



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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

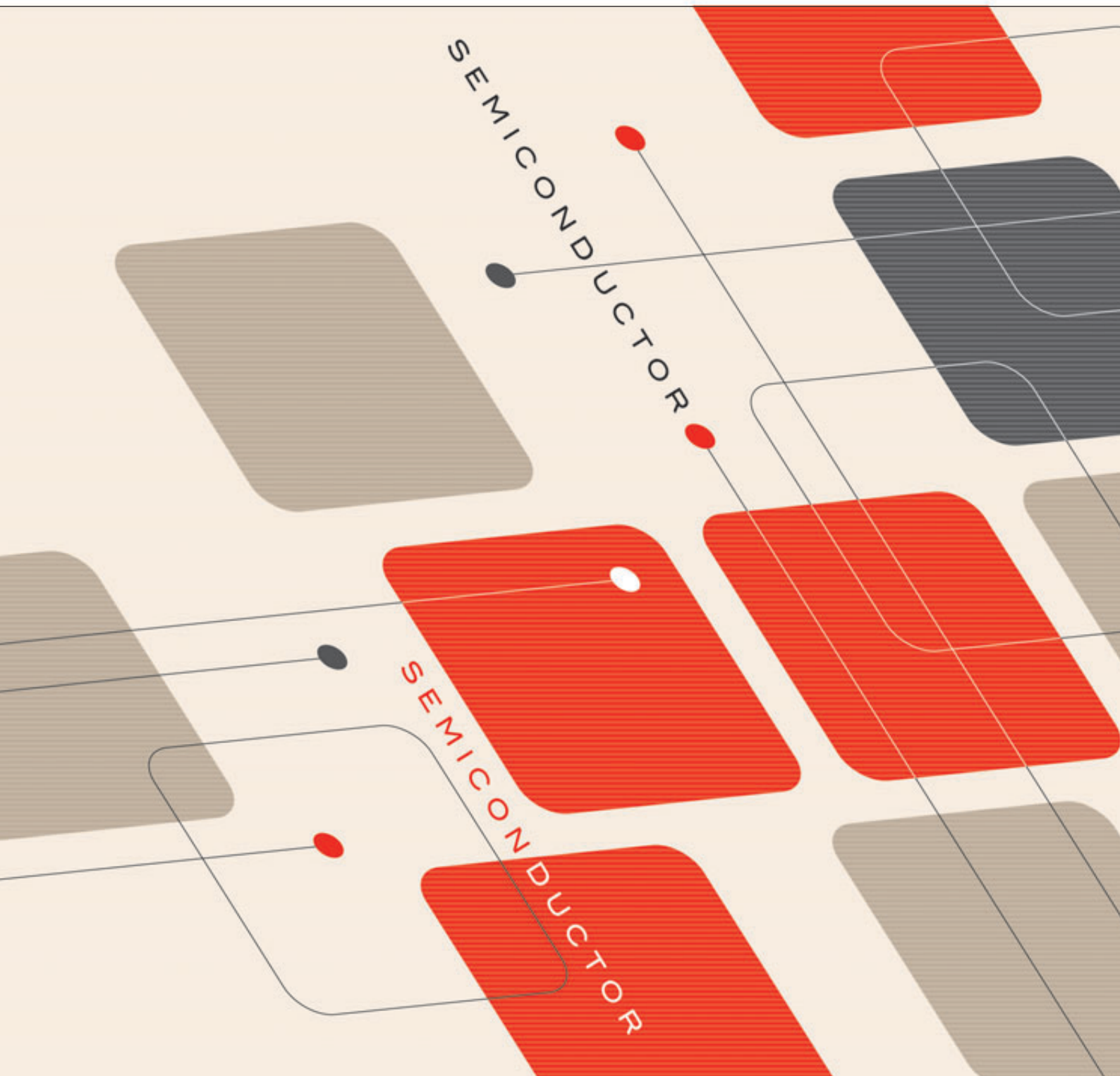
Email & Skype: info@chipsmall.com Web: www.chipsmall.com

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



PRODUCT GUIDE

Photocouplers and Photorelays

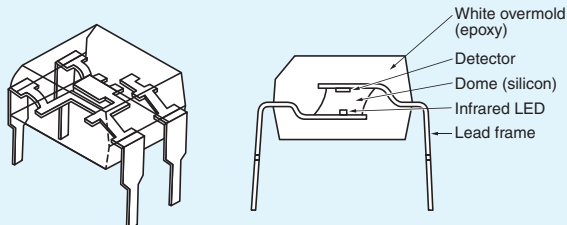


• SEMICONDUCTOR •

<http://www.semicon.toshiba.co.jp/eng>

Preface

As a type of isolator favored by manufacturers, photocouplers now serve as noise protectors in many electronic devices. Toshiba's photocouplers consist of either a GaAs or GaAlAs infrared LED(s) and a silicon photodetector(s) housed in a mold package. GaAlAs LEDs are adopted in high-speed photo-IC types due to their high-speed and high-light output.



Perspective view of the TLP521-1

Cross section of the TLP521-1

Extensive Line of Products

To meet customers' various needs, we offer an extensive product portfolio shown below as well as general-purpose photocouplers.

1. Photo-IC couplers: High speed and advanced functions (highly integrated detectors)
2. Zero-crossing phototriac couplers: Phototriac-output devices with zero-crossing detection
3. Photovoltaic couplers: MOSFET gate drive (high voltage output achieved using a photodiode array)
4. Photorelays (MOSFET-output devices):
AC-DC switches (MOSFET output)
Mechanical relay replacement

Safety Standard Approvals

UL approval has been obtained under file number E67349 for most of our photocouplers. EN60747-5-2-approved photocouplers are also offered with a wide selection of output (transistor, thyristor, triac, IC output and photorelay). The designs of these devices meet other standards including IEC380/VDE0806, IEC60950/EN60950 and IEC60065/EN60065.

Small-Package Products

Toshiba offers a wide variety of photocouplers in a small package to meet the space-saving requirement of increasingly smaller and thinner end products. Packaging options include mini-flat packages (MFSOPs) and half-pitch (1.27 mm) mini-flat SOP packages.

Overseas Manufactured Photocouplers

Part of the general-purpose photocouplers with transistor and triac outputs are manufactured by Toshiba Semiconductor Thailand Co., Ltd. This will help customers procure components locally for overseas assembly of end products.

CONTENTS

1. Product Index.....	3	6. Package Information.....	42
2. New Products.....	5	1. Lead Form Options for DIP Packages.....	42
3. Photocoupler Product Tree.....	9	2. Package Dimensions.....	43
4. Selection Guide.....	10	3. Rank Marking.....	49
1. Transistor-Output and Darlington-Transistor-Output Photocouplers.....	10	7. Packing Information.....	50
2. Photocouplers for Logic Signal Transmission.....	17	1. Photocoupler Magazine Packing Specifications.....	51
3. Photocouplers for IGBT/MOSFET Gate Drive.....	23	2. Tape-and-Reel Specifications.....	53
4. Photorelays (1-Form-A and 2-Form-A).....	26	8. Board Assembly.....	56
5. Photorelays (1-Form-B, 2-Form-B and 1-Form-A/1-Form-B).....	32	1. Example Land Patterns.....	56
6. Triac-Output Photocouplers.....	34	2. Board Assembly Considerations.....	57
7. Thyristor-Output Photocouplers.....	37	9. Device Degradation.....	58
8. Photovoltaic-Output photocouplers.....	38	1. Projected Operating Life Based on LED Light Output Degradation.....	58
9. Products Manufactured by Toshiba Semiconductor (Thailand) Co., Ltd. (TST).....	38	10. Safety Standard Approvals.....	65
5. Part Naming Conventions.....	41	11. Photocoupler Application Circuit Examples.....	67
		12. Competitor Cross Reference.....	79

1 Product Index

Part Number	Package	Output	Page
TLP104	SO6	IC	22
TLP105	MFSOP6	IC	20
TLP108	MFSOP6	IC	18
TLP109	SO6	IC	21
TLP109 (IGM)	SO6	IC	22
TLP116A	SO6	IC	18
TLP117	MFSOP6	IC	17
TLP118	SO6	IC	18
TLP124	MFSOP6	Transistor	11
TLP126	MFSOP6	Transistor	14
TLP127	MFSOP6	Darlington transistor	16
TLP130	MFSOP6	Transistor	14
TLP131	MFSOP6	Transistor	11
TLP137	MFSOP6	Transistor	11
TLP148G	MFSOP6	Thyristor	37
TLP151	SO6	IC	24
TLP151A	SO6	IC	24
TLP155E	SO6	IC	24
TLP160G	MFSOP6	Triac	34
TLP160J	MFSOP6	Triac	34
TLP161G	MFSOP6	Triac	34
TLP161J	MFSOP6	Triac	34
TLP163J	MFSOP6	Triac	34
TLP165J	MFSOP6	Triac	34
TLP166J	MFSOP6	Triac	34
TLP168J	MFSOP6	Triac	34
TLP170A	2.54SOP4	MOSFET (Photorelay)	28
TLP170D	2.54SOP4	MOSFET (Photorelay)	28
TLP170G	2.54SOP4	MOSFET (Photorelay)	28
TLP170J	2.54SOP4	MOSFET (Photorelay)	28
TLP172A	2.54SOP4	MOSFET (Photorelay)	28
TLP172G	2.54SOP4	MOSFET (Photorelay)	28
TLP173A	MFSOP6	MOSFET (Photorelay)	28
TLP174G	2.54SOP4	MOSFET (Photorelay)	28
TLP174GA	2.54SOP4	MOSFET (Photorelay)	28
TLP175A	SO6	MOSFET (Photorelay)	27
TLP176A	2.54SOP4	MOSFET (Photorelay)	28
TLP176D	2.54SOP4	MOSFET (Photorelay)	28
TLP176G	2.54SOP4	MOSFET (Photorelay)	28
TLP176GA	2.54SOP4	MOSFET (Photorelay)	28
TLP179D	2.54SOP4	MOSFET (Photorelay)	28
TLP180	MFSOP6	Transistor	14,38
TLP181	MFSOP6	Transistor	11,38
TLP184	SO6	Transistor	39
TLP185	SO6	Transistor	39
TLP190B	MFSOP6	Photovoltaic	36
TLP191B	MFSOP6	Photovoltaic	36
TLP192A	2.54SOP6	MOSFET (Photorelay)	29
TLP192G	2.54SOP6	MOSFET (Photorelay)	29
TLP197A	2.54SOP6	MOSFET (Photorelay)	29
TLP197D	2.54SOP6	MOSFET (Photorelay)	29
TLP197G	2.54SOP6	MOSFET (Photorelay)	29
TLP197GA	2.54SOP6	MOSFET (Photorelay)	29
TLP199D	2.54SOP6	MOSFET (Photorelay)	29
TLP200D	2.54SOP8	MOSFET (Photorelay)	30
TLP202A	2.54SOP8	MOSFET (Photorelay)	30
TLP202G	2.54SOP8	MOSFET (Photorelay)	30
TLP2066	MFSOP6	IC	18
TLP206A	2.54SOP8	MOSFET (Photorelay)	30
TLP206G	2.54SOP8	MOSFET (Photorelay)	30
TLP206GA	2.54SOP8	MOSFET (Photorelay)	30
TLP2095	MFSOP6	IC	20
TLP2098	MFSOP6	IC	20
TLP209D	2.54SOP8	MOSFET (Photorelay)	30
TLP2105	SO8	IC	21
TLP2108	SO8	IC	21
TLP2116	SO8	IC	18
TLP2118E	SO8	IC	18
TLP2160	SO8	IC	19
TLP2166A	SO8	IC	19
TLP2167	SO8	IC	17
TLP2168	SO8	IC	19
TLP2200	DIP8	IC	21
TLP220A	DIP4	MOSFET (Photorelay)	30
TLP220D	DIP4	MOSFET (Photorelay)	30
TLP220G	DIP4	MOSFET (Photorelay)	30
TLP220GA	DIP4	MOSFET (Photorelay)	30
TLP220J	DIP4	MOSFET (Photorelay)	30
TLP221A	DIP4	MOSFET (Photorelay)	30

