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With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





ABSOLUTE MAXIMUM RATINGS

Parameters	Symbol	Unit	Value	Comment
Supply voltage	V _{cc}	V	7	
Primary conductor temperature	—	°C	110	
Non repetitive primary current pulse(20 μS), in powered or unpowered state.	I _p	A	20 × I _f	
ESD(HBM: Human Body Model)	—	kV	4	C=100pF, R=1.5k Ω

ISOLATION CHARACTERISTICS

Parameters	Symbol	Unit	Value	Comment
Insulation voltage	V _d	—	AC4300V, for 1minute(Sensing current 0.5mA)	Primary ↔ Secondary
Insulation Resistance	R _{is}	—	≥ 500M Ω (at DC500V)	Primary ↔ Secondary
Clearance distance	d _{ci}	—	8.2mm (TYP)	Primary ↔ Secondary
Creepage distance	d _{cp}	—	8.2mm (TYP)	Primary ↔ Secondary
Case material	—	—	UL94 V-0	
Comparative Tracking Index: (CTI)	CTI	V	600	
Application example	—	—	300V, CAT III, PD2	Reinforced isolation,non uniform field according to EN61010
	—	—	600V, CAT III, PD2	Reinforced isolation,non uniform field according to EN50178
	—	—	1000V, CAT III, PD2	Simple isolation,non uniform field according to EN50178

ENVIRONMENTAL AND MECHANICAL CHARACTERISTICS

Parameters	Symbol	Unit	Value			Comment
			MIN	TYP	MAX	
Ambient operating temperature	T _a	°C	-40		+105	
Ambient storage temperature	T _s	°C	-40		+105	
Mass	m	g		12		

SPECIFICATIONS

Ta=+25°C, RL=10kΩ, Vcc=+5V

Parameters	Symbol	Unit	Value			Comment		
			MIN	TYP	MAX			
Rated Current	F03P006S05	If	A		6			
	F03P015S05				15			
	F03P025S05				25			
	F03P050S05				50			
Maximum current	F03P006S05	Ipmax	A	-20		20		
	F03P015S05			-51		51		
	F03P025S05			-85		85		
	F03P050S05			-150		150		
Supply Voltage	Vcc	V		4.75	5.00	5.25		
Number of primary turns	Np	T		1, 2, 3, 4				
Number of secondary turns	F03P006S05	Ns	T		1816			
	F03P015S05				1737			
	F03P025S05				1764			
	F03P050S05				1600			
Consumption current (at If)	F03P006S05	Icc	mA		25	Icc=15+Ip(mA)/Ns		
	F03P015S05				30			
	F03P025S05				35			
	F03P050S05				55			
Internal reference voltage(at Ip=0A)	Vref1	V		2.495	2.500	2.505	Ref OUT mode	
External reference voltage	Vref2	V		0		4	Ref IN mode	
Output voltage	Vo	V		0.375		4.625		
Output voltage(at Ip=0A)	Vo	V			Vref1, Vref2			
Electrical offset voltage	F03P006S05	Voe	mV	-5.300		5.300		
	F03P015S05			-2.210		2.210		
	F03P025S05			-1.350		1.350		
	F03P050S05			-0.725		0.725		
Electrical offset current referred to primary	F03P006S05	loe	mA	-51		51		
	F03P015S05			-53		53		
	F03P025S05			-54		54		
	F03P050S05			-58		58		
Temperature coefficient of Internal reference voltage	TCVref1	ppm/K			±5.0	±50		
Temperature coefficient of Output voltage(at Ip=0A)	F03P006S05	TCVo	ppm/K			±6.0	±14	ppm/K of 2.5V (-40°C~+105°C)
	F03P015S05					±2.3	±6	
	F03P025S05					±1.4	±4	
	F03P050S05					±0.7	±3	
Sensitivity(Theoretical value)	F03P006S05	Gth	mV/A		104.2		625mV/If	
	F03P015S05				41.67			
	F03P025S05				25			
	F03P050S05				12.5			
Sensitivity error	εG	%		-0.7		0.7		
Temperature coefficient of Sensitivity(at Ta=-40°C~+105°C)	TCG	ppm/K				±40		
Output Linearity(at If)	εL	%		-0.1		0.1		
Magnetic offset current referred to primary(at 10×If)	I _{OM}	A		-0.1		0.1		
Output current noise referred to primary(at 100Hz~100kHz)	Ino	μA/(Hz) ^{1/2}			20		RL=1kΩ	

Offset voltage value is after removal of core hysteresis.

