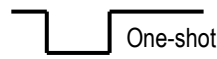


Silicon Precision Monostable Pulse Generators "PG32" and "PG53" Series



MERCURY
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The "PG32" and "PG53" are high-speed Si-gate CMOS Monostable Pulse Generators (One Shot). The pulse generator output level is normally at a high level. The negative edges of the input pulse produces a negative going output with a constant pulse width.

Features:

- No external components needed
- Ultra-low supply current [1.5 μ A typical at +1.8V]
- Very fast recovery time
- Very fast start up time
- Retriggerable capability
- +1.5V to +3.3V single supply voltage
- Hermetically sealed & metal-lid grounded ceramic leadless (CLCC) package
- Superior moisture resistant, compared to plastic molded packaging
- Withstands high vibration and harsh environments
- Suitable for light weight, compact consumer electronic devices
- Ideal for high density boards
- RoHS compliant and (Pb) lead-free product
- United States Patent No: 6,281,732*



Applications:

- ▲ Watchdog Timer
- ▲ Missing Pulse Detection
- ▲ Frequency Discriminators
- ▲ Envelope Detection

Absolute Maximum Ratings

Power Supply Voltage V_{DD}	+3.6 V max.
Input Voltage	-0V min.; V_{DD} V max.
Output Voltage	-0V min.; V_{DD} V max.
Operation Junction Temperature	-55°C min.; +125°C max.

Part Number Format and Example:

Example: **25PG32-10.0** : User input

25	PG	32	-	10.0
Supply voltage code "33" for 3.3V V_{DD} "3" for 3.0 V V_{DD} "25" for 2.5V V_{DD} "18" for 1.8V V_{DD} "15" for 1.55V V_{DD}	Product series	Package size. "32" for 3.2x2.5x1.0 mm "53" for 5x3.2x1.2 mm		Pulse width in μ sec.

*A Collaboration with **Mirco Oscillator Inc.**



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Silicon Precision Monostable Pulse Generators

"PG32" and "PG53" Series



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General Specifications: Ta=+25°C

Product Series	"PG32": 3.2x2.5x1.0 mm, CLCC 4 pads, available pulse width: 5 μ to 60 μ sec.				
	"PG53": 5.0x3.2x1.2 mm, CLCC 4 pads, available pulse width: 5 μ to 600 μ sec.				
Popular Pulse Width	10 μ sec.				
Output Logic	CMOS				
Supply Voltage (V _{DD}) D.C.	+1.55 V±5%	+1.8 V±5%	+2.5 V±5%	+3.0 V±5%	+3.3 V±5%
Voltage Code for Part Number	15	18	25	3	33
Current Consumption (typical)(note 1)	1 μA	1.5 μA	4 μA	7 μA	9 μA
Pulse Width vs Supply Voltage (V _{DD}) 0°C to +70°C (typical)	±0.25%	±0.25%	±0.25%	±0.25%	±0.25%
Pulse Width vs Temperature 0°C to +70°C (typical)	±0.25%	±0.25%	±0.25%	±0.25%	±0.25%
Pulse Width Error	±0.5% max. at +25°C (Initial pulse width accuracy) ±0.5% typical over 0°C to +70°C (Pulse width over temperature and voltage)				
Rise Time (T _r), (typ., 12 pF load)	33 n sec.	25 n sec.	18 n sec.	15 n sec.	14 n sec.
Fall Time (T _f), (typ., 12 pF load)	25 n sec.	21 n sec.	13 n sec.	12 n sec.	12 n sec.
Output "High" Voltage; V _{OH}	0.9*V _{DD} min.				
Output "Low" Voltage; V _{OL}	0.1*V _{DD} max.				
Start-up Time (T _s). (max.)	4 μ sec.	800n sec.	80n sec.	50n sec.	50n sec.
Output Pulse Width. Jitter pk-pk, (typical)(note 2)	50n sec.	50n sec.	50n sec.	30n sec.	30n sec.
High Level TRIG Input Voltage	0.7*V _{DD} min.				
Low Level TRIG Input Voltage	0.1*V _{DD} max.				
Trigger Input Propagation Delay.(typical)	13ns.	10ns.	8ns.	8ns.	8ns.
Recognized TRIG Input Pulse Width.(min.)	8n sec.	6n sec.	6n sec.	2n sec.	2n sec.
Time Between Trigger Signals.(min.)(note 3)	30n sec.	15n sec.	10n sec.	10n sec.	10n sec.

