

IM Relay

- Slim line 10x6mm, low profile 5.65mm and min. board-space 60mm²
- 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 2500Vrms between open contacts and 3000Vrms between coil and contacts
- High mechanical shock resistance up to 300g functional

Typical applications

Telecommunication, access and transmission equipment, optical network terminals, modems, office and business equipment, consumer electronics, measurement and test equipment, industrial control, medical equipment, automotive applications

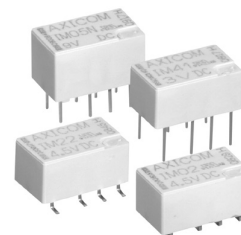
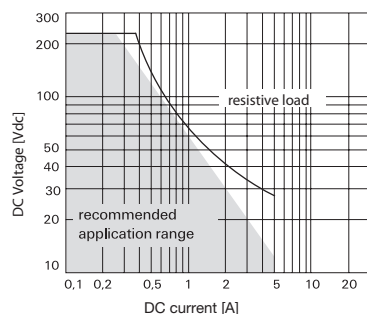
Approvals

UL 508 File No. E 111441

Technical data of approved types on request

Contact Data	standard, C	D	P
	standard and high dielectric version	high current version	high contact stability version
Contact arrangement	2 form C, 2 CO		
Max. switching voltage	220VDC, 250VAC	220VDC, 250VAC	220VDC, 250VAC
Rated current	2A	5A	2A
Limiting continuous current	2A	5A	2A
Switching power	60W, 62.5VA		
Contact material	PdRu +Au covered	AgNi +Au covered	PdRu +Au covered
Contact style	twin contacts		
Minimum switching voltage	100µV		
Initial contact resistance	<50mΩ at 10mA/20mV		
Thermoelectric potential	<10µV		
Operate time	typ. 1ms, max. 3ms		
Release time			
without diode in parallel	typ. 1ms, max. 3ms		
with diode in parallel	typ. 3ms, max. 5ms		
Bounce time max.	typ. 1ms, max. 5ms		

Max. DC load breaking capacity



IM_



Contact Data (continued)

Electrical endurance

at contact application 0

(≤30mV/≤10mA)

cable load open end

resistive, 125VDC / 0.24A - 30W

resistive, 220 VDC / 0.27A - 60W

resistive, 250VAC / 0.25A - 62.5VA

resistive, 30VDC / 1A - 30W

resistive, 30VDC / 2A - 60W

min. 2.5x10⁶ operations

min. 2.0x10⁶ operations

min. 5x10⁵ operations

min. 1x10⁵ operations

min. 1x10⁵ operations

min. 5x10⁵ operations

min. 1x10⁵ operations

Contact ratings, UL

220VDC, 0.24A, 60W

125VDC, 0.24A, 30W

250VAC, 0.25A, 62.5VA

125VAC, 0.5A, 62.5VA

30VDC, 2A, 60W

Mechanical endurance

10⁸ operations

Coil Data

Magnetic system

monostable, bistable

Coil voltage range

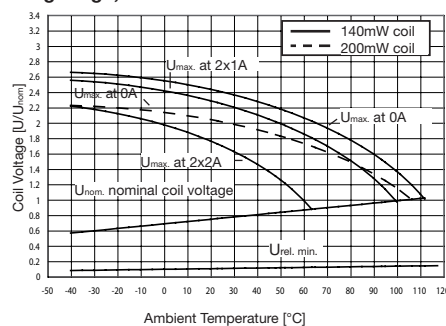
1.5 to 24VDC

Coil versions, standard version, monostable, 1 coil

Coil code	Rated voltage VDC	Operate voltage VDC	Release voltage VDC	Coil resistance Ω±10%	Rated coil power mW
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

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

Coil operating range, standard version



IM Relay (Continued)

Coil Data (continued)

Coil versions, sensitive version, monostable, 1 coil

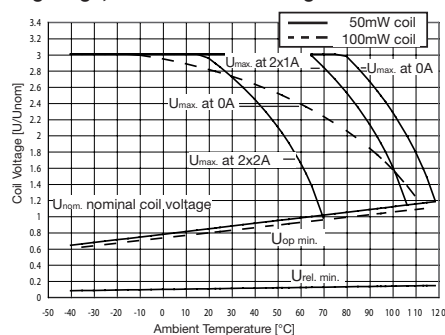
Coil code	Rated voltage VDC	Operate voltage VDC	Release voltage VDC	Coil resistance $\Omega \pm 10\%$	Rated coil power mW
11	3	2.40	0.30	91	100
12	4.5	3.60	0.45	194	100
13	5	4.00	0.50	234	100
16	12	9.60	1.20	1315	110
17	24	19.20	2.40	4120	140

