Commodity code:  
854370 90 45 for 1.8MHz <math>F < 67\text{MHz}</math>  
854370 90 99 for <math>F < 1.8\text{MHz}</math> and <math>F > 67\text{MHz}</math>  
Issue number : N1  
Date : 01/02/2017  
Internal reference : M6