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# SEMICONDUCTOR GENERAL CATALOG

## 東芝半導体製品総覧表2017年1月版

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### General-Purpose Linear ICs 汎用リニアIC

Power Supply ICs / 電源用IC

Motor Drivers / モータドライバ

LED Drivers / LEDドライバ

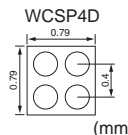
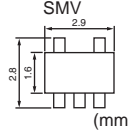
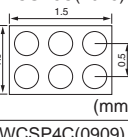
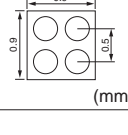
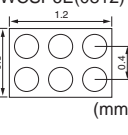
Intelligent Power Devices (IPDs) / インテリジェントパワーデバイス (IPD)

Operational Amplifier ICs (Op Amp ICs) & Comparator ICs / オペアンプ/ コンパレータ

Transistor Arrays / トランジスタアレイ

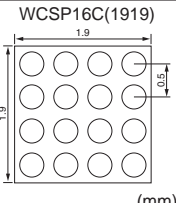
# Power Supply ICs / 電源用IC

## Load Switch ICs / ロードスイッチIC

Package (mm)	Part Number	Output Current (A)	Operating Voltage Range (V)	RON Max (Ta = -40 to 85°C)	Functions					
					Inrush Current Reduction Circuit (Slew Rate Control)	Output Discharge	Thermal Shutdown	Overcurrent Protection	Reverse Current Blocking	Control Pin Connection
 (mm)	TCK106AG *	1.0	1.1 to 5.5	55 mΩ@VIN = 5.0 V, 0.5 A 105 mΩ@VIN = 1.8 V, 0.5 A 220 mΩ@VIN = 1.2 V, 0.2 A	Yes					Active High (pull-down)
	TCK107AG *	1.0			Yes	Yes				Active High (pull-down)
	TCK108AG *	1.0			Yes	Yes				Active Low (open)
 (mm)	TCK106AF *	1.0	1.1 to 5.5	90 mΩ@VIN = 5.5 V, 0.5 A 155 mΩ@VIN = 1.8 V, 0.5 A 270 mΩ@VIN = 1.2 V, 0.5 A	Yes					Active High (pull-down)
	TCK107AF *	1.0			Yes	Yes				Active Low (open)
	TCK108AF *	1.0			Yes	Yes				Active Low (open)
 (mm)	TCK111G *	3.0	1.1 to 5.5	15 mΩ@VIN = 1.1 V, 1.5 A	Yes		Yes		True Reverse Current Blocking	Active High (pull-down)
	TCK112G *	3.0			Yes	Yes	Yes			
 (mm)	TCK206G *	2.0	0.75 to 3.6	28 mΩ@VIN = 0.75 V, 1.5 A	Yes				Yes	Active High (pull-down)
	TCK207G *	2.0			Yes	Yes			Yes	
	TCK208G *	2.0			Yes	Yes			Yes	
 (mm)	TCK22946G *	0.40	1.1 to 5.5	85 mΩ@VIN = 5.0 V, 150 mA 95 mΩ@VIN = 3.3 V, 150 mA 140 mΩ@VIN = 1.8 V, 150 mA	50 μs	Yes	Yes	400 mA	True Reverse Current Blocking	Active high (pull-down)
	TCK22951G *	0.74			50 μs	Yes	Yes	740 mA		
	TCK2065G *	1.11	50 μs		Yes	Yes	1110 mA			
	TCK1024G *	1.54	50 μs		Yes	Yes	1540 mA			
	TCK22891G *	0.40	50 μs		Yes	Yes	400 mA			
	TCK22892G *	0.74	50 μs		Yes	Yes	740 mA			
	TCK22893G *	1.11	50 μs		Yes	Yes	1110 mA			
	TCK22894G *	1.54	50 μs		Yes	Yes	1540 mA			
	TCK22921G *	2.0	4.5 μs		Yes			Yes		
	TCK22922G *	2.0	666 μs		Yes			Yes		
	TCK22923G *	2.0	1364 μs		Yes			Yes		
	TCK22925G *	2.0	3380 μs		Yes			Yes		
	TCK22971G *	2.0	4.5 μs					Yes		
	TCK22972G *	2.0	666 μs					Yes		
	TCK22973G *	2.0	1364 μs					Yes		
	TCK22974G *	2.0	3380 μs					Yes		
	TCK22975G *	2.0	666 μs					Yes	Active Low (open)	
	TCK22910G *	2.0	1400 μs			Yes			True Reverse Current Blocking	Active Low (open)
	TCK22911G *	2.0	1400 μs		Yes	Yes				Active high (pull-down)
	TCK22912G *	2.0	1400 μs			Yes				
TCK22913G *	2.0	1400 μs	Yes	Yes						

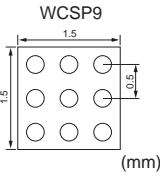
\*: New product / 新製品

Power Multiplexer ICs / パワーマルチプレクサ IC  
(Switch Type: Dual Input-Single Output)

Package (mm)	Part Number	Output Current (A)	Operating Voltage Range (V)	R <sub>ON</sub> Max (Ta = -40°C to 85°C)	Over voltage lock out (typ.)(V)	Under voltage lock out (typ.)(V)	Thermal Shutdown	Reverse Current Blocking	Auto power source select mode	Flag Operation
 <p>WCSP16C(1919) 1.9 1.9 0.5 (mm)</p>	TCK321G *	2.0	2.3 to 36	170 mΩ@V <sub>IN</sub> = 4.5 V, 1 A	12	2.9	Yes	Yes	Yes	VINA Monitored
	TCK322G *	2.0			15	2.9	Yes	Yes	Yes	VINA Monitored
	TCK323G *	2.0			15	2.9	Yes	Yes	Yes	VINB Monitored

\*: New product / 新製品

(Switch Type: Single Input-Single Output)

Package (mm)	Part Number	Output Current (A)	Operating Voltage Range (V)	R <sub>ON</sub> Max (Ta = -40°C to 85°C)	Over voltage lock out (typ.)(V)	Under voltage lock out (typ.)(V)	Thermal Shutdown	Reverse Current Blocking	Switch Control function	Chip Enable function
 <p>WCSP9 1.5 1.5 0.5 (mm)</p>	TCK301G *	3.0	2.3 to 28	140 mΩ@V <sub>IN</sub> = 4.5 V, 1 A	6.6	2.9	Yes	Yes	Active High (pull-up)	Active Low (pull-down)
	TCK302G *	3.0			10.5	2.9	Yes	Yes	Active High (pull-up)	Active Low (pull-down)
	TCK303G *	3.0			15.5	2.9	Yes	Yes	Active High (pull-up)	Active Low (pull-down)
	TCK304G *	3.0			6.6	2.9	Yes	Yes	Active Low (pull-down)	Active High (pull-down)
	TCK305G *	3.0			10.5	2.9	Yes	Yes	Active Low (pull-down)	Active Low (pull-down)

\*: New product / 新製品

## Small Surface-Mount Low Dropout (LDO) Regulators / 小型面実装ロードロップアウト (LDO) レギュレータ

Low Dropout (LDO) Regulators are so small they can be locally assigned to individual circuit blocks, making them suitable for applications requiring low dropout.

These devices incorporate an ON/OFF control function, which facilitates power management.

回路ブロックに分散配置ができるロードロップアウトレギュレータICです。  
ON/OFFスイッチ機能が付いていますので、パワーマネージメントが可能です。

### < Features >

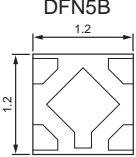
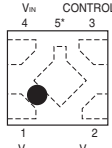
- Small package
- Low noise
- Low-dropout voltage
- Fast load transient response
- Overcurrent protection
- Low current consumption (CMOS Type)
- High ripple rejection
- Capable of using a ceramic capacitor
- Low saturation voltage
- ON/OFF control function
- Overtemperature protection
- Auto discharge, CE pin with a pull-down resistor

### < 特長、付加機能 >

- 小型パッケージ
- 低ノイズ
- 低ドロップアウト電圧
- 高速負荷過渡応答
- 過電流保護回路内蔵
- 低消費電流 (CMOSタイプ)
- 高リップルリジェクション
- セラミックコンデンサ使用可能
- 低飽和電圧
- ON/OFFコントロール機能内蔵
- 過熱保護回路内蔵
- オートディスチャージ機能内蔵
- コントロール端子プルダウン接続

