# SIEMENS

Dual PNP-Operational Amplifiers

<div align="right">

TAE 2453

TAF 2453

</div>

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
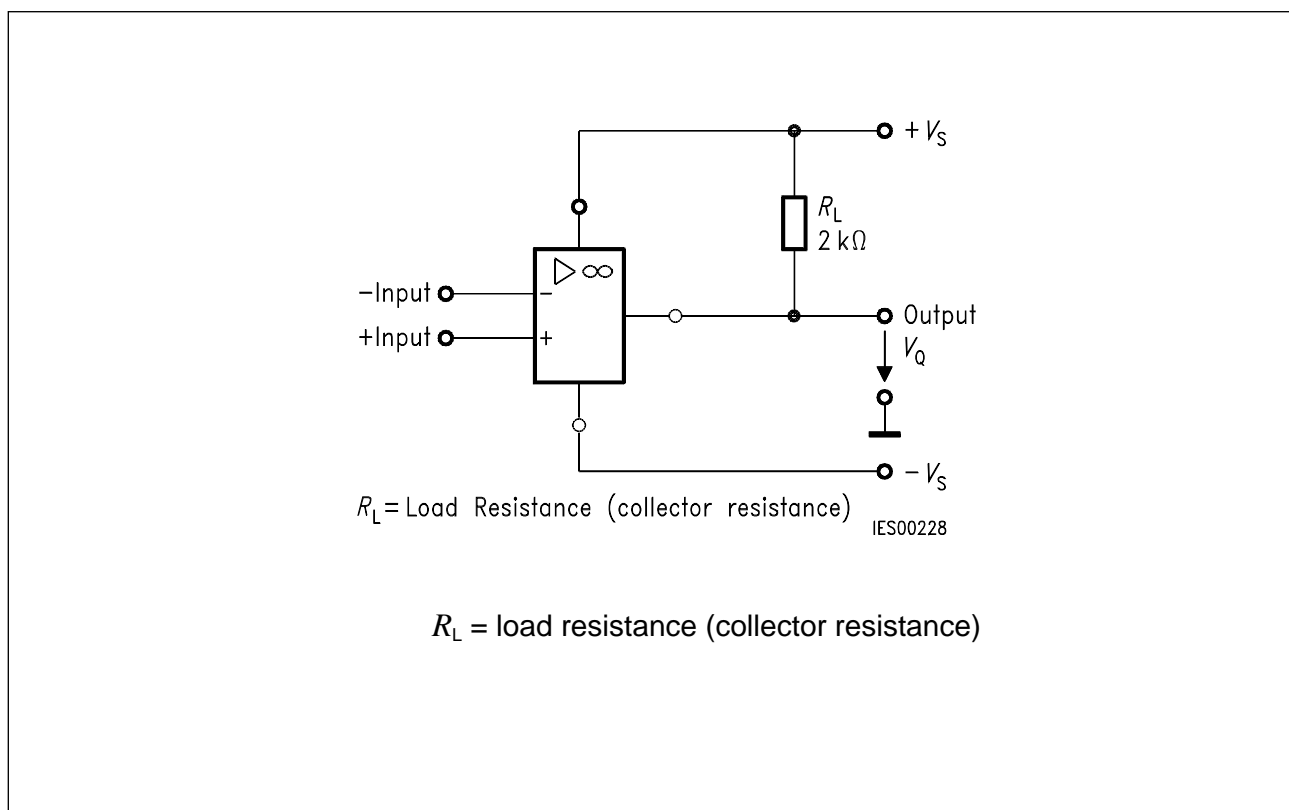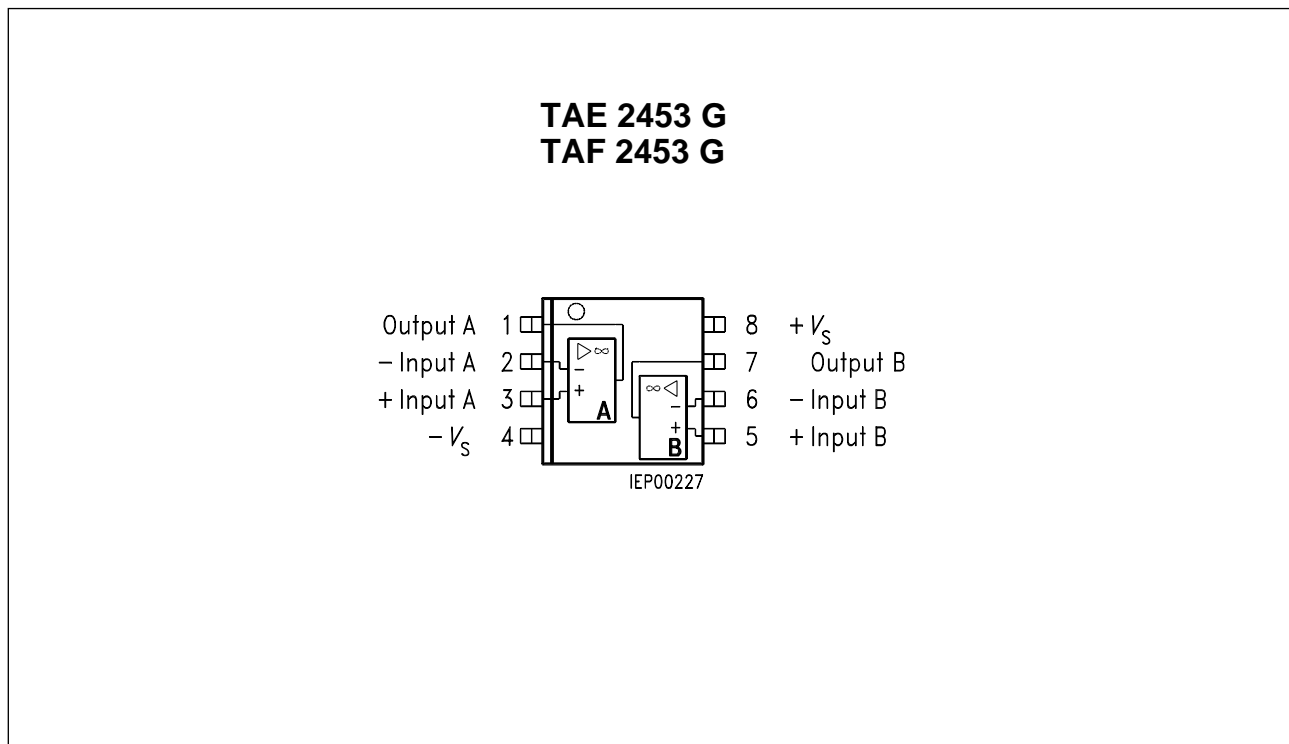 correspond to those of type TAE 1453 G
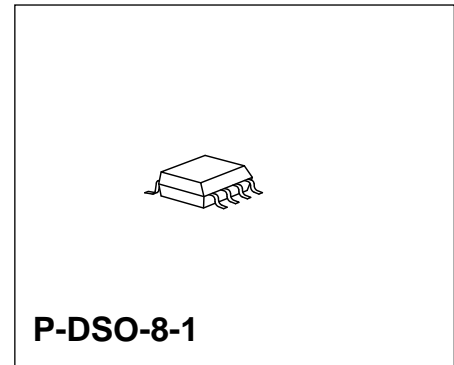
P-DSO-8-1