Notes:

1/ Output duty cycle 50%.

2/ Output pulse width 10 μ sec.

3/ Shorter time may cause output pulse to be retrigged or width reduced in accuracy.

Environmental Performance Specifications

Green Requirement	RoHS compliant, Pb (lead) free in accordance with EU Directive 2002/95/EC 6/6 (2002/95/EC) and WEEE (2002/96/EC). Free of halide, cadmium, hexavalent chromium, lead, mercury, PBB's and PBDE's.
Moisture Sensitivity Level	Level 1 (infinite) according to IPC/JEDEC J-STD-020D.1
Second Level Interconnect	e4
Operating temp. range	0°C to +70°C
Storage temp. range	-55 to +125°C
Humidity	85% RH, 85°C, 48 hours
Fine Leak / Gross Leak	MIL-Std-883, method 1014, condition A / MIL-Std-883, method 1014, condition C

Silicon Precision Monostable Pulse Generators

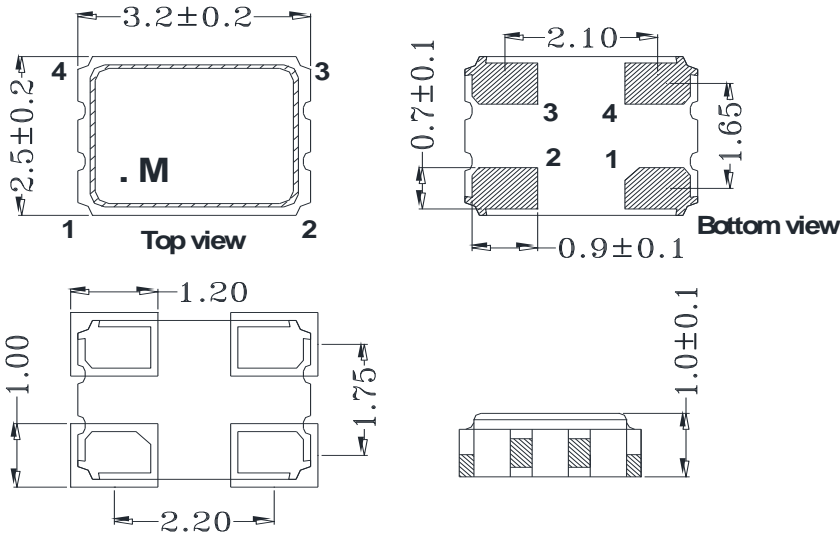
