SC1460-5
5mA Capless™ Charge Pump

Description

The SC1460-5 is a versatile charge pump designed for use in battery operated power supply applications requiring up to 5mA. Output voltage is referenced to a fixed ratio of V_{IN} (V_O = 1.515 X V_{IN}). It enables a simple low current boost circuit to be implemented without the costly inductors or capacitors associated with regular switching circuits. Features include internal MOSFETs, control circuitry and charge pump capacitor, requiring only two external capacitors for a total solution. With a very high operating frequency (8MHz free running at 3.3V_{IN} typically), the SC1460-5 does not require large input or output capacitors, and therefore uses very little board space. Two versions are available: the SC1460-5 produces a 5V output from 3.3V in, and the SC1460-3.3 produces a 3.3V output from 2.5V in. Both are supplied in the popular 3 lead, SOT-23 package.

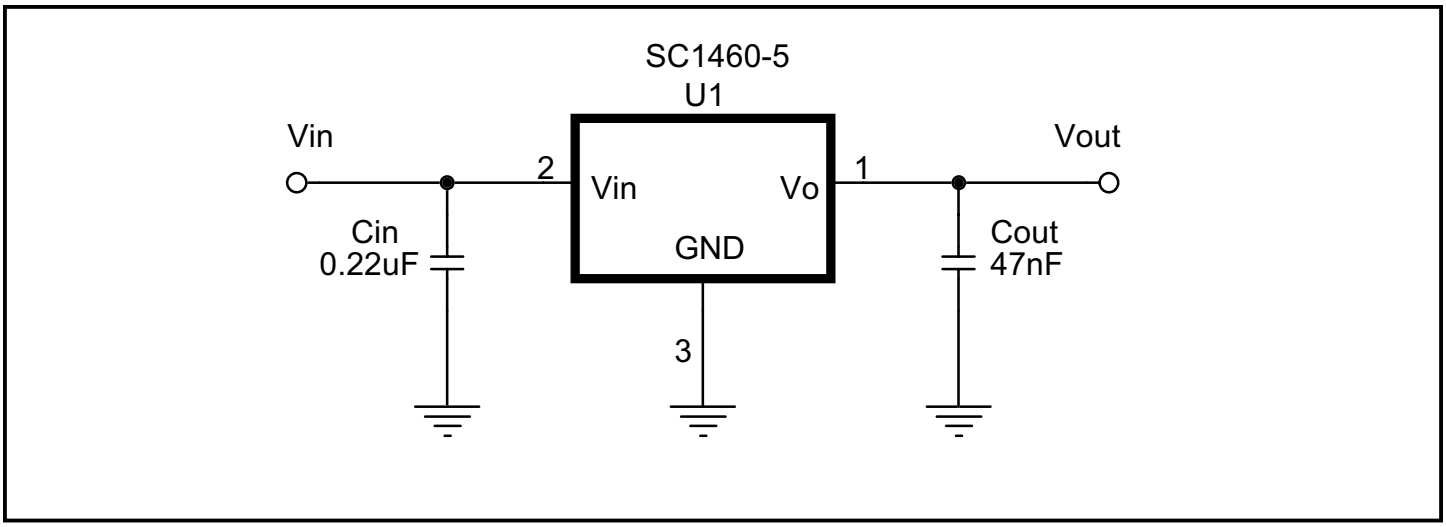
Features

- Small size - SOT-23 package
- 4% voltage accuracy
- Typical 100uA quiescent current
- V_{OUT} referenced within ± 4% of 1.515 X V_{IN}

Applications

- Handheld Power Supplies
- PDA Power Supplies
- Notebook Power Supplies
- Peripheral Card Supplies
- Industrial Power Supplies
- High Density DC/DC Conversion

