

Three-Terminal Positive Voltage Regulators

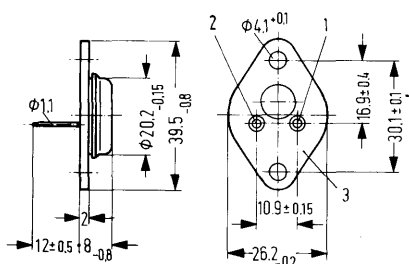
TDB 7800 -7800
TDB 7800 T-7800
TDC 7800 -7800

TDB 7800 and TDC 7800 are monolithic three-terminal positive regulators in packages similar to 3 A 2 DIN 41872 (TO-3). These regulators employ internal current limiting, thermal shutdown and safe-area compensation, without external components. If adequate heat sinking is provided, they can deliver over 1 A output current. These devices can be used with external components to obtain adjustable output voltages and currents and also as the power pass element in precision regulators.

Output voltages: 5V, 6V, 8V, 12V, 15V, 18V and 24V in TO-3 and TO-220 packages.

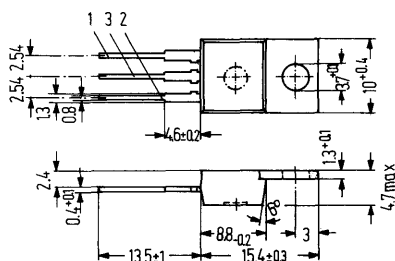
Package outlines

for TDB 7800 and TDC 7800



3 A 2 DIN 41872 (TO-3)
Weight approx 16.5 g

for TDB 7800 T



TO-220 AB
Weight approx 18 g
Pin 3 electrically connected
with heat sinking

Dimensions in mm

Maximum ratings

Input voltage ($V_i = 5$ to 18 V)
($V_o = 24$ V)

Junction temperature

Storage temperature

Thermal resistance:

System-case: TDB 7800, TDC 7800

System-case: TDB 7800 T

System-ambient air: TDB 7800, TDC 7800

System-ambient air: TDB 7800 T

	TDB 7800 TDB 7800 T TDC 7800	
V_i	35	V
V_o	40	V
T_j	150	°C
T_s	-65 to +150	°C
$R_{thScase}$	4	K/W
$R_{thScase}$	4	K/W
R_{thSamb}	35	K/W
R_{thSamb}	50	K/W

Range of operation

Ambient temperature in operation

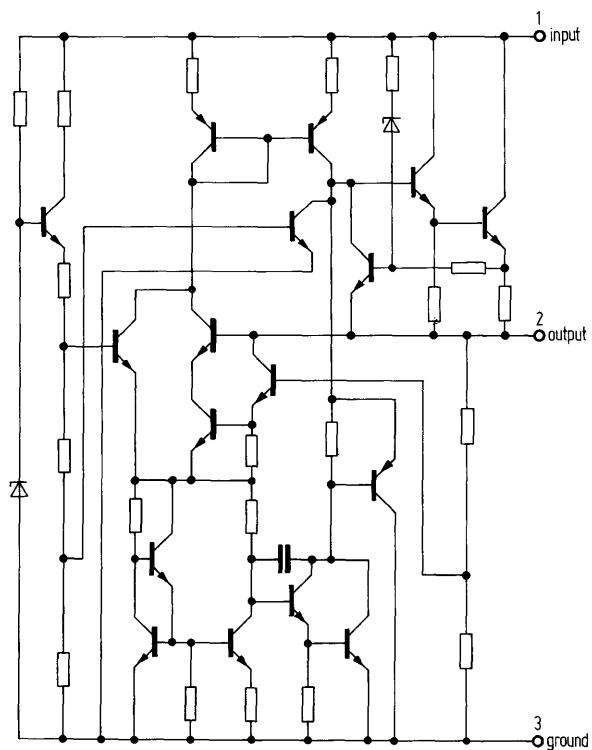
TDB 7800; TDB 7800 T

TDC 7800

T_{amb}	0 to +85	°C
T_{amb}	-55 to +125	°C

TDB 7800 -7800
TDB 7800 T-7800
TDC 7800 -7800

Circuit



Type	Ordering codes
TDB 7805	Q67000-A1047
TDB 7805 T	Q67000-A1048
TDC 7805	Q67000-A1049

Operating characteristics

($V_i = 10\text{ V}$; $I_q = 500\text{ mA}$)

$T_{amb} = 25\text{ }^{\circ}\text{C}$)

Output voltage

Line regulation:

$7\text{ V} \leq V_i \leq 25\text{ V}$

$8\text{ V} \leq V_i \leq 12\text{ V}$

Load regulation:

$5\text{ mA} \leq I_q \leq 1.5\text{ A}$

$250\text{ mA} \leq I_q \leq 750\text{ mA}$

Output voltage:

