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TOSHIBA CMOS Linear Integrated Circuit Silicon Monolithic

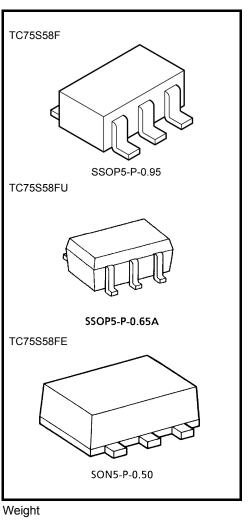
TC75S58F,TC75S58FU,TC75S58FE

Single Comparator

The TC75S58F/TC75S58FU/TC75S58FE is a CMOS generalpurpose single comparator. The device can operate off a single power supply and draws a lower supply current than a conventional bipolar general-purpose comparator. This device's open-drain output stage can be wire-ORed with those of other open-drain output circuits.

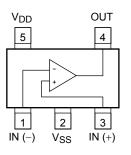
Features

- Low-current power supply
- $I_{DD} = 10 \ \mu A \ (typ.)$
- Single power supply operation
- Wide common mode input voltage range : $V_{SS} \sim V_{DD} 0.9 V$
- Open drain output circuit
- Low input bias current
- Small package

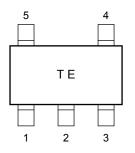


SSOP5-P-0.95 : 0.014 g (typ.) SSOP5-P-0.65A : 0.006 g (typ.) SON5-P-0.50 : 0.003 g (typ.)

Pin Connection (top view)



Marking (top view)



Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit	
Supply voltage		V _{DD} , V _{SS}	±3.5 or 7	V	
Differential input voltage		DVIN	±7	V	
Input voltage		V _{IN}	V _{SS} ~V _{DD}	V	
Output current		Ι _Ο	±35	mA	
Power dissipation	TC75S58F/FU	D-	200	mW	
	TC75S58FE	P _D	100	IIIVV	
Operating temperature		T _{opr}	-40~85	°C	
Storage temperature		T _{stg}	-55~125	°C	

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings and the operating ranges.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

- Note: This device's CMOS structure makes it prone to latch-up. To prevent latch-up, please take the following precautions:
 - Ensure that no I/O pin's voltage level ever exceeds V_{DD} or drops below $V_{SS}.$ In addition, check the power-on timing.
 - Do not subject the device to excessive noise.

Electrical Characteristics ($V_{DD} = 5 V$, $V_{SS} = GND$, $Ta = 25^{\circ}C$)

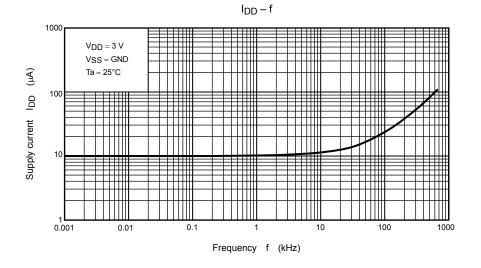
Characteristics	Symbol	Test Circuit	Test Condition	Min	Тур.	Max	Unit
Input offset voltage	V _{IO}		—	_	±1	±7	mV
Input offset current	l _{IO}		—	_	1		pА
Input bias current	lį		—	_	1		pА
Common mode input voltage	CMVIN		—	0	_	4.1	V
Supply current	I _{DD} (Note)		—		11	22	μA
Voltage gain	GV		—		94		dB
Sink current	I _{sink}		V _{OL} = 0.5 V	13	25		mA
Output leak current	ILEAK		$V_0 = 5 V$	_	5		nA
Output voltage	V _{OL}		I _{sink} = 5.0 mA		0.1	0.3	V
Operating supply voltage	V _{DD}		—	1.8	_	7.0	V
Dranagation dology time (turn on)	tPLH (1)		Over drive = 100 mV	_	800		ns
Propagation delay time (turn on)	tPLH (2)		TTL step input		620		
Propagation delay time (turn off)	tPHL (1)		Over drive = 100 mV		230		ns
	tPHL (2)		TTL step input		350		
Response time	t _{TLH}		Over drive = 100 mV		190		ns
	t _{THL}	—	Over drive = 100 mV	—	6		

