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Transistor Array Product Replacement Announcement

**Toshiba Corporation Semiconductor & Storage Products company
Mixed Signal IC Marketing and Engineering Dept
Aug 3, 2015**

New Generation Transistor Array Products

- **Existing Transistor Array products, using bipolar process, will be EOL by Mar 31, 2016.**
- **Toshiba develops new transistor array products TBD62xxxA series as a succession products for P2P replacements**
- **The new transistor array products apply the following technologies:**
 1. **Replace bipolar to DMOS¹ architecture,**
 2. **Replace pure bipolar process to advanced BiCD process**
 3. **Change wafer size from 6 inch to 8 inch**

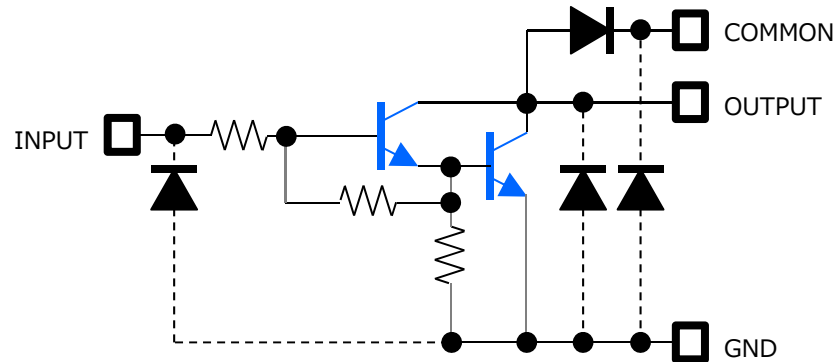
Note ¹ : Double Diffused Metal Oxide Semiconductor

New Generation Transistor Array Product Block Diagram

In respond to many customers' requests, Toshiba re-designs the transistor array products from bipolar transistor to DMOS* architecture

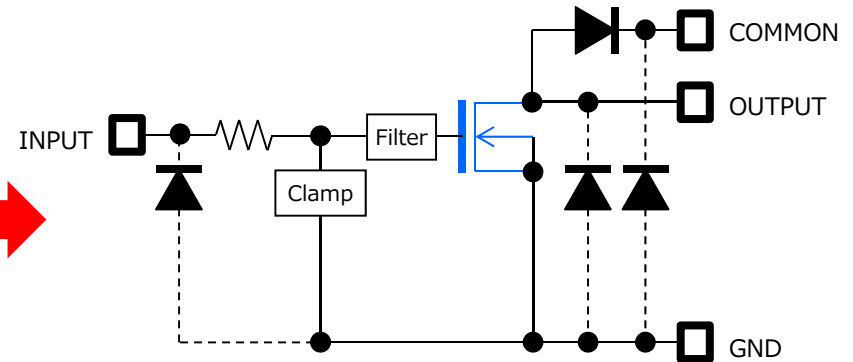
ULN/TD62xxxA series

**Output stage
Bipolar Transistor**



TBD62xxxA series

**Output stage
DMOS FET**



- The new generation DMOS products pin assignment, package and basic functions are the same as the Existing BJT products.
- The circuit configuration is changed from bipolar transistor of the current control element to DMOS transistor of voltage control element for electrical characteristics. The differences are shown later related to the input impedance, output switching characteristics, and output current capability. New parts, in principle, can replace the existing parts, customers are encouraged to obtain the new parts for validations.

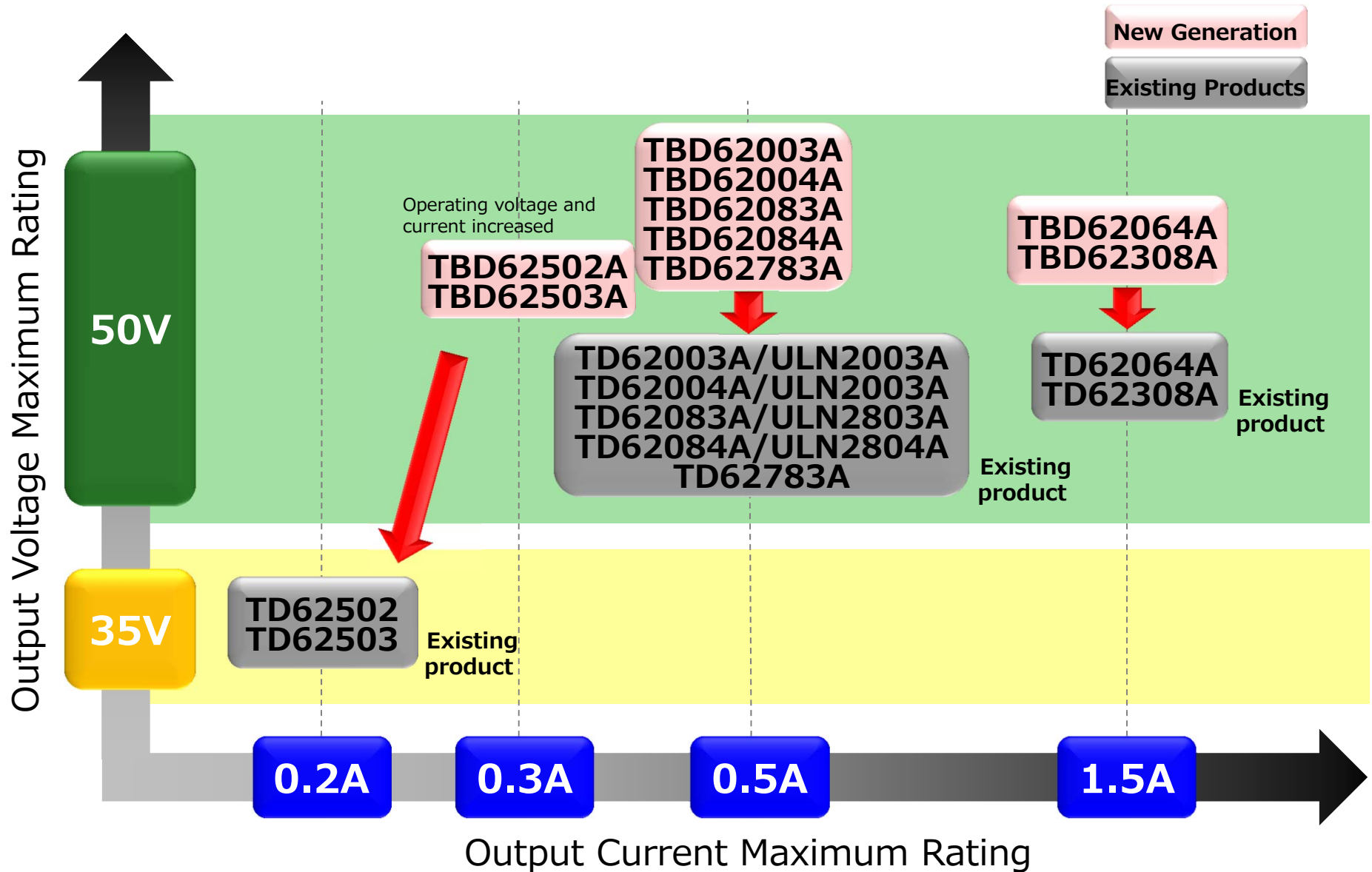
General Comparisons of Existing and New Generation Transistor Array Series

