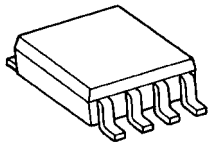
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

T A R 8 D 0 8 K

Dual Low-Dropout Regulator

TAR8D08K is a bipolar type 2-output power supply with a control pin. ON and OFF can be switched using the control pin.



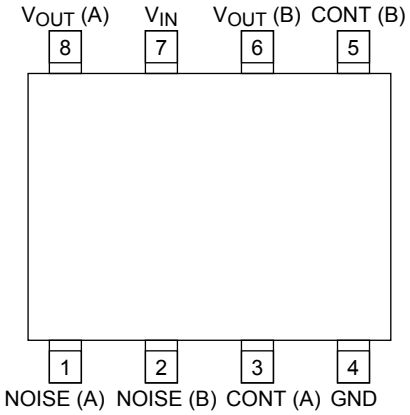
SSOP8-P-0.50A

Weight: 0.01 g (typ.)

Features

- Include 2-LDO regulators. (2.8V, 2.85V)
- Output power supply can be independent control.
- Overtemperature/overcurrent protection.
- Very small 8-pin package.

Pin Assigment (top view)



V_{OUT} (A) = 2.8 V

V_{OUT} (B) = 2.85 V

Marking

8D08

Overtemperature protection and overcurrent protection function are not necessary of operating ratings below the absolute maximum ratings.

Do not use device under conditions in which their absolute maximum ratings will be exceeded.

Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Supply Voltage	V_{IN}	15	V
Output Current (V_{OUT} (A))	I_{OUT} (A)	100	mA
Output Current (V_{OUT} (B))	I_{OUT} (B)		
Power Dissipation	P_D	200 (Note 1)	mW
		400 (Note 2)	
Operation Temp Range	T_{opr}	−40~85	°C
Storage Temp Range	T_{stg}	−55~150	°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 1: Unit Rating

Note 2: Mounted on a glass epoxy circuit board of 30 mm × 30 mm Pad dimansion of 70 mm^2

Electrical Characteristics (unless otherwise specified, V_{IN} = V_{OUT} (B) + 1 V, I_{OUT} = 30 mA, C_{IN} = 1 μF, C_{OUT} = 10 μF, C_{NOISE} = 0.01 μF, T_j = 25°C)

2.8 V output Characteristics (V_{OUT} (A))

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	I_{OUT} = 30 mA	2.73	2.8	2.87	V
Dropout Voltage	V_{IN}-V_{OUT}	I_{OUT} = 30 mA		120	180	
Input Voltatge	V_{IN}		V_{OUT} + 0.18 V	—	15	V
Load Regulation	Reg·load	I_{OUT} = 0 mA~30 mA	—	2	12	mV
Line Reguration	Reg·line	V_{IN} = 3.8 V~15.0 V	—	3	15	mV
Temp. Coeffcient	T_{CVO}	Ta = −40°C~85°C	—	100	—	ppm/°C
Ripple Rejection	R.R	I_{OUT} = 10 mA, f = 1 kHz, V_{Ripple} = 500 mV_{p-p}, Ta = 25°C	—	70	—	dB
Output Noise Voltage	V_{NO}	I_{OUT} = 10 mA, 10 Hz ≦ f ≦ 10 kHz, Ta = 25°C	—	30	—	μV_{rms}

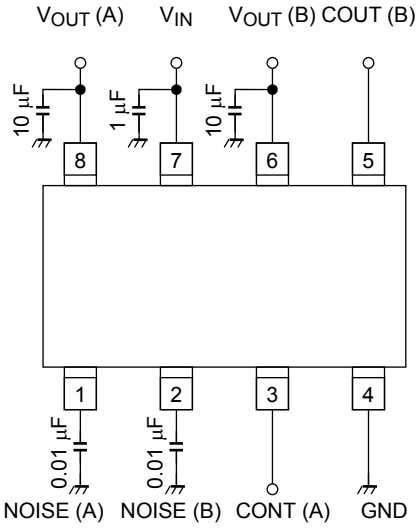
2.85 V output Characteristics (V_{OUT} (B))