$P \leq 15\text{ W}$ $7.0\text{ V} \leq V_i \leq 20\text{ V}$

$5\text{ mA} \leq I_q \leq 1.0\text{ A}$

$0\text{ }^{\circ}\text{C} \leq T_{amb} \leq 70\text{ }^{\circ}\text{C}$

$P \leq 15\text{ W}$ $8.0\text{ V} \leq V_i \leq 20\text{ V}$

$5\text{ mA} \leq I_q \leq 1.0\text{ A}$

$-55\text{ }^{\circ}\text{C} \leq T_{amb} \leq +125\text{ }^{\circ}\text{C}$

Quiescent current

Quiescent current change

$0\text{ }^{\circ}\text{C} \leq T_{amb} \leq +70\text{ }^{\circ}\text{C}$:

$7\text{ V} \leq V_i \leq 25\text{ V}$

$5\text{ mA} \leq I_q \leq 1.0\text{ A}$

$-55\text{ }^{\circ}\text{C} \leq T_{amb} \leq +125\text{ }^{\circ}\text{C}$:

$8\text{ V} \leq V_i \leq 25\text{ V}$

$5\text{ mA} \leq I_q \leq 1.0\text{ A}$

Output noise voltage:

$10\text{ Hz} \leq f \leq 100\text{ kHz}$

Long term stability:

$0\text{ }^{\circ}\text{C} \leq T_{amb} \leq +70\text{ }^{\circ}\text{C}$

$-55\text{ }^{\circ}\text{C} \leq T_{amb} \leq +125\text{ }^{\circ}\text{C}$

Ripple rejection

($f = 120\text{ Hz}$; $8\text{ V} \leq V_i \leq 18\text{ V}$)

$0\text{ }^{\circ}\text{C} \leq T_{amb} \leq +70\text{ }^{\circ}\text{C}$

$-55\text{ }^{\circ}\text{C} \leq T_{amb} \leq +125\text{ }^{\circ}\text{C}$

Dropout voltage ($I_q = 1.0\text{ A}$)

Short circuit current

Peak output current

Output resistance ($f = 1\text{ kHz}$)

$0\text{ }^{\circ}\text{C} \leq T_{amb} \leq +70\text{ }^{\circ}\text{C}$

$-55\text{ }^{\circ}\text{C} \leq T_{amb} \leq +125\text{ }^{\circ}\text{C}$

Temperature coefficient of V_q ($I_q = 5\text{ mA}$)

$0\text{ }^{\circ}\text{C} \leq T_{amb} \leq +70\text{ }^{\circ}\text{C}$

$0\text{ }^{\circ}\text{C} \leq T_{amb} \leq +125\text{ }^{\circ}\text{C}$

	TDB 7805 TDB 7805 T			TDC 7805			
	min	typ	max	min	typ	max	
V_q	4.8	5.0	5.2	4.8	5.0	5.2	V
		3	100		3	50	mV
		1	50		1	25	mV
		15	100		15	50	mV
		5	50		5	25	mV
V_q	4.75		5.25				V
V_q				4.65		5.35	V
		4.2	8.0		4.2	6.0	mA
			1.3				mA
			.5				mA
						.8	mA
						.5	mA
		40			40		μV
			20				mV/ 1000 h
						20	mV/ 1000 h
	62	78		68	78		dB
		2.0			2.0		dB
		750			750		V
I_{qsc}		2.2			2.2		mA
I_q							A
R_q		17					m Ω
R_q					17		m Ω
α_E		-1.1			-1.1		mV/K
α_E							mV/K

Type	Ordering codes
TDB 7806	Q67000-A1050
TDB 7806 T	Q67000-A1051
TDC 7806	Q67000-A1052

Operating characteristics

($V_i = 11\text{ V}$; $I_q = 500\text{ mA}$; $T_{\text{amb}} = 25^\circ\text{C}$)

