

## IM Relay

- 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 2500Vrms between open contacts and 2500Vrms between coil and contacts
- High mechanical shock resistance up to 50g 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

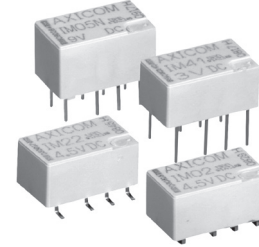
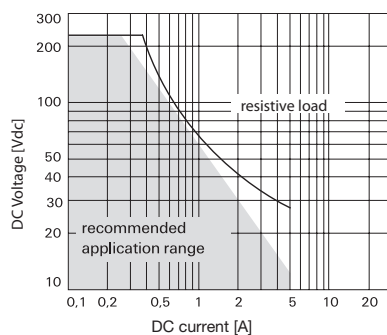
### Approvals

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/30mV		
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\_L



### Contact Data (continued)

Electrical endurance at contact application 0 ( $\leq 30\text{mV}/\leq 10\text{mA}$ )	min. $2.5 \times 10^6$ operations
cable load open end	min. $2.0 \times 10^6$ operations
resistive, 125VDC / 0.24A - 30W	min. $5 \times 10^5$ operations
resistive, 220 VDC / 0.27A - 60W	min. $1 \times 10^5$ operations
resistive, 250VAC / 0.25A - 62.5VA	min. $1 \times 10^5$ operations
resistive, 30VDC / 1A - 30W	min. $5 \times 10^5$ operations
resistive, 30VDC / 2A - 60W	min. $1 \times 10^5$ operations
UL contact rating	30VDC, 2A, 60W, NO only
	110VDC, 0.3A, 33W
	220VDC, 0.27A, 60W
	125VAC, 0.5A, 62.5W
	250VAC, 0.25A, 62.5W
Mechanical endurance	$10^8$ operations

### Coil Data

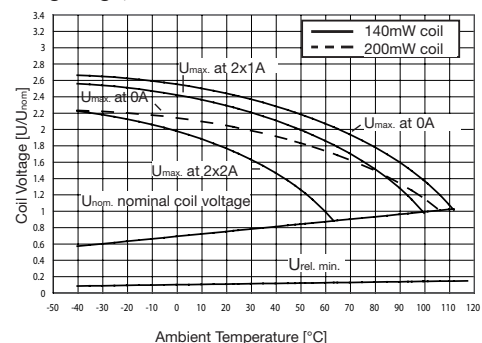
Magnetic system	monostable, bistable
Coil voltage range	1.5 to 24VDC

### Coil versions, standard version, monostable, 1 coil

Coil code	Rated voltage VDC	Operate voltage VDC	Release voltage VDC	Coil resistance $\Omega \pm 10\%$	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

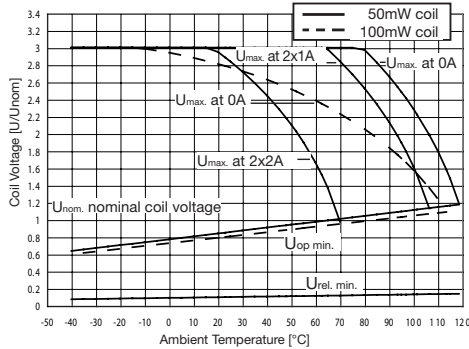
Coil code	Rated voltage VDC	Operate voltage VDC	Release voltage VDC	Coil resistance $\Omega \pm 10\%$	Rated coil power mW
11	3	2.40	0.30	91	100
12	4.5	3.60	0.45	194	100
13	5	4.00	0.50	234	100
16	12	9.60	1.20	1315	110
17	24	19.20	2.40	4120	140

#### 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

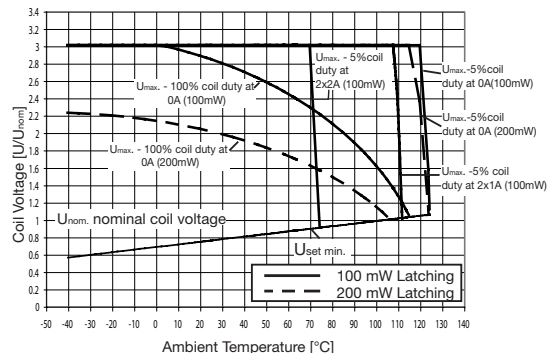


### Coil versions, standard, bistable 1 coil

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 <sub>rms</sub>	1500V <sub>rms</sub>	750V <sub>rms</sub>
between contact and coil	1800V <sub>rms</sub>	1800V <sub>rms</sub>	1500V <sub>rms</sub>
between adjacent contacts	1000V <sub>rms</sub>	1800V <sub>rms</sub>	750V <sub>rms</sub>
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 <sup>9</sup> Ω	>10 <sup>9</sup> Ω	>10 <sup>9</sup> 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.te.com/customer-support/rohssupportcenter](http://www.te.com/customer-support/rohssupportcenter)