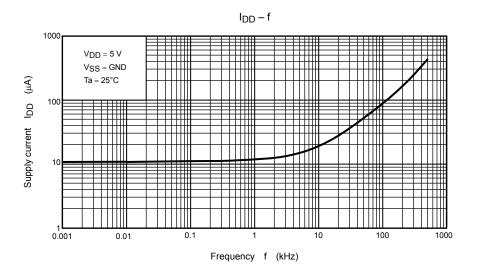
Electrical Characteristics (V_{DD} = 3 V, V_{SS} = GND, Ta = 25°C)

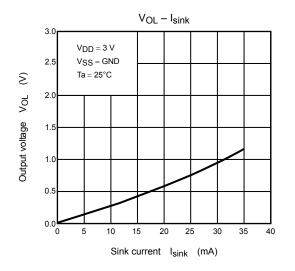
Characteristics	Symbol	Test Circuit	Test Condition	Min	Тур.	Max	Unit
Input offset voltage	V _{IO}		—	_	±1	±7	mV
Input offset current	l _{IO}		—	_	1	_	pА
Input bias current	lı		—	_	1	_	pА
Common mode input voltage	CMVIN		—	0	_	2.1	V
Supply current	I _{DD} (Note)		—	_	10	20	μA
Sink current	I _{sink}		V _{OL} = 0.5 V	6	18	_	mA
Output leak current	I _{LEAK}	_	$V_0 = 3 V$	_	5	_	nA
Output voltage	V _{OL}	_	I _{sink} = 5.0 mA	_	0.15	0.35	V
Propagation delay time (turn on)	t _{PLH}	_	Over drive = 100 mV	_	590	_	ns
Propagation delay time (turn off)	t _{PHL}		Over drive = 100 mV		230		ns
Response time	tтLH		Over drive = 100 mV	_	170	_	20
	t _{THL}		Over drive = 100 mV		5		ns

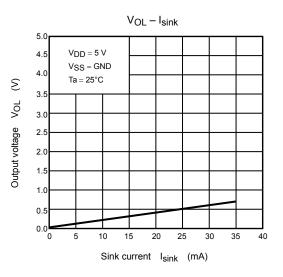
Note: This device's current consumption increases as its operating frequency increases. Note that the power dissipation should not exceed the allowable power dissipation.

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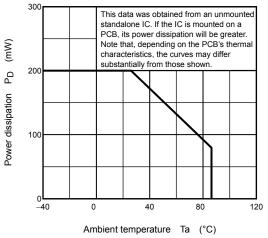








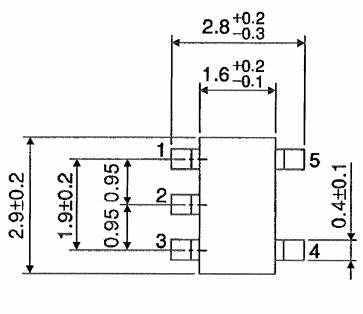


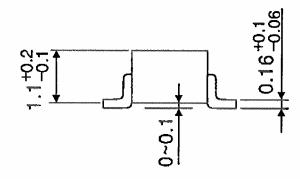


Package Dimensions

SSOP5-P-0.95

Unit : mm

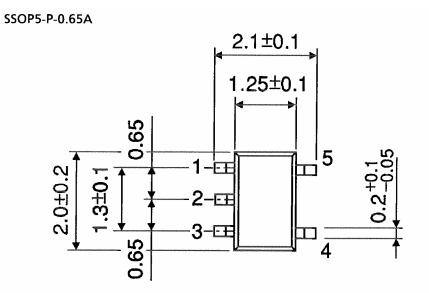




Weight: 0.014 g (typ.)

Unit : mm

Package Dimensions



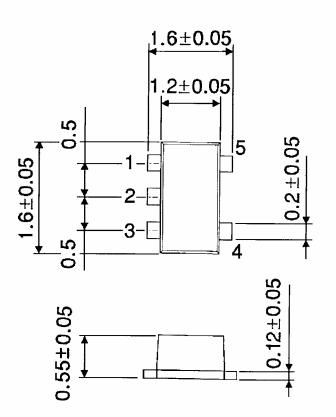
0.9±0.1 0.15^{+0.15}

Weight: 0.006 g (typ.)

Package Dimensions

SON5-P-0.50

Unit : mm



Weight: 0.003 g (typ.)

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20070701-EN GENERAL

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