Coil versions, ultra high sensitive version, monostable, 1 coil

Coil code	Rated voltage VDC	Operate voltage VDC	Release voltage VDC	Coil resistance $\Omega \pm 10\%$	Rated coil power mW
21	3	2.55	0.30	180	50
22	4.5	3.83	0.45	405	50
23	5	4.25	0.50	500	50
26	12	10.20	1.20	2880	50

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

Coil operating range, sensitive and ultra high sensitive coil

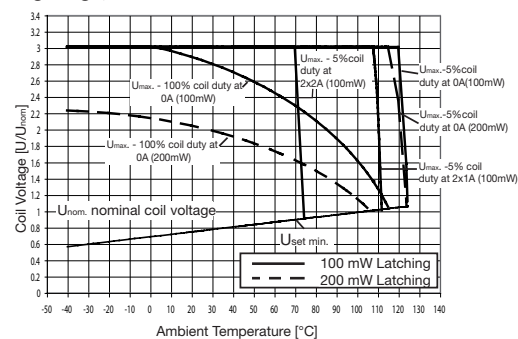


Coil versions, standard, bistable 1 coil

Coil code	Rated voltage VDC	Set voltage VDC	Reset voltage VDC	Coil resistance $\Omega \pm 10\%$	Rated coil power mW
40	1.5	1.13	-1.13	23	100
48	2.4	1.80	-1.80	58	100
41	3	2.25	-2.25	90	100
42	4.5	3.38	-3.38	203	100
43	5	3.75	-3.75	250	100
44	6	4.50	-4.50	360	100
45	9	6.75	-6.75	810	100
46	12	9.00	-9.00	1440	100
47	24	18.00	-18.00	2880	200

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

Coil operating range, bistable 1 coil



Insulation Data

	standard	C	D,P
	standard, sensitive, ultra high sensitive version	high dielectric version	high current, high contact stability version
Initial dielectric strength			
between open contacts	1000V _{rms}	1500V _{rms}	750V _{rms}
between contact and coil	1800V _{rms}	1800V _{rms}	1500V _{rms}
between adjacent contacts	1000V _{rms}	1800V _{rms}	750V _{rms}
Initial surge withstand voltage			
between open contacts	1500V	2500V	1000V
between contact and coil	2500V	2500V	2000V
between adjacent contacts	1500V	2500V	1000V
Initial insulation resistance			
between insulated elements	>10 ⁹ Ω	>10 ⁹ Ω	>10 ⁹ Ω
Capacitance			
between open contacts		max. 1pF	
between contact and coil		max. 2pF	
between adjacent contacts		max. 2pF	

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

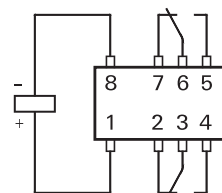
Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at www.tycoelectronics.com/customersupport/rohssupportcenter

Ambient temperature	-40°C to +85°C
Thermal resistance	<150K/W
Category of environmental protection	IEC 61810
	RT V - hermetically sealed
Degree of protection, IEC 60529	IP 67, immersion cleanable
Vibration resistance (functional)	20g, 10 to 500Hz
Shock resistance (functional), half sinus 11ms	50g
Shock resistance (destructive), half sinus 0.5ms	500g
Mounting position	any
Weight	max. 0.75g
Resistance to soldering heat THT	
IEC 60068-2-20	265°C/10s
Resistance to soldering heat SMT	
IEC 60068-2-58	265°C/10s
Moisture sensitive level, JEDEC J-Std-020D	MSL3
Ultrasonic cleaning	not recommended
Packaging/unit	
THT version	tube/50pcs., box/1000 pcs.
SMT version	reel/1000 pcs., box/1000 or 5000 pcs.

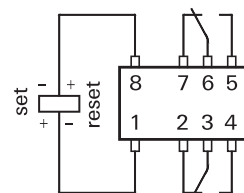
Terminal assignment

TOP view on relay

Monostable version
rest condition



Bistable version, 1 coil
reset condition

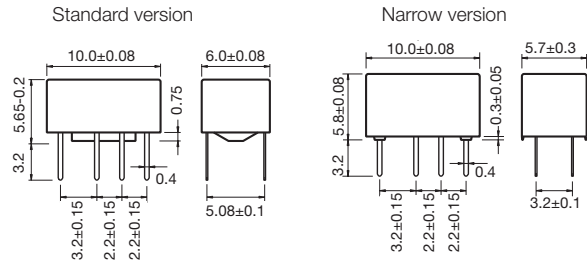


Contacts are shown in reset condition. Contact position might change during transportation and must be reset before use.

