SIEMENS

Dual PNP-Operational Amplifiers

TAE 2453
TAF 2453

Bipolar IC

Features

- Supply voltage range between 3 V and 36 V
- Low current consumption, 0.8 mA typ.
- Extremely large control range
- Low output saturation voltage, almost independent of load current
- Output current up to 70 mA (max. 100 mA)
- Output virtually short-circuit proof
- Wide common-mode voltage range
- Wide operating temperature range (TAF 2453 G)
- Pin-compatible to TBB 1458 B
- The characteristic curves of the electric parameters correspond to those of type TAE 1453 G

P-DSO-8-1

Applications

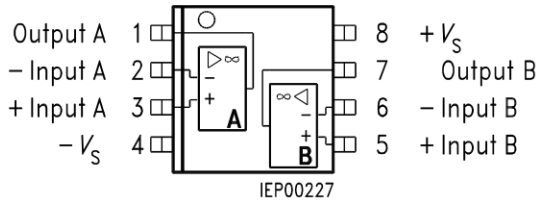
- Amplifier
- Level converter
- Driver
- Zero voltage switch
- Comparator

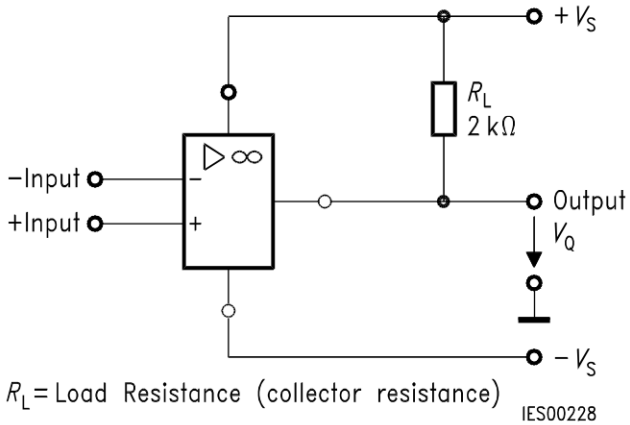
Type	Ordering Code	Package
TAE 2453 G	Q67000-A2108	P-DSO-8-1 (SMD)
TAF 2453 G	Q67000-A2211	P-DSO-8-1 (SMD)

The TAF 2453 / TAE 2453 consists of two independent, frequency-compensated op amps, each having a PNP-input differential stage and an open collector output. The integrated regulator provides for all parameters a large degree of independence from the supply voltage.

Pin Configurations
(top view)

