

## **AXICOM IM RELAY**

## SIGNAL RELAYS

### INTRODUCTION

TE Connectivity (TE)'s Axicom IM signal relays, as part of our smallest types of electromechanical relays, offer a wide and deep range of variations suitable for many applications.

The IM series are equipped with 2 changeover contacts in both monostable or bistable versions, available in multiple coil solutions, performance types and pin layouts.

#### **FEATURES**

- Slim line 10x6mm, low profile 5.65mm and min. board-space 60mm<sup>2</sup>.
- Switching current 2/5A, switching power 60W/62.5VA and switching voltage 220VDC/250VAC.
- Low coil power consumption, 140mW standard, 100mW for high sensitive version, 50mW for ultra high sensitive version and 100mW for bistable version.
- High dielectric and surge capability up to  $2500V_{rms}$  between open contacts and  $2500V_{rms}$  between coil and contacts.
- High mechanical shock resistance up to 50g functional.

#### **APPLICATIONS**

- Telecommunication
- · Access and transmission equipment
- Optical network terminals
- Modems
- · Office and business equipment
- Consumer electronics
- Measurement and test equipment
- Industrial control
- Medical equipment
- HVAC

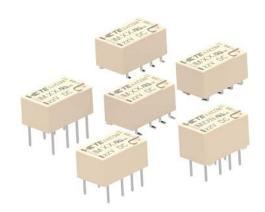
### **APPROVALS**

• UL 61810-1 (former UL 508) File No. E214025





Technical data of approved types on request

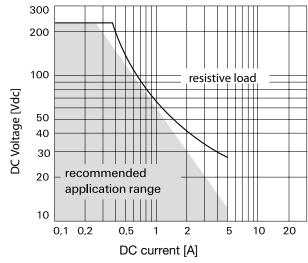


## **CONTACT DATA**

Performance type	Standard, C (Standard and high dielectric version)	<b>D, I</b> (High current version)	P (High contact stability version)			
Contact arrangement		2 form C, 2 CO				
Max. switching voltage	220VDC, 250VAC	220VDC, 250VAC	220VDC, 250VAC			
Rated current	2A	5A <sup>1)</sup>	2A			
Limiting continuous current	2A	5A <sup>1)</sup>	2A			
Switching power		60W, 62.5VA				
Contact material	PdRu +Au covered	AgNi +Au covered	PdRu +Au covered			
Contact style	Twin contacts	Twin contacts I: single contacts	Twin contacts			
Minimum switching voltage	100μV					
Initial contact resistance	<50mΩ at 10mA/30mV I: < 100mΩ					
Thermoelectric potential		<10µV				
Operate time	ty	/p. 1ms, max. 3m	S			
Release time						
Without diode in parallel	ty	p. 1ms, max. 3ms	3			
With diode in parallel	ty	p. 3ms, max. 5ms	S			
Bounce time max.	ty	p. 1ms, max. 5ms	3			
Electrical endurance						
at contact application 0 (≤30mV/≤10mA)	min.	2.5x10° operatio	ons			
Cable load open end	min.	2.0x10 <sup>6</sup> operation	ons			
Resistive, 125VDC / 0.24A - 30W	mir	n. 5x10 <sup>5</sup> operation	าร			
Resistive, 220 VDC / 0.27A - 60W	mir	n. 1x10 <sup>5</sup> operatior	ns			
Resistive, 250VAC / 0.25A - 62.5VA	mir	າ. 1x10⁵ operatior	ns			
Resistive, 30VDC / 1A - 30W	mir	n. 5x10 <sup>5</sup> operation	าร			
Resistive, 30VDC / 2A - 60W	mir	າ. 1x10⁵ operatior	ns			

Performance type	Standard, C (Standard and high dielectric version)	<b>D, I</b> (High current version)	P (High contact stability version)			
	30VDC, 2A, 6	SOW, NO on	ly			
	110VDC, 0.3A, 33W					
UL contact	220VDC, 0.27A, 60W					
rating	125VAC, 0.5A, 62.5VA					
	250VAC, 0.25A, 62.5VA					
	30VAC, 2A, 62.5VA, NO only (IMxxI, IMxxD)					
Mechanical endurance	min. 1x10 <sup>8</sup> operations					