### (Single Output CMOS Type) / (CMOS, シングル出力)

□I<sub>OUT</sub> (Max) = 500 mA

Output Voltage V <sub>out</sub> (V) (Typ.)	Part Number
	 (mm)
Auto Discharge	Yes
0.55	TCR5AM055 *
0.6	TCR5AM06 *
0.65	TCR5AM065 *
0.7	TCR5AM07 *
0.75	TCR5AM075 *
0.8	TCR5AM08 *
0.85	TCR5AM085 *
0.9	TCR5AM09 *
0.95	TCR5AM095 *
1.0	TCR5AM10 *
1.0	TCR5AM10A * (1)
1.05	TCR5AM105 *
1.05	TCR5AM105A * (1)
1.1	TCR5AM11 *
1.1	TCR5AM11A * (1)
1.15	TCR5AM115 *
1.2	TCR5AM12 *
1.2	TCR5AM12A * (1)
1.25	TCR5AM125 *
1.3	TCR5AM13 *
1.4	TCR5AM14 *
1.5	TCR5AM15 *
1.6	TCR5AM16 *
1.7	TCR5AM17 *
1.8	TCR5AM18 *
1.9	TCR5AM19 *
2.0	TCR5AM20 *
2.1	TCR5AM21 *
2.2	TCR5AM22 *
2.3	TCR5AM23 *
2.4	TCR5AM24 *
2.5	TCR5AM25 *
2.6	TCR5AM26 *
2.7	TCR5AM27 *
2.8	TCR5AM28 *
2.85	TCR5AM285 *
2.9	TCR5AM29 *
2.95	TCR5AM295 *
3.0	TCR5AM30 *
3.1	TCR5AM31 *
3.2	TCR5AM32 *
3.3	TCR5AM33 *
3.4	TCR5AM34 *
3.5	TCR5AM35 *
3.6	TCR5AM36 *
Pin Configuration (Top View)	 *Center electrode is GND

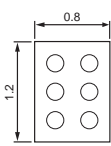
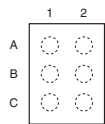
• Note (1) : Soft start function / ソフトスタート機能付

\*: New product / 新製品

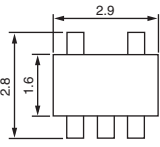
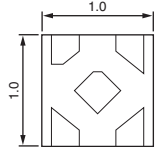
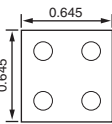
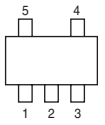
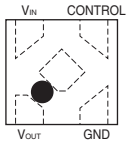
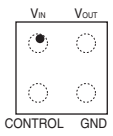
• Please ask your local retailer about the devices with other output voltages.

• その他の電圧ランクは営業窓口にご相談ください。

□I<sub>OUT</sub> (Max) = 1.3 A

WCSP6F	
	 (mm)
Part Number	TCR13AGADJ
Output Voltage V <sub>out</sub> (V) (Typ.)	0.55 to 3.6 • Adjustable output voltage
Auto Discharge	Yes
Pin Configuration (Top View)	 A1: V <sub>OUT</sub> B1: V <sub>ADJ</sub> C1: GND A2: V <sub>IN</sub> B2: CONTROL C2: V <sub>BIAS</sub>

□ I<sub>OUT</sub> (Max) = 300 mA

Output Voltage V <sub>out</sub> (V) (Typ.)	Part Number		
	SMV  (mm)	DFN4  (mm)	WCSP4E  (mm)
Auto Discharge	Yes	Yes	Yes
1.0	TCR3DF10	TCR3DM10	TCR3DG10 *
1.05	TCR3DF105	TCR3DM105	—
1.1	TCR3DF11	TCR3DM11	TCR3DG11 *
1.2	TCR3DF12	TCR3DM12	TCR3DG12 *
1.25	TCR3DF125	—	—
1.3	TCR3DF13	TCR3DM13	TCR3DG13 *
1.35	—	TCR3DM135	TCR3DG135 *
1.5	TCR3DF15	TCR3DM15	—
1.7	TCR3DF17	—	—
1.8	TCR3DF18	TCR3DM18	TCR3DG18 *
1.85	TCR3DF185	—	—
1.9	TCR3DF19	—	—
2.4	TCR3DF24	—	—
2.5	TCR3DF25	TCR3DM25	TCR3DG25 *
2.7	TCR3DF27	—	—
2.75	TCR3DF275	—	—
2.8	TCR3DF28	TCR3DM28	TCR3DG28 *
2.85	TCR3DF285	TCR3DM285	TCR3DG285 *
2.9	TCR3DF29	—	—
2.95	TCR3DF295	—	—
3.0	TCR3DF30	TCR3DM30	TCR3DG30 *
3.1	TCR3DF31	—	TCR3DG31 *
3.2	TCR3DF32	TCR3DM32	TCR3DG32 *
3.3	TCR3DF33	TCR3DM33	TCR3DG33 *
3.35	TCR3DF335	—	—
3.5	—	TCR3DM35	TCR3DG35 *
3.6	TCR3DF36	TCR3DM36	TCR3DG36 *
3.9	TCR3DF39	—	—
4.0	TCR3DF40	—	—
4.5	TCR3DF45	TCR3DM45	TCR3DG45 *
Pin Configuration (Top View)	 1: V <sub>IN</sub> 2: GND 3: CONTROL 4: NC 5: V <sub>OUT</sub>		

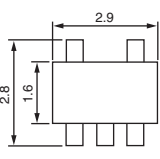
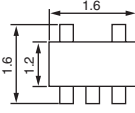
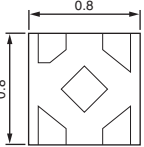
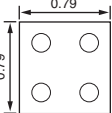
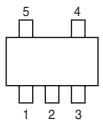
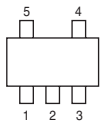
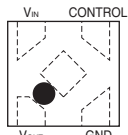
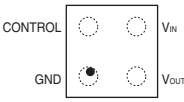
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\*: New product / 新製品

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# Small Surface-Mount Low Dropout (LDO) Regulators / 小型面実装ロードレギュレータ (Single Output CMOS Type) / (CMOS, シングル出力)

□I<sub>out</sub> (Max) = 200 mA

Output Voltage V <sub>out</sub> (V) (Typ.)	Part Number						
	SMV  (mm)	ESV  (mm)	SDFN4  (mm)	WCSP4  (mm)			
Auto Discharge	Yes		Yes				
0.8	—	TCR2LF08 *	—	TCR2LE08 *			
0.85	—	TCR2LF085 *	—	TCR2LE085 *			
0.9	—	TCR2LF09 *	—	TCR2LE09 *			
0.95	—	TCR2LF095 *	—	TCR2LE095 *			
1.0	TCR2EF10	TCR2LF10 *	TCR2EE10	TCR2LE10 *	TCR2EN10	TCR2LN10 *	—
1.05	TCR2EF105	TCR2LF105 *	TCR2EE105	TCR2LE105 *	TCR2EN105	TCR2LN105 *	—
1.1	TCR2EF11	TCR2LF11 *	TCR2EE11	TCR2LE11 *	TCR2EN11	TCR2LN11 *	—
1.15	TCR2EF115	TCR2LF115 *	TCR2EE115	TCR2LE115 *	TCR2EN115	TCR2LN115 *	—
1.2	TCR2EF12	TCR2LF12 *	TCR2EE12	TCR2LE12 *	TCR2EN12	TCR2LN12 *	TCR2DG12
1.25	TCR2EF125	—	TCR2EE125	—	TCR2EN125	—	TCR2DG125
1.3	TCR2EF13	TCR2LF13 *	TCR2EE13	TCR2LE13 *	TCR2EN13	TCR2LN13 *	TCR2DG13
1.35	TCR2EF135	—	TCR2EE135	—	—	—	—
1.4	TCR2EF14	—	TCR2EE14	—	—	—	TCR2DG14
1.45	—	—	TCR2EE145	—	—	—	—
1.5	TCR2EF15	TCR2LF15 *	TCR2EE15	TCR2LE15 *	TCR2EN15	TCR2LN15 *	TCR2DG15
1.6	—	—	—	—	—	—	TCR2DG16
1.7	—	—	TCR2EE17	—	—	—	TCR2DG17
1.8	TCR2EF18	TCR2LF18 *	TCR2EE18	TCR2LE18 *	TCR2EN18	TCR2LN18 *	TCR2DG18
1.85	—	—	TCR2EE185	—	—	—	TCR2DG185
1.9	TCR2EF19	TCR2LF19 *	TCR2EE19	TCR2LE19 *	TCR2EN19	TCR2LN19 *	TCR2DG19
2.0	TCR2EF20	TCR2LF20 *	TCR2EE20	TCR2LE20 *	—	TCR2LN20 *	TCR2DG20
2.1	—	TCR2LF21 *	—	TCR2LE21 *	TCR2EN21	TCR2LN21 *	TCR2DG21
2.2	—	—	—	—	—	—	TCR2DG22
2.3	—	—	—	—	—	—	TCR2DG23
2.4	—	—	TCR2EE24	—	—	—	TCR2DG24
2.5	TCR2EF25	TCR2LF25 *	TCR2EE25	TCR2LE25 *	TCR2EN25	TCR2LN25 *	TCR2DG25
2.6	—	—	—	—	—	—	TCR2DG26
2.7	TCR2EF27	TCR2LF27 *	TCR2EE27	TCR2LE27 *	TCR2EN27	TCR2LN27 *	TCR2DG27
2.75	—	—	TCR2EE275	—	—	—	—
2.8	TCR2EF28	TCR2LF28 *	TCR2EE28	TCR2LE28 *	TCR2EN28	TCR2LN28 *	TCR2DG28
2.85	TCR2EF285	TCR2LF285 *	TCR2EE285	TCR2LE285 *	TCR2EN285	TCR2LN285 *	TCR2DG285
2.9	TCR2EF29	—	TCR2EE29	—	TCR2EN29	—	TCR2DG29
2.95	—	—	TCR2EE295	—	—	—	TCR2DG295
3.0	TCR2EF30	TCR2LF30 *	TCR2EE30	TCR2LE30 *	TCR2EN30	TCR2LN30 *	TCR2DG30
3.05	—	—	TCR2EE305	—	—	—	—
3.1	TCR2EF31	TCR2LF31 *	TCR2EE31	TCR2LE31 *	TCR2EN31	TCR2LN31 *	TCR2DG31
3.2	TCR2EF32	TCR2LF32 *	TCR2EE32	TCR2LE32 *	TCR2EN32	TCR2LN32 *	TCR2DG32
3.3	TCR2EF33	TCR2LF33 *	TCR2EE33	TCR2LE33 *	TCR2EN33	TCR2LN33 *	TCR2DG33
3.35	—	—	TCR2EE335	—	—	—	—
3.4	—	—	TCR2EE34	—	TCR2EN34	—	TCR2DG34
3.5	—	—	—	—	TCR2EN35	—	TCR2DG35
3.6	TCR2EF36	TCR2LF36 *	TCR2EE36	TCR2LE36 *	TCR2EN36	TCR2LN36 *	TCR2DG36
3.9	—	—	TCR2EE39	—	—	—	—
4.0	TCR2EF40	—	TCR2EE40	—	—	—	—
4.1	TCR2EF41	—	TCR2EE41	—	—	—	—
4.2	—	—	TCR2EE42	—	—	—	—
4.5	TCR2EF45	—	TCR2EE45	—	—	—	—
4.8	—	—	TCR2EE48	—	—	—	—
5.0	TCR2EF50	—	TCR2EE50	—	—	—	—
Pin Configuration (Top View)	 1: VIN 2: GND 3: CONTROL 4: NC 5: VOUT	 1: CONTROL 2: GND 3: VIN 4: VOUT 5: NC					