TBD62xxxA has a functional compatibility with ULN/TD62xxxA products

	Existing product ULN/TD62xxxA	New generation product TBD62xxxA
Output Transistor	Bipolar Transistor	DMOS FET
Process	Bipolar process	BiCD process of 130nm
Package	Equal line-up with more package options	
Pin assignment	Same	
Function	Equal	
Voltage rating	Equal (50V)	
Current rating	Equal	
Electrical characteristics	The differences are shown in later pages	

BiCD process : Process where Bipolar ,CMOS, and DMOS are consolidated.


Standard Product Lineup (1st Phase)



Standard Product Lineup (1st Phase)

Standard Product Lineup will be launched in the first phase

Existing Product	New generation product	Output Type	Ch	Inductive Load	Common Diode	Input Level	Iout	Vout	Package	
TD62064A PG/FG	TBD62064A PG/FG	Sink	4ch	possible	internal	H	1.5A	50V	DIP16/HSOP16	
TD62308A PG/FG	TBD62308A PG/FG			possible	internal	L	1.5A	50V	DIP16/HSOP16	
TD62003A PG/FG ULN2003A PG/FWG	TBD62003A PG/FG/FNG/FWG		7ch	possible	internal	H	0.5A	50V	DIP16/SOP16 SSOP16/SOL16	
TD62004A PG/FG ULN2004A PG/FWG	TBD62004A PG/FG/FNG/FWG			possible	internal	H	0.5A	50V	DIP16/SOP16 SSOP16/SOL16	
TD62502 PG/FG/FNG	TBD62502A PG/FG/FNG/FWG			Note1	-	H	0.3A	50V	DIP16/SOP16 SSOP16/SOL16	
TD62503 PG/FG/FNG	TBD62503A PG/FG/FNG/FWG			Note1	-	H	0.3A	50V	DIP16/SOP16 SSOP16/SOL16	
TD62083A PG/FG/FNG ULN2803A PG/FWG	TBD62083A PG/FG/FNG/FWG			8ch	possible	internal	H	0.5A	50V	DIP18/SOP18 SSOP18/SOL18
TD62084A PG/FG/FNG ULN2804A PG/FWG	TBD62084A PG/FG/FNG/FWG				possible		H	0.5A	50V	DIP18/SOP18 SSOP18/SOL18
TD62783A PG/FG/FNG TD62783A FWG	TBD62783A PG/FG/FNG/FWG		Source		possible	internal	H	0.5A	50V	DIP18/SOP18 SSOP18/SOL18

 It's a series product

Note1: For inductive load driving, products with built-in common diode are recommended

Standard Product Lineup Schedules

Standard Product Lineup will be launched in the first phase

Product	2015		2016		2017	
TBD62502A TBD62503A	MP Ready					
TBD62003A TBD62004A	MP Ready					
TBD62083A TBD62084A		Sep MP				
TBD62783A		Nov MP				
TBD62064A			Jan MP			
TBD62308A			Mar MP			

Sample is available three months before MP

Remark: These schedules are subjected to change

Existing products TD62502A, TD62503A, TD62003A, TD62004A, TD62083A, and TD62084A with Last Time Buy by March 31, 2016

Existing products TD62783A, TD62064A, and TD62308A with Last Time Buy by September 30, 2016

All existing products TD62xxx with End of sales by March 31, 2017

Enhanced Product Lineup (2nd Phase)

Enhanced Product Lineup will be launched in next phase

Past product	New generation product	Output type	Ch	Inductive load	Common Diode	Input Level	Iout	Vout	Package
TD62304A PG/FG/FNG TD62305A PG/FG/FNG	TBD62304A PG/FG/FNG/FWG	Sink	7ch	-	-	L	0.5A	50V	DIP16/SOP16 SSOP16/SOL16
TD62387A PG/FG/FNG	TBD62387A PG/FG/FNG/FWG		8ch	Possible	Internal	L	0.5A	50V	DIP20/SOP20 SSOP20/SOL20
TD62382A PG/FG/FNG TD62384A PG/FG TD62385A PG/FG	TBD62384A PG/FG/FNG/FWG			-	-	L	0.5A	50V	DIP18/SOP18 SSOP18/SOL18
TD62381 PG/FG/FNG	TBD62381A PG/FG/FNG/FWG			-	-	H	0.5A	50V	DIP18/SOP18 SSOP18/SOL18
TD62781A PG/FG	TBD62781A PG/FG/FWG	Source	8ch	-	-	H	0.5A	50V	DIP18/SOP18/SOL18
TD62785 PG/FG	TBD62785A PG/FG/FWG			-	-	L	0.5A	6V	DIP18/SOP18/SOL18
TD62786A PG/FG/FNG	TBD62786A PG/FG/FNG/FWG			Possible	internal	L	0.5A	50V	DIP18/SOP18 SSOP18/SOL18