Part Number	Package	Output	Page
TLP222A	DIP4	MOSFET (Photorelay)	30
TLP222A-2	DIP8	MOSFET (Photorelay)	31
TLP222G	DIP4	MOSFET (Photorelay)	31
TLP222G-2	DIP8	MOSFET (Photorelay)	31
TLP224G	DIP4	MOSFET (Photorelay)	30
TLP224G-2	DIP8	MOSFET (Photorelay)	31
TLP224GA	DIP4	MOSFET (Photorelay)	30
TLP224GA-2	DIP8	MOSFET (Photorelay)	31
TLP225A	DIP4	MOSFET (Photorelay)	30
TLP227A	DIP4	MOSFET (Photorelay)	30
TLP227A-2	DIP8	MOSFET (Photorelay)	31
TLP227G	DIP4	MOSFET (Photorelay)	30
TLP227G-2	DIP8	MOSFET (Photorelay)	32
TLP227GA	DIP4	MOSFET (Photorelay)	30
TLP227GA-2	DIP8	MOSFET (Photorelay)	32
TLP2366	SO6	IC	19
TLP2367	SO6	IC	17
TLP2368	SO6	IC	19
TLP2403	SO8	IC	21
TLP2404	SO8	IC	22
TLP2405	SO8	IC	20
TLP2408	SO8	IC	20
TLP2409	SO8	IC	21
TLP2409 (IGM)	SO8	IC	22
TLP2418	SO8	IC	18
TLP2451	SO8	IC	24
TLP2451A	SO8	IC	24
TLP2466	SO8	IC	19
TLP2467	SO8	IC	18
TLP2468	SO8	IC	19
TLP2530	DIP8	IC	22
TLP2531	DIP8	IC	22
TLP2601	DIP8	IC	19
TLP260J	MFSOP6	Triac	35
TLP261J	MFSOP6	Triac	35
TLP2630	DIP8	IC	20
TLP2631	DIP8	IC	20
TLP2766	SDIP6	IC	19
TLP2767	SDIP6	IC	18
TLP2768	SDIP6	IC	19
TLP280	SOP4	Transistor	14,39
TLP280-4	SOP16	Transistor	14
TLP281	SOP4	Transistor	11,39
TLP281-4	SOP16	Transistor	12
TLP284	SOP4	Transistor	11,39
TLP284-4	SOP16	Transistor	11
TLP285	SOP4	Transistor	11,39
TLP285-4	SOP16	Transistor	11
TLP290-4	SO16	Transistor	39
TLP291-4	SO16	Transistor	39
TLP3022 (S)	DIP6	Triac	36,40
TLP3023 (S)	DIP6	Triac	36,40
TLP3042 (S)	DIP6	Triac	36,40
TLP3043 (S)	DIP6	Triac	36,40
TLP3052 (S)	DIP6	Triac	36,40
TLP3062 (S)	DIP6	Triac	37,40
TLP3063 (S)	DIP6	Triac	37,40
TLP3064 (S)	DIP6	Triac	37,40
TLP3082 (S)	DIP6	Triac	37,40
TLP3100	2.54SOP6	MOSFET (Photorelay)	29
TLP3110	2.54SOP4	MOSFET (Photorelay)	28
TLP3111	2.54SOP4	MOSFET (Photorelay)	28
TLP3113	2.54SOP4	MOSFET (Photorelay)	28
TLP3114	2.54SOP4	MOSFET (Photorelay)	28
TLP3115	2.54SOP4	MOSFET (Photorelay)	28
TLP3116	2.54SOP4	MOSFET (Photorelay)	28
TLP3118	2.54SOP6	MOSFET (Photorelay)	28
TLP3119	2.54SOP4	MOSFET (Photorelay)	28
TLP3120	2.54SOP6	MOSFET (Photorelay)	29
TLP3121	2.54SOP4	MOSFET (Photorelay)	29
TLP3122	2.54SOP4	MOSFET (Photorelay)	29
TLP3123	2.54SOP4	MOSFET (Photorelay)	29
TLP3125	2.54SOP8	MOSFET (Photorelay)	29
TLP3130	2.54SOP4	MOSFET (Photorelay)	29
TLP3131	2.54SOP4	MOSFET (Photorelay)	29
TLP320	DIP4	Transistor	15
TLP320-2	DIP8	Transistor	15
TLP3203	SSOP4	MOSFET (Photorelay)	27
TLP320-4	DIP16	Transistor	15

1 Product Index

Part Number	Package	Output	Page
TLP3212	SSOP4	MOSFET (Photorelay)	27
TLP3213	SSOP4	MOSFET (Photorelay)	27
TLP3214	SSOP4	MOSFET (Photorelay)	27
TLP3215	SSOP4	MOSFET (Photorelay)	27
TLP3216	SSOP4	MOSFET (Photorelay)	27
TLP3217	SSOP4	MOSFET (Photorelay)	27
TLP3218	SSOP4	MOSFET (Photorelay)	27
TLP3219	SSOP4	MOSFET (Photorelay)	27
TLP3220	SSOP4	MOSFET (Photorelay)	27
TLP3230	SSOP4	MOSFET (Photorelay)	27
TLP3231	SSOP4	MOSFET (Photorelay)	27
TLP3240	SSOP4	MOSFET (Photorelay)	27
TLP3241	SSOP4	MOSFET (Photorelay)	27
TLP3250	SSOP4	MOSFET (Photorelay)	27
TLP3275	SSOP4	MOSFET (Photorelay)	27
TLP330	DIP6	Transistor	15
TLP331	DIP6	Transistor	12
TLP3312	USOP4	MOSFET (Photorelay)	27
TLP332	DIP6	Transistor	12
TLP3375	USOP4	MOSFET (Photorelay)	27
TLP350	DIP8	IC	24
TLP350H	DIP8	IC	24
TLP351	DIP8	IC	24
TLP351A	DIP8	IC	24
TLP351H	DIP8	IC	24
TLP352	DIP8	IC	24
TLP3542	DIP6	MOSFET (Photorelay)	31
TLP3543	DIP6	MOSFET (Photorelay)	31
TLP3544	DIP6	MOSFET (Photorelay)	31
TLP3545	DIP6	MOSFET (Photorelay)	31
TLP3546	DIP6	MOSFET (Photorelay)	31
TLP360J	DIP4	Triac	35
TLP361J	DIP4	Triac	35
TLP363J	DIP4	Triac	35
TLP371	DIP6	Darlington transistor	16
TLP372	DIP6	Darlington transistor	16
TLP373	DIP6	Darlington transistor	16
TLP3762 (S)	DIP6	Triac	37
TLP3782 (S)	DIP6	Triac	37,40
TLP3783 (S)	DIP6	Triac	37,40
TLP3902	MFSOP6	Photovoltaic	38
TLP3904	SSOP4	Photovoltaic	38
TLP3914	SSOP4	Photovoltaic	38
TLP3924	SSOP4	Photovoltaic	38
TLP4006G	DIP8	MOSFET (Photorelay)	33
TLP4007G	DIP8	MOSFET (Photorelay)	33
TLP4026G	2.54SOP8	MOSFET (Photorelay)	33
TLP4027G	2.54SOP8	MOSFET (Photorelay)	33
TLP4172G	2.54SOP4	MOSFET (Photorelay)	32
TLP4176G	2.54SOP4	MOSFET (Photorelay)	32
TLP4192G	2.54SOP6	MOSFET (Photorelay)	32
TLP4197G	2.54SOP6	MOSFET (Photorelay)	32
TLP4202G	2.54SOP8	MOSFET (Photorelay)	33
TLP4206G	2.54SOP8	MOSFET (Photorelay)	32
TLP4222G	DIP4	MOSFET (Photorelay)	32
TLP4222G-2	DIP8	MOSFET (Photorelay)	33
TLP4227G	DIP4	MOSFET (Photorelay)	33
TLP4227G-2	DIP8	MOSFET (Photorelay)	33
TLP4592G	DIP6	MOSFET (Photorelay)	32
TLP4597G	DIP6	MOSFET (Photorelay)	33
TLP504A	DIP8	Transistor	12
TLP512	DIP6	IC	21
TLP513	DIP6	IC	19
TLP523	DIP4	Darlington transistor	16
TLP523-2	DIP8	Darlington transistor	16
TLP523-4	DIP16	Darlington transistor	16
TLP525G	DIP4	Triac	35
TLP525G-2	DIP8	Triac	35
TLP525G-4	DIP16	Triac	35
TLP531	DIP6	Transistor	12
TLP532	DIP6	Transistor	12
TLP548J	DIP6	Thyristor	37
TLP549J	DIP8	Thyristor	37
TLP550	DIP8	IC	21
TLP551	DIP8	IC	21
TLP552	DIP8	IC	19
TLP553	DIP8	IC	21
TLP554	DIP8	IC	19

Part Number	Package	Output	Page
TLP555	DIP8	IC	20
TLP557	DIP8	IC	25
TLP558	DIP8	IC	20
TLP559	DIP8	IC	21
TLP559 (IGM)	DIP8	IC	23
TLP560G	DIP6	Triac	35
TLP560J	DIP6	Triac	36
TLP561G	DIP6	Triac	36
TLP561J	DIP6	Triac	36
TLP570	DIP6	Darlington transistor	16
TLP571	DIP6	Darlington transistor	16
TLP572	DIP6	Darlington transistor	16
TLP590B	DIP6	Photovoltaic	38
TLP591B	DIP6	Photovoltaic	38
TLP592A	DIP6	MOSFET (Photorelay)	31
TLP592G	DIP6	MOSFET (Photorelay)	31
TLP597A	DIP6	MOSFET (Photorelay)	31
TLP597G	DIP6	MOSFET (Photorelay)	31
TLP597GA	DIP6	MOSFET (Photorelay)	31
TLP598AA	DIP6	MOSFET (Photorelay)	31
TLP598GA	DIP6	MOSFET (Photorelay)	31
TLP620	DIP4	Transistor	15,39
TLP620-2	DIP8	Transistor	15,39
TLP620-4	DIP16	Transistor	15
TLP624	DIP4	Transistor	12
TLP624-2	DIP8	Transistor	12
TLP624-4	DIP16	Transistor	12
TLP626	DIP4	Transistor	15
TLP626-2	DIP8	Transistor	15
TLP626-4	DIP16	Transistor	15
TLP627	DIP4	Darlington transistor	16,39
TLP627-2	DIP8	Darlington transistor	16,39
TLP627-4	DIP16	Darlington transistor	16
TLP628	DIP4	Transistor	12
TLP628-2	DIP8	Transistor	13
TLP628-4	DIP16	Transistor	13
TLP629	DIP4	Transistor	13
TLP629-2	DIP8	Transistor	13
TLP629-4	DIP16	Transistor	13
TLP630	DIP6	Transistor	15
TLP631	DIP6	Transistor	13
TLP632	DIP6	Transistor	13
TLP651	DIP8	IC	21
TLP700	SDIP6	IC	25
TLP700H	SDIP6	IC	25
TLP701	SDIP6	IC	25
TLP701A	SDIP6	IC	25
TLP701H	SDIP6	IC	25
TLP705	SDIP6	IC	25
TLP705A	SDIP6	IC	25
TLP708	SDIP6	IC	18
TLP714	SDIP6	IC	22
TLP715	SDIP6	IC	20
TLP716	SDIP6	IC	18
TLP718	SDIP6	IC	20
TLP719	SDIP6	IC	21
TLP731	DIP6	Transistor	13
TLP732	DIP6	Transistor	13
TLP733	DIP6	Transistor	13
TLP734	DIP6	Transistor	14
TLP748J	DIP6	Thyristor	37
TLP750	DIP8	IC	22
TLP751	DIP8	IC	22
TLP754	DIP8	IC	22
TLP759	DIP8	IC	22
TLP759 (IGM)	DIP8	IC	23
TLP762J	DIP6	Triac	36
TLP763J	DIP6	Triac	36
TLP781	DIP4	Transistor	14
TLP785	DIP4	Transistor	14
TLP797GA	DIP6	MOSFET (Photorelay)	31
TLP797J	DIP6	MOSFET (Photorelay)	31
TLP798GA	DIP6	MOSFET (Photorelay)	31
6N135	DIP8	IC	23
6N136	DIP8	IC	23
6N137	DIP8	IC	23
6N138	DIP8	IC	23
6N139	DIP8	IC	23

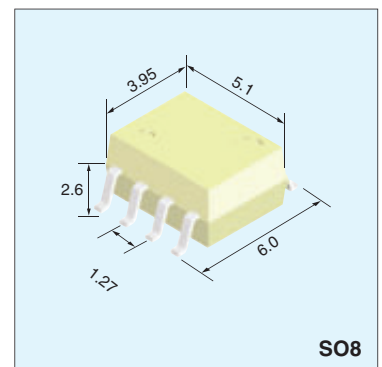
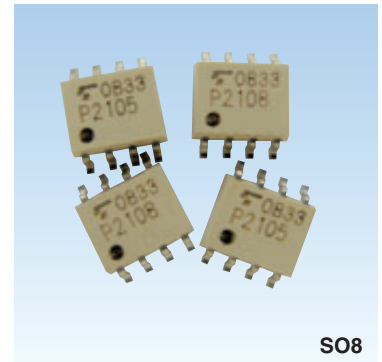
2 New Products

Small Surface-Mount IC-Output Photocouplers in the SO8 Package

Toshiba is expanding its portfolio of IC-output photocouplers in the small and thin SO8 package. To meet customer needs, Toshiba has released photocouplers featuring various data rates, dual-channel configurations and power device drivers.