Typical Application Circuit



Absolute Maximum Rating

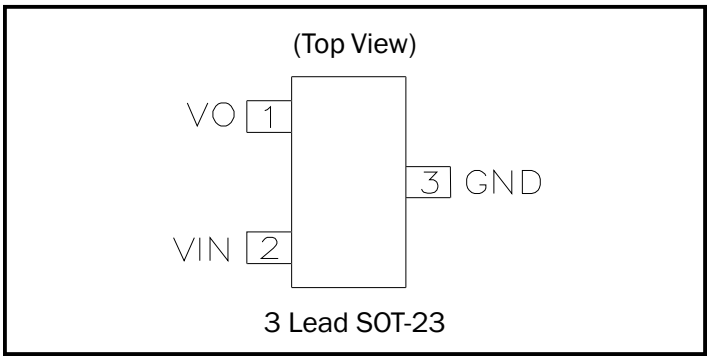
Parameter	Symbol	Maximum	Units
Supply Voltage	V_{IN}	-0.3 to + 4	V
Output Voltage	V_O	-0.3 to +6.0	V
Thermal Resistance Junction to Ambient	θ_{JA}	410	°C/W
Operating Temperature Range	T_A	0 to +70	°C
Junction Temperature Range	T_J	0 to 125	°C
Storage Temperature Range	T_{STG}	-65 to +150	°C
Lead Temperature (Soldering) 10 seconds	T_L	300	°C
ESD Rating (Human Body Model)	ESD	4	kV

Electrical Characteristics

Unless specified: V_{IN} = 3.3V, $0 \le I_O \le 4mA$, C_{IN} = 0.22uF, C_{OUT} = 47nF, T_A = 25°C. Values in **bold** apply over full operating temperature range.

Parameter	Symbol	Conditions	MIN	TYP	MAX	Units
Input Supply Voltage	V_{IN}		2.25		3.63	V
Input Supply Current	I_{IN}	I_O = 0mA V_{IN} = 3.3 V		100	150	µA
Output Voltage	V_O	V_{IN} = 3.3V	**-4**	1.515 X V_{IN}	**4**	%
Output Voltage	V_O	V_{IN} = 3.3V	4.80	5.0	5.20	V
Output Ripple (pk-pk)	V_R	I_O = 4mA, C_{OUT} = 47nF		50		mV
Output Current	I_O		4	5		mA
Efficiency	η	I_O = 4mA	50	56		%
Oscillator Frequency	OSC	V_{IN} = 3.3V		8		MHz
Time to Regulation at Turn-On	t_{ON}	Power Up with I_O = 4mA		100		µs

Pin Configuration



Ordering Information

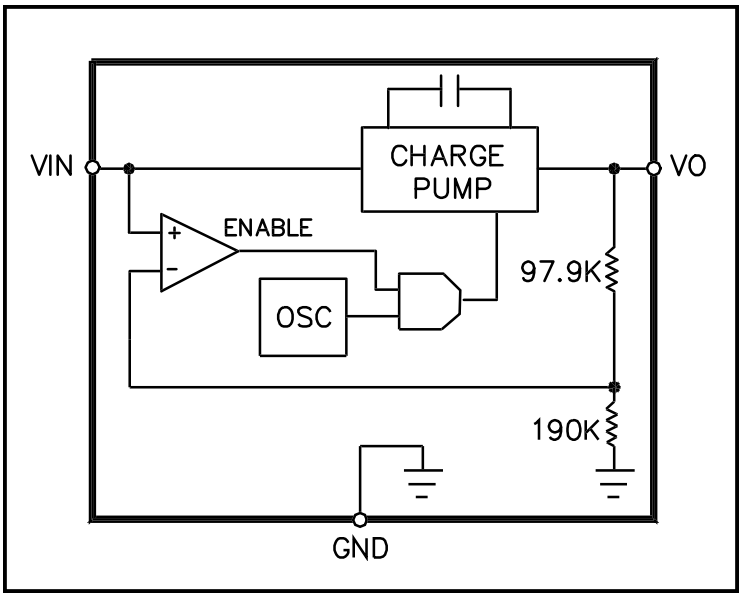
Device[1]	Package
SC1460CSK-5.0TR	SOT-23-3L

Note: (1) Only available in tape and reel packaging. A reel contains 3000 devices.

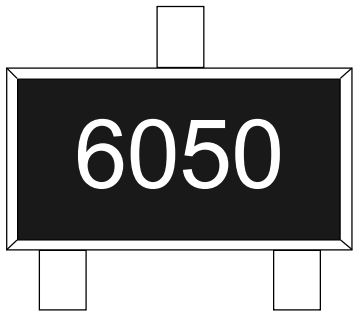
Pin Descriptions

Pin #	Pin Name	Pin Function
1	VO	Voltage output.
2	VIN	Supply voltage input.
3	GND	Ground.