Enhanced Lineup Product Schedules

Enhanced Product Lineup will be launched in next phase

Product	2016		2017		2018	
TBD62387A		Dec MP				
TBD62304A			Mar MP			
TBD62384A			Jun MP			
TBD62381A				Sep MP		
TBD62785A				Dec MP		
TBD62781A					Mar MP	
TBD62786A					Jun MP	

Sample is available three months before MP

Remark: Schedules are subjected to change

Package Lineup1 (Parts assembled in Japan)

The new generation products package line up equals to the existing products, except “*”. Toshiba also offers few additional package options. The following new products will be assembled in Japan

Existing product	Package		New generation product	Package
TD62003APG/FG	DIP16/SOP16		TBD62003AFG/FNG**	SOP16/SSOP16**
TD62004APG/FG	DIP16/SOP16		TBD62004AFG/FNG**	SOP16/SSOP16**
TD62502PG*/FG/FNG	DIP16*/SOP16/SSOP16		TBD62502AFG/FNG	SOP16/SSOP16
TD62503PG*/FG/FNG	DIP16*/SOP16/SSOP16		TBD62503AFG/FNG	SOP16/SSOP16
TD62083APG/FG/FNG	DIP18/SOP18/SSOP18	→	TBD62083AFG/FNG	SOP18/SSOP18
TD62084APG/FG/FNG	DIP18/SOP18/SSOP18		TBD62084AFG/FNG	SOP18/SSOP18
TD62783APG/FG/FNG	DIP18/SOP18/SSOP18		TBD62783AFG/FNG	SOP18/SSOP18
TD62064APG*/FG	DIP16*/HSOP16		TBD62064AFG	HSOP16
TD62308APG*/FG	DIP16*/HSOP16		TBD62308AFG	HSOP16

DIP package of the new generation product will be made in China (see next page)

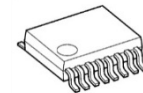
** new line-up

Package Lineup 2 (Parts assembled in China)

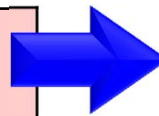
DIP and SOL packages will also be continued of the following parts where assembly site is in China

Existing product	Package		New generation product	Package
ULN2003APG/FWG	DIP16/SOL16		TBD62003APG/FWG	DIP16/SOL16
ULN2004APG/FWG	DIP16/SOL16		TBD62004APG/FWG	DIP16/SOL16
ULN2803APG/FWG	DIP18/SOL18	→	TBD62083APG/FWG	DIP18/SOL18
ULN2804APG/FWG	DIP18/SOL18		TBD62084APG/FWG	DIP18/SOL18
TD62783APG/FWG	DIP18/SOL18		TBD62783APG/FWG	DIP18/SOL18

New Generation Transistor Array **SSOP** package

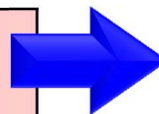


Existing products TD62502FNG,TD62503FNG					
PKG	Pin	Wire	Frame	Plating	Assembly
SSOP (FNG)	16	Au	Cu	SnAg	In Japan



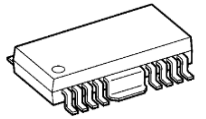
New generation products TBD62502AFNG,TBD62503AFNG TBD62003AFNG,TBD62004AFNG					
PKG	Pin	Wire	Frame	Plating	Assembly
SSOP (FNG)	16	Cu	Cu	SnAg	In Japan

Existing products TD62083AFNG,TD62084AFNG TD62783AFNG					
PKG	Pin	Wire	Frame	Plating	Assembly
SSOP (FNG)	18	Au	Cu	SnAg	In Japan

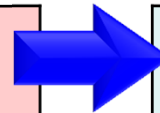


New generation products TBD62083AFNG,TBD62084AFNG TBD62783AFNG					
PKG	Pin	Wire	Frame	Plating	Assembly
SSOP (FNG)	18	Cu	Cu	SnAg	In Japan

New Generation Transistor Array HSOP package

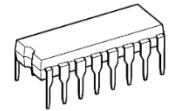


Existing products TD62064AFG,TD62308AFG					
PKG	Pin	Wire	Frame	Plating	Assembly
HSOP (FG)	16	Au	Cu	SnAg	In Japan



New generation products TBD62064AFG,TBD62308AFG					
PKG	Pin	Wire	Frame	Plating	Assembly
HSOP (FG)	16	Au	Cu	SnAg	In Japan

New Generation Transistor Array DIP package



Existing products						New generation products					
TD62064APG,TD62308APG TD62003APG,TD62004APG TD62502PG,TD62503PG ULN2003APG,ULN2004APG						TBD62064APG,TBD62308APG TBD62003APG,TBD62004APG TBD62502APG,TBD62503APG					
PKG	Pin	Wire	Frame	Plating	Assembly	PKG	Pin	Wire	Frame	Plating	Assembly
DIP (PG)	16	Au	Cu	SnAg	In Japan	DIP (PG)	16	Cu	Cu	Pure -Sn	In China
	16	Cu	Cu	Pure -Sn	In China						