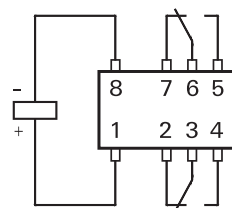
Ambient temperature	-40°C to +85°C
Thermal resistance	<150K/W
Category of environmental protection	
IEC 61810	RT V - hermetically sealed
Degree of protection, IEC 60529	IP 67, immersion cleanable
Vibration resistance (functional)	20g, 10 to 500Hz
Shock resistance (functional), half sinus 11ms	50g
Shock resistance (destructive), half sinus 0.5ms	500g
Mounting position	any
Weight	max. 0.75g
Resistance to soldering heat THT	Peak value
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
related only to SMT relays	
packed in original dry-packs	

Ultrasonic cleaning	not recommended
Packaging/unit	
THT version	tube/50pcs., box/1000 pcs.
SMT version	reel/1000 pcs., box/1000 or 5000 pcs.

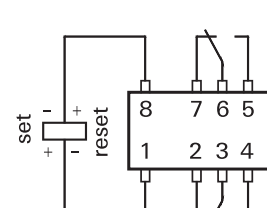
### Terminal assignment

#### TOP view on relay

Monostable version  
rest condition



Bistable version, 1 coil  
reset condition

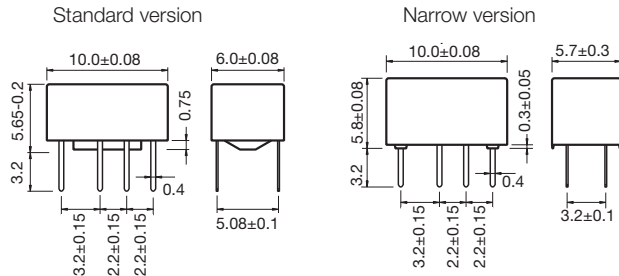


Contacts are shown in reset condition. Contact position might change during transportation and must be reset before use.

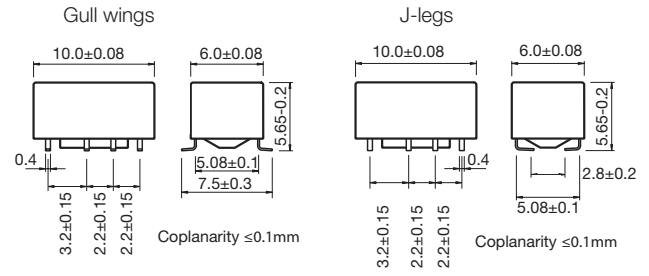
## IM Relay (Continued)

