

Linear Voltage Regulator

Part# (Remark)	Input Voltage (max)	Output Voltage	Output Current	Dropout Voltage	Accuracy	Features (Note)	Package
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Voltage Regulator

TS7800	35/40V	5/6/8/9/10/12/15/18/24V	1.0A	2V	±4%	T	TO-220, TO-220F
TS7900	-35/-40V	-5/-8/-9/-12/-15/-18/-24V	1.0A	2V	±4%	T	TO-220, TO-220F
TS78M00	35/40V	5/6/8/9/12/15/18/24V	0.5A	2V	±4%	T	TO-220, TO-252
TS79M00	-35/40V	-5/-8/-9/-12/-15/-18/-24V	0.5A	2V	±4%	T	TO-220, TO-252
TS78L00	30V	5/8/9/12/15/18/24V	0.1A	2V	±4%	T	TO-92, SOP-8, SOT-89
TS79L00	-30V	-5/-8/-9/-12/-15/-18/-24V	0.1A	2V	±4%	T	TO-92, SOP-8, SOT-89
TS317	40V	Adj	1.5A	2V	±4%	T	TO-220, TO-252, TO-92, SOP-8

Low Drop Out Voltage Regulator

TS1117	12V	Adj/1.5/1.8/2.5/3.3/5V	1A	1.3V	±1%	C, T	TO-220, TO-263, TO-252, SOT-223
TS1086	12V	Adj/1.5/1.8/2.5/3.3/5V	1.5A	1.3V	±1%	C, T	TO-220, TO-263, TO-252, SOT-223
TS1085	12V	Adj/2.5/3.3/5V	3A	1.3V	±1%	C, T	TO-220, TO-263, TO-252
TS1084	12V	Adj/2.5/3.3/5V	5A	1.3V	±1%	C, T	TO-220, TO-263, TO-252
TS1083	7V	Adj	7.5A	1.3V	±1%	C, T	TO-220
TS1082	7V	Adj	10A	1.3V	±1%	C, T	TO-220

Ultra Low Drop Out Voltage Regulator

TS2950	30V	2.5/3.0/3.3/5V	0.15A	0.6V	±1%	C, T	TO-92
TS2951	30V	2.5/3.0/3.3/5V/Adj	0.15A	0.6V	±1%	C, E, F, T	SOP-8
TS2937	26V	1.8/2.5/3.3/5V	0.5A	0.6V	±1%	C, T	TO-220, TO-263, TO-252, SOT-223
TS2940	26V	1.8/2.5/3.3/5V	1.0A	0.6V	±1%	C, T	TO-220, TO-263, TO-252, SOT-223
* TS29150	26V	3.3/5V	1.5A	0.6V	±1%	C, T	TO-220, TO-263,
* TS29151	26V	3.3/5V	1.5A	0.6V	±1%	C, E, F, T	TO-220-5L, TO-263-5L
* TS29152	26V	Adj	1.5A	0.6V	±1%	C, E, T	TO-220-5L, TO-263-5L
* TS29153	26V	Adj	1.5A	0.6V	±1%	C, F, T	TO-220-5L, TO-263-5L

CMOS Low Drop Out Voltage Regulator

TS9000/A	8V	2.5/2.7/2.8/3.0/3.3/3.5/3.6	0.3A	0.3V	±1.5%	C, T	SOT-23, SOT-89, TO-92
TS9001	8V	1.5/1.8/1.9/2.2/2.5/2.7/2.8/2.9/3.0/3.3/3.4/3.5/3.6/3.8V	0.3A	0.3V	±1.5%	C, B, E, T	SOT-25
TS9002	8V	1.2/1.3/1.5V	0.3A	0.3V	±1.5%	C, E, P, T	SOT-25
TS9003	8V	1.5/1.8/2.5/2.7/2.8/2.9/3.0/3.1/3.3/3.4/3.5/3.6/3.7/3.8V	0.3A	0.3V	±1.5%	C, B, E, P, T	SOT-26
TS9004	8V	adj	0.3A	0.3V	±2.5%	C, E, P, T	SOT-25, SOT-26
TS9005	8V	1.5/1.8/2.5/2.8/3.0/3.3V	0.6A	0.6V	±1.5%	C, T	SOT-89, SOT-223
TS9010	12V	2.5/3.3/5.0V	0.15A	0.4V	±2%	E, L, T	SOT-25
TS9011	12V	1.8/2.5/2.8/3.0/3.3/5.0V	0.25A	0.4V	±2%	L, T	SOT-23, SOT-89

Note B: bypass C: current limit E: enable/shutdown F: flag L: low quiescent (5uA) P: power good T: thermal shutdown