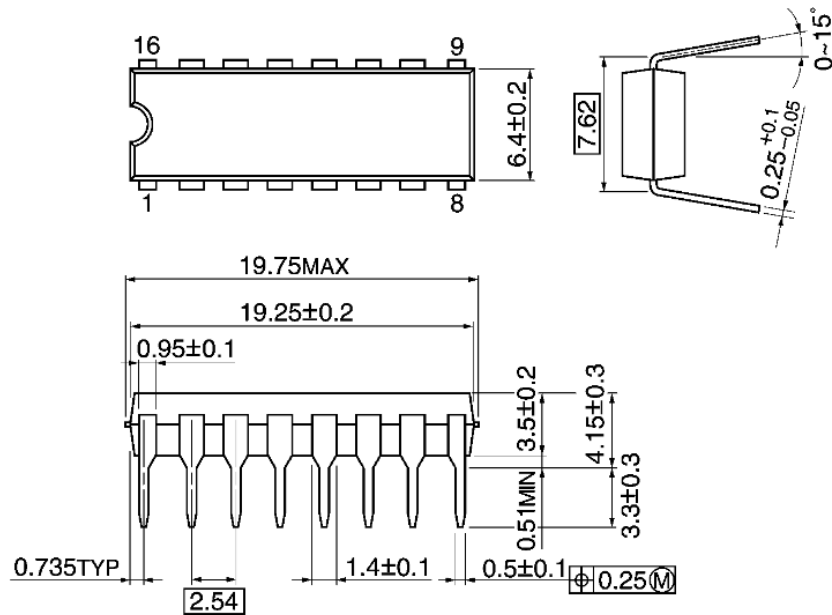
ULN type

Existing products						New generation products					
TD62083APG,TD62084APG TD62783APG ULN2803APG,ULN2804APG						TBD62083APG,TBD62084APG TBD62783APG					
PKG	Pin	Wire	Frame	Plating	Assembly	PKG	Pin	Wire	Frame	Plating	Assembly
DIP (PG)	18	Au	Cu	SnAg	In Japan	DIP (PG)	18	Cu	Cu	Pure -Sn	In China
	18	Cu	Cu	Pure -Sn	In China						

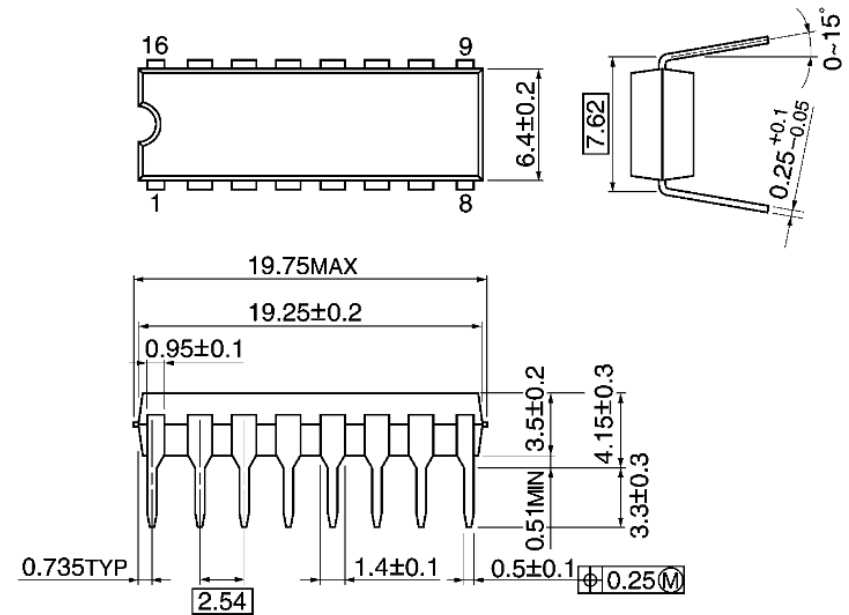
ULN type

Mechanical Dimensions (DIP16 package)

Japan assembly

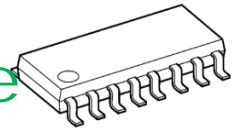


China assembly



There is no size difference in DIP16 package

New Generation Transistor Array SOP package



Existing products						New generation products					
TD62003AFG,TD62004AFG TD62502FG,TD62503FG ULN2003AFWG,ULN2004AFWG						TBD62003AFG/FWG,TBD62004AFG/FWG TBD62502AFG/FWG,TBD62503AFG/FWG					
PKG	Pin	Wire	Frame	Plating	Assembly	PKG	Pin	Wire	Frame	Plating	Assembly
SOP (FG)	16	Au	NSD (42Alloy)	SnAg	In Japan	SOP (FG)	16	Cu	NSD (42Alloy)	SnAg	In Japan
SOL (FWG)	16	Cu	Cu	Pure -Sn	In China	SOL (FWG)	16	Cu	Cu	Pure -Sn	In China

ULN type

Recommendation

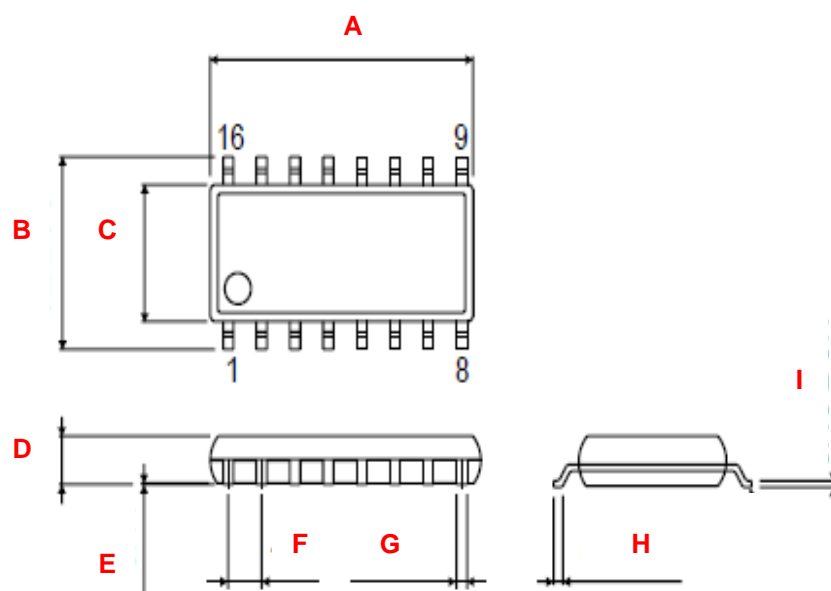
Existing products						New generation products					
TD62083AFG,TD62084AFG ULN2083AFWG,ULN2084AFWG TD62783AFG/FWG						TBD62083AFG/FWG,TBD62084AFG/FWG TBD62783AFG/FWG					
PKG	Pin	Wire	Frame	Plating	Assembly	PKG	Pin	Wire	Frame	Plating	Assembly
SOP (FG)	18	Au	Cu	SnAg	In Japan	SOP (FG)	18	Cu	Cu	SnAg	In Japan
SOL (FWG)	18	Cu	Cu	Pure -Sn	In China	SOL (FWG)	18	Cu	Cu	Pure -Sn	In China