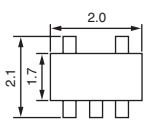
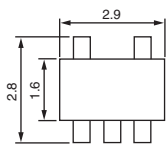
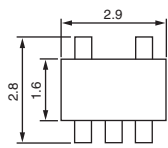
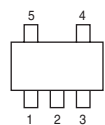
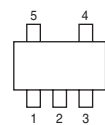
• Please ask your local retailer about the devices with other output voltages.

\*: New product / 新製品

• その他の電圧ランクは営業窓口にご相談ください。

(Single Output Bipolar Type) / (バイポーラ, シングル出力)

□I<sub>OUT</sub> (Max) = 200 mA

Output Voltage V <sub>out</sub> (V) (Typ.)	Part Number		
	UFV  (mm)	SMV  (mm)	SMV  (mm)
1.5	TAR5S15U	TAR5S15	TAR5SB15
1.6	TAR5S16U	TAR5S16	TAR5SB16
1.7	TAR5S17U	TAR5S17	TAR5SB17
1.8	TAR5S18U	TAR5S18	TAR5SB18
1.9	TAR5S19U	TAR5S19	TAR5SB19
2.0	TAR5S20U	TAR5S20	TAR5SB20
2.1	TAR5S21U	TAR5S21	TAR5SB21
2.2	TAR5S22U	TAR5S22	TAR5SB22
2.3	TAR5S23U	TAR5S23	TAR5SB23
2.4	TAR5S24U	TAR5S24	TAR5SB24
2.5	TAR5S25U	TAR5S25	TAR5SB25
2.6	TAR5S26U	TAR5S26	TAR5SB26
2.7	TAR5S27U	TAR5S27	TAR5SB27
2.8	TAR5S28U	TAR5S28	TAR5SB28
2.9	TAR5S29U	TAR5S29	TAR5SB29
3.0	TAR5S30U	TAR5S30	TAR5SB30
3.1	TAR5S31U	TAR5S31	TAR5SB31
3.2	TAR5S32U	TAR5S32	TAR5SB32
3.3	TAR5S33U	TAR5S33	TAR5SB33
3.4	TAR5S34U	TAR5S34	TAR5SB34
3.5	TAR5S35U	TAR5S35	TAR5SB35
3.6	TAR5S36U	TAR5S36	TAR5SB36
3.7	TAR5S37U	TAR5S37	TAR5SB37
3.8	TAR5S38U	TAR5S38	TAR5SB38
3.9	TAR5S39U	TAR5S39	TAR5SB39
4.0	TAR5S40U	TAR5S40	TAR5SB40
4.1	TAR5S41U	TAR5S41	TAR5SB41
4.2	TAR5S42U	TAR5S42	TAR5SB42
4.3	TAR5S43U	TAR5S43	TAR5SB43
4.4	TAR5S44U	TAR5S44	TAR5SB44
4.5	TAR5S45U	TAR5S45	TAR5SB45
4.6	TAR5S46U	TAR5S46	TAR5SB46
4.7	TAR5S47U	TAR5S47	TAR5SB47
4.8	TAR5S48U	TAR5S48	TAR5SB48
4.9	TAR5S49U	TAR5S49	TAR5SB49
5.0	TAR5S50U	TAR5S50	TAR5SB50
Pin Configuration (Top View)			
	1: CONTROL 2: GND 3: NOISE 4: V <sub>OUT</sub> 5: V <sub>IN</sub>		1: V <sub>IN</sub> 2: GND 3: CONTROL 4: NOISE 5: V <sub>OUT</sub>

・ Please ask your local retailer about the devices with other output voltages.

・ その他の電圧ランクは営業窓口とご相談ください。

## DC-DC Converters / DC-DC コンバータ用 IC

(System Power Supplies, Multi-Channel) / (システム電源, 多チャンネル)

Part Number	Input Supply Voltage (V)	Switching Frequency Typ. (kHz)	Package	Application	Features
TC7734FTG	3.4 to 5.5	1,000	QFN64	Tablet	Step-Down: 4ch, LDO: 3ch, LED driver: 2ch, 1.5 A battery charger function, USB adaptor detection, I <sup>2</sup> C interface, Varied error detections and protections, programmable power sequence
TC7735FTG	4.5 to 16	1,000	QFN32	LCD Panel	Step-up/Down: 1ch, Step-down: 1ch, Charge pump: 1ch (positive) + 1ch (negative), Op-amp: 1ch
TC7738WBG	** 2.9 to 5.5	3000	WCSP45	SSD	Step-Down: 6ch, LDO: 2ch, LOAD-SW, BYPASS-SW, I <sup>2</sup> C interface, Varied error detections and protections, programmable power sequence
TC7739FTG	** 4.5 to 5.5	2000	QFN32	Amusement	Step-Down: 2ch, LDO: 4ch, LOAD-SW, I <sup>2</sup> C interface, Varied error detections and protections, programmable power sequence

\*\* : Under development / 開発中

## (Charge Controller ICs) / (充電制御 IC)

Part Number	Input Supply Voltage (V)	Input Current (A)	Output Voltage (V)	Output Current (A)	Switching Frequency Typ. (kHz)	Package	Features
TC7710AWBG	4.3 to 6.5	2 (max)	3.46 to 4.72	2 (max)	3000	WCSP25	Compliant with Battery Charging Spec rev1.2, OTG (On-the-Go) voltage output, temperature detection, 1-cell charging
TC7764WBG	—	—	5 to 5.3	1.2 (max)	—	WCSP28	WPC-compliant version 1.1 support at 5 W, magnetic induction, receiver side, I <sup>2</sup> C communications, fail-safe feature, built-in controller circuit, FOD adjustment (by external resistor)
TC7765WBG	—	—	7 to 12	1 (max)	—	WCSP28	Magnetic induction, receiver side, I <sup>2</sup> C communications, fail-safe feature, built-in controller circuit, FOD adjustment (by external resistor)
TC7766WBG-M000	—	—	5 to 14	1.7 (max)	—	WCSP28	WPC-compliant version 1.2 EPP support at 15 W. magnetic induction, receiver side, I <sup>2</sup> C communications, fail-safe feature, built-in controller circuit, FOD adjustment (by external resistor)
TC7766WBG-M010	—	—	5 to 14	1 (max)	—	WCSP28	WPC-compliant version 1.2 BPP support at 5 W. magnetic induction, receiver side, I <sup>2</sup> C communications, fail-safe feature, built-in controller circuit, FOD adjustment (by external resistor)
TB6865AFG	4.5 to 14 <sup>(1)</sup>	—	—	—	—	LQFP100	WPC-compliant, magnetic induction, transmitter side, embedded MCU, 2-device control
TC7718FTG	4.5 to 25	—	—	—	—	QFN36	WPC-compliant version 1.2 support at 15 W. magnetic induction, transmitter side, 2-coil control