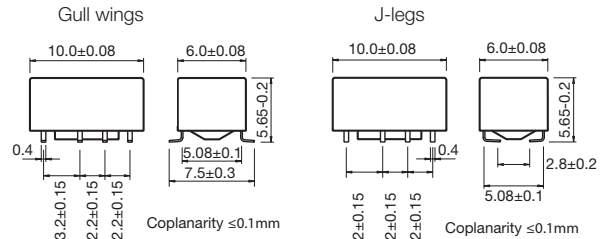
IM Relay (Continued)

Dimensions

THT version

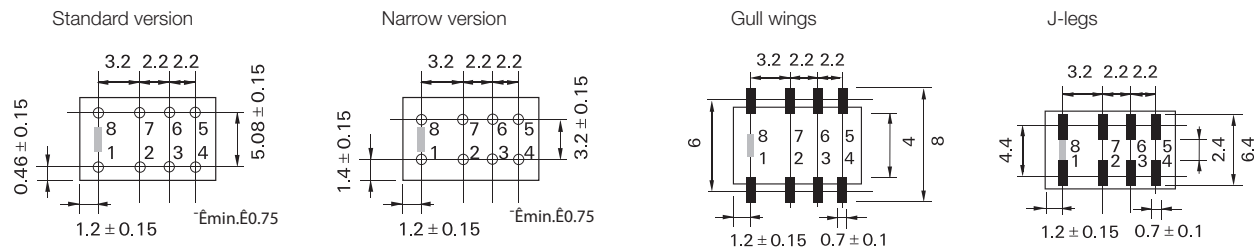


SMT version



PCB layout

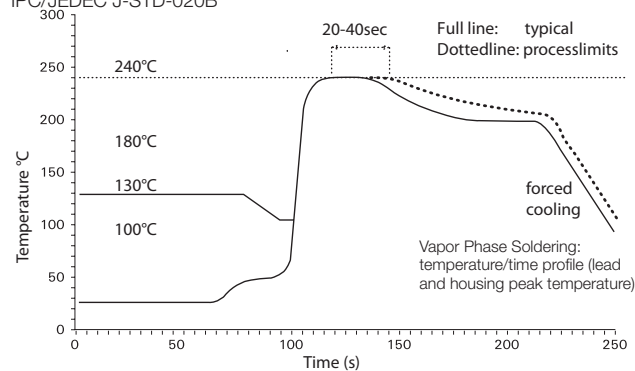
TOP view on component side of PCB



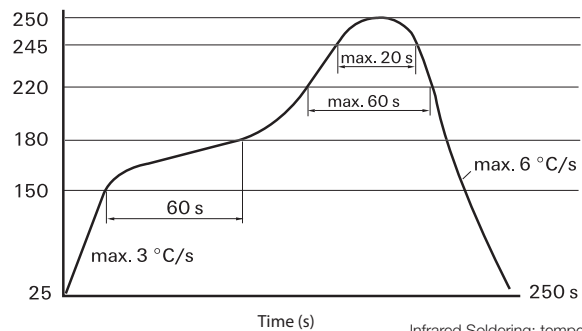
Processing

Recommended soldering conditions

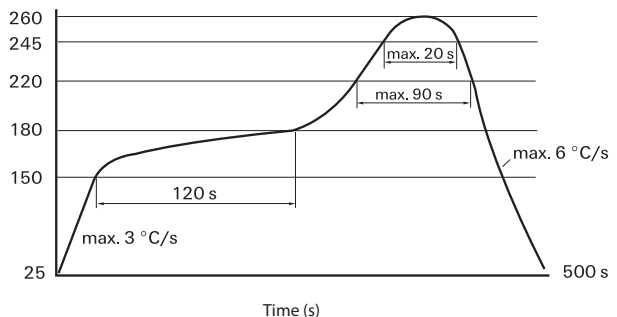
Soldering conditions according IEC 60058-2-58 and IPC/JEDEC J-STD-020B



Recommended reflow soldering profile



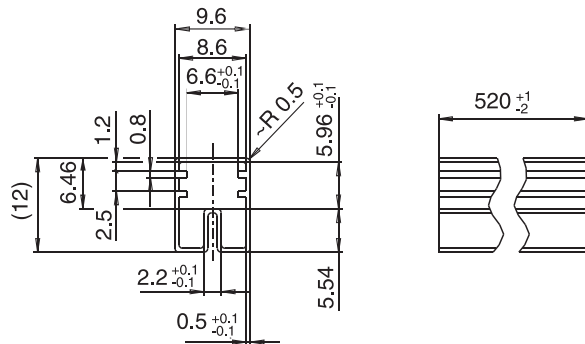
Resistance to soldering heat - Reflow profile