ULN type

Recommendation

Mechanical Dimensions (SOP16/SOL16 package)

Unit:mm

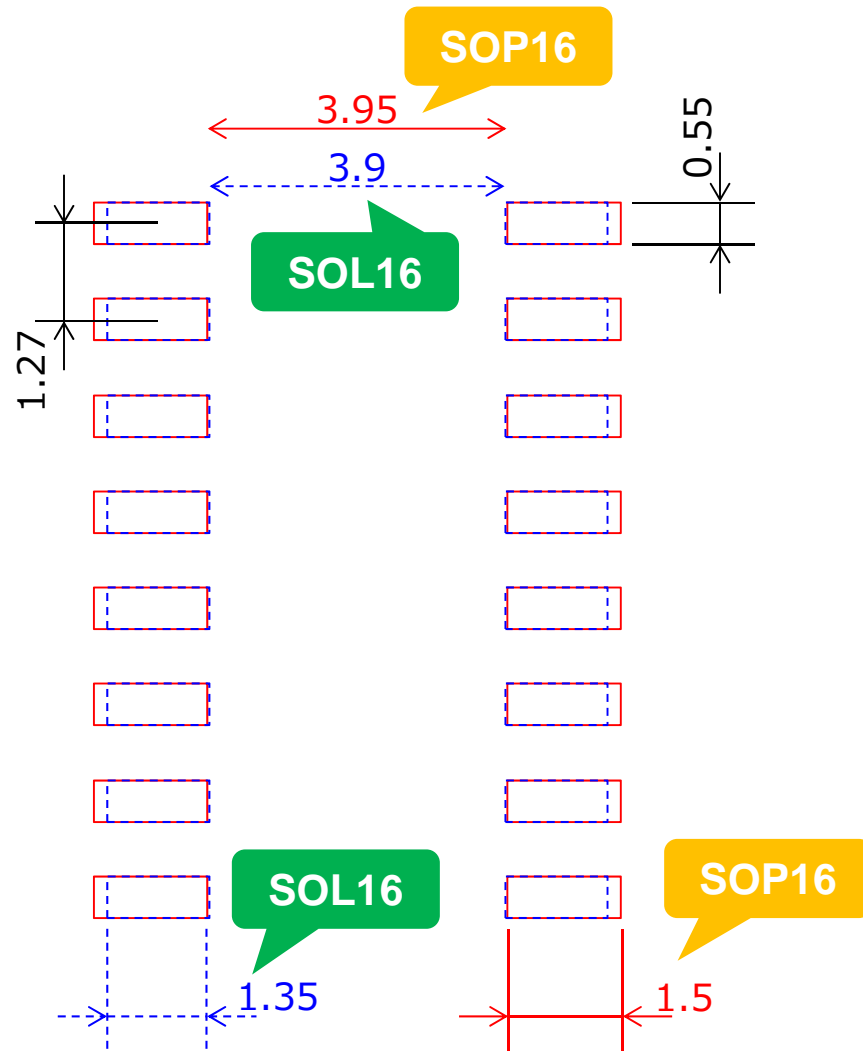


	TBD62003AFG	TBD62003AFWG
	SOP16	SOL16
A	10.5(Max)	10.1(Max)
B	6.0~6.6	5.84~6.24
C	4.2~4.6	3.84~4.04
D	1.9(Max)	1.73(Max)
E	0.1(typ.)	0.115(typ.)
F	1.27(Typ.)	1.27(Typ.)
G	0.3~0.5	0.356~0.456
H	0.325(Min)	0.4(Min)
I	0.15(typ.)	0.2(typ.)

There are differences in size.

Reference land pattern (SOP16/SOL16 package)

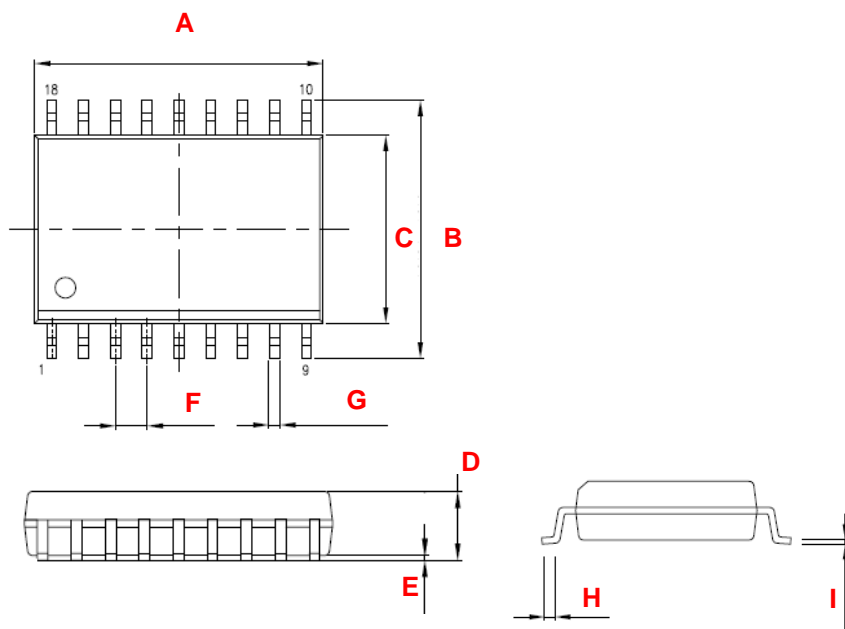
Unit:mm



Reference Data

Mechanical Dimensions (SOP18/SOL18 package)