"PG32" and "PG53" Series



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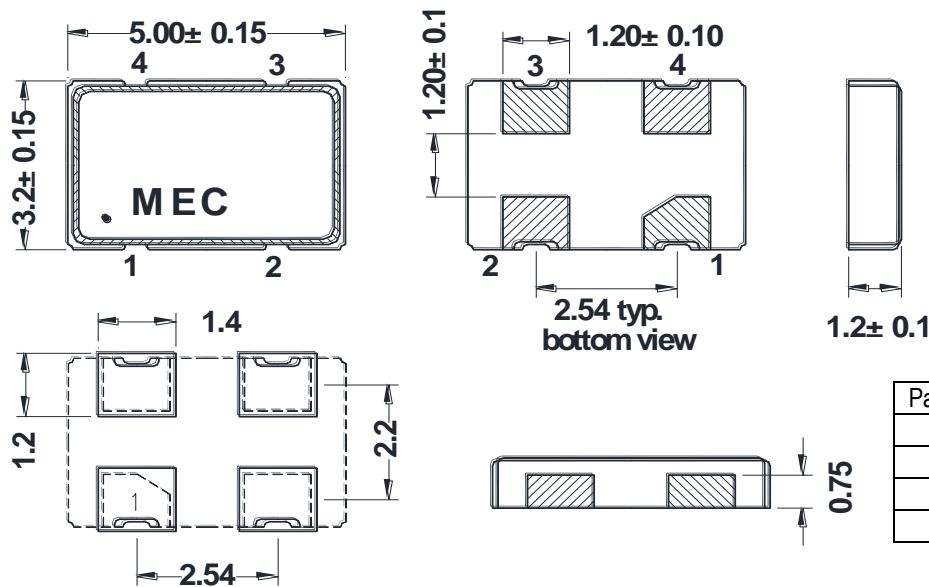
Solderability	MIL-STD-202F method 208E
Reflow	260°C max. for 10 sec. max. 2 reflows.
Vibration	MIL-STD-202F method 204, 35G, 50 to 2000 Hz
Shock	MIL-STD-202F method 213B, test condi. E, 1000GG ½ sine wave
Resistance to Solvent	MIL-STD-202, method 215
Temperature Cycling	MIL-STD-883, method 1010
Pad Surface Finish	Gold (0.3 to 1.0 µm) over nickel (1.27 to 8.89 µm)
Weight of the Device	PG32: 0.042 grams typical; PG53: 0.078 grams typical

PG32 Package Dimensions and Recommended Solder Pad Layout unit: (mm)



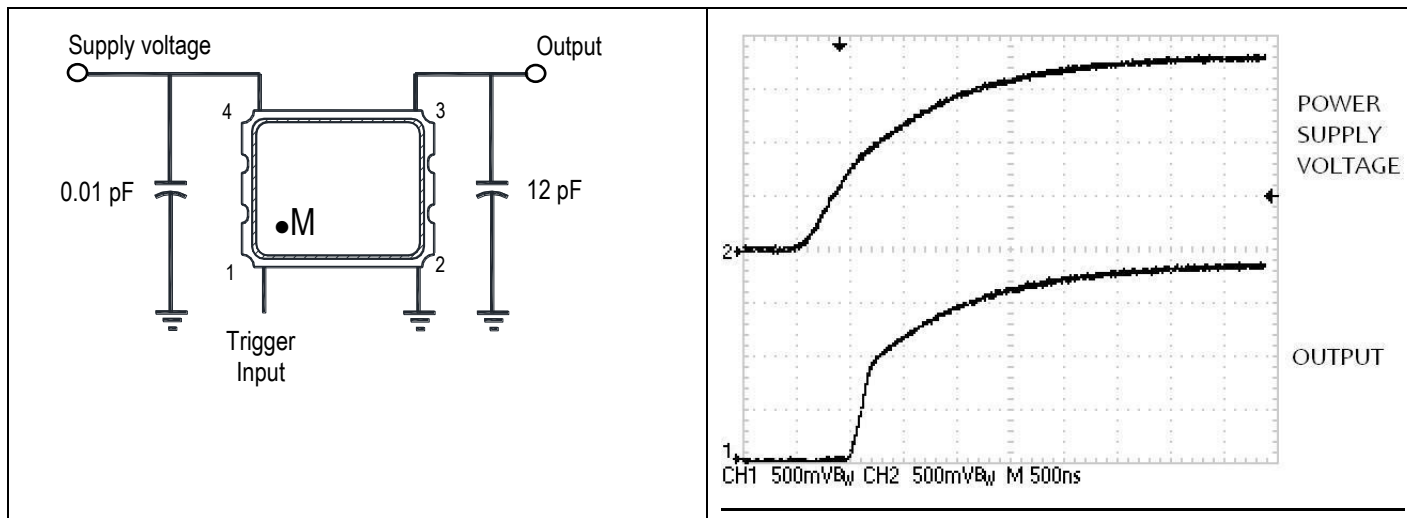
Pad No.	Function
1	Trigger input
2	Ground
3	Output
4	Supply voltage

PG53 Package Dimensions and Recommended Solder Pad Layout unit: (mm)