Note (1): Analog circuitry rating / アナログ回路の規格表記となります。

## (PFC Controller ICs) / (PFC 制御 IC)

Part Number	Control Method	Input Supply Voltage (V)	Package	Features
TB6819AFG	CRM	9.5 to 25	SOP8	Brown-out protection



# Motor Drivers / モータドライバ

## Brushed DC Motor Driver ICs / ブラシ付きモータドライバ

Part Number	Large Mode	Maximum Ratings		Output Ron	Circuits (Ch)	C.C. PWM	Single Power Supply	Protection			Temp. Range T <sub>A</sub>	Package
		Voltage (V)	Current (A)					UVLO (1)	ISD (2)	TSD (3)		
TB62212FTAG/FNG ☆	●	40	2.0 / 4.0 (4)	2.20 / 1.10 (4)	4/2 (4)	●	●	●	○	○	-40 to +85°C	QFN48/HTSSOP48
TB62216FTG/FNG/FG ☆		40	2.5	1.00	2	●	●	●	○	○	-20 to +85°C	QFN48/HTSSOP48/ HSOP28
TB6549FG/PG		30	3.5	1.00	1		●		◇	◇	-20 to +85°C	HSOP20/DIP16
TB6549HQ		30	4.5	1.00	1		●		◇	◇	-20 to +85°C	HZIP25
TB6552FTG/FNG ☆		15	1.0	1.50	2					◇	-20 to +85°C	QFN16/SSOP16
TB6559FG		50	2.5	1.30	1	●	●		◇	◇	-30 to +85°C	HSOP16
TB6561NG/FG		40	1.5	1.50	2		●		◇	◇	-20 to +85°C	SDIP24/SSOP30
TB6568KQ		50	3.0	0.55	1		●	●	○	○	-40 to +85°C	HSIP7
TB6569FG		50	4.5	0.55	1	●	●	●	○	○	-40 to +85°C	HSOP16
TB6569FTG ☆		50	4.5	0.55	1	●	●	●	○	○	-40 to +85°C	QFN32
TB6593FNG ☆		15	3.2	0.35	1			●		◇	-20 to +85°C	SSOP20
TB6612FNG ☆		15	3.2	0.50	2			●		◇	-20 to +85°C	SSOP24
TB6613FTG ☆		6	0.8	1.50	8	●		●		◇	-20 to +85°C	QON44
TB6614FNG ☆		15	3.2	0.30	1			●	◇	◇	-20 to +85°C	SSOP16
TB6640FTG/AFTG ☆		40	3.0	1.00	1	●		●	○/◇	○/◇	-40 to +85°C	QFN48
TB6641FG		50	4.5	0.55	1	●	●	●	○	○	-40 to +85°C	HSOP16
TB6641FTG ☆		50	4.5	0.55	1	●	●	●	○	○	-40 to +85°C	QFN32
TB6642FG		50	4.5	0.55	1		●	●	○/◇	○/◇	-40 to +85°C	HSOP16
TB6642FTG ☆		50	4.5	0.55	1		●	●	○/◇	○/◇	-40 to +85°C	QFN32
TB6643KQ		50	4.5	0.55	1		●	●	○	○	-40 to +85°C	HSIP7
TB67H301FTG		40	3.0	1.00	1	●		●	○/◇	○/◇	-40 to +85°C	QFN24
TB67H302HG		50	5.0	0.40	2	●	●	●	○	○	-30 to +85°C	HZIP25
TB67H303HG		50	10.0	0.20	1	●	●	●	○	○	-30 to +85°C	HZIP25
TB67H400AFTG/FNG ☆	●	50	4.0 / 8.0 (4)	0.49 / 0.25 (4)	2/1 (4)	●	●	●	○	○	-20 to +85°C	QFN48/HTSSOP48
TB67H400AHG/NG	●	50	4.0 / 8.0 (4)	0.49 / 0.25 (4)	2/1 (4)	●	●	●	○	○	-20 to +85°C	HZIP25/SDIP24
TB67H410FTG/NG * ☆	●	50	2.5 / 5.0 (4)	0.80 / 0.40 (4)	2/1 (4)	●	●	●	○	○	-20 to +85°C	QFN48/SDIP24
TC78H600FTG		18	1.0	1.20	2	●		●	○	◇	-20 to +85°C	QFN24
TC78H600FNG ☆		18	1.0	1.20	2	●		●	○	◇	-20 to +85°C	SSOP20
TC78H610FNG * ☆		18	1.0	1.20	2			●	○	◇	-20 to +85°C	SSOP16
TC78H620FNG * ☆		18	1.0	1.20	2			●	○	◇	-20 to +85°C	SSOP16
TC78S121FTG/FNG * ☆	●	40	3.5 / 5.0 (4)	0.60 / 0.30 (4)	4/2 (4)	●	●	●	○	○	-20 to +85°C	QFN48/HTSSOP48
TC78S122FTG/FNG * ☆	●	40	3.5 / 5.0 (4)	0.60 / 0.30 (4)	4/2 (4)	●	●	●	○	○	-20 to +85°C	QFN48/HTSSOP48

☆: Dry-packed / 防湿梱包品

\*: New product / 新製品

Note (1): Undervoltage Lockout / 低電圧検知回路

(2): Overcurrent detection / 過電流検出回路

(3): Thermal shutdown / 過熱検出回路

(4): Large Mode

○ Latch type

◇ Non latch type

## Brushless Motor Driver ICs / ブラシレスモータドライバ

Part Number	Phases		Controller	Pre Driver	Driver	Maximum Ratings		Sensorless	Hall Sensor Inputs		Commutation		Lead Angle Control			Temp. Range T <sub>A</sub>	Package
	3-Phase	1-Phase				Voltage (V)	Current (A)		Square	Sine	External Input	Auto (current FB)	Auto (rpm FB)	Auto (InPAC)			
TB6551FAG	☆	●	●			12	0.002		●		●	●				-30 to +115°C	SSOP24
TB6556FG	☆	●	●			12	0.002		●		●	●	●			-30 to +115°C	SSOP30
TB6575FNG	☆	●	●			5.5	0.02	●		●		●				-30 to +105°C	SSOP24
TB6584FNG/AFNG	☆	●	●			18	0.002		●		●	●	●			-30 to +115°C	SSOP30
TB6585FG/AFTG	☆	●			●	45	1.8		●		●	●	●			-30 to +85°C	HSOP36/QFN48
TB6586FG/AFG/BFG	☆	●	●			18	0.002		●	●		●				-30 to +115°C	SSOP24
TB6588FG	☆	●			●	50	2.5	●		●		●				-30 to +105°C	HSOP36
TB6603FTG	☆	●		●		30	0.02		●		●	●				-30 to +85°C	QFN36
TB6604FTG	☆	●		●		30	0.02		●		●		●			-30 to +85°C	QFN48
TB6605FTG	☆	●		●		30	0.02		●		●	●	●			-30 to +85°C	QFN36
TC78B004FTG	** ☆	●		●		30	0.02		●		●		●			-30 to +85°C	QFN40
TB6631FNG	☆	●	●			18	0.002		●		●	●		●		-30 to +115°C	SSOP30
TB6633FNG/AFNG	☆	●			●	25	1.0	●		●		●				-30 to +105°C	SSOP24
TB6634FNG	☆	●	●			18	0.002		●		●	●	●			-30 to +115°C	SSOP30
TB67B000HG		●			●	500	2.0		●	●	●	●				-30 to +115°C	HDIP30
TB67B001FTG/AFTG	* ☆	●			●	25	3.0	●		●		●		●		-40 to +105°C	QFN36
TB67B008FNG/AFNG/BFNG/CFNG	* ☆	●			●	25	3.0	●		●		●		●		-40 to +105°C	SSOP24
TB67B008FTG/AFTG/BFTG/CFTG	* ☆	●			●	25	3.0	●		●		●		●		-40 to +105°C	QFN24
TB67Z800FTG	* ☆	●			●	25	3.0									-40 to +105°C	QFN36
TC78B002FTG/FNG	☆		●		●	18	1.5		●	●	●	●				-40 to +105°C	QFN16/SSOP16
TC78B006FNG/AFNG/BFNG/CFNG	* ☆		●	●		40	0.02		●	●	●					-40 to +105°C	SSOP16
TC78B006FTG/AFTG/BFTG/CFTG	* ☆		●	●		40	0.02		●	●	●					-40 to +105°C	QFN16
TC78B016FTG	* ☆	●			●	40	3.0		●		●	●		●	●	-40 to +105°C	QFN36
TC78B015BFTG/CFTG	** ☆	●			●	36	3.0		●	●		●		●		-40 to +85°C	QFN36