Remark: * Available in 2004/Q2

Voltage Reference

Part#	Input Voltage (max.)	Reference Voltage	Output Current	Operation Current (max.)	Accuracy	Package
TS431	37V	2.495V	0.1A	500uA	±2%	TO-92, SOT-89, SOT-23, SOP-8
TS431A	37V	2.495V	0.1A	500uA	±1%	TO-92, SOT-89, SOT-23, SOP-8
TS431B	37V	2.495V	0.1A	500uA	±0.5%	TO-92, SOT-89, SOT-23, SOP-8
TS432	20V	1.24V	0.1A	200uA	±2%	TO-92, SOT-23, SOT-25
TS432A	20V	1.24V	0.1A	200uA	±1%	TO-92, SOT-23, SOT-25
TS432B	20V	1.24V	0.1A	200uA	±0.5%	TO-92, SOT-23, SOT-25

PWM

Part#	Start-Up Threshold	Start-Up Current	Output Current	Frequency	Voltage Reference	Output Channel	Features (Note)	Package
Current Mode PWM Controller								
TS3842B	14.5~17.5V	250uA	0.7A	<500KHz	5V	1	A, C, U	DIP-8, SOP-8
TS3843B	7.8~9.0V	250uA	0.7A	<500KHz	5V	1	A, C, U	DIP-8, SOP-8
* TS38C42	13.5~15.5V	50uA	0.5A	>500KHz	5V	1	A, C, U	DIP-8, SOP-8
* TS38C43	7.8~9.0V	50uA	0.5A	>500KHz	5V	1	A, C, U	DIP-8, SOP-8

Part#	Input Voltage (max)	Stand-by Current	Output Current	Frequency	Reference Voltage	Output Channel	Features (Note)	Package
Voltage Mode PWM Controller								
TS494	40V	10mA	0.25A	200KHz	5V	2	A, C, O, P	DIP-16, SOP-16
TS1451	40V	3mA	0.02A	500KHz	2.5V	2	A, C, O, P, U	DIP-16, SOP-16
TS3404	20V	1.6mA	0.2A	300KHz	1.25V	1	A, C, P, S, U	DIP-8, SOP-8
* TS3405	6V	3.8mA	0.1A	300KHz	0.8V	1	C, O, S	SOP-8

Note A: adjustable frequency C: current sense O: over voltage protection P: short circuit protection S: soft start U: UVLO

Remark: * Available in 2004/Q2

Switching Regulator

Part# (Remark)	Input Voltage (max)	Output Voltage	Output Current	Frequency	Reference Voltage	Features (Note)	Package
DC to DC Converter							
TS34063	40V	Adj	1.5A	100~100KHz	1.25V	A, C, T	DIP-8, SOP-8
Step-Down Simple Switching Regulator							
TS2576	40V	Adj/3.3/5.0/12V	3A	52KHz	1.23V	C, E, T	TO-220-5L, TO-263-5L
* TS2596	40V	Adj/3.3/5.0/12V	3A	150KHz	1.23V	C, E, T	TO-220-5L, TO-263-5L

Note A: adjustable frequency C: current limit E: enable T: thermal shutdown

Remark: * Available in 2004/Q2

Amplifier & Comparator

Part# (Remark)	Input Voltage (max)	Input Bias Current	Input Offset Voltage	Input Offset Current	Slew Rate	Gain Bandwidth	Numbers of Operators	Package
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Operational Amplifier

TS358	±16V	500nA	7mV	150nA	0.6V/μS	1.1MHz	2	DIP-8, SOP-8
TS324	±16V	500nA	7mV	150nA	0.6V/μS	1.1MHz	4	DIP-14, SOP-14
TS4558	±18V	500nA	5mV	200nA	1.2V/μS	3.0MHz	2	DIP-8, SOP-8
* TS062	±18V	0.4nA	15mV	0.2nA	3.5V/μS	1.0MHz	2	DIP-8, SOP-8
* TS082	±18V	0.4nA	10mV	0.1nA	13V/μS	3.0MHz	2	DIP-8, SOP-8

Part# (Remark)	Input Voltage (Range)	Output Current	Voltage Gain (Max.)	Output Power (Each Channel)	Power Bandwidth	Numbers of Channel	Package
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Audio Amplifier

TS2822M	1.8~15V	1A	41dB	1W with 9V, R _L =8Ω	120KHz	2	DIP-8, SOP-8
* TS2200	4.5~18V	1.5A	41dB	5W with 12V, R _L =8Ω	0.02~300KHz	2	DIP-16, SOP-16

Part# (Remark)	Input Voltage (max.)	Input Bias Current	Input Offset Voltage	Input Offset Current	Response Time	Input Current (max.)	Numbers of Operators	Package
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Comparator

TS393	±18V	250nA	5mV	50nA	1.3μS	50mA	2	DIP-8, SOP-8
TS339	±18V	250nA	5mV	50nA	1.3μS	50mA	4	DIP-14, SOP-14

