

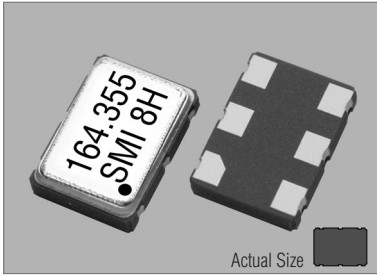
Low Voltage Differential Signaling Oscillators

87SMO & 88SMO (+3.3V LVDS MODELS)

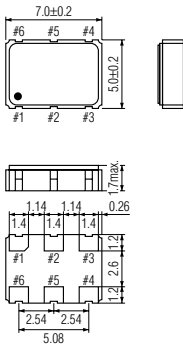
STANDARD SMD CLOCK OSCILLATORS

CLK OSC

87SMO & 88SMO



87SMO & 88SMO



87SMO

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

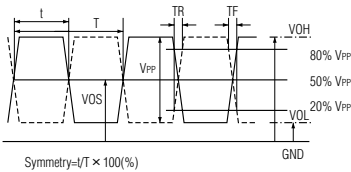
Z: high impedance

88SMO

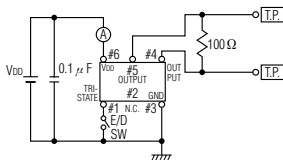
PIN	CONNECTION
1	N.C.
2	"L" OPEN or "H"
3	GND
4	Z OUTPUT
5	Z C-OUTPUT
6	V _{DD}

Z: high impedance

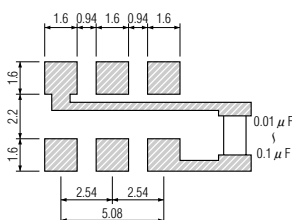
OUTPUT WAVEFORM



TEST CIRCUIT



SOLDERING PATTERN



STANDARD SPECIFICATIONS

LVDS

Item	Specifications	Condition
Generic part number	87SMO or 88SMO*1	
Frequency range	10.9000 MHz to 670.000 MHz	
Frequency stability	87SMO(B): ±50 ppm 88SMO(B): ±50 ppm 87SMO(C): ±30 ppm 88SMO(C): ±30 ppm 87SMO(D): ±25 ppm 88SMO(D): ±25 ppm 87SMO(E): ±20 ppm 88SMO(E): ±20 ppm	• For all supply voltages, load changes, shock, vibration and temperature.
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 Ground • Referenced to Ground
Absolute Max. Ratings		
Supply voltage	-0.5V to +5.0V	
Storage temperature	-55°C to +125°C	
Input current	80 mA max.	
Stand-by current*2	20 µA max.	
Output		
Symmetry	47% to 53%	• Referenced to 50% of amplitude or crossing point
Rise and fall times	230 pS max.	
"0" level	V _{OL} : +0.90V min.	
"1" level	V _{OH} : +1.60V max.	
Load	100 Ω (OUT-OUTN)	
Waveform	LVDS	• V _{th} is 20% and 80% of wave form
Differential output voltage	250 to 450 mV	
Output offset voltage	1.125 to 1.375 V	
Differential output Error	50 mV max.	
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.	• Measured from the time V _{DD} = 3.0V
Enable/Disable Internal Pull-up	50 KΩ min.	• To V _{DD}
Output short circuit current	-20 mA max.	• V _{out} = 0.0V
RMS jitter	0.6 pS max. 2.8 pS max.	• 12 kHz to 20 MHz from F _{nominal} • 10 Hz to 20 MHz from F _{nominal}
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.

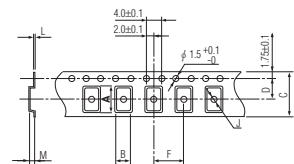
e.g. 87SMO(3.3VE) 139.264 MHz

(※2) Internal crystal oscillation to be halted.

PACKAGE DATA

Item	Package	87SMO & 88SMO
Lid		Metal
Base		Ceramic
Sealing		Seam
Terminal		Tungsten (metalized)
Terminal plating		Gold / Nickel (surface) / (under)
RoHS		Compliant (Pb-free)

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