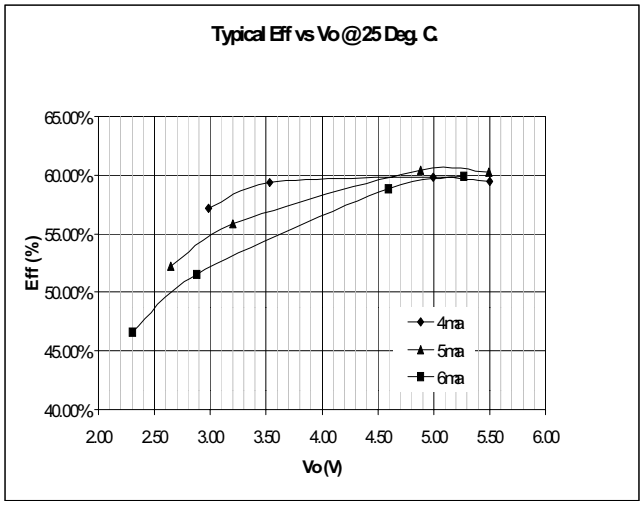
Block Diagram

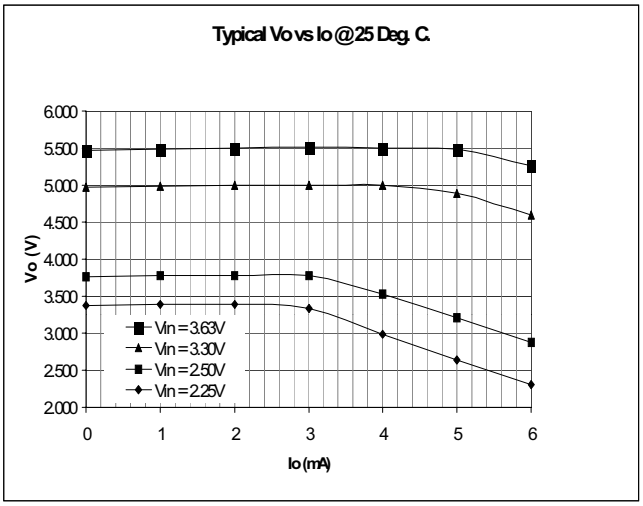


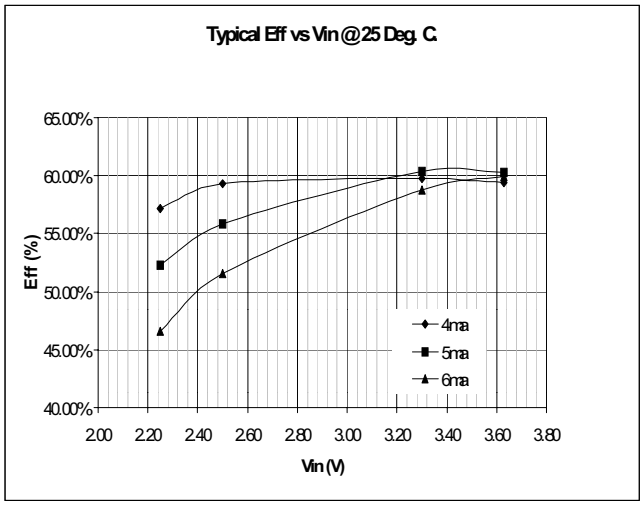
Marking Information

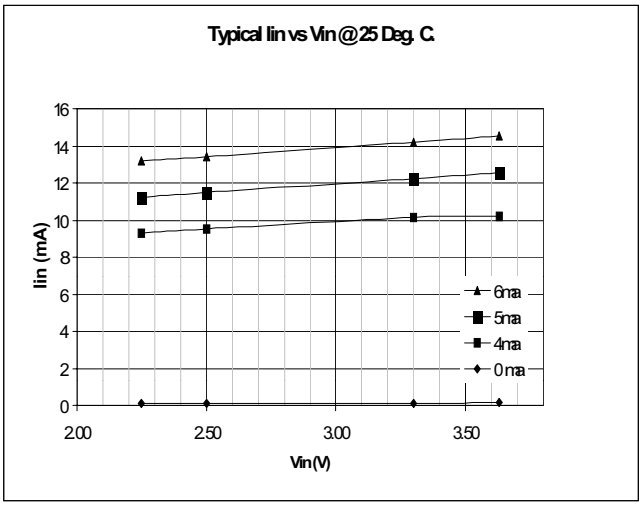