### Dimensions

#### THT version

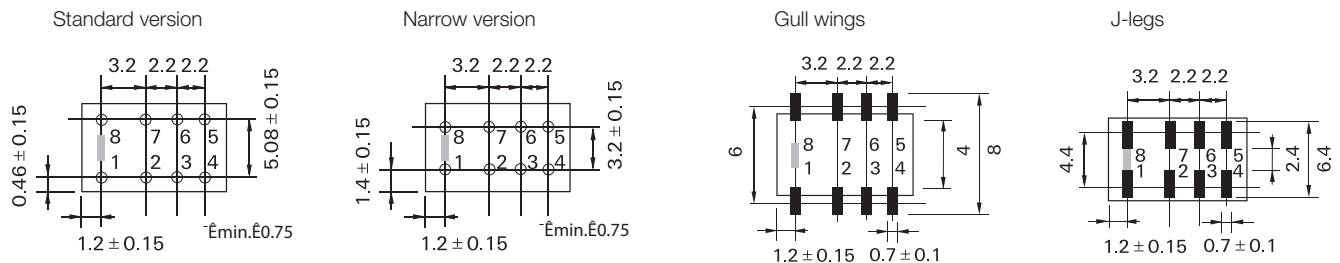


#### SMT version



### PCB layout

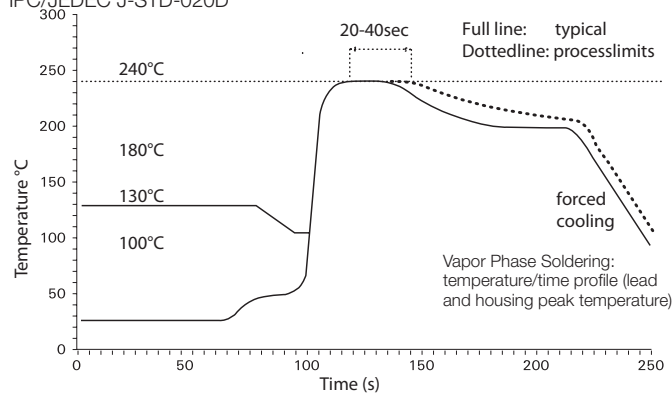
TOP view on component side of PCB



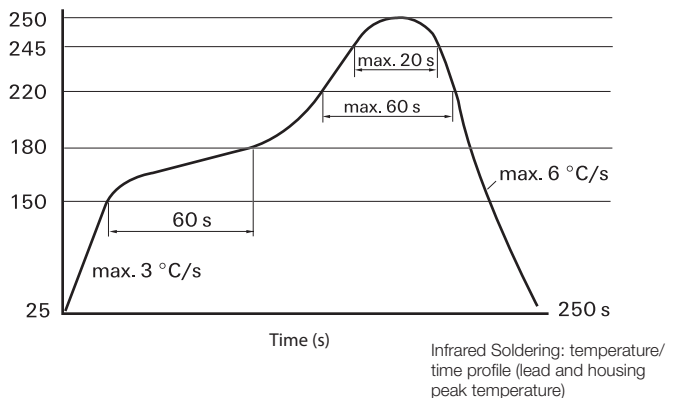
### Processing

Recommended soldering conditions

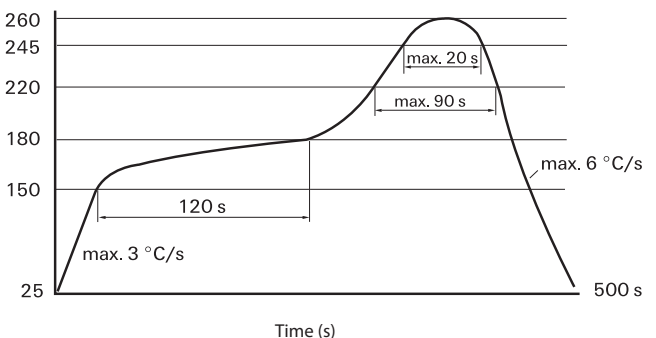
Soldering conditions according IEC 60058-2-58 and IPC/JEDEC J-STD-020D



Recommended reflow soldering profile



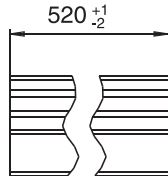
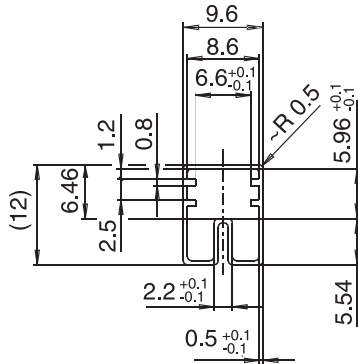
Resistance to soldering heat - Reflow profile



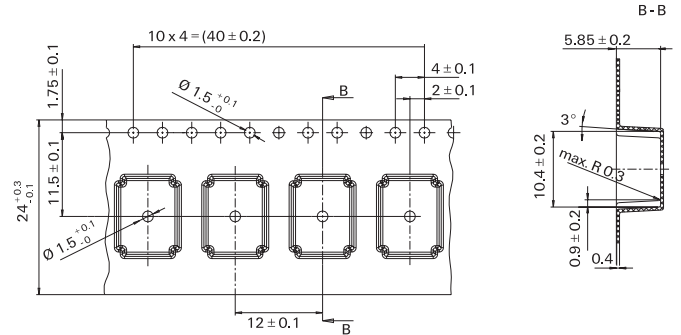
IM Relay (Continued)

Packing

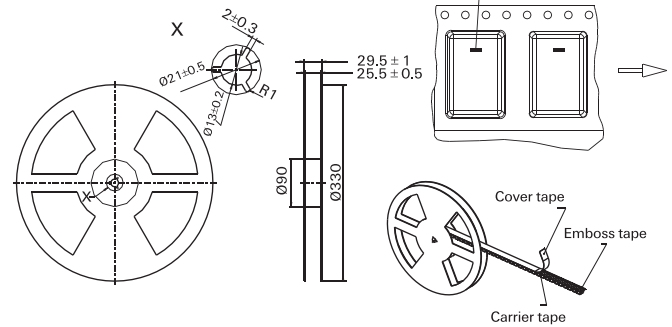
Tube for THT version  
50 relays per tube, 1000 relays per box



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



Reel dimensions



Product code structure

Typical product code

IM

03

G

R

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

N THT - narrow version

J SMT - J-leg

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

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