		TDB 7806 TDB 7806 T			TDC 7806			
		min	typ	max	min	typ	max	
Output voltage	V_q	5.75	6.0	6.25	5.75	6.0	6.25	V
Line regulation:								
$8\text{ V} \leq V_i \leq 25\text{ V}$			5	120		5	60	mV
$9\text{ V} \leq V_i \leq 13\text{ V}$			1.5	60		1.5	30	mV
Load regulation:								
$5\text{ mA} \leq I_q \leq 1.5\text{ A}$			14	120		14	60	mV
$250\text{ mA} \leq I_q \leq 750\text{ mA}$			4	60		4	30	mV
Output voltage:								
$P \leq 15\text{ W}$ $8\text{ V} \leq V_i \leq 25\text{ V}$	V_q	5.7		6.3				V
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$								
$0^\circ\text{C} \leq T_{\text{amb}} \leq 70^\circ\text{C}$								
$P \leq 15\text{ W}$ $9\text{ V} \leq V_i \leq 21\text{ V}$	V_q				5.65		6.35	V
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$								
$-55^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$								
Quiescent current			4.3	8.0		4.3	6.0	mA
Quiescent current change								
$0^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$:								
$8\text{ V} \leq V_i \leq 25\text{ V}$				1.3				mA
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$				.5				mA
$-55^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$:								
$9\text{ V} \leq V_i \leq 25\text{ V}$						.8		mA
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$						.5		mA
Output noise voltage: $10\text{ Hz} \leq f \leq 100\text{ kHz}$			45			45		μV
Long term stability:								
$0^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$				24				mV/1000 h
$-55^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$							24	mV/1000 h
Ripple rejection ($f = 120\text{ Hz}$; $9\text{ V} \leq V_i \leq 19\text{ V}$)								
$0^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$		59	75					dB
$-55^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$					65	75		dB
Dropout voltage ($I_q = 1.0\text{ A}$)			2.0			2.0		V
Short circuit current	I_{qsc}		550			550		mA
Peak output current	I_q		2.2			2.2		A
Output resistance ($f = 1\text{ kHz}$)								
$0^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$	R_q		19					m Ω
$-55^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$	R_q					19		m Ω
Temperature coefficient of V_q ($I_q = 5\text{ mA}$)								
$0^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$	α_E		-8					mV/K
$0^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$	α_E					-8		mV/K

Type	Ordering codes
TDB 7808	Q67000-A1053
TDB 7808 T	Q67000-A1054
TDC 7808	Q67000-A1055

Operating characteristics

($V_i = 14\text{ V}$; $I_q = 500\text{ mA}$; $T_{amb} = 25^\circ\text{C}$)

	TDB 7808 TDB 7808 T			TDC 7808			
	min	typ	max	min	typ	max	
Output voltage	V_q	7.7	8.0	8.3	7.7	8.0	8.3 V
Line regulation:							
$10.5\text{ V} \leq V_i \leq 25\text{ V}$		6	160		6	80	mV
$11\text{ V} \leq V_i \leq 17\text{ V}$		2	80		2	40	mV
Load regulation:							
$5\text{ mA} \leq I_q \leq 1.5\text{ A}$		12	160		12	80	mV
$250\text{ mA} \leq I_q \leq 750\text{ mA}$		4	80		4	40	mV
Output voltage:							
$P \leq 15\text{ W}$ $10.5\text{ V} \leq V_i \leq 23\text{ V}$	V_q	7.6	8.4				V
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$							
$0^\circ\text{C} \leq T_{amb} \leq 70^\circ\text{C}$							
$P \leq 15\text{ W}$ $11.5\text{ V} \leq V_i \leq 23\text{ V}$	V_q			7.6		8.4	V
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$							
$-55^\circ\text{C} \leq T_{amb} \leq +125^\circ\text{C}$							
Quiescent current		4.3	8.0	4.3	6.0		mA
Quiescent current change							
$0^\circ\text{C} \leq T_{amb} \leq +70^\circ\text{C}$:			1.0				mA
$10.5\text{ V} \leq V_i \leq 25\text{ V}$			.5				mA
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$							
$-55^\circ\text{C} \leq T_{amb} \leq +125^\circ\text{C}$:					.8		mA
$11.5\text{ V} \leq V_i \leq 25\text{ V}$					.5		mA
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$							μV
Output noise voltage: $10\text{ Hz} \leq f \leq 100\text{ kHz}$		52		52			
Long term stability:			32				
$0^\circ\text{C} \leq T_{amb} \leq +70^\circ\text{C}$							mV/1000h
$-55^\circ\text{C} \leq T_{amb} \leq +125^\circ\text{C}$					32		mV/1000h
Ripple rejection							
($f = 120\text{ Hz}$; $11.5\text{ V} \leq V_i \leq 21.5\text{ V}$)							
$0^\circ\text{C} \leq T_{amb} \leq +70^\circ\text{C}$		56	72				dB
$-55^\circ\text{C} \leq T_{amb} \leq +125^\circ\text{C}$				62	72		dB
Dropout voltage ($I_q = 1.0\text{ A}$)			2.0		2.0		V
Short circuit current	I_{qsc}		450		450		mA
Peak output current	I_q		2.2		2.2		A
Output resistance ($f = 1\text{ kHz}$)							
$0^\circ\text{C} \leq T_{amb} \leq +70^\circ\text{C}$	R_q		16				m Ω
$-55^\circ\text{C} \leq T_{amb} \leq +125^\circ\text{C}$	R_q			16			m Ω
Temperature coefficient of V_q ($I_q = 5\text{ mA}$)							
$0^\circ\text{C} \leq T_{amb} \leq +70^\circ\text{C}$	α_E	-8					mV/K
$0^\circ\text{C} \leq T_{amb} \leq +125^\circ\text{C}$	α_E					-8	mV/K