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	I_{OUT} = 30 mA	2.77	2.85	2.93	V
Dropout Voltage	V_{IN}-V_{OUT}	I_{OUT} = 30 mA		120	180	
Input Voltatge	V_{IN}		V_{OUT} + 0.18 V	—	15	V
Load Regulation	Reg·load	I_{OUT} = 0 mA~30 mA	—	2	12	mV
Line Reguration	Reg·line	V_{IN} = 3.85 V~15.0 V	—	3	15	mV
Temp. Coeffcient	T_{CVO}	Ta = −40°C~85°C	—	100	—	ppm/°C
Ripple Rejection	R.R	I_{OUT} = 10 mA, f = 1 kHz, V_{Ripple} = 500 mV_{p-p}, Ta = 25°C	—	70	—	dB
Output Noise Voltage	V_{NO}	I_{OUT} = 10 mA, 10 Hz ≦ f ≦ 10 kHz, Ta = 25°C	—	30	—	μV_{rms}

Common Characteristics

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Stand-by Current	$I_{B\ (OFF)}$	V_{CT} = 0 V	—	—	1	μA
Quiescent Current	I_{B1}	I_{OUT} (A) = 0 mA, I_{OUT} (B) = 0 mA	—	350	700	μA
	I_{B2}	I_{OUT} (A) = 30 mA, I_{OUT} (B) = 30 mA	—	850	1800	μA
Control Voltage (ON)	$V_{CT\ (ON)}$	—	1.5	—	V_{IN}	V
Control Voltage (OFF)	$V_{CT\ (OFF)}$	—	—	—	0.4	V
Control Input Current	I_{CT}	V_{CT} = 1.5 V (output ON)	—	—	15	μA

Application Note · Recommended Application circuit



The noise capacitor should be connected to NOISE pin to GND for stable operation.
The recommended value is higher than 0.0047μF.

Control level	A-channel	B-channel
HIGH	ON	ON
LOW	OFF	OFF

The figure above shows commended configuration for using a point regulator. Insert a capacitor for stable input/output operation.

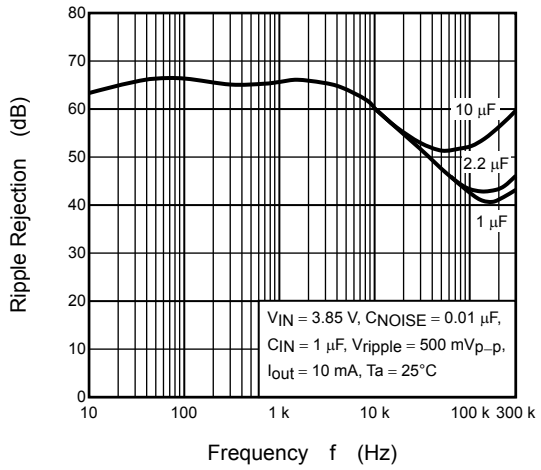
If the control function is not to be used, Toshiba recommended that the control pin be connected to the V_{CC} pin.

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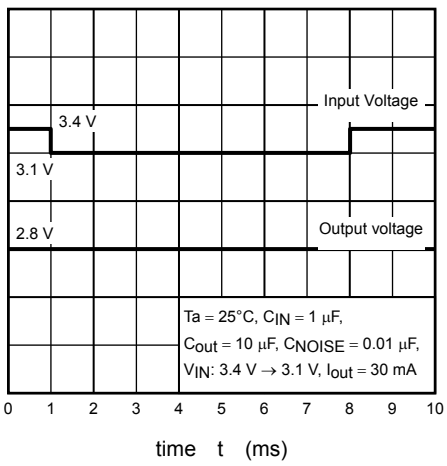
Ripple Rejection

TAR8D08K feature a circuit with an excellent ripple rejection characteristic. Because the circuit also features an excellent output fluctuation characteristic for sudden supply voltage drops, the circuit is ideal for in the RF blocks incorporated in all mobile telephones.