☆: Dry-packed / 防湿梱包品

\*: New product / 新製品

\*\*: Under development / 開発中

# Stepper Motor Drivers / ステッピングモータドライバ

Part Number	Motor Type		Interface			Maximum Ratings		Stepping Mode						DC-DC Converter	Single Power Supply	Protection			Temp. Range TA	Packages
	Bipolar	Unipolar	Clock	Phase	Serial	Voltage (V)	Current (A)	Constant Current Cont.	Full	Half	1/4	1/8	1/16			1/32	UVLO (2)	ISD (3)		
TB62206FG	☆	●		●		40	1.8	●	●	●						●	●	●	-40 to +85°C	HSOP20
TB62208FTG/FNG/FG	☆	●		●		40	1.8	●	●	●					●	●	●	●	-20 to +85°C	QFN48/HTSSOP48/HSOP28
TB62209FG	☆	●	●			40	1.8	●	●	●	●	●	●			●	●	●	-40 to +85°C	HSOP36
TB62210FNG	☆	●		●		40	1.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	HTSSOP24
TB62211FNG	☆	●	●			40	1.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	HTSSOP24
TB62212FTAG/FNG	☆	●		●		40	1.5 x 2ch	●	●	●						●	●	●	-40 to +85°C	QFN48/HTSSOP48
TB62213AFTG/FNG/FG	☆	●	●			40	3.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48/HTSSOP48/HSOP28
TB62213AHQ	●	●		●		40	3.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	HZIP25
TB62214AFTG/FNG/FG	☆	●	●			40	2.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48/HTSSOP48/HSOP28
TB62215AFTG/FNG/FG	☆	●	●			40	3.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48/HTSSOP48/HSOP28
TB62215AHQ	●	●		●		40	3.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	HZIP25
TB62217AFTG	☆	●			●	50	1.3 x 2ch	●	●	●	●	●	●		3ch	●	●	●	-40 to +85°C	HQFP64
TB62218AFTG/FNG/FG	☆	●		●		40	2.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48/HTSSOP48/HSOP28
TB62237BFG	☆	●		●		40	1.3 x 2ch	●	●	●	●	●	●		3ch	●	●	●	-40 to +85°C	HQFP64
TB62247AFTG	☆	●		●		40	1.3 x 2ch	●	●	●	●	●	●		3ch	●	●	●	-40 to +85°C	HQFP64
TB62261FTAG	☆	●		●		40	1.5	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN36
TB62261FTG	☆	●		●		40	1.8	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48
TB62262FTAG	☆	●	●			40	1.5	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN36
TB62262FTG	☆	●	●			40	1.8	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48
TB62269FTG/FTAG	* ☆	●	●			40	1.8	●	●	●	●	●	●	●		●	●	●	-20 to +85°C	QFN48/QFN32
TB6560AFTG/FG	●	●		●		40	2.5	●	●	●	●	●	●				●	●	-30 to +85°C	QFN48/HQFP64
TB6560AHQ	●	●		●		40	3.5	●	●	●	●	●	●				●	●	-30 to +85°C	HZIP25
TB6562ANG/AFG	●	●		●		40	1.5	●	●	●	●	●	●			●	●	●	-20 to +85°C	SDIP24/SSOP30
TB6600FG/HG	●	●	●			50	4.5/5.0	●	●	●	●	●	●			●	●	●	-30 to +85°C	HQFP64/HZIP25
TB6608FNG	●	●		●		15	0.8	●	●	●	●	●	●			●	●	●	-20 to +85°C	SSOP20
TB6615PG		●	●			28	0.4	●	●	●	●	●	●						-30 to +85°C	DIP16
TB6674FAG	●	●		●		24	0.2	●	●	●	●	●	●				●	●	-30 to +85°C	SSOP16
TB6674PG/FG	●	●		●		24	0.4	●	●	●	●	●	●				●	●	-30 to +85°C	DIP16/HSOP16
TB67S101AFTG/FNG	☆	●		●		50	4.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48/HTSSOP48
TB67S101ANG	●	●		●		50	4.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	SDIP24
TB67S102AFTG/FNG	☆	●	●			50	4.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48/HTSSOP48
TB67S103AFTG	* ☆	●	●		●	50	4.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48
TB67S105FTG	☆	●		●		50	3.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48
TB67S109AFTG/FNG	☆	●	●			50	4.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48/HTSSOP48
TB67S111PG		●				80	1.5	●	●	●	●	●	●			●	●	●	-20 to +85°C	DIP16
TB67S141FTG/NG	* ☆	●		●		84	3.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48/SDIP24
TB67S141HG	*	●	●			84	3.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	HZIP25
TB67S142FTG/NG	* ☆	●	●			84	3.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48/SDIP24
TB67S142HG	*	●	●			84	3.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	HZIP25
TB67S145FTG	* ☆	●		●		84	3.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48
TB67S149FTG/FG	* ☆	●	●			84	3.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48/HSOP28
TB67S149HG	*	●	●			84	3.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	HZIP25
TB67S158FTG	* ☆	●	●			80	3.0 x 1ch	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48
TB67S158FTG	* ☆	●	●	●		80	1.5 x 2ch	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48
TB67S158NG	*	●	●	●		80	1.5 x 2ch	●	●	●	●	●	●			●	●	●	-20 to +85°C	SDIP24
TB67S179FTG	* ☆	●	●			80	1.5	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48
TB67S213FTAG	☆	●		●		40	2.5	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN36
TB67S215FTAG	☆	●	●			40	2.5	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN36
TB67S209FTG	* ☆	●	●			50	4.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48
TB67S261FTG	* ☆	●		●		50	2.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48
TB67S265FTG	* ☆	●		●		50	2.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48
TB67S269FTG	* ☆	●	●			50	2.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48
TB67S289FTG	** ☆	●	●			50	3.0	●	●	●	●	●	●			●	●	●	-40 to +85°C	QFN48
TB67S508FTG	** ☆	●	●			40	3.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN36
TC78S121FTG/FNG	* ☆	●		●		40	2.0 x 2ch	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48/HTSSOP48
TC78S122FTG/FNG	* ☆	●	●			40	2.0 x 2ch	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN48/HTSSOP48
TC78S600FTG/FNG	●	●		●		18	1.0	●	●	●	●	●	●			●	●	●	-20 to +85°C	QFN24/SSOP20
TB6613FTG (1)	☆	●	●	●		6	0.8	●								●	●	●	-20 to +85°C	QON44

☆: Dry-packed / 防湿梱包品

\*: New product / 新製品

Note (1): 6-Bit µStep decoder / 6 bit マイクロステップデコーダ

\*\* : Under development / 開発中

(2): Undervoltage Lockout / 低電圧検知回路

(3): Overcurrent detection / 過電流検出回路

(4): Thermal shutdown / 過熱検出回路

(5): The TB6613 provides half-step and 1/64-step modes in stepping motor drive mode. / TB6613のStepping Modeは、Half stepと1/64 stepに対応しております。

・ Transistor arrays can also be used to drive unipolar stepping motors. For details of transistor arrays, see the section "Transistor Array Lineup" on page 145.

・ ユニポーラタイプのステッピングモータ駆動用として、トランジスタアレイも使用されております。詳細は145頁 (Transistor Array Lineup) をご参照願います。