Type	Ordering codes
TDB 7812	Q67000-A1056
TDB 7812 T	Q67000-A1057
TDC 7812	Q67000-A1058

Operating characteristics

($V_i = 19\text{ V}$; $I_q = 500\text{ mA}$; $T_{amb} = 25^\circ\text{C}$)

Output voltage	V_q	11.5	12	12.5	11.5	12	12.5	V
Line regulation:								
$14.5\text{ V} \leq V_i \leq 30\text{ V}$			10	240		10	120	mV
$16\text{ V} \leq V_i \leq 22\text{ V}$			3	120		3	60	mV
Load regulation:								
$5\text{ mA} \leq I_q \leq 1.5\text{ A}$			12	240		12	120	mV
$250\text{ mA} \leq I_q \leq 750\text{ mA}$			4	120		4	60	mV
Output voltage:								
$P \leq 15\text{ W}$ $14.5\text{ V} \leq V_i \leq 27\text{ V}$	V_q	11.4		12.6				V
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$								
$0^\circ\text{C} \leq T_{amb} \leq 70^\circ\text{C}$								
$P \leq 15\text{ W}$ $15.5\text{ V} \leq V_i \leq 27\text{ V}$	V_q				11.4		12.6	V
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$								
$-55^\circ\text{C} \leq T_{amb} \leq +125^\circ\text{C}$								
Quiescent current			4.3	8.0		4.3	6.0	mA
Quiescent current change								
$0^\circ\text{C} \leq T_{amb} \leq +70^\circ\text{C}$:								
$14.5\text{ V} \leq V_i \leq 30\text{ V}$				1.0				mA
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$				.5				mA
$-55^\circ\text{C} \leq T_{amb} \leq +125^\circ\text{C}$:								
$15\text{ V} \leq V_i \leq 30\text{ V}$							.8	mA
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$							.5	mA
Output noise voltage: $10\text{ Hz} \leq f \leq 100\text{ kHz}$			75			75		μV
Long term stability:								
$0^\circ\text{C} \leq T_{amb} \leq +70^\circ\text{C}$				48				mV/ 1000 h
$-55^\circ\text{C} \leq T_{amb} \leq +125^\circ\text{C}$							48	mV/ 1000 h
Ripple rejection								
($f = 120\text{ Hz}$; $15\text{ V} \leq V_i \leq 25\text{ V}$)								
$0^\circ\text{C} \leq T_{amb} \leq +70^\circ\text{C}$								
$-55^\circ\text{C} \leq T_{amb} \leq +125^\circ\text{C}$								
Dropout voltage ($I_q = 1.0\text{ A}$)								
Short circuit current	I_{qsc}		2.0		61	71	2.0	dB
Peak output current	I_q		350				350	dB
Output resistance ($f = 1\text{ kHz}$)			2.2				2.2	V
$0^\circ\text{C} \leq T_{amb} \leq +70^\circ\text{C}$								mA
$-55^\circ\text{C} \leq T_{amb} \leq +125^\circ\text{C}$								A
Temperature coefficient of V_q ($I_q = 5\text{ mA}$)								
$0^\circ\text{C} \leq T_{amb} \leq +70^\circ\text{C}$	R_{q1}		18			18		m Ω
$0^\circ\text{C} \leq T_{amb} \leq +125^\circ\text{C}$	R_{q2}							m Ω
	α_E		-1.0			-1.0		mV/K
	α_E							mV/K

Type	Ordering codes
TDB 7815	Q67000-A1059
TDB 7815 T	Q67000-A1060
TDC 7815	Q67000-A1061

Operating characteristics

($V_i = 23 \text{ V}$; $I_q = 500 \text{ mA}$; $T_{\text{amb}} = 25^\circ\text{C}$)