Unit:mm



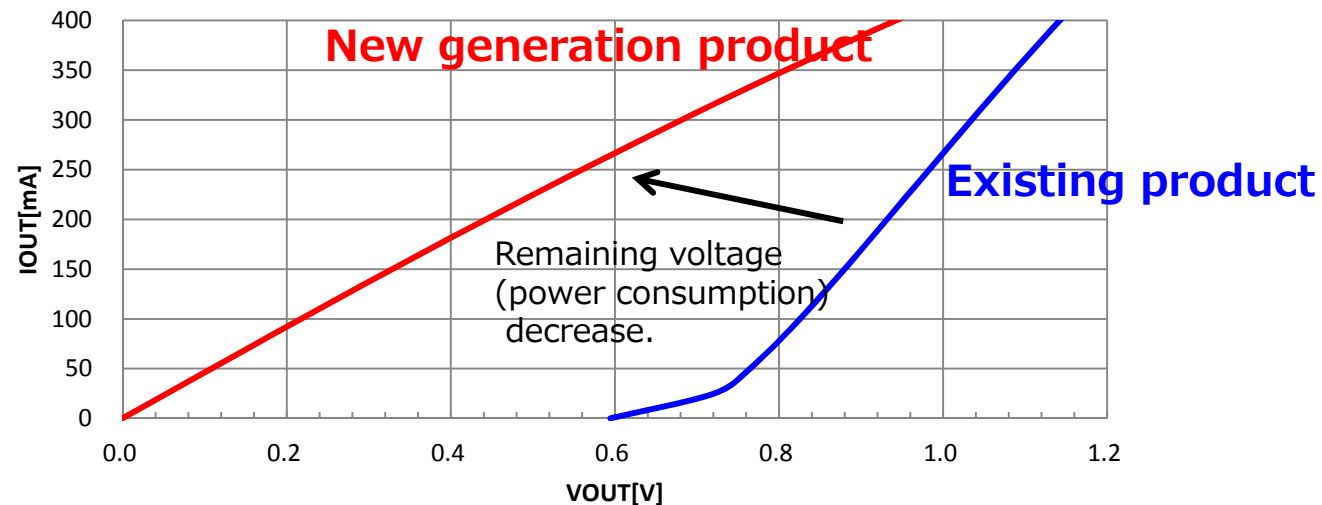
	TBD62083AFG	TBD62083AFWG
	SOP18	SOL18
A	13.0(Max)	11.68(Max)
B	10.0~10.6	10.01~10.64
C	6.8~7.2	7.37~7.62
D	2.45(Max)	2.85(Max)
E	0.15(typ.)	0.175(typ.)
F	1.27(Typ.)	1.27(Typ.)
G	0.3~0.5	0.36~0.51
H	0.9(Max)	1.0(Max)
I	0.25 (typ.)	0.267(typ.)

There are differences in size.

Output Characteristics

In principle, the new DMOS products can replace the existing BJT products for general switching applications. Please note that they have different output characteristics that customers are recommended to validate the new products in their systems

VOUT-IOUT characteristic
(Reference value)



New generation products will show the changed output voltage characteristic which is required to drive the output current.

TBD62003A/TBD62004A and Existing Products Comparisons

	Existing product		New generation product	
	TD62003A/ULN2003A	TD62004A/ULN2004A	TBD62003A	TBD62004A
Composition	Bipolar transistor output		DMOS transistor output	
Output rating	50V/0.5A		50V/0.5A	
Input characteristics	VIN(ON)=2.8V~24V	VIN(ON)=6.2V~24V	VIN(ON)=2.5V~25V	VIN(ON)=7.0V~25V
	Low input impedance ($2.7k\Omega + V_{BE} \times 2$) IIN=0.4mA(typ.)@VIN=2.5V	Low input impedance ($10.5k\Omega + V_{BE} \times 2$) IIN=0.5mA(typ.)@VIN=7.0V	High input impedance (Built-in pull-down resistor of $44k\Omega$) IIN=0.1mA(typ.)@VIN=2.5V	High input impedance (Built-in pull-down resistor of $22.8k\Omega$) IIN=0.3mA(typ.)@VIN=7.0V
	The dependency of the output current to the input current is high. (Output current is determined by the input current \times hFE.)		The dependency of the output current to the input current is low.	
	Possible to use with maximum output capability at VIN=2.8V.	Possible to use with maximum output capability at VIN=6.2V.	Possible to use with maximum output capability at VIN=5.0V (CMOS level).	
Output SW characteristics	tON=0.1us(typ.), tOFF=0.2us(typ)		tON=0.4us(typ.), tOFF=0.8us(typ) It has a filter built-in in input part. It's expected to be slightly slower compared with the existing product.	
Output characteristics	1.3V (typ) when IOU=350mA		0.7V (typ) when IOU=350mA The New generation product is expected to drive a current with a low output voltage. So, it can be turned on with the condition in which previous product cannot drive.	

TBD62502A/TBD62503A and Existing Products Comparisons

	Existing product		New generation product	
	TD62502	TD62503	TBD62502A	TBD62503A
Composition	Bipolar transistor output		DMOS transistor output	
Output rating	35V/0.2A		50V/0.3A	
Input characteristics	VIN(ON)=14V~25V	VIN(ON)=2.4V~25V	VIN(ON)=14V~25V	VIN(ON)=2.5V~25V
	Low input impedance (7V Zener Diode + 10.5kΩ+VBE) IIN=0.6mA(typ.)@VIN=14V	Low input impedance (2.7kΩ+VBE) IIN=0.7mA(typ.)@VIN=2.5V	High input impedance (Built-in pull-down resistor of 24.5kΩ) IIN=0.6mA(typ.)@VIN=14V	High input impedance (Built-in pull-down resistor of 44kΩ) IIN=0.1mA(typ.)@VIN=2.5V
	The dependency of the output current to the input current is high. (Output current is determined by the input current × hFE.)		The dependency of the output current to the input current is low.	
	Possible to use with maximum output capability at VIN=29V.	Possible to use with maximum output capability at VIN=6.1V.	Possible to use with maximum output capability at VIN=5.0V (CMOS level).	
Output SW characteristics	tON=0.05us(typ.), tOFF=0.2us(typ)		tON=0.4us(typ.), tOFF=0.8us(typ) It has a filter built-in in input part. It's expected to be slightly slower compared with the existing product.	
Output characteristics	0.8V (max) when IOU=150mA		0.65V (max) when IOU=200mA The New generation product is expected to drive a current with a low output voltage. So, it can be turned on with the condition in which previous product cannot drive.	