## LED Drivers / LEDドライバ

### LED Display Drivers / LEDディスプレイ用ドライバ

Part Number	Recommend application			Interface		Supply voltage (V)			Number of LED channels	LED outputs			Current Accuracy (±%)		LED output dimming and range				Temp. Range TA	Package		
	Amusement	LED display for general	LED display for high-gradation	LED illumination	Serial	2-line BUS	1-line BUS	VDD		VCC	5 V LDO	Bipolar	MOS	Voltage (V)	Constant Current (mA)	IC to IC	Out to Out	PWM for each			DAC for all	Duty for all
TB62747AFG/AFNG	●	●			●		3.0 to 5.5			16	●	26	1.5 to 35@ VDD = 3.3 V 1.5 to 45@ VDD = 5.0 V	1.5	1.5					●	-40 to 85	SSOP24
TB62777FG/FNG	●	●			●		3.0 to 5.5			8	●	26	5 to 45	3	6					●	-40 to 85	SSOP16
TB62781FNG	●			●	●		3.0 to 5.5			9	●	28	5 to 40	3	6	● (7-bit)				●	-40 to 85	SSOP20
TB62785NG/FTG	●				●		4.5 to 5.5	4.0 to 17		4 x 8	●	17	5 to 50	7	15			● (4-bit)		●	-40 to 85	SDIP24/ VQFN24
TB62D612FTG	●			●	●		3.0 to 5.5			24	●	28	5 to 40	3	6	● (7-bit)				●	-40 to 85	WQFN36
TB62D786FTG	*	●		●		●	4.5 to 5.5		7 to 28	9	●	28	5 to 40	3	6	● (7-bit)				●	-40 to 85	VQFN24
TB62D787FTG	**	●		●		●	4.5 to 5.5		7 to 28	24	●	28	5 to 40	3	6	● (7-bit)				●	-40 to 85	VQFN40
TC62D748CFG/CFNAG	●	●			●		3.0 to 5.5			16	●	17	1.5 to 90	2.5 1.5@ special	2.5 1.5@ special					●	-40 to 85	SSOP24/ QSOP24
TC62D749CFG/CFNAG	●	●			●		3.0 to 5.5			16	●	17	1.5 to 90	2.5 1.5@ special	2.5 1.5@ special					●	-40 to 85	SSOP24/ QSOP24
TC62D776CFNAG	●	●			●		3.0 to 5.5			16	●	17	1.5 to 90	2.5 1.5@ special	2.5 1.5@ special			● (8-bit)		●	-40 to 85	SSOP24/ QSOP24
TC62D722CFNG	●	●			●		3.0 to 5.5			16	●	17	1.5 to 90	2.5 1.5@ special	2.5 1.5@ special	● (10 to 16-bit)		● (8-bit)		●	-40 to 85	HTSSOP24
TC62D723FNG/FNAG	●	●	●	●			3.0 to 5.5			16	●	17	1.5 to 90	2.5 1.5@ special	2.5 1.5@ special	● (10 to 16-bit)		● (8-bit)		●	-40 to 85	HTSSOP24/ QSOP24

\*: New product / 新製品

\*\* : Under development / 開発中

### LED Drivers for LED Lighting / LED照明用ドライバ

Part Number	Recommend application			Type		Supply voltage (V)	Switch MOSFET	PFC	Recommended Power (W)	LED output dimming			TSD	Temp. Range TA	Package
	Bulb/Per	Tube	Ceiling light	Road Light	ACDC Flyback					DCDC Boost down	PWM pulse	Linear voltage			
TB62D901FNG			●	●	●	12 to 30	External		UP to 60	●	●		●	-40 to 85	SSOP20
TC62D902FG	●	●			●	12 to 25	External	●	UP to 15			●	●	-40 to 85	SOP8

### LED Backlighting drivers / LEDバックライト用ドライバ

Part Number	Application			DCDC type		Supply voltage (V)	Number of LED strings	LED outputs		LED output dimming and range		OVP	TSD	Temp. Range TA	Package
	mobile	car navigation	small monitor	DCDC Boost up	Switch MOSFET			Current sensing Resistor	Constant Current (mA)	PWM pulse	Linear voltage				
TB62763FMG	●			●	External	6	1	●		●		●	●	-40 to 85	SON8
TB62771FTG		●	●	●	External	4.75 to 40	4		Up to 150	●		●	●	-40 to 85	WQFN20

# Intelligent Power Devices (IPDs) / インテリジェントパワーデバイス (IPD)

## Low-Voltage IPDs / 低耐圧IPD

(High-Side Switches) / (ハイサイドスイッチ)

Part Number	Package	# Outputs	V <sub>DSS</sub> (V)	I <sub>O</sub> (A)	Junction Temperature T <sub>J</sub> (°C)	Characteristics								Operating Temperature T <sub>opr</sub> (°C)	Operating Supply Voltage (V)	
						R <sub>DS(ON)</sub> (Ω) Max	Power Dissipation P <sub>D</sub> (W)	Protective Functions			Diagnostic Functions					
								Over-current (A)	Over-temperature (°C)	Over-voltage (V)	Over-current	Open Load	Over-temperature			Over-voltage
TPD1052F	PS-8	1 ch	40	0.8	150	0.8	0.7 (mounted on board)	1.2 A (clamp) 0.8 A (duty) Min	150 Min	—	○	—	○	—	—40 to 125	5 to 18
TPD1053F	SOP-8	1 ch	60	3		0.12	1.1 (mounted on board)	3 A Min	150 Min	Active clamp -16 V Typ.	○	○	○	—	—40 to 125	5 to 18
TPD1055FA	WSON10	1 ch	40	3		0.12	1.84 (mounted on board)	3 A Min	150 Min	—	○	○	○	—	—40 to 125	5 to 18
TPD1060F	SOP-8	1 ch	40	3		0.12	0.9 (mounted on board)	3 A Min	150 Min	—	○	○	○	—	—40 to 125	4 to 18

(Low-Side Switches) / (ローサイドスイッチ)

Part Number	Package	# Outputs	V <sub>DSS</sub> (V)	I <sub>O</sub> (A)	Junction Temperature T <sub>J</sub> (°C)	Characteristics								Operating Temperature T <sub>opr</sub> (°C)	Operating Supply Voltage (V)	
						R <sub>DS(ON)</sub> (Ω) Max	Power Dissipation P <sub>D</sub> (W)	Protective Functions			Diagnostic Functions					
								Over-current (A)	Over-temperature (°C)	Over-voltage (V)	Over-current	Open Load	Over-temperature			Over-voltage
TPD1030F	SOP-8	2 ch	40	1	150	0.6	2.0 (t = 10 s) (mounted on board)	1 A Min	150 Min	Active clamp 40 V Min	—	—	—	—	—40 to 110	up to 40
TPD1032F	SOP-8	2 ch	20	3		0.4	0.95 (mounted on board)	3 A Min	150 Min	Active clamp 40 V Min	—	—	—	—	—40 to 110	up to 20
TPD1036F	SOP-8	2 ch	30	1.5		0.5	2.0 (t = 10 s) (mounted on board)	1.5 A Min	150 Min	Active clamp 40 V Min	—	—	—	—	—40 to 110	up to 30
TPD1039F	SOP-8	1 ch	45	1.5		0.25	1.1 (mounted on board)	5 A Typ.	125 Min	Active clamp 45 V Min	—	—	—	—	—40 to 85	up to 45
TPD1044F	PS-8	1 ch	41	1		0.6	0.9 (mounted on board)	1 A Min	150 Min	Active clamp 41V Min	—	—	—	—	—40 to 125	up to 41
TPD1046F	SOP-8	2 ch	40	3		0.2	0.95 (mounted on board)	3 A Min	150 Min	Active clamp 40 V Min	—	—	—	—	—40 to 125	up to 20
TPD1054F	PS-8	1 ch	40	1		0.8	0.7 (mounted on board)	1 A Min	150 Min	Active clamp 40 V Min	○	○	○	—	—40 to 125	V <sub>OUT</sub> = up to 40 V <sub>DD</sub> = 4.5 to 5.5
TPD1058FA	WSON10	1 ch	40	6		0.1	1.84 (mounted on board)	6 A Min	150 Min	Active clamp 40 V Min	○	○	○	—	—40 to 125	V <sub>OUT</sub> = up to 40 V <sub>DD</sub> = 4.5 to 5.5

Low-Voltage IPDs / 低耐圧IPD  
(Pre-drivers) / (プリドライバ)

Part Number	Package	Configuration	# Outputs	Supply Voltage V <sub>DD</sub> (V)	I <sub>O</sub> (A)	Junction Temperature T <sub>j</sub> (°C)	Characteristics							Operating Temperature T <sub>opr</sub> (°C)	Operating Supply Voltage (V)	
							Power Dissipation P <sub>D</sub> (W)	Protective Functions				Diagnostic Functions				
								Over-current (A)	Overvoltage/Undervoltage (V)		Battery Reverse Protection	Over-current	Overvoltage/Undervoltage			
									Over-voltage	Under-voltage			Over-voltage			Under-voltage
TPD7101F ☆	SSOP-24	High-side Power-MOSFET driver (with built-in charge pump)	2 ch	30	Source current 0.1A Typ. Sink current 0.1A Typ.	150	0.8	Adjustable	—	V <sub>DD</sub> : 4.5 V Max	—	○	—	○	−40 to 110	8 to 18
TPD7102F	PS-8	High-side Power-MOSFET driver (with built-in charge pump)	1 ch	25	Source current 1mA Typ.		0.7	—	V <sub>DD</sub> : 18 V Min	—	—	High-side N-ch Power-MOSFET VGS monitor		−40 to 125	7 to 18	
TPD7104F	PS-8	High-side Power-MOSFET driver (with built-in charge pump)	1 ch	24	Source current Internal capacity Sink current 0.5mA Max		0.7	Adjustable	V <sub>OUT</sub> : V <sub>DD</sub> + 15.7 V Typ.	—	—	○	—	—	−40 to 125	5 to 18
TPD7104AF	PS-8	High-side Power-MOSFET driver (with built-in charge pump)	1 ch	24	Source current Internal capacity Sink current 0.5mA Max		0.7	Adjustable	V <sub>OUT</sub> : V <sub>DD</sub> + 15.7 V Typ.	—	○	○	—	—	−40 to 125	5 to 18
TPD7210F ☆	SSOP-24	Power-MOSFET driver for 3-phase bridge (with built-in charge pump)	6 ch	30	Source current 1A Max Sink current 1A Max		0.8	—	—	—	—	Input arm-short detection		○	−40 to 125	4.5 to 18
TPD7211F	PS-8	Half-bridge Power-MOSFET driver (for high-side P-ch MOSFET drive)	2 ch	30	Source current 0.5A Max Sink current 0.5A Max		0.7	—	—	—	—	—	—	—	−40 to 125	5 to 18
TPD7212F ☆**	WQFN32	Power-MOSFET driver for 3-phase bridge (with built-in charge pump)	6 ch	25	Source current −1.0A Max Sink current +1.5A Max		TBD	—	V <sub>DL</sub> : 18 V Typ.	—	—	—	○ (VDL)	○ (VDH, VDL)	−40 to 125	4.5 to 18