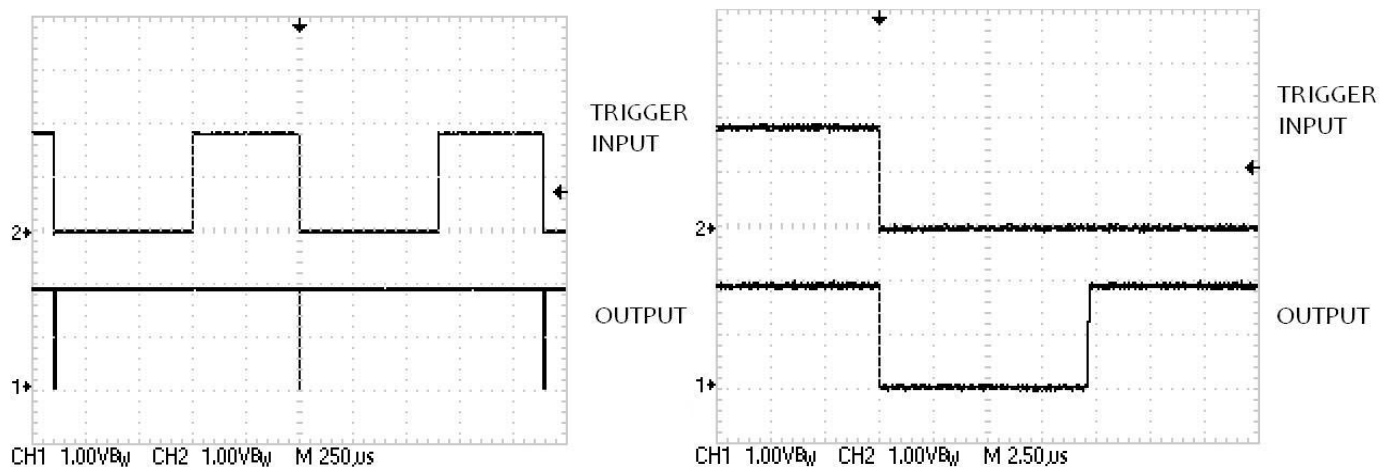


Pad No.	Function
1	Trigger input
2	Ground
3	Output
4	Supply voltage

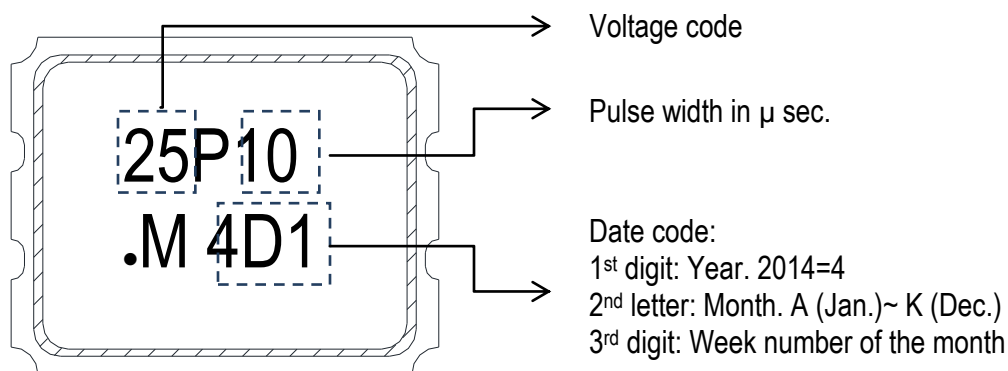
Test Circuit Pulse Generator Turn On



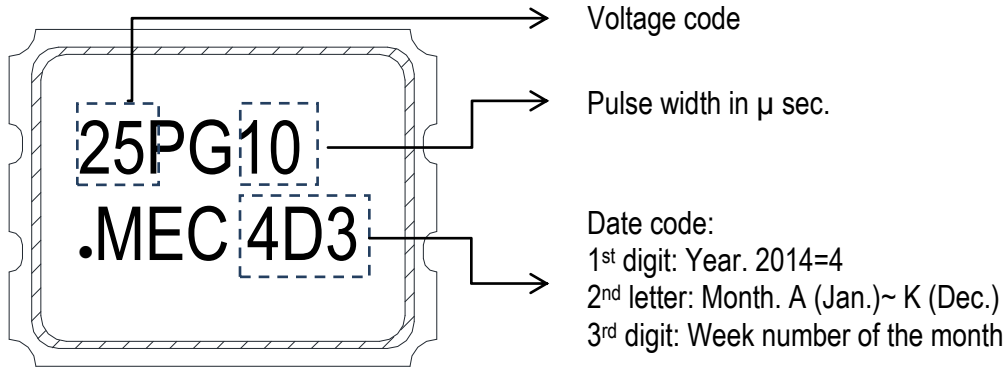
Pulse Generator Triggered



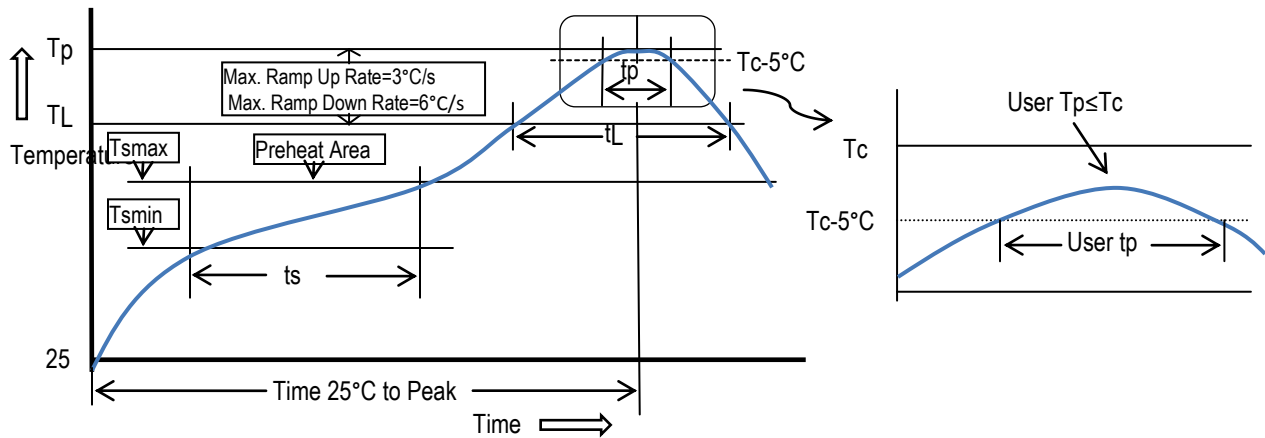
PG32 Product Marking “P”: Pulse generator; “•”: Pad 1 index (top view); “M”: Mercury



PG53 Product Marking “PG”: Pulse generator; “•”: Pad 1 index (top view); “MEC”: Mercury



Recommended Solder Reflow Profile(perIPC/JEDEC J-STD-020D.1)



Profile Feature	Sn-Pb Eutectic Assembly	Pb-free Assembly
Preheat/Soak		
- Temperature min. (T_s min.)	100°C	150°C
- Temperature max. (T_s max.)	150°C	200°C
- Time (t_s) (T_s min. to T_s max.)	60 to 120 seconds	60 to 180 seconds
Ramp-up rate (T_L to T_p)	3°C / sec. max.	3°C / sec. max.
Liquidus temperature (T_L)	183°C	217°C
Time (t_L) maintained above T_L	60 to 150 seconds	60 to 150 seconds
Peak package body temperature (T_p)	235°C	260°C
Time (T_p) within 5°C of the classification temperature T_c	10 to 30 seconds	20 to 40 seconds
Ramp-down rate (T_p to T_L)	6°C / second max.	6°C / second max.
Time 25°C to peak temperature	6 minutes max.	8 minutes max.

All temperatures refer to topside of the package, measured on the package body surface.