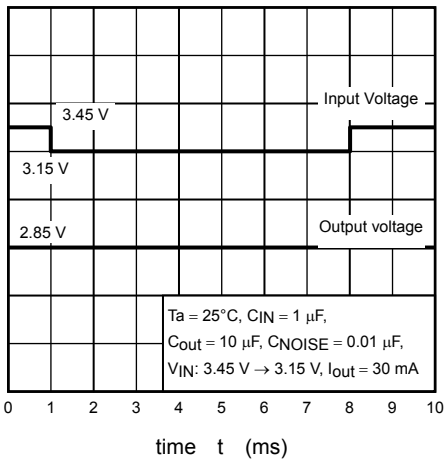
Ripple Rejection – f



Input Transient Responce $V_{OUT(A)}$



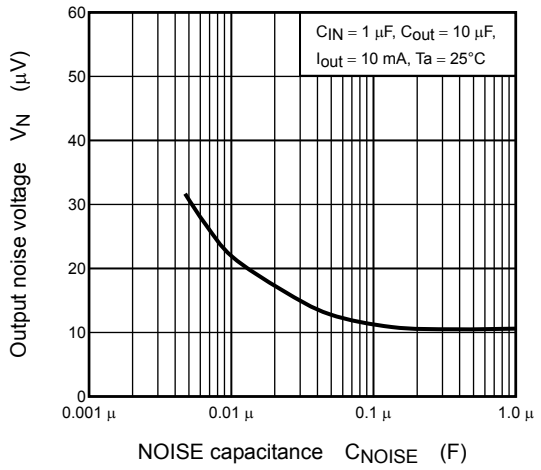
Input Transient Responce $V_{OUT(B)}$



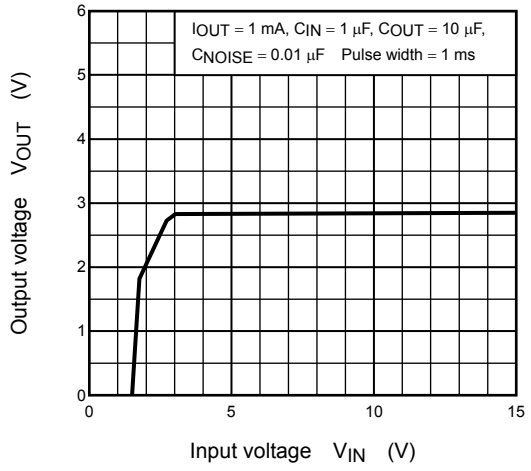
NOISE Pin

TAR8D08K device incorporate a NOISE pin to reduce output noise voltage. Inserting a capacitor between the NOISE pin and GND reduces output noise. To ensure stable operation, insert a capacitor of 0.0047 μF or more between the NOISE pin and GND.