## MAX. DC LOAD BREAKING CAPACITY



<sup>1)</sup> for 5A applications please contact TE  $\,$ 

#### **COIL DATA**

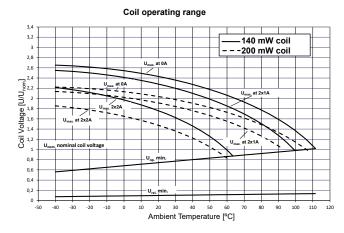
Magnetic system	Monostable, bistable
Coil voltage range	1.5 to 24VDC

Coil code	Rated voltage VDC	Operate voltage VDC	Release voltage VDC	Coil resistance Ω±10%	Rated coil power mW			
Coil versions, standard version, monostable, 1 coil								
00	1.5	1.13	0.15	16	140			
08	2.4	1.80	0.24	41	140			
01	3	2.25	0.30	64	140			
02	4.5	3.38	0.45	145	140			
03	5	3.75	0.50	178	140			
04	6	4.50	0.60	257	140			
05	9	6.75	0.90	579	140			
06	12	9.00	1.20	1029	140			
07	24	18.00	2.40	2880	200			
Coil ver	sions, sens	itive versio	n, monostab	le, 1 coil				
11	3	2.40	0.30	91	100			
12	4.5	3.60	0.45	194	100			
13	5	4.00	0.50	234	100			
16	12	9.60	1.20	1315	110			
17	24	19.20	2.40	4120	140			
Coil ver	sions, ultra	high sensit	ive version,	monostable	, 1 coil			
21	3	3.00	0.30	180	50			
22	4.5	4.50	0.45	405	50			
23	5	5.00	0.50	500	50			
26	12	12.00	1.20	2880	50			

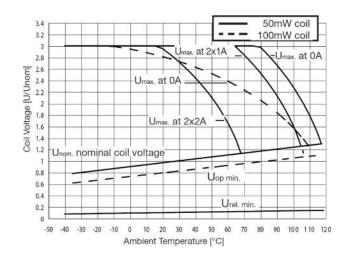
All figures are given for coil without pre-energization, at ambient temperature +23°C

Coil code	Rated voltage VDC	Set voltage VDC	Reset voltage VDC	Coil resistance Ω±10%	Rated coil power mW
Coil ver	sions, stan	dard versio	n, bistable	1 coil	
40	1.5	1.13	-1.13	16	100
48	2.4	1.80	-1.80	41	100
41	3	2.25	-2.25	64	100
42	4.5	3.38	-3.38	145	100
43	5	3.75	-3.75	178	100
44	6	4.50	-4.50	257	100
45	9	6.75	-6.75	579	100
46	12	9.00	-9.00	1029	100
47	24	18.00	18.00	2880	200

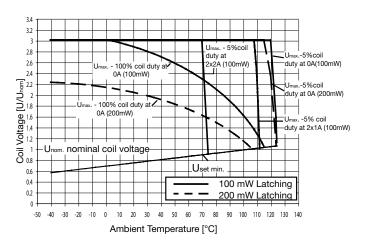
### COIL OPERATING RANGE, STANDARD VERSION, MONOSTABLE, 1 COIL



COIL OPERATING RANGE, SENSITIVE AND ULTRA HIGH SENSITIVE VERSION, MONOSTABLE, 1 COIL



## COIL OPERATING RANGE, STANDARD VERSION, BISTABLE, 1 COIL



#### **INSULATION DATA**

Performance type	Standard (Standard, sensitive, ultra high sensitive version)	<b>C<sup>2)</sup></b> (High dielectric version)	D, P, I  (High current, high contact stability version)				
Initial dielectric streng	gth						
between open contacts	750Vrms	1500Vrms	750Vrms				
between contact and coil	1800Vrms	1800Vrms	1500Vrms				
between adjacent contacts	1000Vrms	1800Vrms	750Vrms				
between open contacts between contact and coil	1500V 2500V	2500V 2500V	1000V 2000V				
between contact							
between adjacent contacts	1500V	2500V	1000V				
Initial insulation resist	ance						
between insulated elements	>10°Ω	>10°Ω	>10°Ω				
Capacitance							
between open contacts		max. 1pF					
between contact and coil	max. 2pF						
between adjacent contacts		max. 2pF					

2) this relay contains SF6 (Sulfur hexafluoride, CAS number: 2551-62-4) for dielectric strength enhancement, SF6 is hermetically sealed in relay without leaks to air during normal application as recommended per the applicable product specification. It is clarified that the usage of SF6 in mini signal relay is not prohibited by related regulations. Please contact TE local sales or field engineer for further information and detailed material declaration. To ensure the dielectric performance after soldering processes / assembly customer is advised to perform a dielectric test.