Data rate (typ.)	Part Number	# of Circuits	Output	Supply Voltage
0.1 Mbit/s	TLP2403	1-ch	Darlington	Up to 18 V
1 Mbit/s	TLP2404	1-ch	Open-collector	4.5 V to 30 V
	TLP2409	1-ch		Up to 30 V
5 Mbit/s	TLP2405	1-ch	Totem-pole	4.5 V to 20 V
	TLP2408	1-ch		
	TLP2105	2-ch		
15 Mbit/s to 20 Mbit/s	TLP2108	2-ch	Totem-pole	3.3 V/5 V
	TLP2466*	1-ch		
	TLP2160*	2-ch	Open-collector	5 V
	TLP2418	1-ch		
	TLP2118E	2-ch	Open-collector	3.3 V/5 V
	TLP2468*	1-ch		
	TLP2168*	2-ch	Totem-pole	5 V
	TLP2116	2-ch		
TLP2166A	2-ch	Totem-pole	3.3 V	
50 Mbit/s	TLP2467*			1-ch
	TLP2167*	2-ch		
Driver Propagation Delay: 0.7 μs (max)	TLP2451	1-ch	±0.6-A peak current	10 V to 30 V
Driver Propagation Delay: 0.5 μs (max)	TLP2451A*	1-ch	±0.6-A peak current	10 V to 30 V

*Under development. Specifications subject to change without notice. For the latest information, please contact your nearest Toshiba sales representative.



IGBT/MOSFET Gate-Drive IC-Output Photocouplers with an Extended Operating Temperature Range

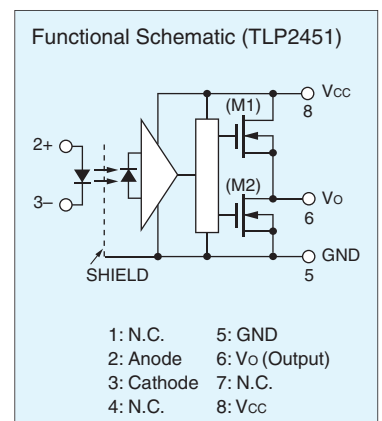
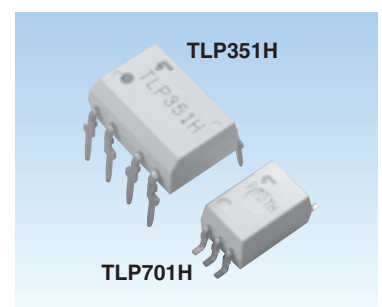
Printed circuit boards are becoming smaller and denser as a result of product miniaturization. This is driving the need for electronic components with an extended operating temperature range.

To meet this need, Toshiba has been expanding its portfolio of IC-output photocouplers that are guaranteed up to 125°C instead of the conventional 100°C limit.

- Wide packaging options: SO6, SO8, SDIP6, DIP8
- Key specifications are guaranteed over -40°C to 125°C (-40°C to 110°C for the TLP151)
- Low current consumption: I_{CC} = 2 mA (max)

Peak Output Current	Part Number	Package	Supply Voltage (V _{CC})	Supply Current (I _{CC})	Input Threshold Current	Propagation Delay (max)	UVLO
±0.6 A	TLP351H*	DIP8	10 V to 30 V	2 mA (max)	5 mA (max)	700 ns	-
	TLP701H*	SDIP6					-
	TLP2451	SO8					-
	TLP2451A*	SO8				500 ns	-
	TLP151*	SO6				700 ns	-
±2.0 A	TLP151A*	SO6	15 V to 30 V			500 ns	-
	TLP700H*	SDIP6					Yes
±2.5 A	TLP350H*	DIP8					Yes

*Under development. Specifications subject to change without notice. For the latest information, please contact your nearest Toshiba sales representative.



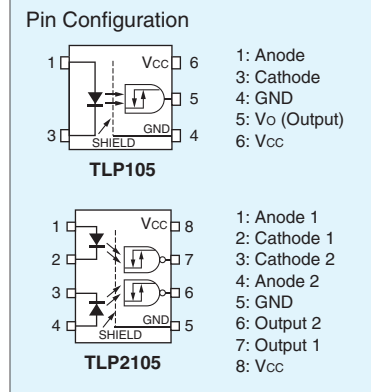
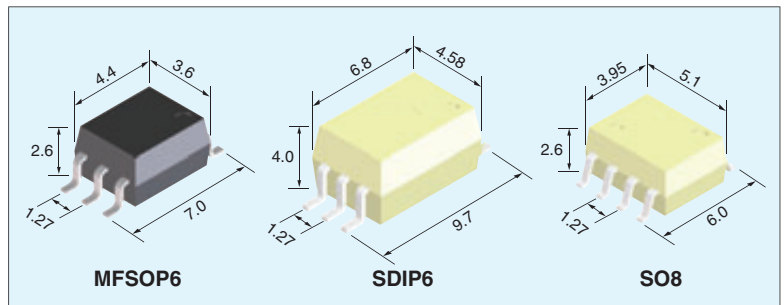
2 New Products

General-Purpose 5-Mbit/s IC-Output Photocouplers

IC-output photocouplers with a data rate of 5 Mbits/s are beneficial for applications where the user needs a data rate that is not achievable with transistor-output photocouplers. In conjunction with various packaging options, the fast IC-output photocouplers simplify system design and provide extra performance for future upgrades.

- Packaging options: MFSOP6, SDIP6, SO8
- Available in positive and negative polarity versions.
- Key specifications guaranteed over -40°C to 100°C
- Low input current: 1.6 mA max (3 mA for the TLP715 and TLP718)
- Totem-pole output: Eliminates the need for an external load resistor.
- Wide supply voltage range: 4.5 V to 20 V
- Available in dual-channel versions (TLP2105/TLP2108)
- EN60747-5-2-certified

Package	Part Number	# of Channels	Logic Polarity
MFSOP6	TLP105	1-ch	Positive
	TLP108	1-ch	Negative
SDIP6	TLP715	1-ch	Positive
	TLP718	1-ch	Negative
SO8	TLP2405	1-ch	Positive
	TLP2408	1-ch	Negative
	TLP2105	2-ch	Positive
	TLP2108	2-ch	Negative



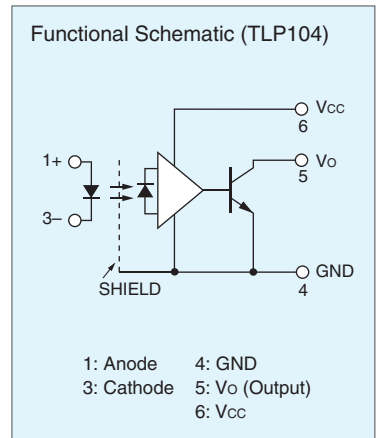
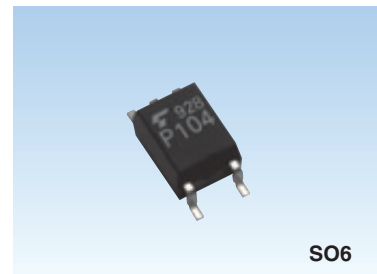
IC-Output Photocouplers for IPM Drive Applications

Toshiba offers IC-output photocouplers ideal for IPM drive applications. Compared to the conventional TLP114A (IGM), these IC-output photocouplers provide shorter propagation delay times, a wider operating temperature range and digital output. Thus, they help to simplify system design and improve system performance. The TLP104 and TLP2404 in a small surface-mount package are now available in mass-production quantities, while those in the SDIP6 and DIP8 packages will shortly be available.

- Wide packaging options: SO6, SO8, SDIP6, DIP8
- Key specifications are guaranteed over -40°C to 125°C .
- Low current consumption: 5 mA (max)
- Wide supply voltage range: 4.5 to 30 V
- Propagation delay times: $t_{pHL} = 400$ ns (max), $t_{pLH} = 550$ ns (max)
- Propagation delay skew: $t_{pHL} - t_{pLH} = 400$ ns (max)

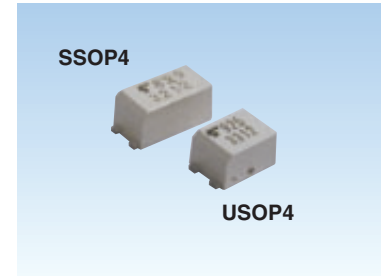
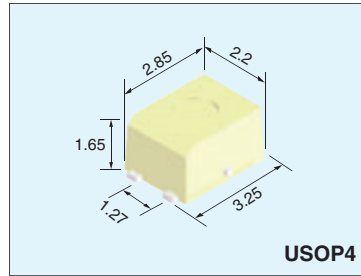
Part Number	Package	Feature
TLP104	SO6	Small surface-mount package with a 2.3-mm PCB mounted height (max)
TLP2404	SO8	Standard 8-pin small surface-mount package
TLP714*	SDIP6	Small surface-mount SDIP6 package
TLP754*	DIP8	Standard DIP8 package

*Under development. Specifications subject to change without notice. For the latest information, please contact your nearest Toshiba sales representative.

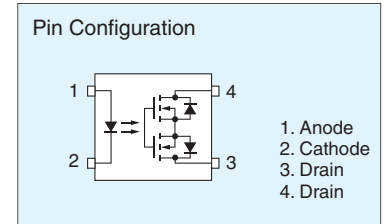


Photorelays in the Ultra-Small USOP4 Package: TLP33xx Series

There is a strong market need for smaller photorelays. To meet this need, Toshiba has developed photorelays in the ultra-small USOP4 package, which are suitable for high-density board assembly. These photorelays help to reduce system size and cost. They are ideal for use in small measuring instruments such as semiconductor testers that require numerous relays. The TLP3312 and TLP3375 provide well-balanced off-state voltage and on-state current, making them suitable not only for tester applications but also for various applications requiring high-density board assembly such as battery-controlled devices.



Part Number	Off-State Voltage (max)	On-State Current (max)	On-State Resistance (max)	Total Capacitance (typ.)	LED Trigger Current (max)
TLP3312	60 V	0.4 A	1.5 Ω	20 pF	3 mA
TLP3375	50 V	0.3 A	1.5 Ω	12 pF	3 mA



High-ION Photorelays: TLP354x Series (Under Development)

Toshiba is now developing the TLP354x Series in the DIP6 package targeting applications that deal with relatively large current. Housed in the DIP6 package, the TLP354x photorelays allow B and C connections, enabling the switching of 8-A, 7-A, 6-A and 4-A dc current respectively. They are suitable for various applications such as factory equipment, power supplies and security systems.

Scheduled for mass production in April

Characteristic	Symbol	Unit	Available	Under Development			
			TLP3542	TLP3543	TLP3544	TLP3545	TLP3546
Package	-	-	DIP6				
Peak Off-State Voltage (min)	V _{OFF}	V	40	20	40	60	100
On-State Current (max)	I _{ON}	A	2.5	4	3.5	3	2
On-State Resistance (max)	R _{ON}	m Ω	100	50	60	70	200
Isolation Voltage (min)	B _{VS}	V _{rms}	2500	2500	2500	2500	2500

*Under development. Specifications subject to change without notice.
For the latest information, please contact your nearest Toshiba sales representative.

2 New Products

General-Purpose Photorelays Certified for Reinforced Insulation: TLP220 Series and TLP221A (Under Development)

Toshiba is now developing the TLP220 Series and the TLP221 targeting factory equipment applications, and wattmeter and smart meter applications for the monitoring of electrical energy consumption. These photorelays meet the requirements for high isolation voltage between input and output, as well as for international safety standards certification. Housed in the DIP4 package, the new photorelays save board space and provide an isolation voltage of 5 kV. The TLP220 Series is available in versions with 60-V, 200-V, 350-V, 400-V and 600-V peak off-state voltages. The TLP221A provides a 60-V peak off-state voltage and a 1.5-A on-state current.

Scheduled for mass production in June to August

Characteristic	Symbol	Unit	Existing Photorelay Examples		Under Development					
			TLP222A	TLP222G	TLP220A	TLP220D	TLP220G	TLP220GA	TLP220J	TLP221A
Package	-	-	DIP4							
Peak Off-State Voltage (min)	V _{OFF}	V	60	350	60	200	350	400	600	60
On-State Current (max)	I _{ON}	A	0.5	0.12	0.5	0.25	0.1	0.12	0.09	1.5
On-State Resistance (max)	R _{ON}	Ω	2	50	2	8	50	35	60	0.2
Isolation Voltage (min)	B _{VS}	V _{rms}	5000	5000	5000	5000	5000	5000	5000	5000

*Under development. Specifications subject to change without notice.
For the latest information, please contact your nearest Toshiba sales representative.

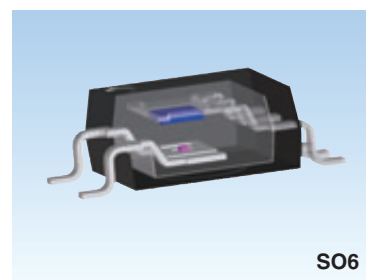
IC-Output Photocouplers in the SO6 Package Certified for Reinforced Insulation

Despite the same footprint size as the MFSOP6 package, the new SO6 package provides reinforced insulation, offering clearance and creepage distances of ≥ 5 mm; an internal isolation thickness of ≥ 0.4 mm; and an isolation voltage of 3750 V_{rms}. Additionally, the SO6 features the maximum PCB mounted height of 2.3 mm, approximately 20% lower than the MFSOP6. This makes the photocouplers in SO6 ideal for low-profile applications.