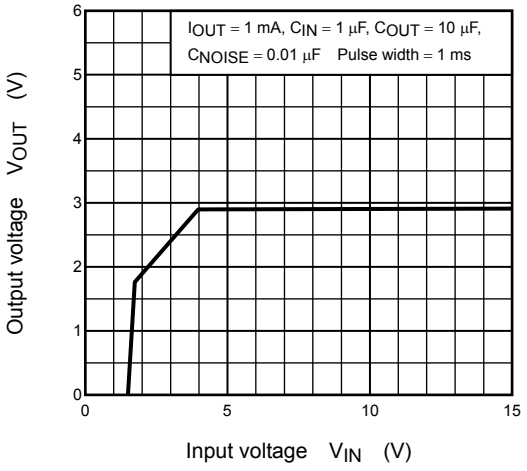
C_{NOISE} – V_N



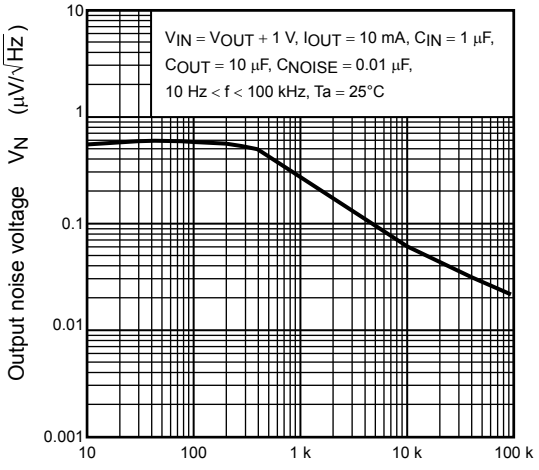
$V_{OUT(A)} - V_{IN}$



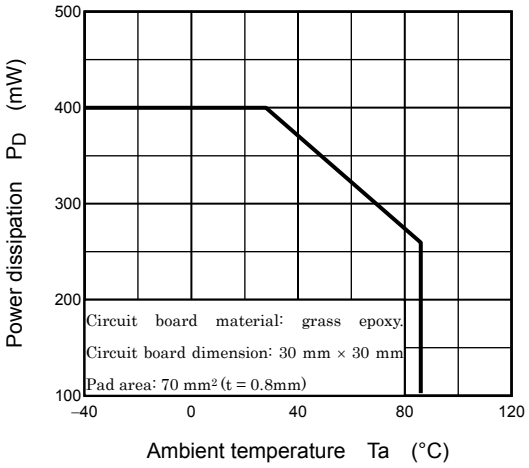
$V_{OUT(B)} - V_{IN}$



$V_N - f$

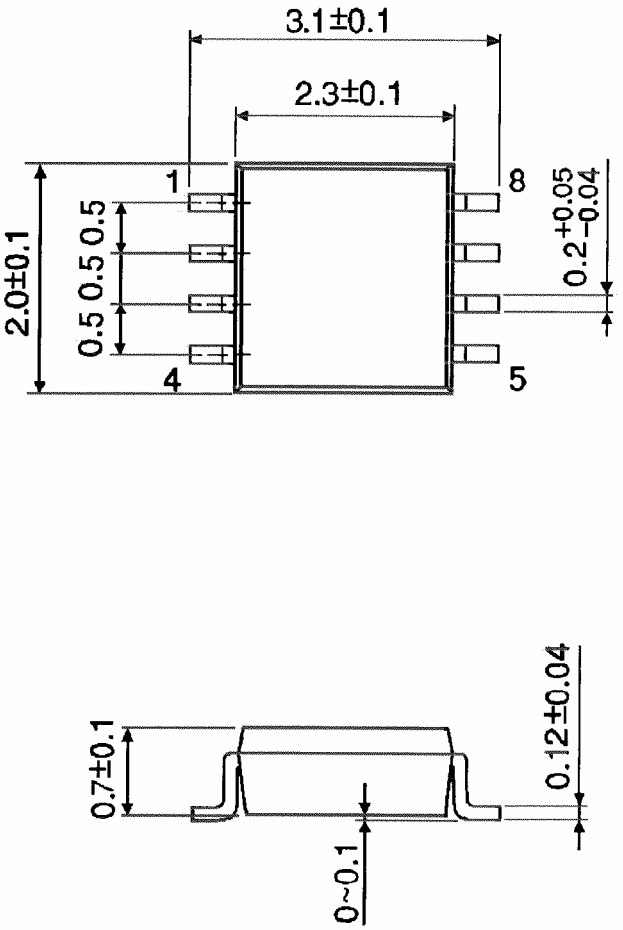


$P_D - Ta$



Package Dimensions

SSOP8-P-0.50A Unit : mm



Weight: 0.01 g (Typ.)

RESTRICTIONS ON PRODUCT USE

20070701-EN GENERAL

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