	TDB 7815 TDB 7815 T			TDC 7815			
	min	typ	max	min	typ	max	
Output voltage	V_q	14.4	15	15.6	14.4	15	15.6 V
Line regulation:							
$17.5 \text{ V} \leq V_i \leq 30 \text{ V}$		11	300		11	150	mV
$20 \text{ V} \leq V_i \leq 26 \text{ V}$		3	150		3	75	mV
Load regulation:							
$5 \text{ mA} \leq I_q \leq 1.5 \text{ A}$		12	150		12	150	mV
$250 \text{ mA} \leq I_q \leq 750 \text{ mA}$		4	75		4	75	mV
Output voltage:							
$P \leq 15 \text{ W}$ $17.5 \text{ V} \leq V_i \leq 30 \text{ V}$	V_q	14.25	15.75				V
$5 \text{ mA} \leq I_q \leq 1.0 \text{ A}$							
$0^\circ\text{C} \leq T_{\text{amb}} \leq 70^\circ\text{C}$							
$P \leq 15 \text{ W}$ $18.5 \text{ V} \leq V_i \leq 30 \text{ V}$	V_q			14.25		15.75	V
$5 \text{ mA} \leq I_q \leq 1.0 \text{ A}$							
$-55^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$							
Quiescent current		4.4	8.0		4.4	6.0	mA
Quiescent current change							
$0^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$:							
$17.5 \text{ V} \leq V_i \leq 30 \text{ V}$			1.0				mA
$5 \text{ mA} \leq I_q \leq 1.0 \text{ A}$			.5				mA
$-55^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$:							
$18.5 \text{ V} \leq V_i \leq 30 \text{ V}$						.8	mA
$5 \text{ mA} \leq I_q \leq 1.0 \text{ A}$						.5	mA
Output noise voltage: $10 \text{ Hz} \leq f \leq 100 \text{ kHz}$		90		90			μV
Long term stability:			60				mV/1000 h
$0^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$							mV/1000 h
$-55^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$						60	mV/1000 h
Ripple rejection							
($f = 120 \text{ Hz}$; $18.5 \text{ V} \leq V_i \leq 28.5 \text{ V}$)		54	70				dB
$0^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$							dB
$-55^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$				60	70		V
Dropout voltage ($I_q = 1.0 \text{ A}$)			2.0		2.0		V
Short circuit current	I_{qsc}		230		230		mA
Peak output current	I_q		2.1		2.1		A
Output resistance ($f = 1 \text{ kHz}$)							
$0^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$	R_q		19				$\text{m}\Omega$
$-55^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$	R_q				19		$\text{m}\Omega$
Temperature coefficient of V_q ($I_q = 5 \text{ mA}$)							
$0^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$	α_E		-1.0				mV/K
$0^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$	α_E				-1.0		mV/K

Type	Ordering codes
TDB 7818	Q67000-A1062
TDB 7818 T	Q67000-A1063
TDC 7818	Q67000-A1064

Operating characteristics

($V_i = 27\text{ V}$; $I_q = 500\text{ mA}$; $T_{\text{amb}} = 25^\circ\text{C}$)

	TDB 7818 TDB 7818 T			TDC 7818			
	min	typ	max	min	typ	max	
Output voltage	V_q	17.3	18	18.7	17.3	18	18.7 V
Line regulation:							
$21\text{ V} \leq V_i \leq 33\text{ V}$		15	360		15	180	mV
$24\text{ V} \leq V_i \leq 30\text{ V}$		5	180		5	90	mV
Load regulation:							
$5\text{ mA} \leq I_q \leq 1.5\text{ A}$		12	360		12	180	mV
$250\text{ mA} \leq I_q \leq 750\text{ mA}$		4	180		4	90	mV
Output voltage:							
$P \leq 15\text{ W}$ $21\text{ V} \leq V_i \leq 33\text{ V}$	V_q	17.1	18.9				V
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$							
$0^\circ\text{C} \leq T_{\text{amb}} \leq 70^\circ\text{C}$							
$P \leq 15\text{ W}$ $22\text{ V} \leq V_i \leq 33\text{ V}$	V_q			17.1		18.9	V
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$							
$-55^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$							
Quiescent current		4.5	8.0		4.5	6.0	mA
Quiescent current change							
$0^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$:			1.0				mA
$21\text{ V} \leq V_i \leq 33\text{ V}$			.5				mA
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$							
$-55^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$:						.8	mA
$22\text{ V} \leq V_i \leq 33\text{ V}$						.5	mA
$5\text{ mA} \leq I_q \leq 1.0\text{ A}$							μV
Output noise voltage: $10\text{ Hz} \leq f \leq 100\text{ kHz}$		110			110		
Long term stability:			72				mV/1000h
$0^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$							mV/1000h
$-55^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$						72	
Ripple rejection							
($f = 120\text{ Hz}$; $22\text{ V} \leq V_i \leq 32\text{ V}$)							
$0^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$		53	69				dB
$-55^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$				59	69		dB
Dropout voltage ($I_q = 1.0\text{ A}$)			2.0			2.0	V
Short circuit current	I_{qsc}		200			200	mA
Peak output current	I_q		2.1			2.1	A
Output resistance ($f = 1\text{ kHz}$)							$\text{m}\Omega$
$0^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$	R_q		22				$\text{m}\Omega$
$-55^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$	R_q				22		
Temperature coefficient of V_q ($I_q = 5\text{ mA}$)							mV/K
$0^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$	α_E	-1.0					mV/K
$0^\circ\text{C} \leq T_{\text{amb}} \leq +125^\circ\text{C}$	α_E				-1.0		