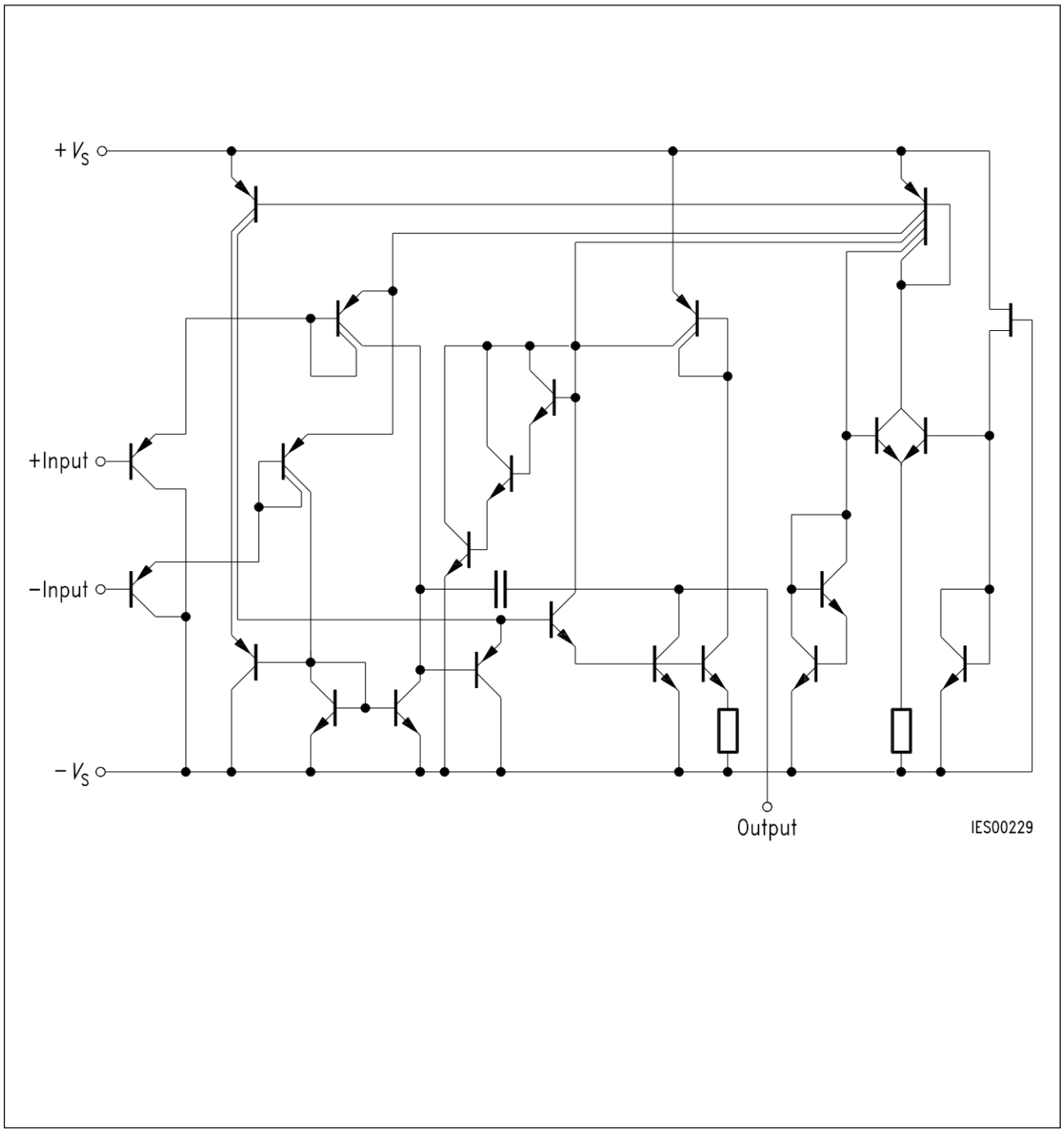
TAE 2453 G
TAF 2453 G





R_L = load resistance (collector resistance)

Connection Diagram



Circuit Diagram

Absolute Maximum Ratings (TAE 2453 G)

Parameter	Symbol	Limit Values	Unit
Supply voltage	V_S	±18	V
Output current	I_Q	100	mA
Differential input voltage	V_{ID}	$\pm V_S$	V
Junction temperature Storage temperature range	T_j T_{stg}	150 – 55 to 125	°C °C
Thermal resistance system - air TAE 2453 G	$R_{th\ SA}$	170	K/W

Operating Range (TAE 2453 G)

Supply voltage	V_S	±2 to ±18 (±1.5 V with slightly increased offset voltage)	V
Ambient temperature	T_A	– 25 to 85	°C

Characteristics (TAE 2453 G)
V_S = ±5 V to ±15 V; R_L = 10 kΩ,
unless otherwise specified

Parameter	Symbol	Limit Values T_A = 25 °C			Limit Values T_A = – 25 to 85 °C		Unit
		min.	typ.	max.	min.	max.	
Open-loop supply current consumption, total	I_S		0.8	1.5		1.8	mA
Input offset voltage R_G = 50 Ω	V_{IO}	– 5.5		5.5	– 7	7	mV
Input offset current Input current	I_{IO} I_I	– 15	 40	15 150	– 100	100 200	nA nA
Control range R_L = 2 kΩ, V_S = ±15 V R_L = 620 Ω, V_S = ±15 V	 $V_{Q\ pp}$ $V_{Q\ pp}$	 14.9 14.9		 – 14.7 – 14.5	 14.9 14.9	 – 14.7 – 14.4	 V V

Characteristics (TAE 2453 G) (cont'd)
V_S = ±5 V to ±15 V; R_L = 10 kΩ,
unless otherwise specified

Parameter	Symbol	Limit Values T_A = 25 °C			Limit Values T_A = – 25 to 85 °C		Unit
		min.	typ.	max.	min.	max.	
Input impedance, f = 1 kHz	Z_I		200				kΩ
Open-loop voltage gain, R_L = 2 kΩ	G_{V0}	80	85		80		dB
Output reverse current	I_{QR}			10		20	µA
Common-mode input voltage range, R_L = 2 kΩ	V_{IC}	$-V_S$ – 0.2		V_S – 1.8	$-V_S$	V_S – 2.0	V
Common-mode rejection, R_L = 2 kΩ	k_{CMR}	75	80		75		dB
Supply voltage rejection G_V = 100	k_{SVR}		25	100		100	µV/V
Temperature coefficient of I_{IO} R_G = 50 Ω	α_{IIO}		0.1				nA/K
Temperature coefficient of V_{IO} R_G = 50 Ω	α_{VIO}		6				µV/K
Slew rate for non-inverting operation	SR		0.65		0.25	1.0	V/µs
Slew rate for inverting operation	SR		1.1		0.5	1.6	V/µs