## **RF DATA**

Isolation at 100MHz/900MHz	37.0dB/18.8dB
Insertion loss at 100MHz/900MHz	0.03dB/0.33dB
Voltage standing wave ratio (VSWR) at 100MHz/900MHz	1.06/1.49

#### **OTHER DATA**

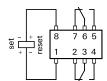
Material compliance	EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at www. te.com/customersupport/ rohssupportcenter				
Ambient temperature	-40°C to +85°C				
Thermal resistance	<150K/W				
Category of environmental protection IEC 61810	RT V - hermetically sealed				
Vibration resistance (functional)	20g, 10 to 500Hz				
Shock resistance (functional), half sinus 11ms	50g				
Shock resistance (destructive), half sinus 0.5ms	500g				
Mounting position	various				
Weight	max. 0.75g				
Resistance to soldering heat SMT IEC 60068-2-58	Moisture sensitive level, JEDEC J-STD-020F MSL3 related only to SMT relays packed in orginal dry-packs. Calculated shelf life in sealed bag: 36 months at <40°C and <90% relative humidity (RH). Floor life (out of the bag) at assembly site is 168 Hours at ≤ 30°C/60% RH.				
Ultrasonic cleaning	not recommended				
Packaging/unit					
THT version	tube/50pcs., box/1000 pcs.				
SMT version	reel/1000 pcs., box/1000 or 5000 pcs.				

Avoid using the relays under strong magnetic fields, as electrical parameters will be affected, such as operate/set voltage and release/reset voltage.

## MONOSTABLE VERSION REST CONDITION



# BISTABLE VERSION, 1 COIL RESET CONDITION



Contacts are shown in reset condition. Contact position might change during transportation and must be reset before use.

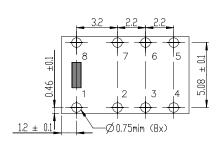
## **DIMENSIONS (UNIT: mm)**

THT Standard version **THT Short version** THT Narrow version 10 ±0.08 6 ±0.08 10 ±0.08 10 ±0.08 5.7 ±0.3  $\Box$ 2.3 SMT Gull wings version SMT Short Gull wings version SMT J-legs version 10 ±0.08 6 ±0.08 10 ±0.08 6 ±0.08 6 ±0.08 10 ±0.08 5.65 -8.2 2.8 6.6 5.08 Coplanarity ≤0.1 Coplanarity ≤0.1 Coplanarity ≤0.1

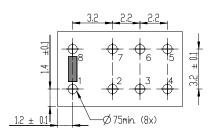
### **PCB LAYOUT**

Top view on component side of PCB

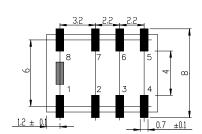
THT Standard and Short version



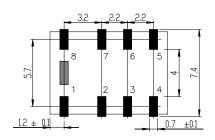
THT Narrow version



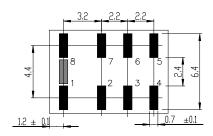
SMT Gull wings version



SMT Short Gull wings version



SMT J-legs version



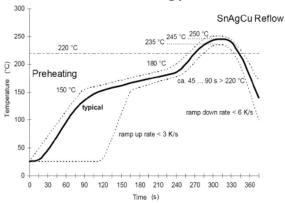
Note:

Customer needs to apply enough solder paste volume / thickness / solder material content to ensure a stable solder joint

### **PROCESSING**

Recommended soldering conditions

### Recommended reflow soldering profile IEC 61760-1

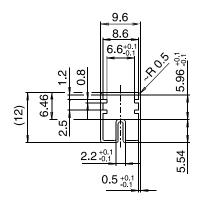


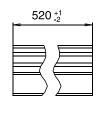
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#### **PACKING**