SPECIFICATIONS

Ta=+25°C, RL=10kΩ, Vcc=+5V

Parameters	Symbol	Unit	Value			Comment
			MIN	TYP	MAX	
Peak to peak output ripple at oscillator frequency(f typ=450kHz)	F03P006S05	—		40	160	RL=1kΩ
	F03P015S05			15	60	
	F03P025S05			10	40	
	F03P050S05			5	20	
Reaction time(at 10% of If)	F03P006S05	tra			0.3	RL=1kΩ, di/dt=18A/μs
	F03P015S05				0.3	RL=1kΩ, di/dt=44A/μs
	F03P025S05				0.3	RL=1kΩ, di/dt=68A/μs
	F03P050S05				0.3	RL=1kΩ, di/dt=100A/μs
Response time 1 (at 90% of If)	F03P006S05	tr			0.3	RL=1kΩ, di/dt=18A/μs
	F03P015S05				0.3	RL=1kΩ, di/dt=44A/μs
	F03P025S05				0.3	RL=1kΩ, di/dt=68A/μs
	F03P050S05				0.3	RL=1kΩ, di/dt=100A/μs
Response time 2 (at 10% of If to 90% of Vo)		tr			0.6	RL=1kΩ, di/dt=If/μs
Frequency bandwidth(±1dB)		BW		200		RL=1kΩ
Frequency bandwidth(±3dB)		BW		300		RL=1kΩ
Output Voltage Accuracy(Overall)	F03P006S05	XG			1.7	$X_G=(100 \times V_{oe}/625)+\epsilon_G+\epsilon_L$
	F03P015S05				1.2	
	F03P025S05				1.0	
	F03P050S05				0.9	

STANDARDS

EN50178, EN61010-1, EN60950-1, UL508(file No.E243511)

※Please refer to the another sheet about conditions of UL Recognition.

Characteristic curve(TYP)

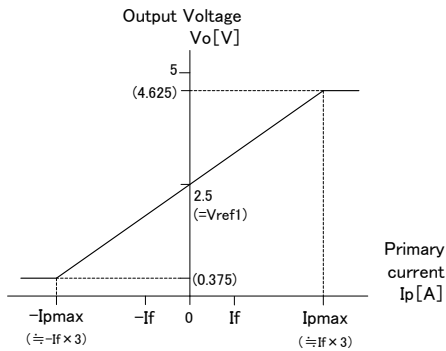


Figure 1 :Linearity curve (Internal reference voltage)

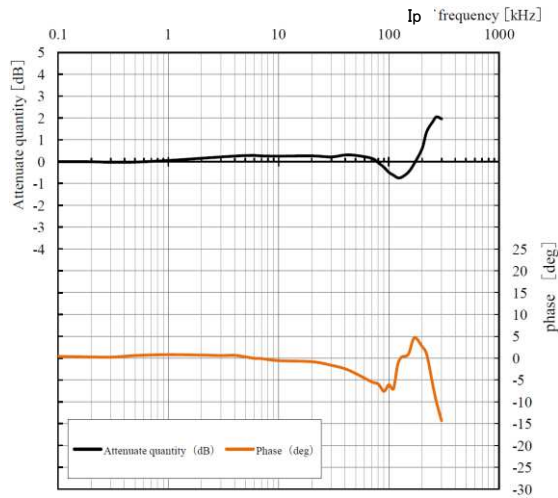


Figure 2: Frequency response curve

ex) F03P025S05
Measurement condition Ta=+25°C, RL=1kΩ, Ip=3A, Vcc=+5V

SUPPORT DOCUMENTATION

Maximum continuous DC primary current

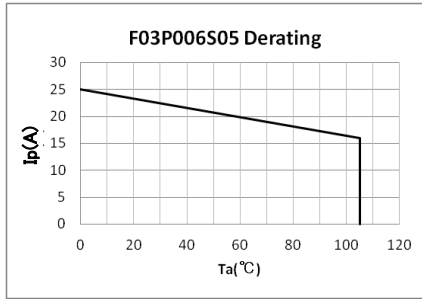


Figure 3 : Ip vs Ta for

F03P006S05

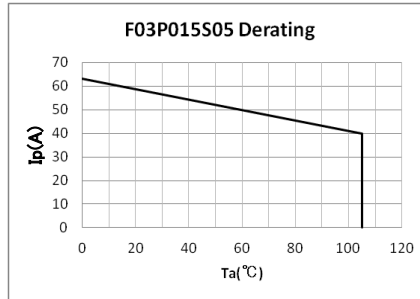


Figure 4 : Ip vs Ta for F03P015S05

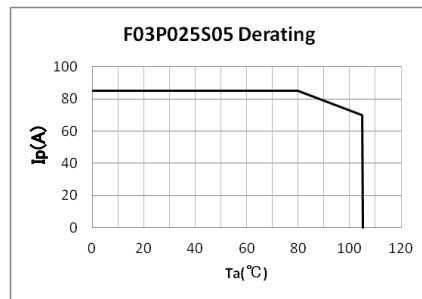


Figure 5 : Ip vs Ta for F03P025S05

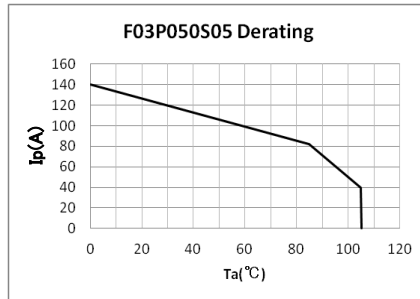


Figure 6 : Ip vs Ta for F03P050S05

According to which the following conditions are true the maximum continuous DC primary current plot shows the boundary of the area.

