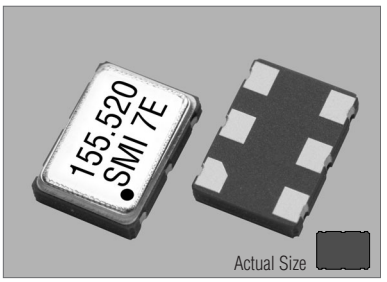
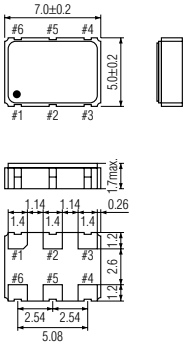
Low Voltage Positive Emitter Coupled Logic Oscillators

77SMO & 78SMO (+3.3V LVPECL MODELS) STANDARD SMD CLOCK OSCILLATORS

77SMO & 78SMO



77SMO & 78SMO



77SMO

PIN	CONNECTION	
1	"L"	OPEN or "H"
2	N.C.	
3	GND	
4	Z	OUTPUT
5	Z	C-OUTPUT
6	V_{DD}	

Z : high impedance

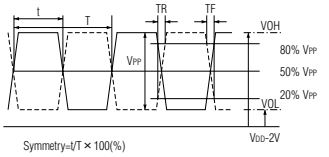
78SMO

PIN	CONNECTION	
1	N.C.	
2	"L"	OPEN or "H"
3	GND	
4	Z	OUTPUT
5	Z	C-OUTPUT
6	V_{DD}	

Z : high impedance

OUTPUT WAVEFORM(1)

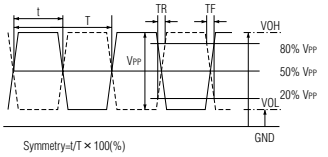
Termination : 50Ω impedance matching



Symmetry=t/T × 100(%)

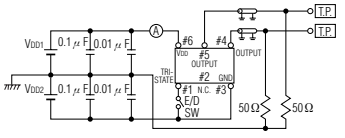
OUTPUT WAVEFORM(2)

Termination : high impedance probes



Symmetry=t/T × 100(%)

TEST CIRCUIT(1)



Termination : 50Ω impedance matching

V_{DD}	V_{DD}1	V_{DD}2
+3.3V	+2.0V	-1.3V
+2.5V	+2.0V	-0.5V

STANDARD SPECIFICATIONS

LVPECL

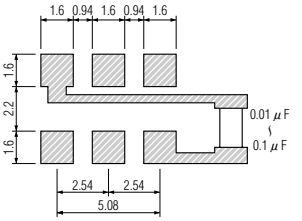
Item	Specifications	Condition
Generic part number	77SMO or 78SMO ※1	
Frequency range	10.9000 MHz to 1175 MHz(1.175GHz)	
Frequency stability	77SMO(B) : ±50 ppm 78SMO(B) : ±50 ppm 77SMO(C) : ±30 ppm 78SMO(C) : ±30 ppm 77SMO(D) : ±25 ppm 78SMO(D) : ±25 ppm 77SMO(E) : ±20 ppm 78SMO(E) : ±20 ppm	・For all supply voltage, load changes, shock, vibration and temperatures
Operating Conditions		
Operating temperature	−10°C to +70°C −40°C to +85°C (W)	・Standard temperature range ・Extended temperature range
Input voltage(V_{DD})	+3.3V DC ±10%	
Stand-by control voltage	V_{IH} : +2.0V min. V_{IL} : +0.8V max.	・Referenced to pad 3 ・Referenced to pad 3
Absolute Max. Ratings		
Supply voltage	−0.5V to +4.6V	
Storage temperature	−55°C to +125°C	
Input current	90 mA max.	
Stand-by current ※2	50 μA max.	
Output		
Symmetry	47% to 53%	・at 50% point of V_{DD}
Rise and fall times	300 pS max.	・20% to 80% of waveform
"0" level	V_{OL} : +1.83V min./+1.99V max.	・Referenced to Ground, V_{DD} = +3.3V
"1" level	V_{OH} : +2.12V min./+2.49V max.	・Referenced to Ground, V_{DD} = +3.3V
Load	50Ω (V_{DD} −2.0V)	
Waveform	PECL/ECL	
Enable time	10 nS max.	・Time for output to reach a logic state
Disable time	10 nS max.	・Time for output to reach a high Z state
Startup time	5 mS max.	・Time for output to reach specified frequency
Enable/Disable Internal pull-up	50 KΩ min.	・To V_{DD}
RMS jitter	0.6 pS max. 2.8 pS max.	・12 kHz to 20 MHz from the output frequency ・10 Hz to 20 MHz from the output frequency
Aging	±5 ppm max.	・at +25°C ±3°C for first year
Reflow condition	+260°C ±10°C for 10 seconds +175°C ±10°C for 1 to 2 minutes (preheating)	

(※1) Final exact part number to be determined with frequency, frequency stability, operating temperature and input voltage.
e.g. 77SMO(3.3VC)W 622.080 MHz
(※2) Internal crystal oscillation to be halted.

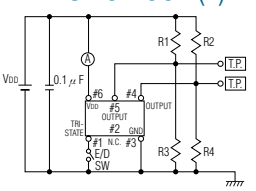
PACKAGE DATA

Item \ Package	77SMO & 78SMO
Lid	Metal
Base	Ceramic
Sealing	Seam
Terminal	Tungsten (metalized)
Terminal plating	Gold / Nickel (surface) / (under)
RoHS	Compliant (Pb-free)

SOLDERING PATTERN



TEST CIRCUIT(2)

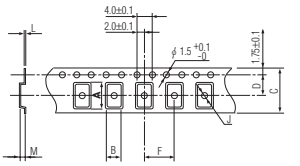


Termination : high impedance probes

V_{DD}	R_1	R_2	R_3	R_4
+3.3V	130Ω	130Ω	82Ω	82Ω
+2.5V	270Ω	270Ω	62Ω	62Ω

Note : R_3 & R_4 to change for the use of low impedance probes

TAPE SPECIFICATIONS



A	B	C	D	F	J	L	M	Reel Dia.	Qty/Reel
7.5	5.5	16.0	7.5	8.0	2.0	0.3	2.2	245	1000pcs