Applications

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

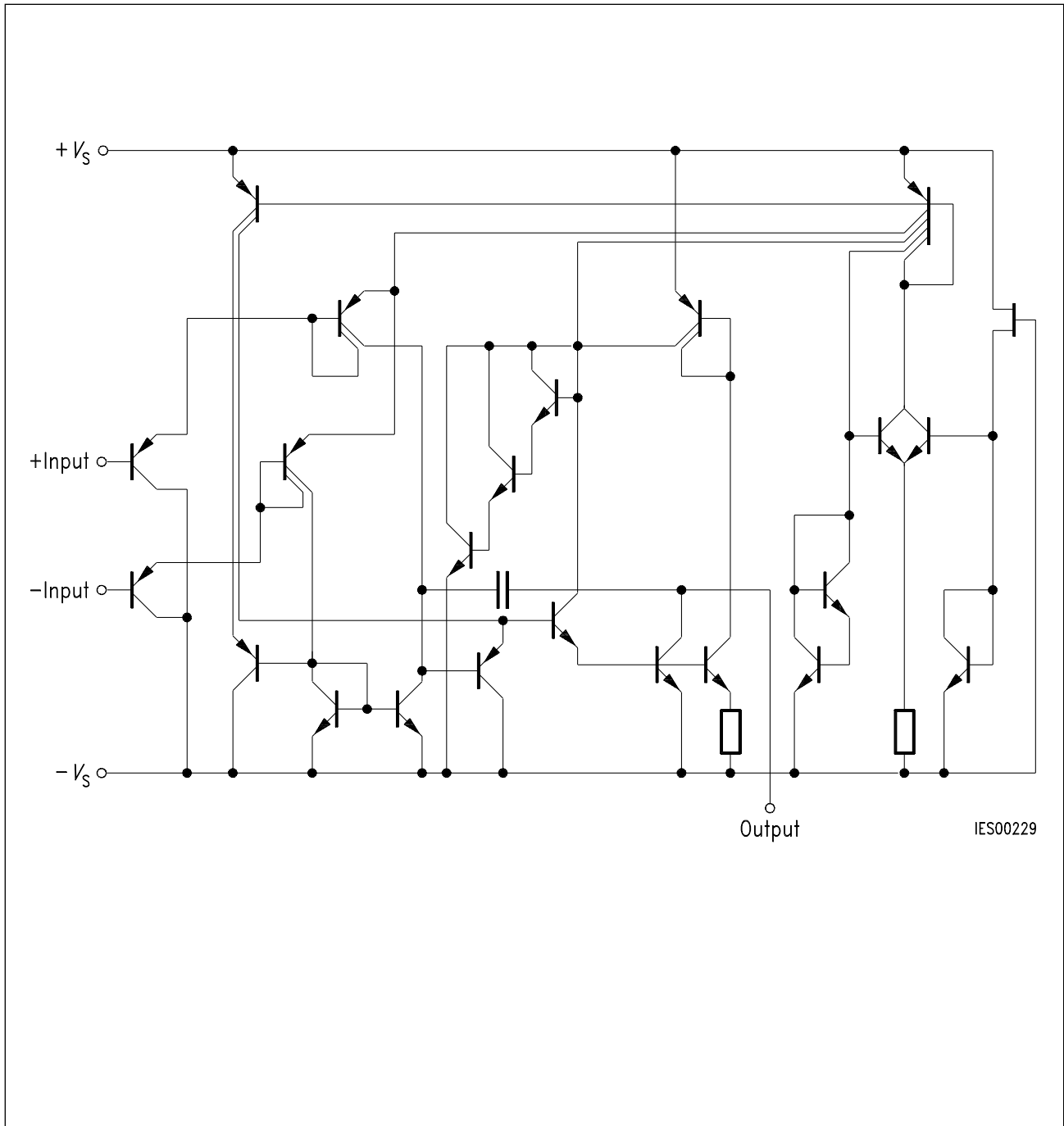| Type	Ordering Code	Package
TAE 2453 G	Q67000-A2108	P-DSO-8-1 (SMD)
TAF 2453 G	Q67000-A2211	P-DSO-8-1 (SMD)

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

Output A   1   8 $+V_S$
− Input A   2   7   Output B
+ Input A   3   6   − Input B
$-V_S$ 4   5   + Input B

IEP00227

−Input   +Input

R_L
2 kΩ

Output
V_Q

$+V_S$

$-V_S$

R_L = Load Resistance (collector resistance)

IES00228

R_L = load resistance (collector resistance)

Connection Diagram

IES00229

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}	± 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)

Parameter	Symbol	Limit Values	Unit
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

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Characteristics (TAE 2453 G) (cont'd)

$V_S = \pm 5$ 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} $R_G = 50\ \Omega$	α_{IIO}		0.1				nA/K
Temperature coefficient of V_{IO} $R_G = 50\ \Omega$	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)

$V_S = \pm 2$ 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, $R_G = 50\ \Omega$	V_{IO}	-6		6	-7.5	7.5	mV
Input offset current	I_{IO}	-15		15	-100	100	nA
Input current	I_I		40	150		200	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	T_j	150	°C
Storage temperature range	T_{stg}	-55 to 150	°C
Thermal resistance system - air TAF 2453 G	$R_{th\ SA}$	170	K/W

Operating Range (TAF 2453 G)

Parameter	Symbol	Limit Values	Unit
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)

$V_S = \pm 5$ 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, $R_G = 50\ \Omega$	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, $V_S = \pm 15$ V $R_L = 620\ \Omega$, $V_S = \pm 15$ 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

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Characteristics (TAF 2453 G) (cont'd)

$V_S = \pm\, 5$ V to $\pm\, 15$ 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} $R_G = 50\ \Omega$	α_{IIO}		0.1	0.8		0.8	nA/K
Temperature coefficient of V_{IO} $R_G = 50\ \Omega$	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)

$V_S = \pm\, 2$ 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, $R_G = 50\ \Omega$	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, $R_L = 2\ k\Omega$	G_{V0}	75			70		dB

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