- ① $I_p < I_{pmax}$
- ② Junction temperature $T_j < 125^\circ\text{C}$
- ③ Primary conductor temperature $< 110^\circ\text{C}$
- ④ Resistor power dissipation $< 0.5 \times$ rated power

Frequency derating

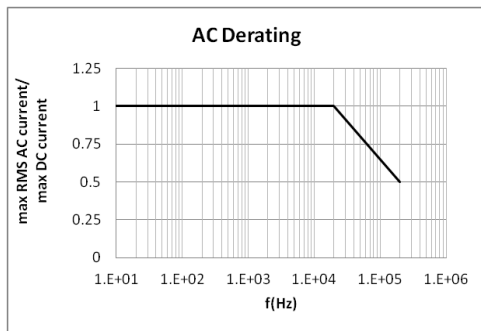


Figure 7 : Maximum RMS AC primary current/maximum DC primary current vs frequency

Reference voltage

The Ref pin has two modes Ref IN and Ref OUT:

<Ref OUT mode>

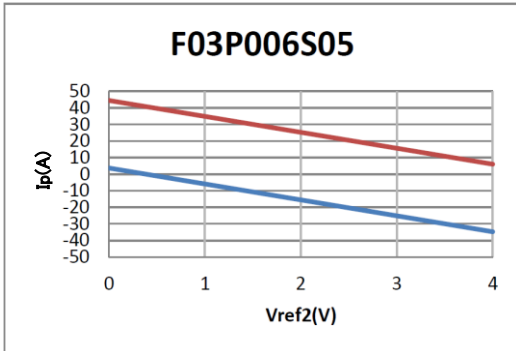
The 2.5V internal precision reference is used by the transducer as the reference point for bipolar measurements;

<Ref IN mode>

An external reference voltage is connected to the Ref pin; this voltage is specified in the range 0 to 4 V , its voltage is used as the reference voltage at the time of measurement.

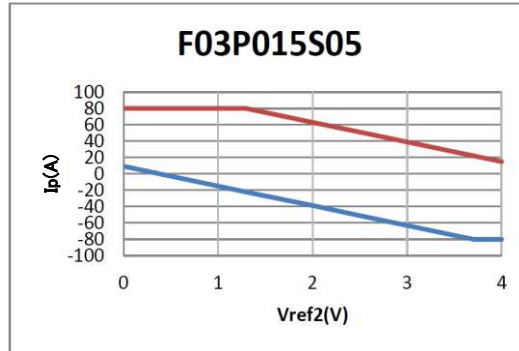
- either to source a typical current of $(V_{ref}-2.5)/680$, the maximum value will be 2.2mA typ. when $V_{ref}=4V$.
- or to sink a typical current of $(2.5-V_{ref})/680$, the maximum value will be 3.68mA typ. when $V_{ref}=0V$.

The following graphs show how the measuring range of each transducer version depends on external reference voltage value V_{ref2} .



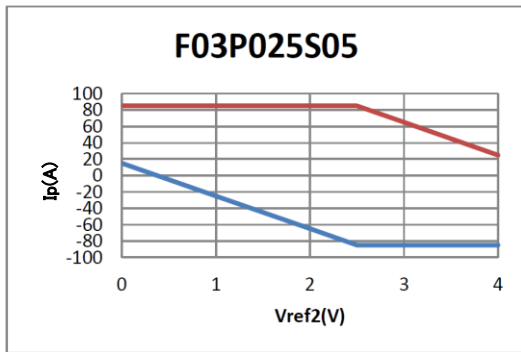
Upper limit: $I_p = -9.6 \times V_{ref2} + 44.4$ ($V_{ref2}=0...4V$)

Lower limit: $I_p = -9.6 \times V_{ref2} + 3.6$ ($V_{ref2}=0...4V$)