Type	Ordering codes
TDB 7824	Q67000-A1065
TDB 7824 T	Q67000-A1066
TDC 7824	Q67000-A1067

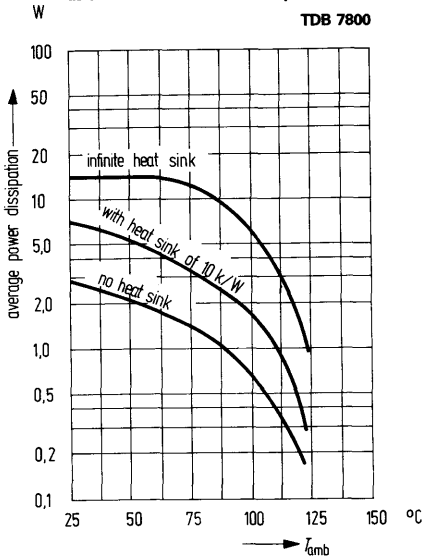
Operating characteristics

($V_i = 33\text{ V}$; $I_q = 500\text{ mA}$; $T_{amb} = 25^\circ\text{C}$)

		TDB 7824 TDB 7824 T			TDC 7824			
		min	typ	max	min	typ	max	
Output voltage	V_q	23	24	25	23	24	25	V
Line regulation:								
27 V $\leq V_i \leq 38$ V			18	480		18	240	mV
30 V $\leq V_i \leq 36$ V			6	240		6	120	mV
Load regulation:								
5 mA $\leq I_q \leq 1.5$ A			12	480		12	240	mV
250 mA $\leq I_q \leq 750$ mA			4	240		4	120	mV
Output voltage:								
$P \leq 15$ W 27 V $\leq V_i \leq 38$ V	V_q	22.8		25.2				V
5 mA $\leq I_q \leq 1.0$ A								
0°C $\leq T_{amb} \leq 70^\circ$ C								
$P \leq 15$ W 28 V $\leq V_i \leq 38$ V	V_q				22.8		25.2	V
5 mA $\leq I_q \leq 1.0$ A								
-55°C $\leq T_{amb} \leq +125^\circ$ C								
Quiescent current			4.6	8.0		4.6	8.0	mA
Quiescent current change								
0°C $\leq T_{amb} \leq +70^\circ$ C:								
27 V $\leq V_i \leq 38$ V				1.0				mA
5 mA $\leq I_q \leq 1.0$ A				.5				mA
-55°C $\leq T_{amb} \leq +125^\circ$ C:								
28 V $\leq V_i \leq 38$ V						.8		mA
5 mA $\leq I_q \leq 1.0$ A						.5		mA
Output noise voltage: 10 Hz $\leq f \leq 100$ kHz			170			170		μ V
Long term stability:								
0°C $\leq T_{amb} \leq +70^\circ$ C				96				mV/1000 h
-55°C $\leq T_{amb} \leq +125^\circ$ C							96	mV/1000 h
Ripple rejection								
($f = 120$ Hz; 28 V $\leq V_i \leq 38$ V)								
0°C $\leq T_{amb} \leq +70^\circ$ C		50	66					dB
-55°C $\leq T_{amb} \leq +125^\circ$ C								dB
Dropout voltage ($I_q = 1.0$ A)					56	66		V
Short circuit current	I_{qsc}		2.0			2.0		mA
Peak output current	I_q		150			150		A
			2.1			2.1		
Output resistance ($f = 1$ kHz)								
0°C $\leq T_{amb} \leq +70^\circ$ C	R_q		28					m Ω
-55°C $\leq T_{amb} \leq +125^\circ$ C	R_q					28		m Ω
Temperature coefficient of V_q ($I_q = 5$ mA)								
0°C $\leq T_{amb} \leq +70^\circ$ C	α_E	-1.5						mV/K
0°C $\leq T_{amb} \leq +125^\circ$ C	α_E					-1.5		mV/K

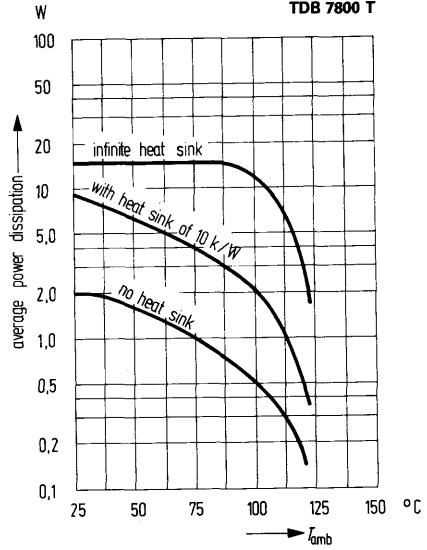
**Maximum average power dissipation
as a function of ambient temperature**