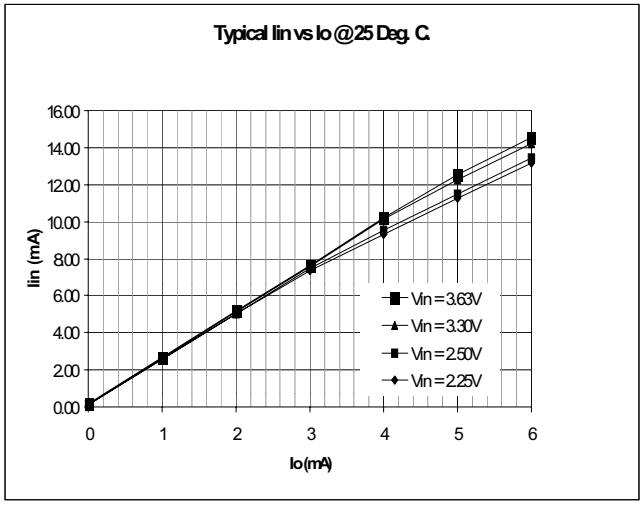
Typical Characteristics

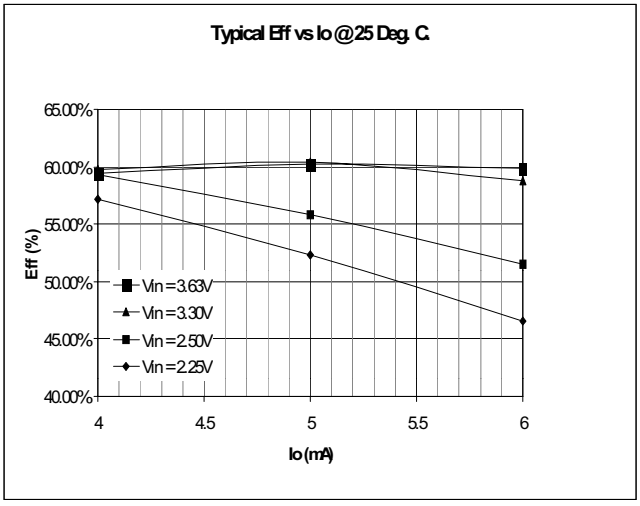




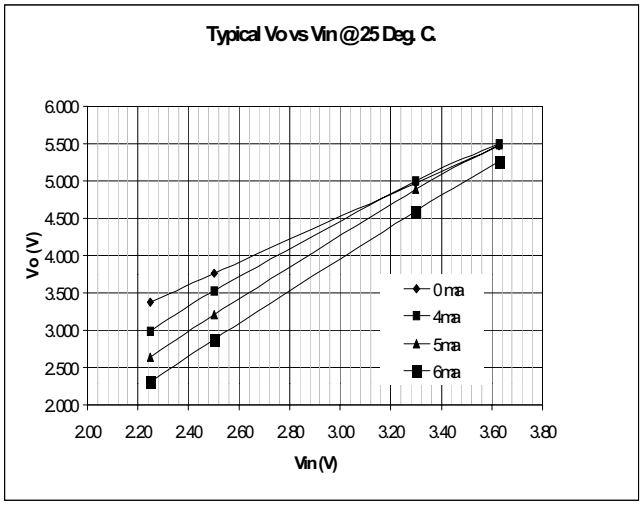








Typical Characteristics (Cont.)