Characteristics (TAE 2453 G)

V_S = ±2 V, R_L = 10 kΩ

Parameter	Symbol	Limit Values T_A = 25 °C			Limit Values T_A = – 25 to 85 °C		Unit
		min.	typ.	max.	min.	max.	
Input offset voltage, R_G = 50 Ω	V_{IO}	– 6		6	– 7.5	7.5	mV
Input offset current Input current	I_{IO} I_I	– 15	 40	15 150	– 100	100 200	nA nA
Open-loop voltage gain	G_{V0}	70			70		dB

Absolute Maximum Ratings (TAF 2453 G)

Parameter	Symbol	Limit Values	Unit
Supply voltage	V_S	±18	V
Output current	I_Q	100	mA
Differential input voltage	V_{ID}	$\pm V_S$	V
Junction temperature Storage temperature range	T_j T_{stg}	150 – 55 to 150	°C °C
Thermal resistance system - air TAF 2453 G	$R_{th\ SA}$	170	K/W

Operating Range (TAF 2453 G)

Supply voltage	V_S	±2 to ±18 (±1.5 V with slightly increased offset voltage)	V
Ambient temperature	T_A	– 55 to 125	°C

Characteristics (TAF 2453 G)
V_S = ±5 V to ±15 V; R_L = 2 kΩ,
unless otherwise specified

Parameter	Symbol	Limit Values T_A = 25 °C			Limit Values T_A = – 55 to 125 °C		Unit
		min.	typ.	max.	min.	max.	
Open-loop supply current consumption total	I_S		0.8	1.5		1.8	mA
Input offset voltage, R_G = 50 Ω	V_{IO}	– 4		4	– 6	6	mV
Input offset current Input current	I_{IO} I_I	– 10	 40	10 100	– 75	75 150	nA nA
Control range R_L = 2 kΩ, V_S = ±15 V R_L = 620 Ω, V_S = ±15 V	 $V_{Q\,pp}$ $V_{Q\,pp}$	 14.9 14.9		 – 14.7 – 14.5	 14.8 14.8	 – 14.7 – 14.4	 V V
Input impedance, f = 1 kHz	Z_I		200				kΩ
Open-loop voltage gain R_L = 2 kΩ	G_{V0}	85	87		80		dB
Output reverse current	I_{QR}			1		5	µA
Common-mode input voltage range	V_{IC}	$-V_S$ – 0.2		V_S – 1.5	$-V_S$ + 0.2	V_S – 1.8	V
Common-mode rejection, R_L = 2 kΩ	k_{CMR}	80	85		75		dB
Supply voltage rejection G_V = 100	k_{SVR}		25	100		100	µV/V

Characteristics (TAF 2453 G) (cont'd)
V_S = ±5 V to ±15 V; R_L = 2 kΩ,
unless otherwise specified

Parameter	Symbol	Limit Values T_A = 25 °C			Limit Values T_A = – 55 to 125 °C		Unit
		min.	typ.	max.	min.	max.	
Temperature coefficient of I_{IO} R_G = 50 Ω	α_{IIO}		0.1	0.8		0.8	nA/K
Temperature coefficient of V_{IO} R_G = 50 Ω	α_{VIO}		6	25		25	µV/K
Slew rate for non-inverting operation	SR		0.65		0.2	1.1	V/µs
Slew rate for inverting operation	SR		1.1		0.4	1.7	V/µs

Characteristics (TAF 2453 G)
V_S = ±2 V

Parameter	Symbol	Limit Values T_A = 25 °C			Limit Values T_A = – 55 to 125 °C		Unit
		min.	typ.	max.	min.	max.	
Input offset voltage, R_G = 50 Ω	V_{IO}	– 4		4	– 6	6	mV
Input offset current	I_{IO}	– 50		50	– 75	75	nA
Input current	I_I		40	100		150	nA
Open-loop voltage gain, R_L = 2 kΩ	G_{V0}	75			70		dB

Note: For typical performance curves, please refer to the data sheets of TAE 1453 and TAF 1453.