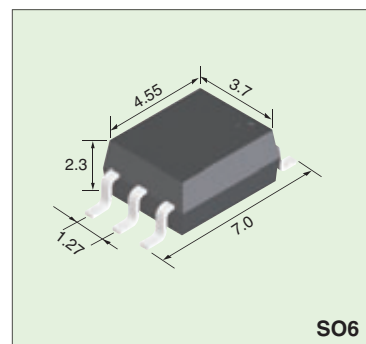
- Clearance/creepage: ≥ 5 mm
- Thin package: ≤ 2.3 mm
- Internal Faraday shield: ≥ 0.4 mm
- Thin package: ≤ 2.3 mm

Part Number	Data rate (typ.)	Output	Supply voltage	Input Threshold Current (max)
TLP104	1 Mbit/s	Open-collector, optimized for IPM drive	4.5 V to 30 V	5 mA
TLP109	1 Mbit/s	Open-collector	4.5 V to 30 V	-
TLP116A	20 Mbit/s	Totem-pole inverting logic	5 V	5 mA
TLP2366*			3.3 V/5 V	5 mA
TLP118	20 Mbit/s	Open-collector inverting logic	5 V	5 mA
TLP2368*			3.3 V/5 V	5 mA
TLP2367*			3.3 V/5 V	5 mA

*Under development. Specifications subject to change without notice.
For the latest information, please contact your nearest Toshiba sales representative.



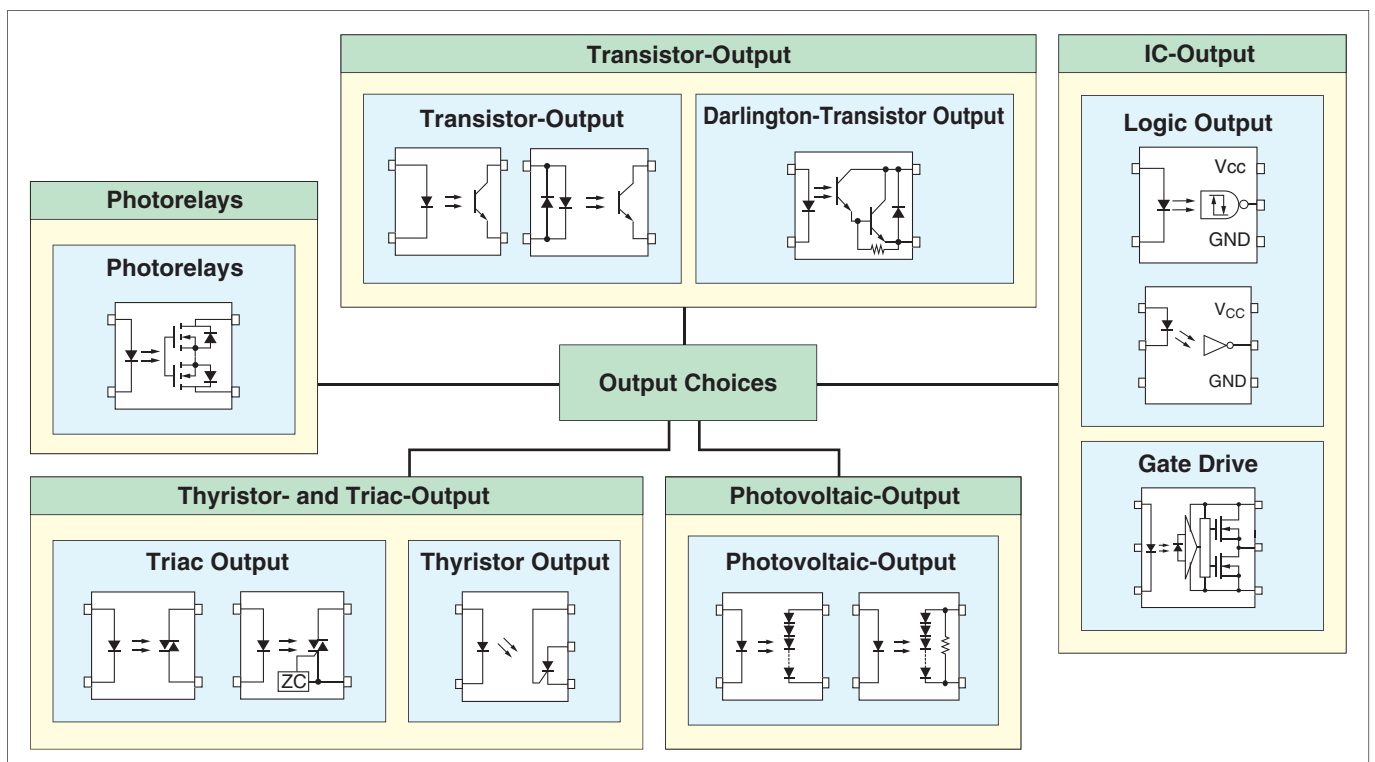
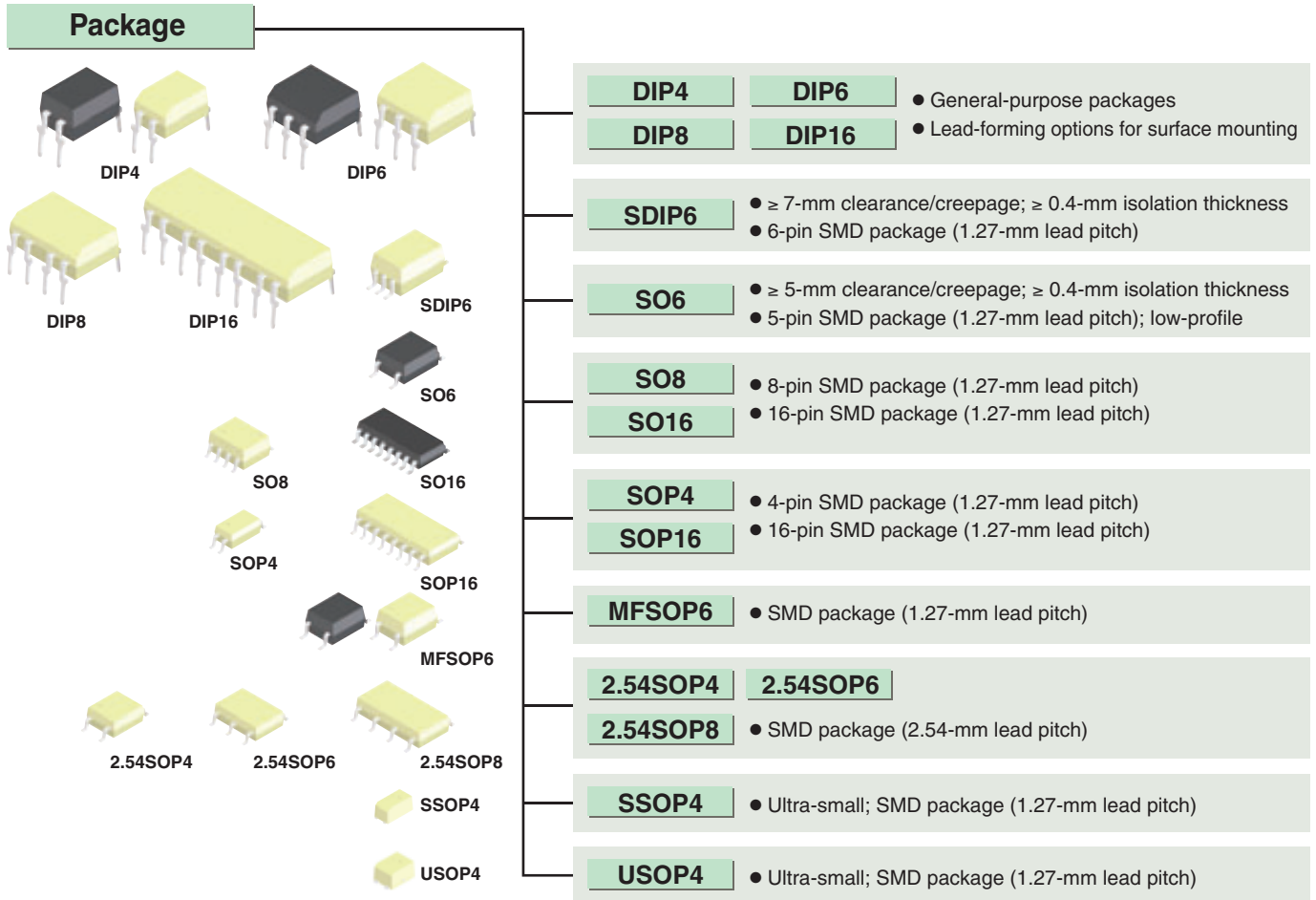
SO6



SO6

3 Photocoupler Product Tree

Photocoupler Product Tree



4 Selection Guide

1 Transistor-Output and Darlington-Transistor-Output Photocouplers

Features		Package									
											
		SOP4	SOP16	SO6	SO16	MFSOP6	DIP6	DIP4	DIP8	DIP16	
Isolation Voltage	Channel	Single	Quad	Single	Quad	Single	Single	Single	Dual	Quad	
	General-purpose	2500 Vrms	TLP281	TLP281-4		TLP291-4*		TLP531 TLP532		TLP504A	
3750 Vrms		TLP285	TLP285-4	TLP185*		TLP131 TLP181					
4000 Vrms							TLP731 TLP732 TLP733 TLP734				
5000 Vrms							TLP631 TLP632	TLP781 TLP785			
Low I _F		3750 Vrms					TLP124 TLP137				
		5000 Vrms						TLP331 TLP332	TLP624	TLP624-2	TLP624-4
High V _{CEO}		5000 Vrms						TLP628	TLP628-2	TLP628-4	
High I _F		5000 Vrms						TLP629	TLP629-2	TLP629-4	
AC input		2500 Vrms	TLP280	TLP280-4		TLP290-4*					
		3750 Vrms	TLP284	TLP284-4	TLP184*		TLP130 TLP180				
	5000 Vrms						TLP630	TLP620	TLP620-2	TLP620-4	
	Low I _F	3750 Vrms					TLP126				
		5000 Vrms							TLP626	TLP626-2	TLP626-4
	High I _F	5000 Vrms						TLP330	TLP320	TLP320-2	TLP320-4
Darlington	2500 Vrms						TLP570 TLP571 TLP572	TLP523	TLP523-2	TLP523-4	
	2500 Vrms					TLP127					
	5000 Vrms						TLP371 TLP372 TLP373	TLP627	TLP627-2	TLP627-4	

*Under development. Specifications subject to change without notice. For the latest information, please contact your nearest Toshiba sales representative.

New Products with Reinforced Insulation in a Small, Surface-Mount SOP Package (≥ 5-mm Clearance/Creepage and ≥ 0.4-mm Internal Isolation Thickness)

Part Number	Pin Configuration	Features	CTR (%) ⁽³⁾				V _{CEO}	BV _s	Safety Standards ⁽²⁾				
			Rank	Min	Max	@ I _F , V _{CE}			UL/cUL	TÜV	VDE	BSI	IEC
TLP284 ⁽⁴⁾		SOP4 Lead pitch = 1.27 mm AC Input SEMKO-approved TST part recm'ed	–	50	600	±5 mA, 5 V	80 V	3750 Vrms	○/○	△	○ ⁽¹⁾	◎	◎
			Y	50	150								
			GR	100	300								
			BL	200	600								
			GB	100	600								
TLP284-4		SOP16 4-channel version of the TLP284 Lead pitch = 1.27 mm AC Input SEMKO-approved	–	50	600	±5 mA, 5 V	80 V	3750 Vrms	○/○	△	○ ⁽¹⁾		△
			GB	100	600								
TLP285 ⁽⁴⁾		SOP4 Lead pitch = 1.27 mm SEMKO-approved TST part recm'ed	–	50	600	5 mA, 5 V	80 V	3750 Vrms	○/○	○ ⁽¹⁾	○ ⁽¹⁾	◎	◎
			Y	50	150								
			GR	100	300								
			BL	200	600								
			GB	100	600								
			YH	75	150								
			GRL	100	200								
			GRH	150	300								
BLL	200	400											
TLP285-4		SOP16 4-channel version of the TLP285 Lead pitch = 1.27 mm SEMKO-approved	–	50	600	5 mA, 5 V	80 V	3750 Vrms	○/○	△	○ ⁽¹⁾		△
			GB	100	600								

General-Purpose, Transistor-Output Photocouplers

Part Number	Pin Configuration	Features	CTR (%) ⁽³⁾				V _{CEO}	BV _s	Safety Standards ⁽²⁾				
			Rank	Min	Max	@ I _F , V _{CE}			UL/cUL	TÜV	VDE	BSI	IEC
TLP124		Mini-flat MFSOP6 Low input drive current	–	100	1200	1 mA, 0.5 V	80 V	3750 Vrms	○/○				
TLP131		Mini-flat MFSOP6 Internal base connection	–	50	600	5 mA, 5 V	80 V	3750 Vrms	○/○				
			Y	50	150								
			GR	100	300								
			BL	200	600								
TLP137		Mini-flat MFSOP6 Low input drive current Internal base connection	–	100	1200	1 mA, 0.5 V	80 V	3750 Vrms	○/○				
			BV	200	1200								
TLP181 ⁽⁴⁾		Mini-flat MFSOP6 SEMKO-approved TST part recm'ed	–	50	600	5 mA, 5 V	80 V	3750 Vrms	○/○	△	○ ⁽¹⁾	◎	◎
			Y	50	150								
			GR	100	300								
			BL	200	600								
			GB	100	600								
			YH	75	150								
			GRL	100	200								
			GRH	150	300								
BLL	200	400											
TLP281 ⁽⁴⁾		SOP4 Lead pitch = 1.27 mm SEMKO-approved TST part recm'ed	–	50	600	5 mA, 5 V	80 V	2500 Vrms	○/○	○ ⁽¹⁾	○ ⁽¹⁾	◎	◎
			Y	50	150								
			GR	100	300								
			BL	200	600								
			GB	100	600								
			YH	75	150								
			GRL	100	200								
			GRH	150	300								
			BLL	200	400								

Note 1: The EN60747-5-2 safety standard for compact packages is different from that for standard DIP packages.