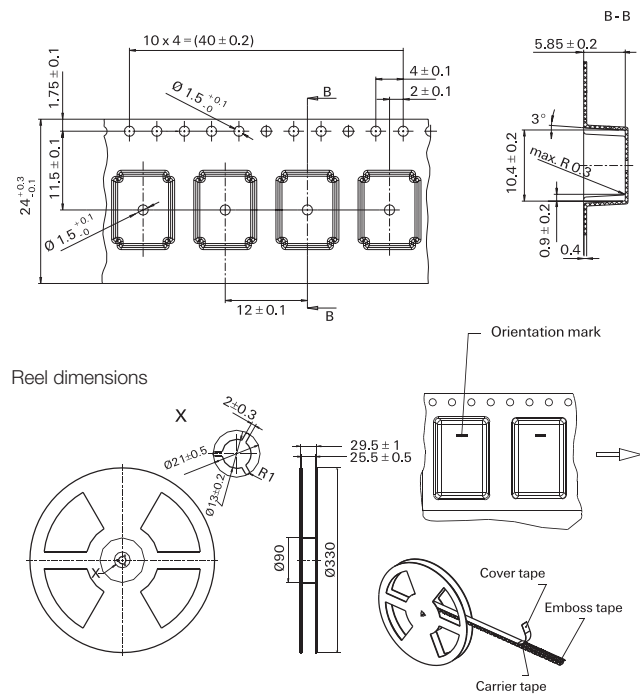
IM Relay (Continued)

Packing

Tube for THT version
50 relays per tube, 1000 relays per box



Tape and reel for SMT version
1000 relays per reel, 1000 or 5000 relays per box



Product code structure		Typical product code	
		IM	03
Type			
IM Signal Relays IM Series			
Contact arrangement			
Blank 2 form C, 2 CO			
Coil			
Coil code: please refer to coil versions table			
Performance type			
Blank Standard version			
		C High dielectric version	
		D High current version	
		P High contact stability version	
Terminals			
T THT - standard		J SMT - J-leg	
N THT - narrow version		G SMT - gull wing	
Packing			
S Tube		R Reel	

IM Relay (Continued)