TDB 7800



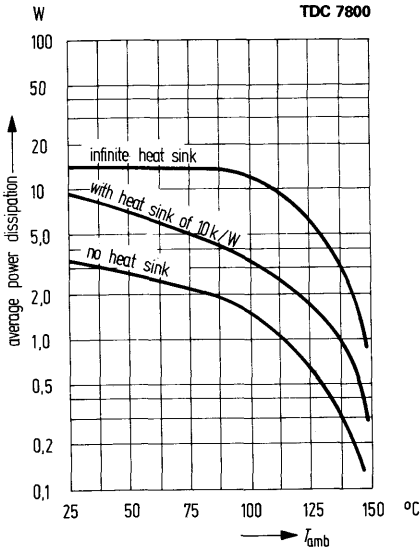
**Maximum average power dissipation
as a function of ambient temperature**

TDB 7800 T

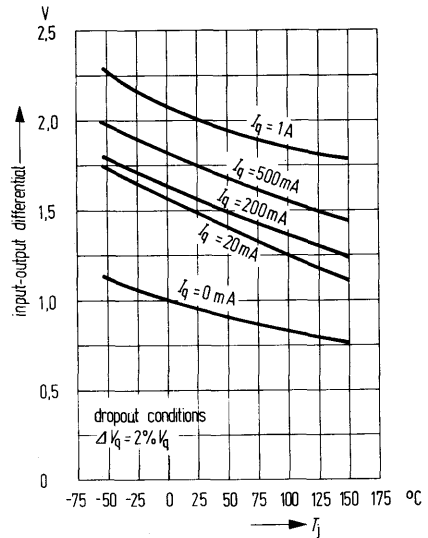


**Maximum average power dissipation
as a function of ambient temperature**

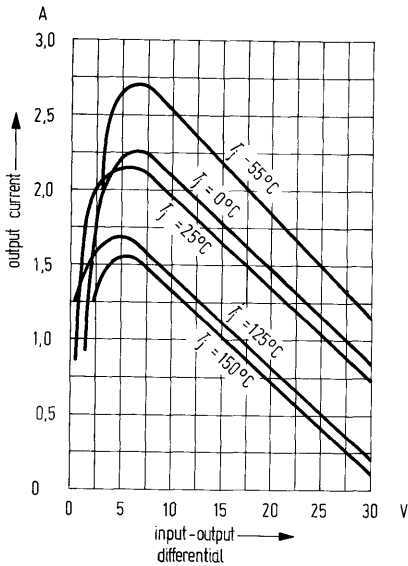
TDC 7800



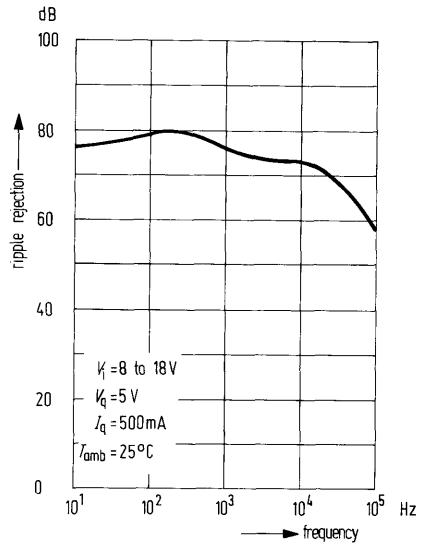
**Dropout voltage as a function of
junction temperature**



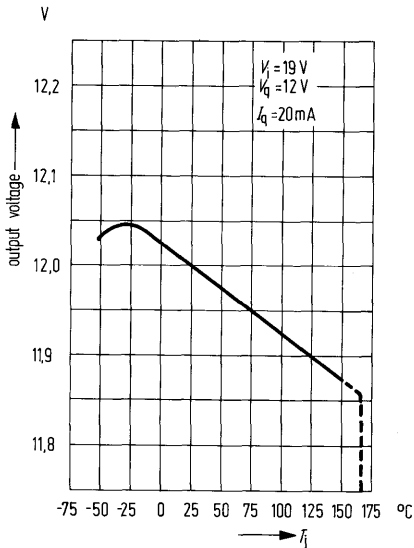
Peak output current as a function of input/output differential voltage