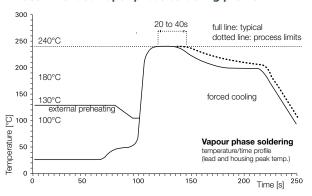
#### **Tube for THT version**

50 relays per tube, 1000 relays per box



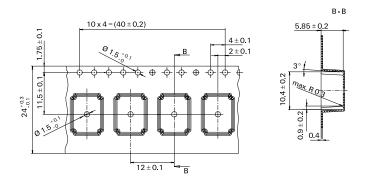


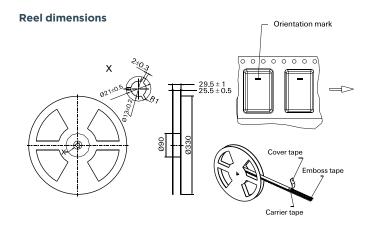
## Recommended vapor phase soldering profile



## Tape and reel for SMT version

1000 relays per reel, 1000 or 5000 relays per box

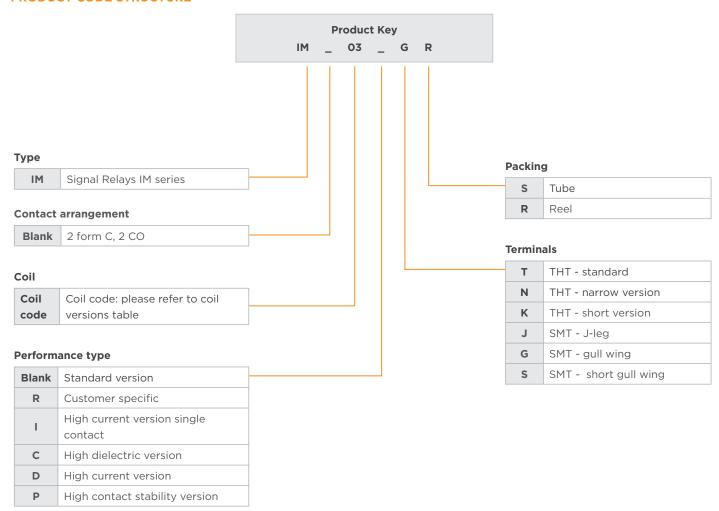




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#### PRODUCT CODE STRUCTURE



## **PRODUCT SELECTION INFORMATION**

Product code	Arrangement	Perf. type	Coil	Coil type	Coil	Terminals	Part number
IMOOGR						SMT gull wing	3-1462037-7
IMOOJR			1.5VDC			SMT J-leg	3-1462037-9
IMOONS						THT narrow	1-1462038-0
IM01GR			3VDC Standard			SMT gull wing	1462037-1
IM01SR				Monostable Sta	Standard	SMT short gull wing	2-1462040-3
IM01JR	2 form C,	Standard				SMT J-leg	4-1462037-0
IM01NS	2 CO contacts					THT narrow	1-1462038-1
IM01TS						THT standard	1462037-4
IM02GR						SMT gull wing	1462037-9
IM02SR			4 F\/DC			SMT short gull wing	2-1462040-4
IM02JR			4.5VDC			SMT J-leg	1-1462037-1
IM02NS						THT narrow	1-1462038-2