TD62083A/TD62084A (Existing Products) and TBD62083A/TBD62084A Comparisons

	Existing product		New generation product	
	TD62083A/ULN2803A	TD62084A/ULN2804A	TBD62083A	TBD62084A
Composition	Bipolar transistor output		DMOS transistor output	
Output rating	50V/0.5A		50V/0.5A	
Input characteristics	VIN(ON)=3.0V~25V	VIN(ON)=8.0V~25V	VIN(ON)=2.5V~25V	VIN(ON)=7.0V~25V
	Low input impedance (2.7kΩ +VBE×2) IIN=0.4mA(typ.)@VIN =2.5V	Low input impedance (10.5kΩ +VBE×2) IIN=0.1mA(typ.)@VIN =2.5V	High input impedance (Built-in pull-down resistor of 44kΩ) IIN=0.1mA(typ.)@VIN =2.5V	High input impedance (Built-in pull-down resistor of 22.8kΩ) IIN=0.3mA(typ.)@VIN =7.0V
	The dependency of the output current to the input current is high. (Output current is determined by the input current × hFE.)		The dependency of the output current to the input current is low.	
	Possible to use with maximum output capability at VIN=3.0V.	Possible to use with maximum output capability at VIN=8.0V.	Possible to use with maximum output capability at VIN=5.0V (CMOS level).	
Output SW characteristics	tON=0.1us(typ.), tOFF=0.2us(typ)		tON=0.4us(typ.), tOFF=0.8us(typ) It has a filter built-in in input part. It's expected to be slightly slower compared with the existing product.	
Output characteristics	1.3V (typ) when IOU=350mA		0.7V (typ) when IOU=350mA The New generation product is expected to drive a current with a low output voltage. So, it can be turned on with the condition in which previous product cannot drive.	

TD62783A (Existing Product) and TBD62783A Comparisons

	Existing product TD62783A	New generation product TBD62783A
Composition	Bipolar transistor output	DMOS transistor output
Output rating	50V/0.5A	50V/0.5A
Input characteristics	VIN(ON)=2.0V~15V	VIN(ON)=2.0V~25V
	Low input impedance ($10k\Omega + V_f \times 3$) IIN=0.04mA(typ.)@VIN=2.5V	High input impedance (The resistor of hundreds of kΩ is designed to be connected as a pull-down resistor.) IN=TBDmA(typ.)@VIN=2.5V
	The dependency of the output current to the input current is high. (Output current is determined by the input current \times hFE.)	The dependency of the output current to the input current is low.
	Possible to use with maximum output capability at VIN=5.0V.	Possible to use with maximum output capability at VIN=5.0V (CMOS level).
Output SW characteristics	tON=0.15us(typ.), tOFF=1.8us(typ.)	It has a filter built-in in input part. It's expected to be slightly slower compared with the existing product. tON=TBDus(typ.), tOFF=TBDus(typ.)
Output characteristics	2.0V (max) when IOU=350mA	1.14V (max) when IOU=350mA (under plan) *The New generation product is expected to drive current with a low output voltage. So, it can be turned on with the condition in which previous product cannot drive.

TD62064A (Existing Product) and TBD62064A Comparisons

	Existing product TD62064A	New generation product TBD62064A
Composition	Bipolar transistor output	DMOS transistor output
Output rating	50V/1.5A	50V/1.5A
Input characteristics	VIN(ON)=2.5V~15V	VIN(ON)=2.5V~25V
	Low input impedance (230Ω +VBE×2) IIN=4.78mA(typ.)@VIN=2.5V	High input impedance (The resistor of hundreds of kΩ is designed to be connected as a pull-down resistor.)IIN=TBDmA(typ.)@VIN=2.5V
	The dependency of the output current to the input current is high. (Output current is determined by the input current × hFE.)	The dependency of the output current to the input current is low.
	Possible to use with maximum output capability at VIN=2.5V.	Possible to use with maximum output capability at VIN=5.0V (CMOS level).
Output SW characteristics	tON=0.1us(typ.), tOFF=1.0us(typ.)	It has a filter built-in in input part. It's expected to be slightly slower compared with the existing product. tON=TBDus(typ.), tOFF=TBDus(typ.)
Output characteristics	1.6V (max) when IOU=1.25A	1.25V (max) when IOU=1.25A (under plan) *The New generation product is expected to drive current with a low output voltage. So, it can be turned on with the condition in which previous product cannot drive.

TD62308A (Existing Product) and TBD62308A Comparisons

	Existing product TD62308A	New generation product TBD62308A
Composition	Bipolar transistor output	DMOS transistor output
Output rating	50V/1.5A	50V/1.5A
Input characteristics	$V_{IN(ON)}=0\sim V_{CC}-3.6V$	$V_{IN(ON)}=0\sim V_{CC}-3.5V$
	Low input impedance ($4k\Omega+V_{BE}\times 2$) $I_{IN}=0.28mA(\text{typ.})@V_{IN}=2.5V$	High input impedance (The resistor of hundreds of $k\Omega$ is designed to be connected as a pull-down resistor.) $I_{IN}=TBDmA(\text{typ.})@V_{IN}=2.5V$
	The dependency of the output current to the input current is high. (Output current is determined by the input current \times hFE.)	The dependency of the output current to the input current is low.
	Possible to use with maximum output capability at $V_{CC}=5.0V$.	Possible to use with maximum output capability at $V_{CC}=5.0V$.
Output SW characteristics	$t_{ON}=0.2\mu s(\text{typ.}), t_{OFF}=5.0\mu s(\text{typ.})$	It has a filter built-in in input part. It's expected to be slightly slower compared with the existing product. $t_{ON}=TBD\mu s(\text{typ.}), t_{OFF}=TBD\mu s(\text{typ.})$
Output characteristics	1.8V (max) when $I_{OUT}=1.25A$	1.25V (max) when $I_{OUT}=1.25A$ (under plan) *The New generation product is expected to drive current with a low output voltage. So, it can be turned on with the condition in which previous product cannot drive.