Remark: * Available in 2004/Q2

Reset IC

Part# (Remark)	Input Voltage (max)	Detect Voltage	Quiescent Current	Type	Accuracy	Features (Note)	Package
TS809	6V	2.63/2.93/3.08/4.0/4.38/4.63V	30μA	Active Low	±1.5%	---	SOT-23
TS810	6V	2.63/2.93/3.08/4.0/4.38/4.63V	30μA	Active High	±1.5%	---	SOT-23
TS809R	6V	2.63/2.93/3.08/4.0/4.38/4.63V	30μA	Active Low	±1.5%	---	SOT-23
TS810R	6V	2.63/2.93/3.08/4.0/4.38/4.63V	30μA	Active High	±1.5%	---	SOT-23
TS823	6V	2.19/2.32/2.63/2.93/3.08/4.38/4.63V	10μA	Active Low	±1.5%	M, W	SOT-25
TS824	6V	2.19/2.32/2.63/2.93/3.08/4.38/4.63V	10μA	Active High	±1.5%	C, W	SOT-25
TS825	6V	2.19/2.32/2.63/2.93/3.08/4.38/4.63V	10μA	Active High	±1.5%	C, M	SOT-25

Note C: complementary reset M: manual reset W: watchdog

Battery Protect IC

Part# (Remark)	Input Voltage (max)	Detect Voltage	Standby Current	Type	Accuracy	Features (Note)	Package
* TS2208/A	12V	0.2/2.5/4.28V	0.6μA	Active Low	±1%/0.5%	---	SOT-26

Remark: * Available in 2004/Q2

MOSFETs

Part#	Type	V _{DS}	V _{GS}	I _D	R _{DS(ON)} (max)			Qg (typ) (V _{GS} =4.5V)	Package
					10V	4.5V	2.5V		
TSM2301	P	- 20V	±8V	3A	--	130mΩ	190mΩ	5.4nC	SOT-23
TSM4835	P	- 30V	±20V	8A	18mΩ	30mΩ	--	23nC	SOP-8
TSM2302	N	20V	±8V	3A	--	65mΩ	95mΩ	5.2nC	SOT-23
TSM7401	N	20V	±12V	8A	--	25mΩ	30mΩ	15nC	SOP-8
* TSM3045	N	30V	±20V	12A	45mΩ	60mΩ	--	12nC	TO-252
TSM2N7000	N	60v	±20V	0.2A	5Ω	5Ω	--	--	TO-92
TSM2N7002	N	60v	±20V	0.12A	7.5Ω	7.5Ω	--	--	SOT-23
TSM1N60	N	600v	±30V	1A	8Ω	--	--	8nC	TO-252, TO-251
TSM2N60	N	600v	±20V	2A	4.4Ω	--	--	14nC	TO-252, TO-251
* TSM4N02D	N/N	20V	±8V	4A	--	55mΩ	85mΩ	8nC	TSSOP-8
* TSM7312D	N/N	20V	±8V	4A	--	55mΩ	85mΩ	8nC	SOP-8
* TSM7317D	N/N	20V	±12V	6A	--	22mΩ	29mΩ	15nC	SOP-8
TSM6968D	N/N	20V	±12V	6A	--	25mΩ	30mΩ	10nC	TSSOP-8
* TSM7304D	P/P	- 20V	±8V	4A	--	120mΩ	180mΩ	8nC	SOP-8
* TSM7328D	P/P	- 30V	±20V	6A	23mΩ	35mΩ	--	52nC	SOP-8

Remark: * Available in 2004/Q2

Transistor

Part# (Remark)	Type	V _{CEO} (max)	V _{CBO} (max.)	V _{EBO} (max.)	I _C (max.)	Hfe	Vce(sat)	Pin Style	Package
TSB1412	PNP	- 20V	- 30V	- 6V	-5A	80~820	-1.0V	BCE	TO-252
TSD2118	NPN	20V	30V	6V	5A	120~820	1.0V	BCE	TO-252
TSB1386	PNP	- 20V	- 30V	- 6V	-5A	80~820	-1.0V	ECB	SOT-89, SOT-23
TSD2098	NPN	20V	30V	6V	5A	120~820	1.0V	ECB	SOT-89, SOT-23
TSB1424	PNP	- 30V	- 40V	- 5V	-3A	120~560	-0.5V	ECB	SOT-89, SOT-23
TSD2150	NPN	30V	40V	5V	3A	120~560	0.5V	ECB	SOT-89, SOT-23
TSB772/S	PNP	- 30V	- 40V	-5V	-3A	100~500	-0.5V	ECB / BCE	TO-92, TO-126, TO-252
TSD882/S	NPN	30V	40V	5V	3A	100~500	0.5V	ECB / BCE	TO-92, TO-126, TO-252
TSB1132	PNP	- 30V	- 40V	-5V	-1A	82~560	-0.5V	ECB	SOT-89
TSD1664	NPN	30V	40V	5V	1A	82~560	0.5V	ECB	SOT-89
TS13001	NPN	400V	400V	7V	0.1A	40~80	0.5V	BCE	TO-92
TS13002	NPN	400V	700V	7V	0.2A	20~40	0.5V	ECB	TO-92
TS13003	NPN	400V	700V	9V	1.5A	8~40	3.0V	ECB/BCE	TO-92, TO-126
* TS13005	NPN	400V	700V	9V	4A	8~60	1.0V	BCE	TO-220, TO-252
* TS13007	NPN	400V	700V	9V	8A	8~60	3.0V	BCE	TO-220

Remark: * Available in 2004/Q2