Product code	Arrangement	Perf. type	Coil	Coil type	Coil	Terminals	Part number
IM03GR						SMT gull wing	1-1462037-4
IM03SR			5VDC			SMT short gull wing	2-1462040-5
IM03JR						SMT J-leg	1-1462037-6
IM03NS						THT narrow	1-1462038-3
IM03TS						THT standard	1-1462037-8
IM04GR						SMT gull wing	4-1462037-2
IM04JR			6VDC			SMT J-leg	4-1462037-4
IMO4NS						THT narrow	1-1462038-4
IM05GR						SMT gull wing	3-1462037-4
IM05SR						SMT short gull wing	2-1462040-6
IM05JR			9VDC		Standard	SMT J-leg	4-1462037-5
IM05NS					Stariuaru	THT narrow	1-1462038-5
IM05TS						THT standard	2-1462037-2
IM06GR						SMT gull wing	2-1462037-3
IM06SR			12VDC			SMT short gull wing	2-1462040-7
IM06JR			IZVDC			SMT J-leg	4-1462037-6
IM06NS						THT narrow	1-1462038-6
IM07GR	2 form C,		24VDC			SMT gull wing	4-1462037-7
IM07SR	2 CO	Standard		Monostable		SMT short gull wing	2-1462040-8
IM07JR	contacts		24 V D C			SMT J-leg	4-1462037-8
IM07NS						THT narrow	1-1462038-7
IM08GR			2.4VDC			SMT gull wing	6-1462039-3
IM11GR			3VDC				9-1462038-5
IM12GR			4.5VDC				1462039-3
IM13GR			5VDC		High sens.	SMIT gull willig	1462039-4
IM16GR			12VDC		nigii seiis.		1462039-5
IM17GR			24VDC				1462039-6
IM17TS			24100			THT standard	4-1462039-6
IM21GR			3VDC			SMT gull wing	2-1462039-6
IM21TS			3 4 D C			THT standard	1-1462039-5
IM22GR			4.5VDC			SMT gull wing	2-1462039-7
IM22TS			4.3700		1.00	THT standard	2-1462039-8
IM23GR					Ultra high sensitive	SMT gull wing	2-1462039-9
IM23TS			5VDC			THT standard	3-1462039-0
IM23KS						THT short	6-1462039-7
IM26GR			12)/DC			SMT gull wing	3-1462039-1
IM26TS		12VDC				THT standard	3-1462039-2

Product code	Arrangement	Perf. type	Coil	Coil type	Coil	Terminals	Part number
3) IM40GR						SMT gull wing	5-1462037-1
3) IM40SR						SMT short gull wing	2-1462040-9
3) IM40JR			1.5VDC			SMT J-leg	5-1462037-2
3) IM40NS						THT narrow	1-1462038-8
3) IM40TS						THT standard	5-1462037-0
3) IM41GR						SMT gull wing	5-1462037-4
3) IM41SR						SMT short gull wing	2-1462040-0
<sup>3)</sup> IM41JR			3VDC			SMT J-leg SMT	5-1462037-5
3) IM41NS						THT narrow	1-1462038-9
<sup>3)</sup> IM41TS						THT standard	5-1462037-3
3) IM42GR						SMT gull wing	3-1462037-1
3) IM42SR						SMT short gull wing	3-1462040-1
3) IM42JR			4.5VDC			SMT J-leg	5-1462037-7
3) IM42NS						THT narrow	2-1462038-0
3) IM42TS						THT standard	5-1462037-6
3) IM43GR						SMT gull wing	5-1462037-9
3) IM43SR						SMT short gull wing	3-1462040-2
3) IM43JR			5VDC	Distribution of the state of th		SMT J-leg	6-1462037-0
3) IM43NS						THT narrow	2-1462038-1
<sup>3)</sup> IM43TS	2 form C,	CO Standard				THT standard	5-1462037-8
3) IM44GR	2 CO contacts			Bistable	Standard	SMT gull wing	6-1462037-2
3) IM44SR	33a3t5					SMT short gull wing	3-1462040-3
3) IM44JR			6VDC			SMT J-leg	6-1462037-3
3) IM44NS						THT narrow	2-1462038-2
3) IM44TS						THT standard	6-1462037-1
3) IM45GR			9VDC			SMT gull wing	6-1462037-4
3) IM45SR						SMT short gull wing	3-1462040-4
3) IM45JR						SMT J-leg	6-1462037-5
<sup>3)</sup> IM45NS						THT narrow	2-1462038-3
3) IM46GR						SMT gull wing	6-1462037-7
IM46SR						SMT short gull wing	3-1462040-5
<sup>3)</sup> IM46JR			12VDC			SMT J-leg	6-1462037-8
3) IM46NS						THT narrow	2-1462038-4
<sup>3)</sup> IM46TS						THT standard	6-1462037-6
IM47GR						SMT gull wing	7-1462037-0
IM47JR			241/00			SMT J-leg	7-1462037-1
IM47NS			24VDC			THT narrow	2-1462038-5
IM47TS				_		THT standard	6-1462037-9
3) IM48GR			2.4VDC			SMT gull wing	1462039-8
<sup>3)</sup> IM48SR						SMT short gull wing	3-1462040-6