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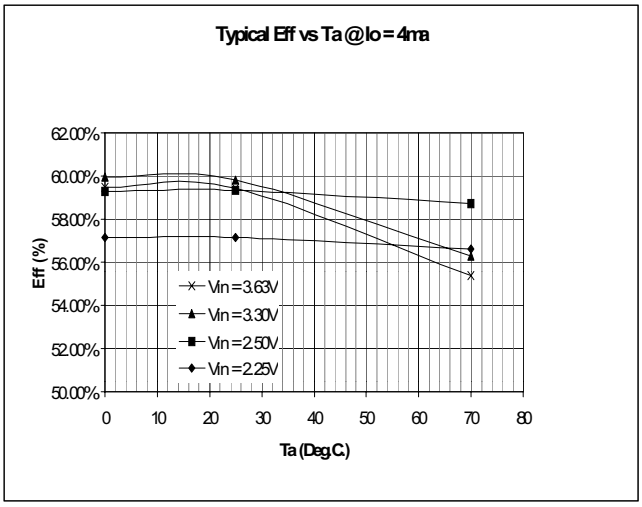
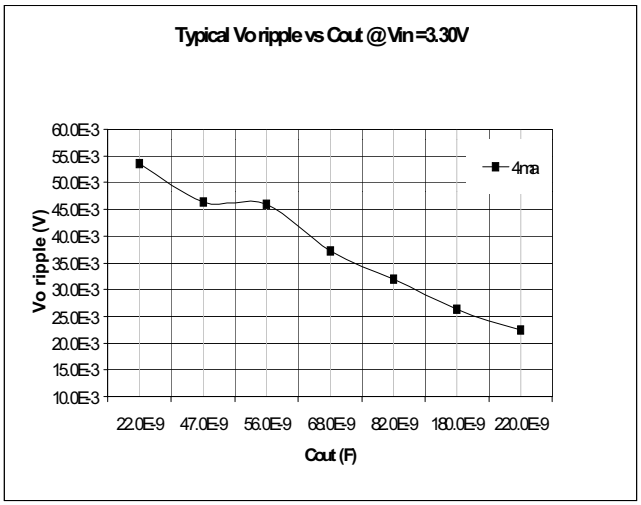
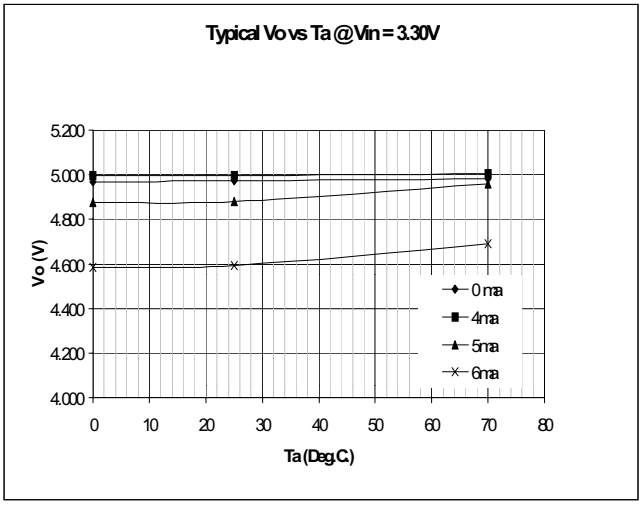
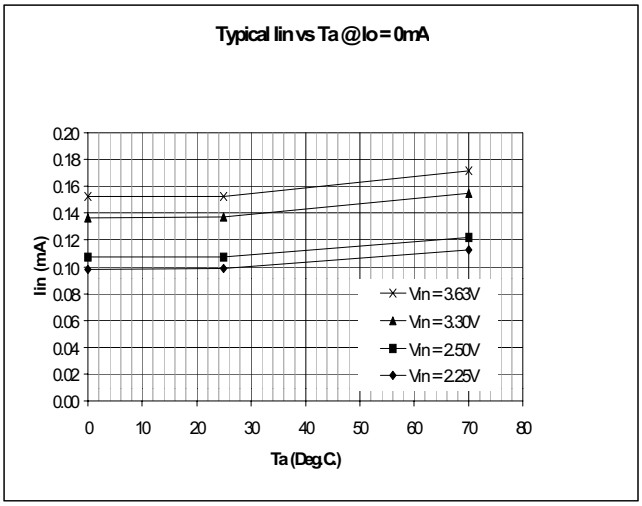
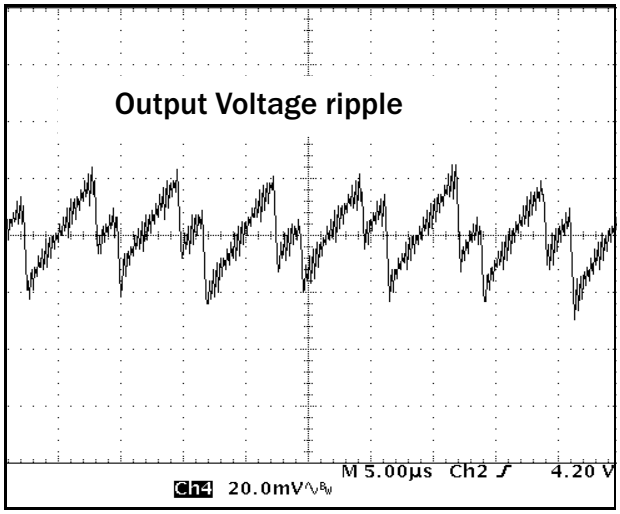