Since the mini-flat package is a compact package, please contact your nearest Toshiba sales representative for more details.

Note 2: BSI and IEC: ○: Approved (supplementary or basic insulation) ◎: Approved (reinforced insulation) △: Design which meets safety standard/approval pending as of January 2011
EN 60065- and IEC 60065-approved, EN 60950- and IEC 60950-approved

TÜV and VDE: ○: Approved △: Design which meets safety standard/approval pending as of January 2011
EN 60747-5-2-approved with option V4 or D4

For the latest information, please contact your nearest Toshiba sales representative.

Note 3: Some CTR ranks may be limited in production quantities. For details, please contact your nearest Toshiba sales representative.

Note 4: Product manufactured by Toshiba Semiconductor (Thailand) Co., Ltd. [TST] is recommended. See page 38 for detail. Japan product is non-promotional item.

4 Selection Guide

General-Purpose, Transistor-Output Photocouplers (Continued)

Part Number	Pin Configuration	Features	CTR (%) ⁽³⁾				V _{CEO}	BV _s	Safety Standards ⁽²⁾				
			Rank	Min	Max	@ I _F , V _{CE}			UL/cUL	TÜV	VDE	BSI	IEC
TLP281-4		SOP16 4-channel version of the TLP281 Lead pitch = 1.27 mm SEMKO-approved	–	50	600	5 mA, 5 V	80 V	2500 V _{rms}	○/○	△	○ ⁽¹⁾	◎	◎
			GB	100	600								
TLP331		DIP6 Low input drive current Internal base connection	–	100	1200	1 mA, 0.5 V	55 V	5000 V _{rms}	○/○				
			BV	200	1200								
TLP332		DIP6 Low input drive current	–	100	1200	1 mA, 0.5 V	55 V	5000 V _{rms}	○/○				
			BV	200	1200								
TLP504A		DIP8	–	50	600	5 mA, 5 V	55 V	2500 V _{rms}	○/–				
			GB	100	600								
TLP531		DIP6 Internal base connection	–	50	600	5 mA, 5 V	55 V	2500 V _{rms}	○/○				
			Y	50	150								
			GR	100	300								
			BL	200	600								
			GB	100	600								
TLP532		DIP6 High EMI immunity	–	50	600	5 mA, 5 V	55 V	2500 V _{rms}	○/○				
			Y	50	150								
			GR	100	300								
			BL	200	600								
			GB	100	600								
TLP624		DIP4 Low input drive current	–	100	1200	1 mA, 5 V	55 V	5000 V _{rms}	○/–	△	△	◎	◎
			BV	200	1200								
TLP624-2		DIP8 Dual-channel version of the TLP624	–	100	1200	1 mA, 5 V	55 V	5000 V _{rms}	○/–	△	△	◎	◎
			BV	200	1200								
TLP624-4		DIP16 4-channel version of the TLP624	–	100	1200	1 mA, 5 V	55 V	5000 V _{rms}	○/–	△	△	◎	◎
			BV	200	1200								
TLP628		DIP4 High V _{CEO}	–	50	600	5 mA, 5 V	350 V	5000 V _{rms}	○/–	△	△	△	△
			GB	100	600								

Note 1: The EN60747-5-2 safety standard for compact packages is different from that for standard DIP packages.

Since the mini-flat package is a compact package, please contact your nearest Toshiba sales representative for more details.

Note 2: BSI and IEC: ○: Approved (supplementary or basic insulation) ◎: Approved (reinforced insulation) △: Design which meets safety standard/approval pending as of January 2011
EN 60065- and IEC 60065-approved, EN 60950- and IEC 60950-approved

TÜV and VDE: ○: Approved △: Design which meets safety standard/approval pending as of January 2011

EN 60747-5-2-approved with option V4 or D4

For the latest information, please contact your nearest Toshiba sales representative.

Note 3: Some CTR ranks may be limited in production quantities. For details, please contact your nearest Toshiba sales representative.

General-Purpose, Transistor-Output Photocouplers (Continued)

Part Number	Pin Configuration	Features	CTR (%) ⁽³⁾				V _{CEO}	BV _s	Safety Standards ⁽²⁾				
			Rank	Min	Max	@ I _F , V _{CE}			UL/cUL	TÜV	VDE	BSI	IEC
TLP628-2		DIP8 Dual-channel version of the TLP628	-	50	600	5 mA, 5 V	350 V	5000 Vrms	○/—	△	△	△	△
			GB	100	600								
TLP628-4		DIP16 4-channel version of the TLP628	-	50	600	5 mA, 5 V	350 V	5000 Vrms	○/—	△	△	△	△
			GB	100	600								
TLP629		DIP4 High input current I _F = 150 mA	-	20	80	100 mA, 1 V	55 V	5000 Vrms	○/—	△	△	△	△
TLP629-2		DIP8 Dual-channel version of the TLP629	-	20	80	100 mA, 1 V	55 V	5000 Vrms	○/—	△	△	△	△
TLP629-4		DIP16 4-channel version of the TLP629	-	20	80	100 mA, 1 V	55 V	5000 Vrms	○/—	△	△	△	△
TLP631		DIP6 Internal base connection	-	50	600	5 mA, 5 V	55 V	5000 Vrms	○/○				
			GB	100	600								
			GR	100	300								
TLP632		DIP6 High EMI immunity	-	50	600	5 mA, 5 V	55 V	5000 Vrms	○/○				
			GB	100	600								
			GR	100	300								
TLP731		DIP6 SEMKO-approved Internal base connection	-	50	600	5 mA, 5 V	55 V	4000 Vrms	○/○	△	○	◎	◎
			GB	100	600								
			GR	100	300								
TLP732		DIP6 SEMKO-approved	-	50	600	5 mA, 5 V	55 V	4000 Vrms	○/○	△	○	◎	◎
			GB	100	600								
			GR	100	300								
TLP733 TLP733F		DIP6 SEMKO-approved Internal base connection	-	50	600	5 mA, 5 V	55 V	4000 Vrms	○/—	△	○	◎	◎
			GB	100	600								
			GR	100	300								

Note 1: The EN60747-5-2 safety standard for compact packages is different from that for standard DIP packages.

Since the mini-flat package is a compact package, please contact your nearest Toshiba sales representative for more details.

Note 2: BSI and IEC: ○: Approved (supplementary or basic insulation) ◎: Approved (reinforced insulation) △: Design which meets safety standard/approval pending as of January 2011

EN 60065- and IEC 60065-approved, EN 60950- and IEC 60950-approved

TÜV and VDE: ○: Approved △: Design which meets safety standard/approval pending as of January 2011

EN 60747-5-2-approved with option V4 or D4

For the latest information, please contact your nearest Toshiba sales representative.

Note 3: Some CTR ranks may be limited in production quantities. For details, please contact your nearest Toshiba sales representative.

4 Selection Guide

General-Purpose, Transistor-Output Photocouplers (Continued)

Part Number	Pin Configuration	Features	CTR (%) ⁽³⁾				V _{CEO}	BV _s	Safety Standards ⁽²⁾				
			Rank	Min	Max	@ I _F , V _{CE}			UL/cUL	TÜV	VDE	BSI	IEC
TLP734 TLP734F		DIP6 SEMKO-approved	–	50	600	5 mA, 5 V	55 V	4000 Vrms	○/–	△	○	◎	◎
			GB	100	600								
			GR	100	300								
TLP781 ⁽⁶⁾ TLP781F ⁽⁶⁾		DIP 4 High isolation voltage UL-approved (double protection)	–	50	600	5 mA, 5 V	80 V	5000 Vrms	○/○ ⁽⁵⁾	△	○	◎	◎
			Y	50	150								
			GR	100	300								
			BL	200	600								
			GB	100	600								
			YH	75	150								
			GRL	100	200								
			GRH	150	300								
BLL	200	400											
TLP785* ⁽⁶⁾ TLP785F* ⁽⁶⁾		DIP 4 High isolation voltage UL-approved (double protection)	–	50	600	5 mA, 5 V	80 V	5000 Vrms	○/○ ⁽⁵⁾	△	△	△	△
			Y	50	150								
			GR	100	300								
			BL	200	600								
			GB	100	600								
			YH	75	150								
			GRL	100	200								
			GRH	150	300								
BLL	200	400											

AC-Input, Transistor-Output Photocouplers

Part Number	Pin Configuration	Features	CTR (%) ⁽³⁾				V _{CEO}	BV _s	Safety Standards ⁽²⁾				
			Rank	Min	Max	@ I _F , V _{CE}			UL/cUL	TÜV	VDE	BSI	IEC
TLP126		Mini-flat MFSOP6 AC input Low input drive current	–	100	1200	±1 mA, 0.5 V	80 V	3750 Vrms	○/○				
TLP130		Mini-flat MFSOP6 AC input Internal base connection	–	50	600	±5 mA, 5 V	80 V	3750 Vrms	○/○				
			GB	100	600								
TLP180 ⁽⁴⁾		Mini-flat MFSOP6 AC input SEMKO-approved TST part recm'ed	–	50	600	±5 mA, 5 V	80 V	3750 Vrms	○/○	○ ⁽¹⁾	○ ⁽¹⁾	◎	◎
			Y	50	150								
			GR	100	300								
			BL	200	600								
			GB	100	600								
TLP280 ⁽⁴⁾		SOP4 Lead pitch = 1.27 mm AC input SEMKO-approved TST part recm'ed	–	50	600	±5 mA, 5 V	80 V	2500 Vrms	○/○	○ ⁽¹⁾	○ ⁽¹⁾	◎	◎
			Y	50	150								
			GR	100	300								
			BL	200	600								
TLP280-4		SOP16 4-channel version of the TLP280 Lead pitch = 1.27 mm AC input SEMKO-approved	–	50	600	±5 mA, 5 V	80 V	2500 Vrms	○/○	△	○ ⁽¹⁾	◎	◎
			GB	100	600								

*Under development. Specifications subject to change without notice. For the latest information, please contact your nearest Toshiba sales representative.

Note 1: The EN60747-5-2 safety standard for compact packages is different from that for standard DIP packages.

Since the mini-flat package is a compact package, please contact your nearest Toshiba sales representative for more details.

Note 2: BSI and IEC: ○: Approved (supplementary or basic insulation) ◎: Approved (reinforced insulation) △: Design which meets safety standard/approval pending as of January 2011
EN 60065- and IEC 60065-approved, EN 60950- and IEC 60950-approved

TÜV and VDE: ○: Approved △: Design which meets safety standard/approval pending as of January 2011

EN 60747-5-2-approved with option V4 or D4

For the latest information, please contact your nearest Toshiba sales representative.

Note 3: Some CTR ranks may be limited in production quantities. For details, please contact your nearest Toshiba sales representative.

Note 4: Product manufactured by Toshiba Semiconductor (Thailand) Co.,Ltd. [TST] is recommended. See page 38 for detail. Japan product is non-promotional item.

Note 5: For safety standard compliance criteria including the operating temperature conditions, please contact your nearest Toshiba representative.

Note 6: About the package dimensions and lead form options, see each datasheet.