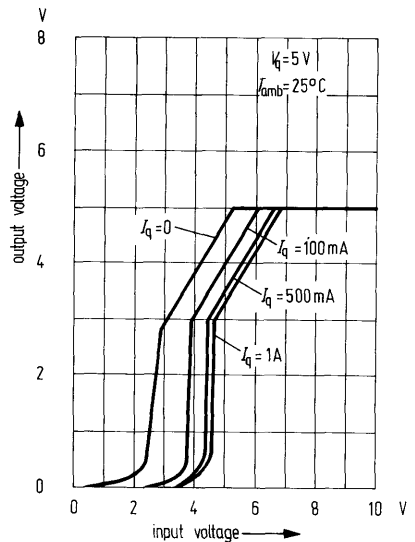
Ripple rejection as a function frequency



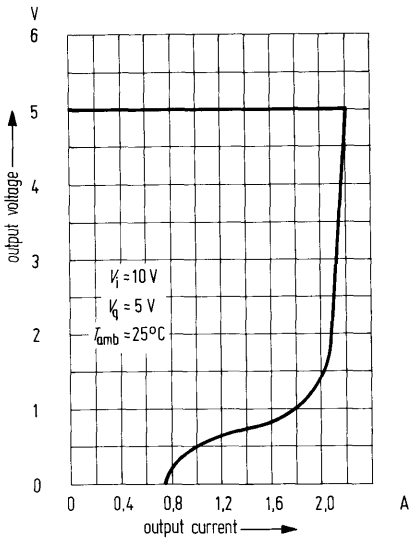
Output voltage as a function of junction temperature



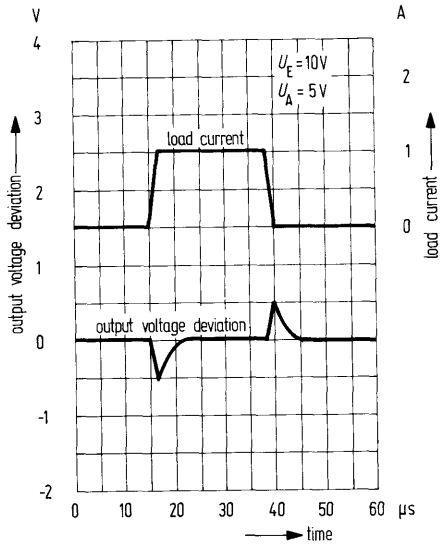
Dropout characteristics



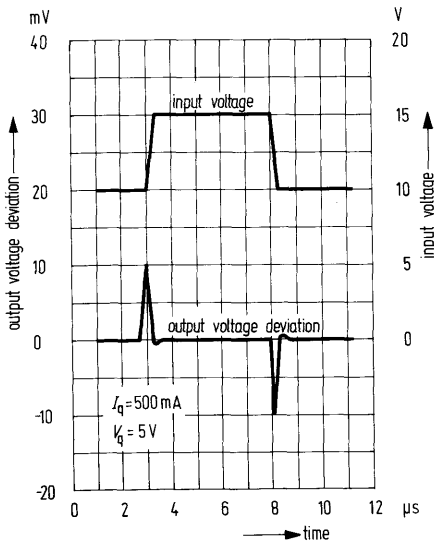
Current limiting characteristics



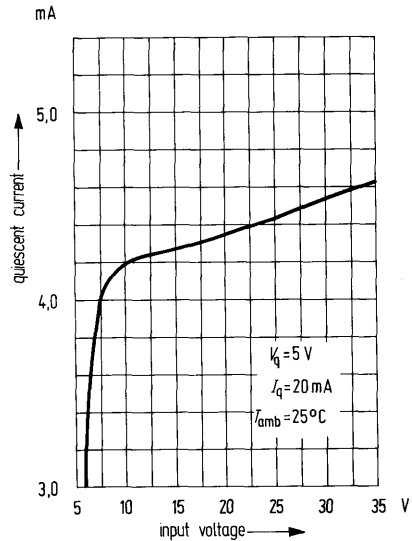
Load transient response



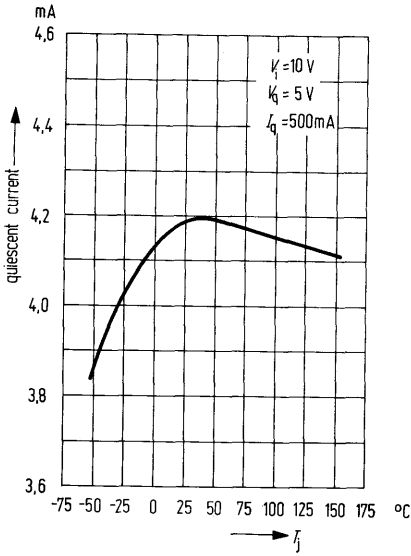
Line transient response



Quiescent current as a function of input voltage



Quiescent current as a function of temperature



Output impedance as a function of frequency