☆: Dry-packed / 防湿梱包品

\*\* : Under development / 開発中

## High-Voltage IPDs / 高耐压IPD

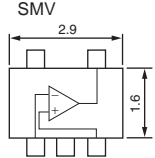
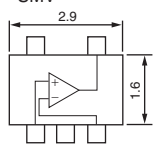
Part Number	Package	Functions	Output Type	Features	Characteristics			Absolute Maximum Ratings (Ta = 25°C)	
					Protective Functions			V <sub>BB</sub> (V)	I <sub>OUT</sub> (A)
					Overcurrent	Over-temperature	Undervoltage		
TPD4131K	DIP26	Hall amp input, PWM, 3-phase decoder	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	○	○	○	250	1
TPD4151K	DIP26	Hall amp input, PWM, 3-phase decoder	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	○	○	○	250	1
TPD4132K	DIP26	Hall amp input, PWM, 3-phase decoder	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	○	○	○	500	1
TPD4142K	DIP26	Hall amp input, PWM, 3-phase decoder	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	○	○	○	500	1
TPD4146K	DIP26	Hall amp input, PWM, 3-phase decoder FGC	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	○	○	○	500	1
TPD4123K	DIP26	6-input, low-side driver, high-side driver, 3 shunt type	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	○	○	○	500	1
TPD4123AK	DIP26	6-input, low-side driver, high-side driver, 3 shunt type	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	—	○	○	500	1
TPD4134K	DIP26	6-input, low-side driver, high-side driver, 3 shunt type	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	○	○	○	500	2
TPD4134AK	DIP26	6-input, low-side driver, high-side driver, 3 shunt type	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	—	○	○	500	2
TPD4144K	DIP26	6-input, low-side driver, high-side driver, 3 shunt type	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	○	○	○	500	2
TPD4144AK	DIP26	6-input, low-side driver, high-side driver, 3 shunt type	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	—	○	○	500	2
TPD4135K	DIP26	6-input, low-side driver, high-side driver, 3 shunt type	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	○	○	○	500	3
TPD4135AK	DIP26	6-input, low-side driver, high-side driver, 3 shunt type	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	—	○	○	500	3
TPD4152K *	DIP26	Hall amp input, PWM, 3-phase decoder	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	○	○	○	600	0.7
TPD4152F *	HSSOP31	Hall amp input, PWM, 3-phase decoder	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	○	○	○	600	0.7
TPD4204F *	SOP30	6-input, low-side driver, high-side driver, 3 shunt type	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	○	○	○	600	2.5
TPD4206F *	SOP30	6-input, low-side driver, high-side driver, 3 shunt type	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	○	○	○	500	2.5
TPD4207F *	SOP30	6-input, low-side driver, high-side driver, 3 shunt type	3-phase full-bridge	High-voltage PWM Brushless DC motor driver	○	○	○	600	5

\*: New product / 新製品

# Operational Amplifier ICs (Op Amp ICs) & Comparator ICs / オペアンプ/コンパレータ

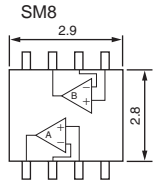
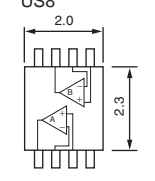
## Operational Amplifier ICs (Op Amp ICs) & Comparator ICs / オペアンプ/コンパレータ

(Bipolar, Single-Circuit Type) / (バイポーラ, シングル品)

Part Number	Package	Marking	Functions	Features	Supply Voltage (V)	Internal Connections
TA75S393F	SMV	TA	Bipolar comparator	Single/dual power supply, open-collector output	2 to 36 or $\pm 1$ to $\pm 18$	(Unit: mm) 
TA75S01F	SMV	SA	Bipolar Op Amp	Single/dual power supply, unity gain stable	3 to 12 or $\pm 1.5$ to $\pm 6$	(Unit: mm) 
TA75S558F	SMV	SB		Dual power supply	$\pm 4$ to $\pm 18$	

- ・ Note that input pin configurations of the single op amp and comparator ICs differ. US8 and SM8 have the same pin configuration.
- ・ The internal connection diagrams only show the general configurations of the circuits.
- ・ シングルタイプのオペアンプとコンパレータの入力端子のピン配置が異なりますのでご注意ください。なお、US8, SM8タイプは同一のピン配置です。
- ・ 内部接続図はイメージ図です。

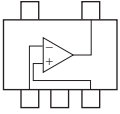
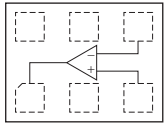
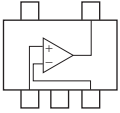
(Bipolar, Dual-Circuit Type) / (バイポーラ, デュアル品)

Part Number	Package	Marking	Functions	Features	Supply Voltage (V)	Internal Connections
TA75W393FU	SM8	5W393	Bipolar comparator	Single/dual power supply, open-collector output	2 to 36 or $\pm 1$ to $\pm 18$	(Unit: mm) 
TA75W01FU	SM8	5W01	Bipolar Op Amp	Single/dual power supply, unity gain stable	3 to 12 or $\pm 1.5$ to $\pm 6$	
TA75W558FU	SM8	5W558		Dual power supply	$\pm 4$ to $\pm 18$	

- ・ The internal connection diagrams only show the general configurations of the circuits.
- ・ 内部接続図はイメージ図です。



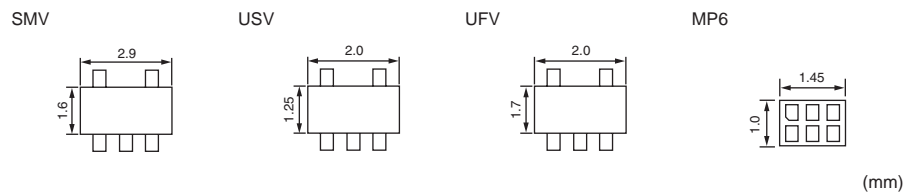
(CMOS, Single-Circuit Type) / (CMOS, シングル品)

Part Number	Package	Marking	Functions	Features	Supply Voltage (V)	Internal Connections	
TC75S56F	SMV	TC	CMOS comparator	Single/dual power supply, push-pull output, ultra-low current consumption	1.8 to 7 or ±0.9 to ±3.5		
TC75S56FU	USV						
TC75S57F	SMV	TD			Single/dual power supply, push-pull output, low current consumption		1.8 to 7 or ±0.9 to ±3.5
TC75S57FU	USV						
TC75S58F	SMV	TE			Single/dual power supply, open-drain output, ultra-low current consumption		1.8 to 7 or ±0.9 to ±3.5
TC75S58FU	USV						
TC75S59F	SMV	TF			Single/dual power supply, open-drain output, low current consumption		1.8 to 7 or ±0.9 to ±3.5
TC75S59FU	USV						
TC75S70L6X *	MP6	VQ	CMOS comparator with a full range of input and output voltages	Single/dual power supply, full range of input and output voltages, low bias current, low-voltage operation	1.3 to 4.6 or ±0.65 to ±2.3		
TC75S51F	SMV	SC	CMOS Op Amp	Single/dual power supply, low-voltage operation	1.5 to 7 or ±0.75 to ±3.5		
TC75S51FU	USV						
TC75S54F	SMV	SE			Single/dual power supply, low-voltage operation, low current consumption		1.8 to 7 or ±0.9 to ±3.5
TC75S54FU	USV						
TC75S55F	SMV	SF			Single/dual power supply, low-voltage operation, ultra-low current consumption		1.8 to 7 or ±0.9 to ±3.5
TC75S55FU	USV						
TC75S63TU	UFV	SP			Single/dual power supply, low current consumption, low noise		2.2 to 5.5 or ±1.1 to ±2.75