AC-Input, Transistor-Output Photocouplers (Continued)

Part Number	Pin Configuration	Features	CTR (%) ⁽³⁾				V _{CEO}	BV _s	Safety Standards ⁽²⁾				
			Rank	Min	Max	@ I _F , V _{CE}			UL/cUL	TÜV	VDE	BSI	IEC
TLP320		DIP4 High input current AC input I _F = 150 mA	–	20	80	±100 mA, 1 V	55 V	5000 Vrms	○/○			○	○
TLP320-2		DIP8 Dual-channel version of the TLP320	–	20	80	±100 mA, 1 V	55 V	5000 Vrms	○/○			○	○
TLP320-4		DIP16 4-channel version of the TLP320	–	20	80	±100 mA, 1 V	55 V	5000 Vrms	○/○			○	○
TLP330		DIP6 High input current AC input I _F = 150 mA Internal base connection	–	20	80	±100 mA, 1 V	55 V	5000 Vrms	○/○				
TLP620 ⁽⁴⁾ TLP620F ⁽⁴⁾		DIP4 AC input SEMKO-approved TST part recm'd	–	50	600	±5 mA, 5 V	55 V	5000 Vrms	○/○	△	○	○	○
			Y	50	150								
			GR	100	300								
			BL	200	600								
TLP620-2 ⁽⁴⁾ TLP620F-2 ⁽⁴⁾		DIP8 Dual-channel version of the TLP620 SEMKO-approved TST part recm'd	–	50	600	±5 mA, 5 V	55 V	5000 Vrms	○/○	△	○	○	○
			GB	100	600								
TLP620-4		DIP16 4-channel version of the TLP620	–	50	600	±5 mA, 5 V	55 V	5000 Vrms	○/○	△	○	○	○
			GB	100	600								
TLP626		DIP4 Low input drive current AC input	–	100	1200	±1 mA, 0.5 V	55 V	5000 Vrms	○/–	△	△	○	○
			BV	200									
TLP626-2		DIP8 Dual-channel version of the TLP626	–	100	1200	±1 mA, 0.5 V	55 V	5000 Vrms	○/–	△	△	○	○
			BV	200									
TLP626-4		DIP16 4-channel version of the TLP626	–	100	1200	±1 mA, 0.5 V	55 V	5000 Vrms	○/–	△	△	○	○
			BV	200									
TLP630		DIP6 AC input High isolation voltage Internal base connection	–	50	600	±5 mA, 5 V	55 V	5000 Vrms	○/○				
			GB	100									

Note 1: The EN60747-5-2 safety standard for compact packages is different from that for standard DIP packages.

Since the mini-flat package is a compact package, please contact your nearest Toshiba sales representative for more details.

Note 2: BSI and IEC: ○: Approved (supplementary or basic insulation) ◎: Approved (reinforced insulation) △: Design which meets safety standard/approval pending as of January 2011
EN 60065- and IEC 60065-approved, EN 60950- and IEC 60950-approved

TÜV and VDE: ○: Approved △: Design which meets safety standard/approval pending as of January 2011

EN 60747-5-2-approved with option V4 or D4

For the latest information, please contact your nearest Toshiba sales representative.

Note 3: Some CTR ranks may be limited in production quantities. For details, please contact your nearest Toshiba sales representative.

Note 4: Product manufactured by Toshiba Semiconductor (Thailand) Co., Ltd. [TST] is recommended. See page 38 for detail. Japan product is non-promotional item.

4 Selection Guide

Darlington-Transistor-Output Photocouplers

Part Number	Pin Configuration	Features	CTR (%) ⁽³⁾		V _{CE (sat)}		V _{CEO}	BV _s	Safety Standards ⁽²⁾				
			Min	@ I _F , V _{CE}	Max	@ I _C , I _F			UL/cUL	TÜV	VDE	BSI	IEC
TLP127		Mini-flat MFSOP6 High V _{CEO}	1000	1 mA, 1 V	1.2 V	100 mA, 10 mA	300 V	2500 Vrms	○/○	△	○ ⁽¹⁾	○	○
TLP371		DIP6 High V _{CEO} SEMKO-approved Internal base connection	1000	1 mA, 1 V	1.2 V	100 mA, 10 mA	300 V	5000 Vrms	○/○			△	△
TLP372		DIP6 High V _{CEO} SEMKO-approved	1000	1 mA, 1 V	1.2 V	100 mA, 10 mA	300 V	5000 Vrms	○/○			△	△
TLP373		DIP6 High V _{CEO} Long emitter-collector distance SEMKO-approved	1000	1 mA, 1 V	1.2 V	100 mA, 10 mA	300 V	5000 Vrms	○/○			△	△
TLP523		DIP4	500	1 mA, 1 V	1 V	50 mA, 10 mA	55 V	2500 Vrms	○/○				
TLP523-2		DIP8 Dual-channel version of the TLP523	500	1 mA, 1 V	1 V	50 mA, 10 mA	55 V	2500 Vrms	○/○				
TLP523-4		DIP16 4-channel version of the TLP523	500	1 mA, 1 V	1 V	50 mA, 10 mA	55 V	2500 Vrms	○/○				
TLP570		DIP6 High EMI immunity	1000	1 mA, 1 V	1.2 V	100 mA, 10 mA	35 V	2500 Vrms	○/○				
TLP571		DIP6 Internal base connection	1000	1 mA, 1 V	1.2 V	100 mA, 10 mA	35 V	2500 Vrms	○/—				
TLP572		DIP6 Built-in R _{BE}	1000	1 mA, 1.2 V	1.2 V	100 mA, 10 mA	55 V	2500 Vrms	○/—				
TLP627 ⁽⁴⁾		DIP4 High V _{CEO} SEMKO-approved TST part recm'd	1000	1 mA, 1 V	1.2 V	100 mA, 10 mA	300 V	5000 Vrms	○/○	△	○	○	○
TLP627-2 ⁽⁴⁾		DIP8 Dual-channel version of the TLP627 SEMKO-approved TST part recm'd	1000	1 mA, 1 V	1.2 V	100 mA, 10 mA	300 V	5000 Vrms	○/○	△	○	○	○
TLP627-4		DIP16 4-channel version of the TLP627	1000	1 mA, 1 V	1.2 V	100 mA, 10 mA	300 V	5000 Vrms	○/○	△	○	○	○

Note 1: The EN60747-5-2 safety standard for compact packages is different from that for standard DIP packages.

Since the mini-flat package is a compact package, please contact your nearest Toshiba sales representative for more details.

Note 2: BSI and IEC: ○: Approved (supplementary or basic insulation) ◎: Approved (reinforced insulation) △: Design which meets safety standard/approval pending as of January 2011
EN 60065- and IEC 60065-approved, EN 60950- and IEC 60950-approved

TÜV and VDE: ○: Approved △: Design which meets safety standard/approval pending as of January 2011








EN 60747-5-2-approved with option V4 or D4

For the latest information, please contact your nearest Toshiba sales representative.

Note 3: Some CTR ranks may be limited in production quantities. For details, please contact your nearest Toshiba sales representative.

Note 4: Product manufactured by Toshiba Semiconductor (Thailand) Co.,Ltd. [TST] is recommended. See page 38 for detail. Japan product is non-promotional item.

2 Photocouplers for Logic Signal Transmission

Package										
Data Rate (Typ.)	Output	MFSOP6	SO6	SO8		SDIP6	DIP6	DIP8		JEDEC
				1ch	2ch			1ch	2ch	
0.3 Mbit/s	Open-collector (Darlington)			TLP2403				TLP553		6N138 6N139
1 Mbit/s	Open-collector	(TLP112)* ² (TLP112A)* ² (TLP114A)* ²	TLP109	TLP2409		TLP719	TLP512	TLP550 TLP551 TLP559 TLP651 TLP750 TLP751 TLP759	TLP2530 TLP2531	6N135 6N136
		IPM drive (TLP114A(IGM))* ³	TLP109(IGM) TLP104	TLP2409(IGM) TLP2404			TLP714* ¹	TLP559(IGM) TLP759(IGM) TLP754* ¹		
5 Mbit/s	Totem-pole	TLP105 TLP108		TLP2405 TLP2408	TLP2105 TLP2108	TLP715 TLP718				
	Dual polarity input	TLP2095 TLP2098								
	3-state							TLP555 TLP558 TLP2200		
10 Mbit/s	Open-collector	(TLP113)* ⁴ (TLP115)* ⁴ (TLP115A)* ⁴					TLP513	TLP552 TLP554 TLP2601	TLP2630 TLP2631	6N137
15 to 20 Mbit/s	Totem-pole	5 V (TLP116)* ⁵	TLP116A			TLP2116	TLP716			
		3.3 V TLP2066				TLP2166A				
	Open-collector	3.3 V/5 V		TLP2366* ¹	TLP2466* ¹	TLP2160* ¹	TLP2766* ¹			
		5 V		TLP118	TLP2418	TLP2118	TLP708			
50 Mbit/s	Totem-pole	3.3 V/5 V		TLP2368* ¹	TLP2468* ¹	TLP2168* ¹	TLP2768* ¹			
		5 V TLP117								
		3.3 V/5 V		TLP2367* ¹	TLP2467* ¹	TLP2167* ¹	TLP2767* ¹			

*1: Under development as of January 2011. For the latest information, please contact your nearest Toshiba sales representative.

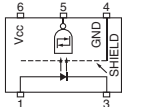
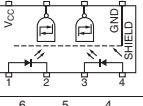
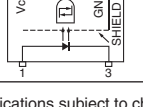
*2: TLP109 recommended

*3: TLP109(IGM) recommended

*4: TLP118 recommended

*5: TLP116A recommended

Photocouplers for Logic Signal Transmission at 40 to 50 Mbit/s (Typ.)

Part Number	Pin Configuration	Features	Data Rate (NRZ) (Typ.)	Output Form	I _{FHL} (Max)	BV _s	Safety Standards ⁽²⁾				
							UL/cUL	TÜV	VDE	BSI	IEC
TLP117		Mini-flat MFSOP6 Propagation delay time: 30 ns (max) V _{CC} = 5 V	50 Mbit/s	Totem pole output (Inverter logic)	5 mA	3750 Vrms	○ / ○	○ ⁽¹⁾	○ ⁽¹⁾		
TLP2167*		SO8 V _{CC} = 3.3 or 5 V T _{opr} (max) 125°C	40 Mbit/s	Totem pole output (Inverter logic)	5 mA	2500 Vrms	△ / △		△ ⁽¹⁾		
TLP2367*		SO6 (reinforced insulation) V _{CC} = 3.3 or 5 V T _{opr} (max) 125°C	40 Mbit/s	Totem pole output (Inverter logic)	5 mA	3750 Vrms	△ / △		△ ⁽²⁾		

*Under development. Specifications subject to change without notice. For the latest information, please contact your nearest Toshiba sales representative.

Note 1: The EN60747-5-2 safety standard for compact packages is different from that for standard DIP packages.

Since the mini-flat package is a compact package, please contact your nearest Toshiba sales representative for more details.

Note 2: BSI and IEC: ○: Approved (supplementary or basic insulation) ◎: Approved (reinforced insulation) △: Design which meets safety standard/approval pending as of January 2011

EN 60065- and IEC 60065-approved, EN 60950- and IEC 60950-approved

TÜV and VDE: ○: Approved △: Design which meets safety standard/approval pending as of January 2011

EN 60747-5-2-approved with option V4 or D4

For the latest information, please contact your nearest Toshiba sales representative.

4 Selection Guide

Photocouplers for Logic Signal Transmission at 40 to 50 Mbit/s (Typ.) (Continued)

Part Number	Pin Configuration	Features	Data Rate (NRZ) (Typ.)	Output Form	IFHL (Max)	BVs	Safety Standards ⁽²⁾				
							UL/cUL	TÜV	VDE	BSI	IEC
TLP2467*		SO8 V _{CC} = 3.3 or 5 V T _{opr} (max) 125°C	40 Mbit/s	Totem pole output (Inverter logic)	5 mA	3750 Vrms	△ / △		△ ⁽¹⁾		
TLP2767*		SDIP6 (reinforced insulation) V _{CC} = 3.3 or 5 V T _{opr} (max) 125°C	40 Mbit/s	Totem pole output (Inverter logic)	5 mA	5000 Vrms	△ / △		△		

Photocouplers for Logic Signal Transmission at 15 to 20 Mbit/s (Typ.)

Part Number	Pin Configuration	Features	Propagation Delay Time (Max)	Output Form	IFHL (Max)	BVs	Safety Standards ⁽²⁾				
							UL/cUL	TÜV	VDE	BSI	IEC
TLP116A		SO6 (reinforced insulation) High speed: 20 Mbit/s V _{CC} = 5 V	60 ns	Totem pole output (Inverter logic)	5 mA	3750 Vrms	○ / ○	○ ⁽¹⁾	○ ⁽¹⁾		
TLP2116		SO8 High speed: 15 Mbit/s V _{CC} = 5 V Dual-channel version	75 ns	Totem pole output (Inverter logic)	5 mA	2500 Vrms	○ / ○	○ ⁽¹⁾	○ ⁽¹⁾		
TLP716 TLP716F		SDIP6 High speed: 15 Mbit/s V _{CC} = 5 V High isolation voltage	75 ns	Totem pole output (Inverter logic)	6.5 mA	5000 Vrms	○ / ○	○	○		
TLP118		SO6 (reinforced insulation) High speed: 20 Mbit/s V _{CC} = 5 V T _{opr} = 125°C (max)	60 ns	Open-collector (Inverter logic)	5 mA	3750 Vrms	○ / ○		○ ⁽¹⁾		
TLP2418*		SO8 High speed: 15 Mbit/s V _{CC} = 5 V	75 ns	Open-collector (Inverter logic)	5 mA	3750 Vrms	○ / ○		○ ⁽¹⁾		
TLP2118E*		SO8 High speed: 15 Mbit/s V _{CC} = 5 V	75 ns	Open-collector (Inverter logic)	5 mA	2500 Vrms	○ / ○		○ ⁽¹⁾		
TLP708*		SDIP6 High speed: 15 Mbit/s V _{CC} = 5 V High isolation voltage	75 ns	Open-collector (Inverter logic)	5 mA	5000 Vrms	○ / ○		○		
TLP2066		Mini-flat MFSOP6 High speed: 20 Mbit/s V _{CC} = 3.3 V	60 ns	Totem pole output (Inverter logic)	5 mA	3750 Vrms	○ / ○	○ ⁽¹⁾	○ ⁽¹⁾		

*Under development. Specifications subject to change without notice. For the latest information, please contact your nearest Toshiba sales representative.