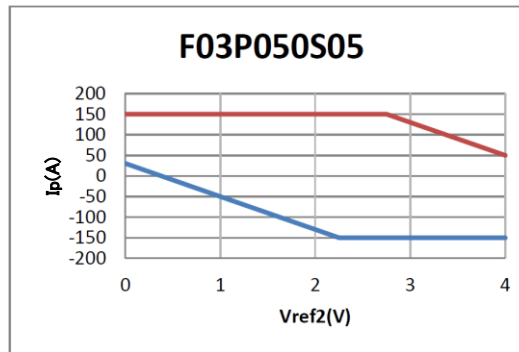
Upper limit: $I_p = 80$ ($V_{ref2}=0...1.29V$)
 $I_p = -24 \times V_{ref2} + 111$ ($V_{ref2}=1.29...4V$)

Lower limit: $I_p = -24 \times V_{ref2} + 9$ ($V_{ref2}=0...3.7V$)
 $I_p = -80$ ($V_{ref2}=3.7...4V$)



Upper limit: $I_p = 85$ ($V_{ref2}=0...2.5V$)
 $I_p = -40 \times V_{ref2} + 185$ ($V_{ref2}=2.5...4V$)

Lower limit: $I_p = -40 \times V_{ref2} + 15$ ($V_{ref2}=0...2.5V$)
 $I_p = -85$ ($V_{ref2}=2.5...4V$)

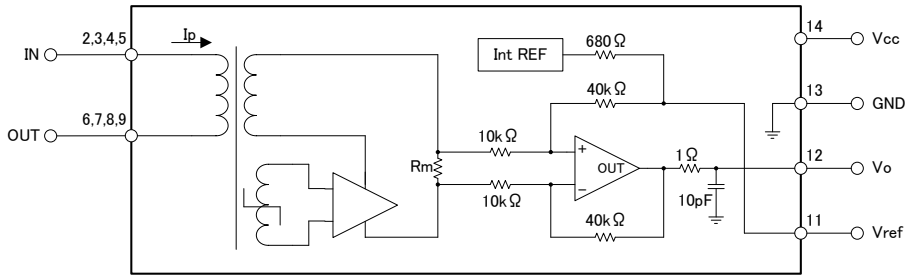


Upper limit: $I_p = 150$ ($V_{ref2}=0...2.75V$)
 $I_p = -80 \times V_{ref2} + 370$ ($V_{ref2}=2.75...4V$)

Lower limit: $I_p = -80 \times V_{ref2} + 30$ ($V_{ref2}=0...2.25V$)
 $I_p = -150$ ($V_{ref2}=2.25...4V$)

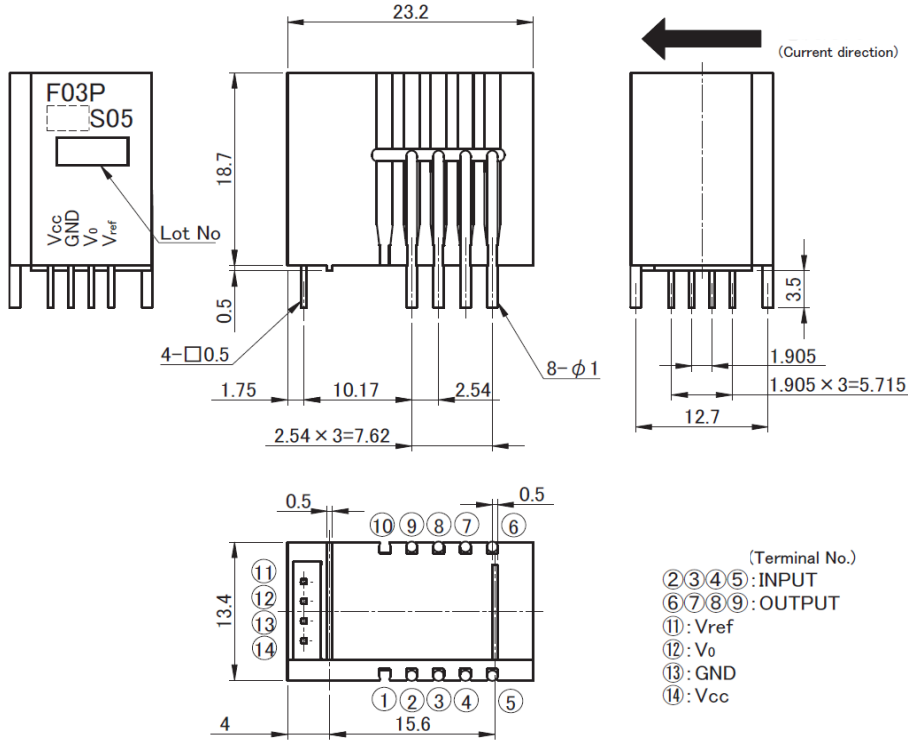
If you do not want to use the Ref pin, please unconnected.

CONNECTION



If/4	
If/2	
If	

DIMENSIONS(mm)



※: (Unless otherwise specified tolerances shall be ±0.5)

RECOMMENDED HOLE DIAMETER(mm)