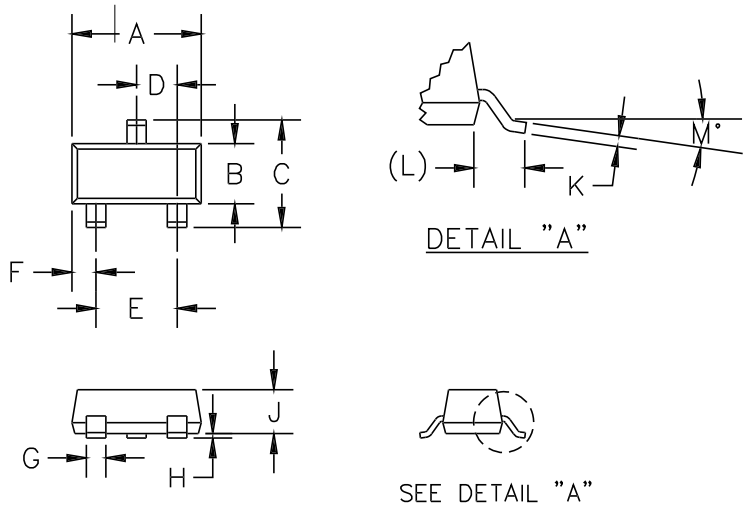






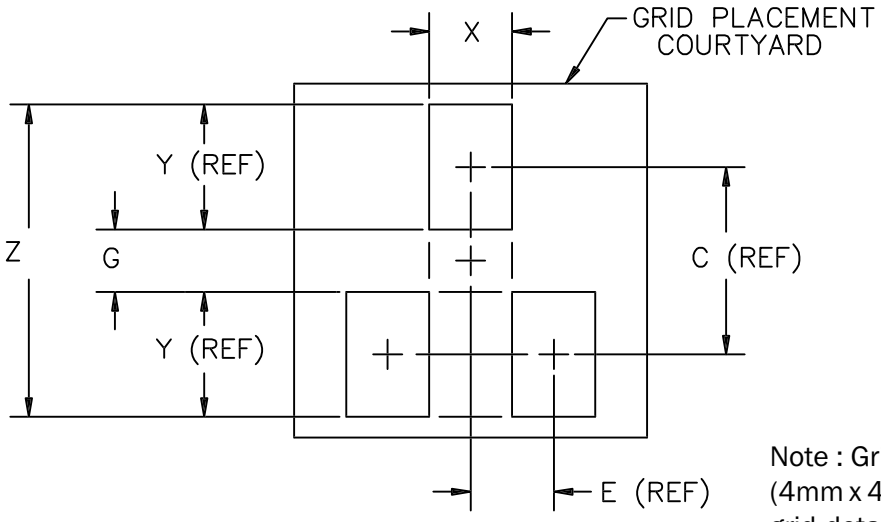


Outline Drawing - SOT-23-3L



DIMENSIONS [1]					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	–
B	.047	.055	1.20	1.40	–
C	.083	.104	2.10	2.64	–
D	.035	.040	0.89	1.03	–
E	.070	.080	1.78	2.05	–
F	.018	.024	.45	.60	–
G	.015	.020	.37	.51	–
H	.0005	.004	.013	0.10	–
J	.034	.040	.877	1.02	–
K	.003	.007	.085	.180	–
L	–	.027	–	0.69	REF
M	0	8°	0	8°	–

Land Pattern - SOT-23-3L



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
C	–	.09	–	2.20	–
E	–	.04	–	.95	–
G	.03	.04	.80	1.00	–
X	.03	.04	.80	1.00	–
Y	–	.06	–	1.40	–
Z	.14	.15	3.40	3.60	–

Note : Grid placement courtyard is 8 x 8 elements (4mm x 4mm) in accordance with the international grid detailed in IEC Publication 97.

Contact Information

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