TOSHIBA

Leading Innovation >>>

Toshiba Transistor Array Product EOL and Replacement List

8/19/2015

SSBU = X579

Standard Product Line Up

EOL Part	Replacement Part	EOL Part LTB	Replacement Part Sampling Schedule	Replacement Part MP Schedule
TD62064APG	TBD62064APG	3/31/2016	Nov-15	Jan-16
TD62064AFG	TBD62064AFG	3/31/2016	Nov-15	Jan-16
TD62308APG	TBD62308APG	3/31/2016	Jan-16	Mar-16
TD62308AFG	TBD62308AFG	3/31/2016	Jan-16	Mar-16
TD62003APG	TBD62003APG	3/31/2016	Now	Now
TD62003AFG	TBD62003AFG	3/31/2016	Now	Now
ULN2003APG	TBD62003APG	3/31/2016	Now	Now
ULN2003AFWG	TBD62003AFWG	3/31/2016	Now	Now
TD62004APG	TBD62004APG	3/31/2016	Now	Now
TD62004AFG	TBD62004AFG	3/31/2016	Now	Now
ULN2004APG	TBD62004APG	3/31/2016	Now	Now
ULN2004AFWG	TBD62004AFWG	3/31/2016	Now	Now
TD62502PG	TBD62502APG	3/31/2016	Now	Now
TD62502FG	TBD62502AFG	3/31/2016	Now	Now
TD62502FNG	TBD62502AFNG	3/31/2016	Now	Now
TD62503PG	TBD62503APG	3/31/2016	Now	Now
TD62503FG	TBD62503AFG	3/31/2016	Now	Now
TD62503FNG	TBD62503AFNG	3/31/2016	Now	Now
TD62083APG	TBD62083APG	3/31/2016	Now	Sep-15
TD62083AFG	TBD62083AFG	3/31/2016	Now	Sep-15
TD62083AFNG	TBD62083AFNG	3/31/2016	Now	Sep-15
ULN2803APG	TBD62083APG	3/31/2016	Now	Sep-15
ULN2803AFWG	TBD62083AFWG	3/31/2016	Now	Sep-15
TD62084APG	TBD62084APG	3/31/2016	Now	Sep-15
TD62084AFG	TBD62084AFG	3/31/2016	Now	Sep-15
TD62084AFNG	TBD62084AFNG	3/31/2016	Now	Sep-15
ULN2804APG	TBD62084APG	3/31/2016	Now	Sep-15
ULN2804AFWG	TBD62084AFWG	3/31/2016	Now	Sep-15
TD62783APG	TBD62783APG	3/31/2016	Now	Nov-15
TD62783AFG	TBD62783AFG	3/31/2016	Now	Nov-15
TD62783AFNG	TBD62783AFNG	3/31/2016	Now	Nov-15
TD62783AFWG	TBD62783AFWG	3/31/2016	Now	Nov-15

Enhanced Product Lineup

EOL Part	Replacement Part	EOL Part LTB	Replacement Part Sampling Schedule	Replacement Part MP Schedule
TD62304APG	TBD62304APG	3/31/2016	TBD	Mar-17
TD62304AFG	TBD62304AFG	3/31/2016	TBD	Mar-17
TD62304AFNG	TBD62304AFNG	3/31/2016	TBD	Mar-17
TD62305APG	TBD62304APG	3/31/2016	TBD	Mar-17
TD62305AFG	TBD62304AFG	3/31/2016	TBD	Mar-17
TD62305AFNG	TBD62304AFNG	3/31/2016	TBD	Mar-17
TD62387APG	TBD62387APG	3/31/2016	TBD	Dec-16
TD62387AFG	TBD62387AFG	3/31/2016	TBD	Dec-16
TD62387AFNG	TBD62387AFNG	3/31/2016	TBD	Dec-16
TD62382APG	TBD62384APG	3/31/2016	TBD	Jun-17

TD62382AFG	TBD62384AFG	3/31/2016	TBD	Jun-17
TD62382AFNG	TBD62384AFNG	3/31/2016	TBD	Jun-17
TD62384APG	TBD62384APG	3/31/2016	TBD	Jun-17
TD62384AFG	TBD62384AFG	3/31/2016	TBD	Jun-17
TD62385APG	TBD62384APG	3/31/2016	TBD	Jun-17
TD62385AFG	TBD62384AFG	3/31/2016	TBD	Jun-17
TD62381PG	TBD62381APG	3/31/2016	TBD	Sep-17
TD62381FG	TBD62381AFG	3/31/2016	TBD	Sep-17
TD62381FNG	TBD62381AFNG	3/31/2016	TBD	Sep-17
TD62781APG	TBD62781APG	3/31/2016	TBD	Mar-18
TD62781AFG	TBD62781AFG	3/31/2016	TBD	Mar-18
TD62785PG	TBD62785PG	3/31/2016	TBD	Dec-17
TD62785FG	TBD62785FG	3/31/2016	TBD	Dec-17
TD62786APG	TBD62786APG	3/31/2016	TBD	Jun-18
TD62786AFG	TBD62786AFG	3/31/2016	TBD	Jun-18
TD62786AFNG	TBD62786AFNG	3/31/2016	TBD	Jun-18