Note 1: The EN60747-5-2 safety standard for compact packages is different from that for standard DIP packages.

Since the mini-flat package is a compact package, please contact your nearest Toshiba sales representative for more details.

Note 2: BSI and IEC: ○: Approved (supplementary or basic insulation) ◎: Approved (reinforced insulation) △: Design which meets safety standard/approval pending as of January 2011

EN 60065- and IEC 60065-approved, EN 60950- and IEC 60950-approved

TÜV and VDE: ○: Approved △: Design which meets safety standard/approval pending as of January 2011

EN 60747-5-2-approved with option V4 or D4

For the latest information, please contact your nearest Toshiba sales representative.

Photocouplers for Logic Signal Transmission at 15 to 20 Mbit/s (Typ.) (Continued)

Part Number	Pin Configuration	Features	Data Rate (NRZ) (Typ.)	Output Form	IFHL (Max)	BVs	Safety Standards ⁽²⁾				
							UL/cUL	TÜV	VDE	BSI	IEC
TLP2160*		SO8 V _{CC} = 3.3 or 5 V T _{opr} = 125°C (max) Dual-channel version	20 Mbit/s	Totem pole output (Inverter logic)	3.5 mA	2500 Vrms	△ / △		△ ⁽¹⁾		
TLP2168*		SO8 V _{CC} = 3.3 or 5 V T _{opr} = 125°C (max) Dual-channel version	20 Mbit/s	Open-collector (Inverter logic)	5 mA	3750 Vrms	○ / ○		○ ⁽¹⁾		
TLP2366*		SO6 (reinforced insulation) V _{CC} = 3.3 or 5 V T _{opr} = 125°C (max)	20 Mbit/s	Totem pole output (Inverter logic)	3.5 mA	3750 Vrms	△ / △		△ ⁽¹⁾		
TLP2368*		SO6 (reinforced insulation) V _{CC} = 3.3 or 5 V T _{opr} = 125°C (max)	20 Mbit/s	Open-collector (Inverter logic)	5 mA	3750 Vrms	△ / △		△ ⁽¹⁾		
TLP2466*		SO8 V _{CC} = 3.3 or 5 V T _{opr} = 125°C (max)	20 Mbit/s	Totem pole output (Inverter logic)	3.5 mA	3750 Vrms	△ / △		△ ⁽¹⁾		
TLP2468		SO8 V _{CC} = 3.3 or 5 V T _{opr} = 125°C (max)	20 Mbit/s	Open-collector (Inverter logic)	5 mA	3750 Vrms	○ / ○		○ ⁽¹⁾		
TLP2766*		SDIP6 V _{CC} = 3.3 or 5 V T _{opr} = 125°C (max)	20 Mbit/s	Totem pole output (Inverter logic)	3.5 mA	5000 Vrms	△ / △		△		
TLP2768*		SDIP6 V _{CC} = 3.3 or 5 V T _{opr} = 125°C (max)	20 Mbit/s	Open-collector (Inverter logic)	5 mA	5000 Vrms	△ / △		△		
TLP2166A		SO8 Propagation delay time: 75 ns V _{CC} = 3.3 V Dual-channel version	15 Mbit/s	Totem pole output (Inverter logic)	3 mA	2500 Vrms	○ / ○		○ ⁽¹⁾		

Photocouplers for Logic Signal Transmission at 10 Mbit/s (Typ.)

Part Number	Pin Configuration	Features	Propagation Delay Time (Max)	Output Form	IFHL, IFLH (Max)	BVs	Safety Standards ⁽²⁾				
							UL/cUL	TÜV	VDE	BSI	IEC
TLP513		DIP6 6-pin package version of the TLP552 V _{CC} = 5 V	120 ns (T _{opr} = 25°C)	Open-collector	5 mA	2500 Vrms	○ / -				
TLP552		DIP8 Logic output V _{CC} = 5 V	120 ns (T _{opr} = 25°C)	Open-collector	5 mA	2500 Vrms	○ / -				
TLP554		DIP8 High CMR version of the TLP552 V _{CC} = 5 V	120 ns (T _{opr} = 25°C)	Open-collector	5 mA	2500 Vrms	○ / ○				
TLP2601		DIP8 High CMR V _{CC} = 5 V	75 ns (T _{opr} = 25°C)	Open-collector	5 mA	2500 Vrms	○ / ○				

*Under development. Specifications subject to change without notice. For the latest information, please contact your nearest Toshiba sales representative.

Note 1: The EN60747-5-2 safety standard for compact packages is different from that for standard DIP packages.

Since the mini-flat package is a compact package, please contact your nearest Toshiba sales representative for more details.

Note 2: BSI and IEC: ○: Approved (supplementary or basic insulation) ◎: Approved (reinforced insulation) △: Design which meets safety standard/approval pending as of January 2011

EN 60065- and IEC 60065-approved, EN 60950- and IEC 60950-approved

TÜV and VDE: ○: Approved △: Design which meets safety standard/approval pending as of January 2011

EN 60747-5-2-approved with option V4 or D4

For the latest information, please contact your nearest Toshiba sales representative.

4 Selection Guide

Photocouplers for Logic Signal Transmission at 10 Mbit/s (Typ.) (Continued)

Part Number	Pin Configuration	Features	Propagation Delay Time (Max)	Output Form	IFHL, IFLH (Max)	BV _s	Safety Standards ⁽²⁾				
							UL/cUL	TÜV	VDE	BSI	IEC
TLP2630		DIP8 Dual-channel version of the 6N137 and the TLP552 V _{CC} = 5 V	75 ns (Topr = 25°C)	Open-collector	5 mA	2500 Vrms	○/○				
TLP2631		DIP8 High CMR Dual-channel version of the TLP554 V _{CC} = 5 V	75 ns (Topr = 25°C)	Open-collector	5 mA	2500 Vrms	○/○				

Photocouplers for Logic Signal Transmission at 5 Mbit/s (Typ.)

Part Number	Pin Configuration	Features	Propagation Delay Time (Max)	Output Form	IFHL, IFLH (Max)	BV _s	Safety Standards ⁽²⁾				
							UL/cUL	TÜV	VDE	BSI	IEC
TLP105		Mini-flat MFSOP6 V _{CC} = 4.5 to 20 V Low input operation IPM drive	250 ns	Totem pole output (Buffer logic)	1.6 mA	3750 Vrms	○/○	○ ⁽¹⁾	○ ⁽¹⁾		
TLP108		Mini-flat MFSOP6 V _{CC} = 4.5 to 20 V Low input operation IPM drive	250 ns	Totem pole output (Inverter logic)	1.6 mA	3750 Vrms	○/○	○ ⁽¹⁾	○ ⁽¹⁾		
TLP2405		SO8 V _{CC} = 4.5 to 20 V Low input operation IPM drive	250 ns	Totem pole output (Buffer logic)	1.6 mA	3750 Vrms	○/○		○ ⁽¹⁾		
TLP2408		SO8 V _{CC} = 4.5 to 20 V Low input operation IPM drive	250 ns	Totem pole output (Inverter logic)	1.6 mA	3750 Vrms	○/○		○ ⁽¹⁾		
TLP555		DIP8 Low input current V _{CC} = 4.5 to 20 V	400 ns (Topr = 25°C)	3-state (Buffer logic)	1.6 mA	2500 Vrms	○/○				
TLP558		DIP8 Inverting logic version of the TLP555 V _{CC} = 4.5 to 20 V	400 ns (Topr = 25°C)	3-state (Inverter logic)	1.6 mA	2500 Vrms	○/○				
TLP715 TLP715F		SDIP6 IPM drive High CMR V _{CC} = 4.5 to 20 V	250 ns	Totem pole output (Buffer logic)	3 mA	5000 Vrms	○/○	○	○		
TLP718 TLP718F		SDIP6 IPM drive High CMR V _{CC} = 4.5 to 20 V	250 ns	Totem pole output (Inverter logic)	3 mA	5000 Vrms	○/○	○	○		
TLP2095		Mini-flat MFSOP6 Dual polarity input version of the TLP105 V _{CC} = 3 to 20 V	250 ns	Totem pole output (Buffer logic)	3 mA	3750 Vrms	○/○		○ ⁽¹⁾		
TLP2098		Mini-flat MFSOP6 Dual polarity input version of the TLP108 V _{CC} = 3 to 20 V	250 ns	Totem pole output (Inverter logic)	3 mA	3750 Vrms	○/○		○ ⁽¹⁾		

Note 1: The EN60747-5-2 safety standard for compact packages is different from that for standard DIP packages.

Since the mini-flat package is a compact package, please contact your nearest Toshiba sales representative for more details.

Note 2: BSI and IEC: ○: Approved (supplementary or basic insulation) ◎: Approved (reinforced insulation) △: Design which meets safety standard/approval pending as of January 2011
EN 60065- and IEC 60065-approved, EN 60950- and IEC 60950-approved

TÜV and VDE: ○: Approved △: Design which meets safety standard/approval pending as of January 2011
EN 60747-5-2-approved with option V4 or D4

For the latest information, please contact your nearest Toshiba sales representative.

Photocouplers for Logic Signal Transmission at 5 Mbit/s (Typ.) (Continued)

Part Number	Pin Configuration	Features	Propagation Delay Time (Max)	Output Form	IFHL, IFLH (Max)	BVs	Safety Standards ⁽²⁾				
							UL/cUL	TÜV	VDE	BSI	IEC
TLP2105		SO8 Dual-channel version for the TLP105 V _{CC} = 4.5 to 20 V	250 ns	Totem pole output (Buffer logic)	1.6 mA	3750 Vrms	○/○	○ ⁽¹⁾	○ ⁽¹⁾		
TLP2108		SO8 Dual-channel version for the TLP108 V _{CC} = 4.5 to 20 V	250 ns	Totem pole output (Inverter logic)	1.6 mA	3750 Vrms	○/○	○ ⁽¹⁾	○ ⁽¹⁾		
TLP2200		DIP8 Low input current V _{CC} = 4.5 to 20 V	400 ns	3-state (Buffer logic)	1.6 mA	2500 Vrms	○/○				

Photocouplers for Logic Signal Transmission at 1 Mbit/s (Typ.)

Part Number	Pin Configuration	Features	Data Rate (NRZ) (Typ.)	CTR	@IF	BVs	Safety Standards ⁽²⁾				
							UL/cUL	TÜV	VDE	BSI	IEC
TLP109		SO6 (reinforced insulation)	1 Mbit/s	20% (min)	16 mA	3750 Vrms	○/○		○ ⁽¹⁾		
TLP2409		SO8 T _{opr} = 125°C (max) SO8 version of the TLP109	1 Mbit/s	20% (min)	16 mA	3750 Vrms	○/○		○ ⁽¹⁾		
TLP512		DIP6 6-pin package version of the TLP550	1 Mbit/s	20% (min)	16 mA	2500 Vrms	○/-				
TLP550		DIP8 High CMR	1 Mbit/s	10% (min) (19% min for rank 0)	16 mA	2500 Vrms	○/○				
TLP551		DIP8 Internal base connection	1 Mbit/s	10% (min) (19% min for rank 0)	16 mA	2500 Vrms	○/○				
TLP2403		SO8 Low input current SO8 version of the TLP553	300 kbit/s	400% (min)	0.5 mA	3750 Vrms	○/○		○ ⁽¹⁾		
TLP553		DIP8 Low input drive current	300 kbit/s	400% (min)	0.5 mA	2500 Vrms	○/-				
TLP559		DIP8 High CMR version of the TLP550	1 Mbit/s	20% (min)	16 mA	2500 Vrms	○/○				
TLP651		DIP8 Internal base connection	1 Mbit/s	10% (min) (19% min for rank 0)	16 mA	5000 Vrms	○/○				
TLP719 TLP719F		SDIP6 High CMR	1 Mbit/s	20% (min)	16 mA	5000 Vrms	○/○	○	○		

Note 1: The EN60747-5-2 safety standard for compact packages is different from that for standard DIP packages.

Since the mini-flat package is a compact package, please contact your nearest Toshiba sales representative for more details.