Product code	Arrangement	Perf. type	Coil	Coil type	Coil	Terminals	Part number			
IM00GR	2 form C, 2 CO contacts	Standard	1.5VDC	Monostable	Standard	SMT gull wing	3-1462037-7			
IM00JR						SMT J-leg	3-1462037-9			
IM00NS						THT narrow	1-1462038-0			
IM01GR						SMT gull wing	1462037-1			
IM01JR			3VDC			SMT J-leg	4-1462037-0			
IM01NS	THT narrow	1-1462038-1								
IM01TS	THT standard	1462037-4								
IM02GR	SMT gull wing	1462037-9								
IM02JR			4.5VDC			SMT J-leg	1-1462037-1			
IM02NS	THT narrow	1-1462038-2								
IM03GR	SMT gull wing	1-1462037-4								
IM03JR	SMT J-leg	1-1462037-6								
IM03NS			5VDC			THT narrow	1-1462038-3			
IM03TS	THT standard	1-1462037-8								
IM04GR	SMT gull wing	4-1462037-2								
IM04JR	SMT J-leg	4-1462037-4								
IM04NS			9VDC			THT narrow	1-1462038-4			
IM05GR	SMT gull wing	3-1462037-4								
IM05JR	SMT J-leg	4-1462037-5								
IM05NS	THT narrow	1-1462038-5								
IM05TS	THT standard	2-1462037-2	12VDC			THT standard	2-1462037-2			
IM06GR	SMT gull wing	2-1462037-3								
IM06JR	SMT J-leg	4-1462037-6								
IM06NS	THT narrow	1-1462038-6								
IM07GR			24VDC			SMT gull wing	4-1462037-7			
IM07JR						SMT J-leg	4-1462037-8			
IM07NS						THT narrow	1-1462038-7			
IM08GR						SMT gull wing	6-1462039-3			
IM11GR			2.4VDC		High sens.		9-1462038-5			
IM12GR			3VDC							
IM13GR			4.5VDC				1462039-3			
IM16GR			5VDC				1462039-4			
IM17GR			12VDC				1462039-5			
IM17TS			24VDC				1462039-6			
IM21GR			3VDC			Ultra high sensitive	THT standard	4-1462039-6		
IM21TS							SMT gull wing	2-1462039-6		
IM22GR							THT standard	1-1462039-5		
IM22TS							SMT gull wing	2-1462039-7		
IM23GR			5VDC			THT standard	2-1462039-8			
IM23TS						SMT gull wing	2-1462039-9			
IM25GR						THT standard	3-1462039-0			
IM25TS						SMT gull wing	3-1462039-5			
IM26GR			9VDC			THT standard	3-1462039-6			
IM26TS						SMT gull wing	3-1462039-1			
IM40GR						12VDC	Bistable	Standard	THT standard	3-1462039-2
IM40JR						1.5VDC			SMT gull wing	5-1462037-1
IM40NS				SMT J-leg	5-1462037-2					
IM40TS				THT narrow	1-1462038-8					
IM41GR			3VDC			THT standard	5-1462037-0			
IM41JR						SMT gull wing	5-1462037-4			
IM41NS						SMT J-leg	5-1462037-5			
IM41TS						THT narrow	1-1462038-9			
IM42GR			4.5VDC			THT standard	5-1462037-3			
IM42JR						SMT gull wing	3-1462037-1			
IM42NS						SMT J-leg	5-1462037-7			
IM42TS						THT narrow	2-1462038-0			
IM43GR			5VDC			THT standard	5-1462037-6			
IM43JR						SMT gull wing	5-1462037-9			
IM43NS						SMT J-leg	6-1462037-0			
IM43TS						THT narrow	2-1462038-1			
IM44GR			6VDC			THT standard	5-1462037-8			
IM44JR						SMT gull wing	6-1462037-2			
IM44NS						SMT J-leg	6-1462037-3			
IM44TS						THT narrow	2-1462038-2			
IM45GR			9VDC			THT standard	6-1462037-1			
IM45JR						SMT gull wing	6-1462037-4			
IM45NS						SMT J-leg	6-1462037-5			
IM46GR						THT narrow	2-1462038-3			
IM46JR			12VDC			SMT gull wing	6-1462037-7			
IM46NS						SMT J-leg	6-1462037-8			
IM46TS						THT narrow	2-1462038-4			
IM47GR						THT standard	6-1462037-6			
IM47JR			24VDC			SMT gull wing	7-1462037-0			
IM47NS						SMT J-leg	7-1462037-1			
IM47TS						THT narrow	2-1462038-5			
IM48GR						THT standard	6-1462037-9			
			2.4VDC			SMT gull wing	1462039-8			

IM Relay (Continued)

Product code	Arrangement	Perf. type	Coil	Coil type	Coil	Terminals	Part number
IM01CGR	2 form C 2 CO contacts	High dielectric	3VDC	Monostable	Standard	SMT gull wing	1462038-4
IM01CTS						THT standard	9-1462038-6
IM02CGR			4.5VDC			SMT gull wing	1462038-1
IM03CGR			5VDC			SMT gull wing	1462038-2
IM03CJR						SMT J-leg	4-1462039-8
IM03CTS						THT standard	4-1462039-7
IM05CGR			9VDC			SMT gull wing	1462038-3
IM06CGR			12VDC			SMT gull wing	9-1462037-9
IM06CJR						SMT J-leg	3-1462039-4
IM06CTS						THT standard	4-1462037-9
IM07CGR			24VDC			SMT gull wing	1462039-2
IM07CTS						THT standard	1462039-1
IM17CGR					High sens.	SMT gull wing	1462039-7
IM41CGR			3VDC	Bistable	Standard		4-1462039-2
IM42CGR			4.5VDC				4-1462039-1
IM43CGR			5VDC				9-1462038-7
IM02DGR		High current	4.5VDC	Monostable	Standard		9-1462038-8
IM03DGR			5VDC				9-1462038-9
IM03DJR						SMT J-leg	3-1462039-3
IM05DGR			9VDC			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						THT standard	7-1462039-2
IM22DTS			4.5VDC		U.h.sens.		7-1462039-6
IM41DGR			3VDC	Bistable	Standard	SMT gull wing	6-1462039-8
IM42DGR			4.5VDC				1-1462039-9
IM42DNS						THT narrow	1-1462039-6
IM46DNS			12VDC				1-1462039-2
IM47DJR			24VDC			SMT J-leg	7-1462039-5
IM48DGR			2.4VDC			SMT gull wing	1462039-9
IM49DGR			2VDC				2-1462039-2
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	Standard	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