<sup>3)</sup> Type VDE certified, for more information contact TE  $\,$ 

Product code	Arrangement	Perf. type	Coil	Coil type	Coil	Terminals	Part number
IM01CGR			7) (D.C.			SMT gull wing	1462038-4
IM01CTS			3VDC			THT standard	9-1462038-6
IM02CGR			4.5VDC			SMT gull wing	1462038-1
IM03CGR			5VDC				1462038-2
IM03CJR						SMT J-leg	4-1462039-8
IM03CTS						THT standard	4-1462039-7
IM05CGR			9VDC	Monostable	Standard		1462038-3
IM06CGR	2 form C,					SMT gull wing	9-1462037-9
IM06CJR	2 CO	High dielectric	12VDC			SMT J-leg	3-1462039-4
IM06CTS	contacts					THT standard	4-1462037-9
IM07CGR						SMT gull wing	1462039-2
IM07CTS			24VDC			THT standard	1462039-1
IM17CGR					High sens.		1462039-7
3) IM41CGR			3VDC				4-1462039-2
3) IM42CGR			4.5VDC	Districts	Character of	SMT gull wing	4-1462039-1
3) IM43CGR			5VDC	Bistable	Standard		9-1462038-7
3) IM48CGR			2.4VDC				9-1462039-0
IM02DGR		4.5VDC			SMT gull wing	9-1462038-8	
IM02IJR						SMT J-leg	1462047-8
IM02IGR						SMT gull wing	1462047-9
IM03DGR			5VDC		Standard	SMT gull wing	9-1462038-9
IM03DJR						SMT J-leg	3-1462039-3
IM05DGR			9VDC	Monostable		SMT gull wing	1-1462039-7
IM06DGR			12VDC				1-1462039-8
IM06DJR						SMT J-leg	7-1462039-0
IM06DTS						THT standard	3-1462039-8
IM07DGR			24VDC			SMT gull wing	3-1462039-7
IM07DJR						SMT J-leg	7-1462039-4
IM07DTS		High current				THT standard	7-1462039-2
IM22DTS			4.5VDC		U.h.sens.	ini stalluaru	7-1462039-6
IM41DGR			3VDC			SMT gull wing	6-1462039-8
IM42DGR			4.5VDC			Sitti guii Willig	1-1462039-9
IM42DNS						THT narrow	1-1462039-6
IM46DNS			12VDC			THITIATIOW	1-1462039-2
IM47DJR			24VDC	Distable	Standard	SMT J-leg	7-1462039-5
IM48DGR			2.4VDC	Bistable	Standard		1462039-9
IM49DGR			2VDC			SMT gull wing	2-1462039-2
IM40IGR			1.5VDC				1462047-7
IM48IGR			2.4VDC				1462047-1
IM49IGR							1462047-4

<sup>3)</sup> Type VDE certified, for more information contact TE  $\,$ 

Product code	Arrangement	Perf. type	Coil	Coil type	Coil	Terminals	Part number
IM02PGR		High contact stability	4.5VDC	Monostable	Standard		5-1462039-4
IM02PNS						THT narrow	5-1462039-8
IM03PGR			5VDC			SMT gull wing	5-1462039-5
IM03PJR						SMT J-leg	6-1462039-6
IM03PNS						THT narrow	5-1462039-9
IM06PGR			12VDC			SMT gull wing	5-1462039-6
IM06PNS						THT narrow	6-1462039-0
IM42PGR			4.5VDC	Bistable		SMT gull wing	5-1462039-7
IM42PNS						THT narrow	7-1462039-8
IM43PGR						SMT gull wing	7-1462039-3
IM46PNS			12VDC			THT narrow	6-1462039-1

3) Type VDE certified, for more information contact TE

#### Note:

This list represents the most common types and does not show all variants covered by this datasheet. Other types on request.

#### Notes:

- 1. Datasheets and product specification according to IEC 61810-1 and to be used only together with the 'Definitions' section.
- 2. Datasheets and product data is subject to the terms of the disclaimer and all chapters of the 'Definitions' section, available at http://relays.te.com/definitions.
- 3. Datasheets, product data, 'Definitions' section, application notes and all specifications are subject to change.

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