Note 2: BSI and IEC: ○: Approved (supplementary or basic insulation) ◎: Approved (reinforced insulation) △: Design which meets safety standard/approval pending as of January 2011

EN 60065- and IEC 60065-approved, EN 60950- and IEC 60950-approved

TÜV and VDE: ○: Approved △: Design which meets safety standard/approval pending as of January 2011

EN 60747-5-2-approved with option V4 or D4

For the latest information, please contact your nearest Toshiba sales representative.

4 Selection Guide

Photocouplers for Logic Signal Transmission at 1 Mbit/s (Typ.) (Continued)

Part Number	Pin Configuration	Features	Data Rate (NRZ) (Typ.)	CTR	@IF	BVs	Safety Standards ⁽²⁾				
							UL/cUL	TÜV	VDE	BSI	IEC
TLP750 TLP750F		DIP8 High CMR SEMKO-approved	1 Mbit/s	10% (min) (19% min for rank 0)	16 mA	5000 Vrms	○/○	△	○	◎	◎
TLP751 TLP751F		DIP8 Internal base connection SEMKO-approved	1 Mbit/s	10% (min)	16 mA	5000 Vrms	○/○	△	○	◎	◎
TLP759 TLP759F		DIP8 IEC60950-compliant version of the TLP559 SEMKO-approved	1 Mbit/s	20% (min)	16 mA	5000 Vrms	○/○	△	○	◎	◎
TLP2530		DIP8 Dual-channel version of the 6N135 and the TLP550	1 Mbit/s	7% (min)	16 mA	2500 Vrms	○/○				
TLP2531		DIP8 Dual-channel version of the 6N136 and the TLP550	1 Mbit/s	19% (min)	16 mA	2500 Vrms	○/○				

IPM-Drive Photocouplers

Part Number	Pin Configuration	Features	Propagation Delay Time (Max)	Output Form/CTR	IFHL, IFLH (Max)	BVs	Safety Standards ⁽²⁾				
							UL/cUL	TÜV	VDE	BSI	IEC
TLP104		SO6 (reinforced insulation) IPM drive T _{opr} = 125°C (max)	550 ns	Open-collector	5 mA	3750 Vrms	○/○		○ ⁽¹⁾		
TLP2404		SO8 IPM drive T _{opr} = 125°C (max) SO8 version of the TLP104	550 ns	Open-collector (Inverter logic)	5 mA	3750 Vrms	○/○		○ ⁽¹⁾		
TLP714 TLP714F		SDIP6 (reinforced insulation) IPM drive T _{opr} = 125°C (max) High isolation voltage	550 ns	Open-collector (Inverter logic)	5 mA	5000 Vrms	○/○		○		
TLP754* TLP754F*		DIP8 IPM drive	550 ns	Open-collector	5 mA	5000 Vrms	△/△		△		
TLP109(IGM)		SO6 (reinforced insulation) IPM drive High CMR	800 ns	25% (min)	10 mA	3750 Vrms	○/○		○ ⁽¹⁾		
TLP2409(IGM)		SO8 IPM drive High CMR	800 ns	20% (min)	10 mA	3750 Vrms	△/△		△ ⁽¹⁾		

*Under development. Specifications subject to change without notice. For the latest information, please contact your nearest Toshiba sales representative.

Note 1: The EN60747-5-2 safety standard for compact packages is different from that for standard DIP packages.

Since the mini-flat package is a compact package, please contact your nearest Toshiba sales representative for more details.

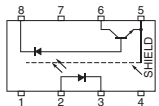
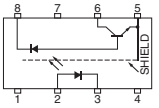
Note 2: BSI and IEC: ○: Approved (supplementary or basic insulation) ◎: Approved (reinforced insulation) △: Design which meets safety standard/approval pending as of January 2011
EN 60065- and IEC 60065-approved, EN 60950- and IEC 60950-approved

TÜV and VDE: ○: Approved △: Design which meets safety standard/approval pending as of January 2011

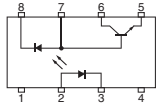
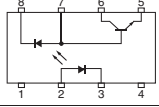
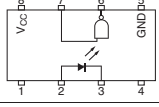
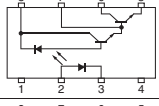
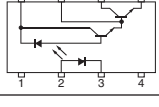
EN 60747-5-2-approved with option V4 or D4

For the latest information, please contact your nearest Toshiba sales representative.

IPM-Drive Photocouplers (Continued)


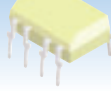


Part Number	Pin Configuration	Features	Propagation Delay Time (Max)	Output Form/CTR	I _{FHL} , I _{FLH} (Max)	BV _s	Safety Standards ⁽²⁾				
							UL/cUL	TÜV	VDE	BSI	IEC
TLP559(IGM)		DIP8 IPM drive High CMR	800 ns	25% (min)	10 mA	2500 V _{rms}	○/○				
TLP759(IGM) TLP759F(IGM)		DIP8 IPM drive High CMR SEMKO-approved	800 ns	25% (min)	10 mA	5000 V _{rms}	○/○	△	○	◎	◎

JEDEC-Compliant Photocouplers

Part Number	Pin Configuration	Features	Data Rate (NRZ) (Typ.)	CTR	I _{FHL} , I _{FLH} (Max)	BV _s	Safety Standards ⁽²⁾				
							UL/cUL	TÜV	VDE	BSI	IEC
6N135		JEDEC-compliant	1 Mbit/s	7% (min)	16 mA	2500 V _{rms}	○/—				
6N136		JEDEC-compliant	1 Mbit/s	19% (min)	16 mA	2500 V _{rms}	○/—				
6N137		JEDEC-compliant	10 Mbit/s	700% (Typ.)	5 mA	2500 V _{rms}	○/—				
6N138		JEDEC-compliant High CTR	300 kbit/s	300% (min)	1.6 mA	2500 V _{rms}	○/—				
6N139		JEDEC-compliant High CTR	300 kbit/s	400% (min)	0.5 mA	2500 V _{rms}	○/—				

Note 2: BSI and IEC: ○: Approved (supplementary or basic insulation) ◎: Approved (reinforced insulation) △: Design which meets safety standard/approval pending as of January 2011
 EN 60065- and IEC 60065-approved, EN 60950- and IEC 60950-approved
 TÜV and VDE: ○: Approved △: Design which meets safety standard/approval pending as of January 2011
 EN 60747-5-2-approved with option V4 or D4
 For the latest information, please contact your nearest Toshiba sales representative.

3 Photocouplers for IGBT/MOSFET Gate Drive

Package Output Peak Current				
	SDIP6	DIP8	SO6	SO8
± 0.25 A		TLP557		
± 0.45 A (max)	TLP705 (High speed)			
± 0.6 A (max)	TLP701 TLP701A* TLP701H* TLP705A*	TLP351 TLP351A* TLP351E TLP351H*	TLP151* TLP151A* TLP155E	TLP2451 TLP2451A*
± 2.0 A (max)	TLP700 TLP700H*			
± 2.5 A (max)		TLP350 TLP350H* TLP352*		

*Under development. Specifications subject to change without notice. For the latest information, please contact your nearest Toshiba sales representative.

4 Selection Guide

Photocouplers for IGBT/MOSFET Gate Drive

Part Number	Pin Configuration	Features	Propagation Delay Time (Max)	Output	I _{FHL} (Max)	BV _s	Safety Standards ⁽²⁾				
							UL/cUL	TÜV	VDE	BSI	IEC
TLP151*		SO6 (reinforced Insulation) T _{opr} = 110°C (max) Direct drive of a small-power IGBT/MOSFET	0.7 μs	Peak output current (max): ±0.6 A	5 mA	3750 Vrms	○/○		○ ⁽¹⁾		
TLP151A*			0.5 μs				○/○		△ ⁽¹⁾		
TLP155E		SO6 (reinforced Insulation) T _{opr} = 100°C (max) Direct drive of a small-power IGBT/MOSFET	0.2 μs	Peak output current (max): ±0.6 A	7.5 mA	3750 Vrms	○/○		○		
TLP2451		SO8 T _{opr} = 125°C (max) Direct drive of a small-power IGBT/MOSFET High CMR	0.7 μs	Peak output current (max): ±0.6 A	5 mA	3750 Vrms	○/○		○		
TLP2451A*			0.5 μs				○/○		△		
TLP350 TLP350F		DIP8 Direct drive of a medium-power IGBT/MOSFET High CMR Low power dissipation	0.5 μs	Peak output current (max): ±2.5 A	5 mA	3750 Vrms	○/○	○	○		
TLP350H* TLP350HF*		DIP8 T _{opr} = 125°C (max) Direct drive of a medium-power IGBT/MOSFET High CMR	0.5 μs	Peak output current (max): ±2.5 A	5 mA	3750 Vrms	○/○		○		
TLP351 TLP351F		DIP8 Direct drive of a medium-power IGBT/MOSFET Low power dissipation	0.7 μs	Peak output current (max): ±0.6 A	5 mA	3750 Vrms	○/○	○	○		
TLP351A* TLP351AF*		DIP8 Direct drive of a small-power IGBT/MOSFET Low power dissipation	0.7 μs	Peak output current (max): ±0.6 A	5 mA	3750 Vrms	△/△				
TLP351H* TLP351HF*		DIP8 T _{opr} = 125°C (max) Direct drive of a small-power IGBT/MOSFET High CMR	0.7 μs	Peak output current (max): ±6.0 A	5 mA	3750 Vrms	○/○		○		
TLP352* TLP352F*		DIP8 Direct drive of a medium-power IGBT/MOSFET Low power dissipation T _{opr} = 125°C (max)	0.2 μs	Peak output current (max): ±2.5 A	5 mA	3750 Vrms	△/△				

*Under development. Specifications subject to change without notice. For the latest information, please contact your nearest Toshiba sales representative.

Note 1: The EN60747-5-2 safety standard for compact packages is different from that for standard DIP packages.

Since the mini-flat package is a compact package, please contact your nearest Toshiba sales representative for more details.

Note 2: BSI and IEC: ○: Approved (supplementary or basic insulation) ◎: Approved (reinforced insulation) △: Design which meets safety standard/approval pending as of January 2011

EN 60065- and IEC 60065-approved, EN 60950- and IEC 60950-approved

TÜV and VDE: ○: Approved △: Design which meets safety standard/approval pending as of January 2011

EN 60747-5-2-approved with option V4 or D4

For the latest information, please contact your nearest Toshiba sales representative.

Photocouplers for IGBT/MOSFET Gate Drive (Continued)

Part Number	Pin Configuration	Features	Propagation Delay Time (Max)	Output	I _{FHL} (Max)	BV _s	Safety Standards ⁽²⁾				
							UL/cUL	TÜV	VDE	BSI	IEC
TLP557		DIP8 Direct drive of a power transistor	5 μs	Constant current output : 0.25 A	5 mA	2500 Vrms	○/○				
TLP700 TLP700F		SDIP6 Direct drive of a medium-power IGBT/MOSFET Low power dissipation	0.5 μs	Peak output current (max): ±2.0 A	5 mA	5000 Vrms	○/○	○	△		
TLP700H* TLP700HF*		SDIP6 T _{opr} = 125°C (max) Direct drive of a medium-power IGBT/MOSFET High CMR	0.5 μs	Peak output current (max): ±2.0 A	5 mA	5000 Vrms	○/○		○		
TLP701 TLP701F		SDIP6 Direct drive of a medium-power IGBT/MOSFET Low power dissipation	0.7 μs	Peak output current (max): ±0.6 A	5 mA	5000 Vrms	○/○	○	○		
TLP701A* TLP701AF*		SDIP6 Direct drive of a small-power IGBT/MOSFET Low power dissipation	0.7 μs	Peak output current (max): ±0.6 A	5 mA	5000 Vrms	○/○		○		
TLP701H* TLP701HF*		SDIP6 T _{opr} = 125°C (max) Direct drive of a small-power IGBT/MOSFET High CMR	0.7 μs	Peak output current (max): ±0.6 A	5 mA	5000 Vrms	○/○		○		
TLP705 TLP705F		SDIP6 Direct drive of a small-power IGBT/MOSFET High speed (250 kHz) Low power dissipation	0.2 μs	Peak output current (max): ±0.45 A	8 mA	5000 Vrms	○/○	○	○		
TLP705A* TLP705AF*		SDIP6 Direct drive of a small-power IGBT/MOSFET High speed Low power dissipation	0.2 μs	Peak output current (max): ±0.6 A	7.5 mA	5000 Vrms	○/○		○		

*Under development. Specifications subject to change without notice. For the latest information, please contact your nearest Toshiba sales representative.

Note 1: The EN60747-5-2 safety standard for compact packages is different from that for standard DIP packages.

Since the mini-flat package is a compact package, please contact your nearest Toshiba sales representative for more details.

Note 2: BSI and IEC: ○: Approved (supplementary or basic insulation) ◎: Approved (reinforced insulation) △: Design which meets safety standard/approval pending as of January 2011

EN 60065- and IEC 60065-approved, EN 60950- and IEC 60950-approved

TÜV and VDE: ○: Approved △: Design which meets safety standard/approval pending as of January 2011

EN 60747-5-2-approved with option V4 or D4

For the latest information, please contact your nearest Toshiba sales representative.