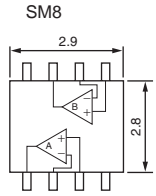
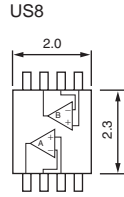
- ・ Note that input pin configurations of the single op amp and comparator ICs differ. US8 and SM8 have the same pin configuration.
- ・ The internal connection diagrams only show the general configurations of the circuits.
- ・ シングルタイプのオペアンプとコンパレータの入力端子のピン配置が異なりますのでご注意ください。なお、US8, SM8 タイプは同一のピン配置です。
- ・ 内部接続図はイメージ図です。

\*: New product / 新製品

Package Lineup / パッケージラインナップ



Operational Amplifier ICs (Op Amp ICs) & Comparator ICs / オペアンプ/コンパレータ  
(CMOS, Dual-Circuit Type) / (CMOS, デュアル品)

Part Number	Package	Marking	Functions	Features	Supply Voltage (V)	Internal Connections
TC75W56FU	SM8	5W56	CMOS comparator	Single/dual power supply, push-pull output, ultra-low current consumption	1.8 to 7 or $\pm 0.9$ to $\pm 3.5$	(Unit: mm)  SM8 
TC75W56FK	US8					
TC75W57FU	SM8	5W57		Single/dual power supply, push-pull output, low current consumption	1.8 to 7 or $\pm 0.9$ to $\pm 3.5$	
TC75W57FK	US8					
TC75W58FU	SM8	5W58		Single/dual power supply, open-drain output, ultra-low current consumption	1.8 to 7 or $\pm 0.9$ to $\pm 3.5$	
TC75W58FK	US8					
TC75W59FU	SM8	5W59	Single/dual power supply, open-drain output, low current consumption	1.8 to 7 or $\pm 0.9$ to $\pm 3.5$		
TC75W59FK	US8					
TC75W51FU	SM8	5W51	CMOS Op Amp	Single/dual power supply, low-voltage operation	1.5 to 7 or $\pm 0.75$ to $\pm 3.5$	US8 
TC75W51FK	US8					
TC75W54FU	SM8	5W54		Single/dual power supply, low-voltage operation, low current consumption	1.8 to 7 or $\pm 0.9$ to $\pm 3.5$	
TC75W54FK	US8					
TC75W55FU	SM8	5W55		Single/dual power supply, low-voltage operation, ultra-low current consumption	1.8 to 7 or $\pm 0.9$ to $\pm 3.5$	
TC75W55FK	US8					

・ The internal connection diagrams only show the general configurations of the circuits.

・ 内部接続図はイメージ図です。

# Transistor Arrays / トランジスタアレイ

## Transistor Arrays / トランジスタアレイ

Part Number	Type		Maximum Ratings		Input Level	Input Voltage Range (V)	Inductive Load	Common Diode	Temp. Range T <sub>A</sub>	Package	Existing Part Number
	Output Type	Ch	Output Voltage (V)	Output Current (A)							
TBD62064APG	Sink	4ch	50	1.5	High	2.5 to 25	●	●	-40 to +85°C	DIP16	TD62064APG
TBD62064AFG	Sink	4ch	50	1.5	High	2.5 to 25	●	●	-40 to +85°C	HSOP16	TD62064AFG
TBD62064AFAG	Sink	4ch	50	1.5	High	2.5 to 25	●	●	-40 to +85°C	SSOP24	TD62064AFG
TBD62308APG	Sink	4ch	50	1.5	Low	0 to VCC-3.5 V	●	●	-40 to +85°C	DIP16	TD62308APG
TBD62308AFG	Sink	4ch	50	1.5	Low	0 to VCC-3.5 V	●	●	-40 to +85°C	HSOP16	TD62308AFG
TBD62308AFAG	Sink	4ch	50	1.5	Low	0 to VCC-3.5 V	●	●	-40 to +85°C	SSOP24	TD62308AFG
TBD62003APG	Sink	7ch	50	0.5	High	2.5 to 25	●	●	-40 to +85°C	DIP16	TD62003APG, ULN2003APG
TBD62003AFG	Sink	7ch	50	0.5	High	2.5 to 25	●	●	-40 to +85°C	SOP16	TD62003AFG, ULN2003AFWG
TBD62003AFNG	Sink	7ch	50	0.5	High	2.5 to 25	●	●	-40 to +85°C	SSOP16	TD62003AFG, ULN2003AFWG
TBD62003AFWG	Sink	7ch	50	0.5	High	2.5 to 25	●	●	-40 to +85°C	SOL16	TD62003AFG, ULN2003AFWG
TBD62004APG	Sink	7ch	50	0.5	High	7.0 to 25	●	●	-40 to +85°C	DIP16	TD62004APG, ULN2004APG
TBD62004AFG	Sink	7ch	50	0.5	High	7.0 to 25	●	●	-40 to +85°C	SOP16	TD62004AFG, ULN2004AFWG
TBD62004AFNG	Sink	7ch	50	0.5	High	7.0 to 25	●	●	-40 to +85°C	SSOP16	TD62004AFG, ULN2004AFWG
TBD62004AFWG	Sink	7ch	50	0.5	High	7.0 to 25	●	●	-40 to +85°C	SOL16	TD62004AFG, ULN2004AFWG
TBD62502APG	Sink	7ch	50	0.3	High	14 to 25	—	—	-40 to +85°C	DIP16	TD62502PG
TBD62502AFG	Sink	7ch	50	0.3	High	14 to 25	—	—	-40 to +85°C	SOP16	TD62502FG
TBD62502AFNG	Sink	7ch	50	0.3	High	14 to 25	—	—	-40 to +85°C	SSOP16	TD62502FNG
TBD62502AFWG	Sink	7ch	50	0.3	High	14 to 25	—	—	-40 to +85°C	SOL16	TD62502FG
TBD62503APG	Sink	7ch	50	0.3	High	2.5 to 25	—	—	-40 to +85°C	DIP16	TD62503PG
TBD62503AFG	Sink	7ch	50	0.3	High	2.5 to 25	—	—	-40 to +85°C	SOP16	TD62503FG
TBD62503AFNG	Sink	7ch	50	0.3	High	2.5 to 25	—	—	-40 to +85°C	SSOP16	TD62503FNG
TBD62503AFWG	Sink	7ch	50	0.3	High	2.5 to 25	—	—	-40 to +85°C	SOL16	TD62503FG
TBD62083APG	Sink	8ch	50	0.5	High	2.5 to 25	●	●	-40 to +85°C	DIP18	TD62083APG, ULN2803APG
TBD62089APG **	Sink	8ch	50	0.5	High	0.7 x VDD to VDD	—	—	-40 to +85°C	DIP20	TC74HC273AP + TD62083APG
TBD62083AFG	Sink	8ch	50	0.5	High	2.5 to 25	●	●	-40 to +85°C	SOP18	TD62083AFG, ULN2803AFWG
TBD62083AFNG	Sink	8ch	50	0.5	High	2.5 to 25	●	●	-40 to +85°C	SSOP18	TD62083AFNG
TBD62083AFWG	Sink	8ch	50	0.5	High	2.5 to 25	●	●	-40 to +85°C	SOL18	TD62083AFG, ULN2803AFWG
TBD62183AFNG *	Sink	8ch	50	0.05	High	2.5 to 25	●	●	-40 to +85°C	SSOP18	TD62083AFNG
TBD62183AFWG *	Sink	8ch	50	0.05	High	2.5 to 25	●	●	-40 to +85°C	SOL18	TD62083AFG, ULN2803AFWG
TBD62084APG	Sink	8ch	50	0.5	High	7.0 to 25	●	●	-40 to +85°C	DIP18	TD62084APG, ULN2804APG
TBD62084AFG	Sink	8ch	50	0.5	High	7.0 to 25	●	●	-40 to +85°C	SOP18	TD62084AFG, ULN2804AFWG
TBD62084AFNG	Sink	8ch	50	0.5	High	7.0 to 25	●	●	-40 to +85°C	SSOP18	TD62084AFNG
TBD62084AFWG	Sink	8ch	50	0.5	High	7.0 to 25	●	●	-40 to +85°C	SOL18	TD62084AFG, ULN2804AFWG
TBD62783APG	Source	8ch	50	0.5	High	2.0 to 25	●	●	-40 to +85°C	DIP18	TD62783APG
TBD62783AFG	Source	8ch	50	0.5	High	2.0 to 25	●	●	-40 to +85°C	SOP18	TD62783AFG, TD62783AFWG
TBD62783AFNG	Source	8ch	50	0.5	High	2.0 to 25	●	●	-40 to +85°C	SSOP18	TD62783AFNG
TBD62783AFWG	Source	8ch	50	0.5	High	2.0 to 25	●	●	-40 to +85°C	SOL18	TD62783AFG, TD62783AFWG
TBD62789APG **	Source	8ch	50	0.5	High	2.0 to 5.5V	●	●	-40 to +85°C	DIP20	TC74HC273AP + TD62783APG

\*: New product / 新製品

\*\* : Under development / 開発中

# SEMICONDUCTOR GENERAL CATALOG

## 東芝半導体製品総覧表

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