

Features

- Surface Mount DIL-Package
- Wide 2:1 Input Range
- 21 Standard Models
- High Efficiency up to 85%
- I/O-Isolation 1'500 VDC
- Indefinite Short-Circuit Protection
- Input Filter meets EN 55022, Class A and FCC, Level A without external Components
- High Accuracy of Pin Co-Planarity
- High Reliability, MTBF >1 Mio. h
- 3 Year Product Warranty



The TES 6 converter series is intended for all applications where PCB's are assembled on an automated SMD production line. The light weight DIL-package allows easy handling by pick and place machines. High efficiency allows an operating temperature range of -40°C to +71°C without derating. I/O-isolation of 1'500 VDC together with conducted noise compliance to EN 55022-A and FCC, level A makes these converters ideal for a wide range of applications in communications, mobile battery powered equipments and industrial systems.

Models

Ordercode	Input voltage range	Output voltage	Output current max.	Efficiency typ.
TES 6-1210 TES 6-1211 TES 6-1212 TES 6-1213 TES 6-1221 TES 6-1222 TES 6-1223	9 – 18 VDC	3.3 VDC	1200 mA	77 %
		5 VDC	1200 mA	81 %
		12 VDC	625 mA	83 %
		15 VDC	500 mA	83 %
		± 5 VDC	± 500 mA	81 %
		± 12 VDC	± 312 mA	83 %
		± 15 VDC	± 250 mA	83 %
TES 6-2410 TES 6-2411 TES 6-2412 TES 6-2413 TES 6-2421 TES 6-2422 TES 6-2423	18 – 36 VDC	3.3 VDC	1200 mA	79 %
		5 VDC	1200 mA	83 %
		12 VDC	625 mA	85 %
		15 VDC	500 mA	85 %
		± 5 VDC	± 500 mA	83 %
		± 12 VDC	± 312 mA	85 %
		± 15 VDC	± 250 mA	85 %
TES 6-4810 TES 6-4811 TES 6-4812 TES 6-4813 TES 6-4821 TES 6-4822 TES 6-4823	36 – 75 VDC	3.3 VDC	1200 mA	79 %
		5 VDC	1200 mA	83 %
		12 VDC	625 mA	85 %
		15 VDC	500 mA	85 %
		± 5 VDC	± 500 mA	83 %
		± 12 VDC	± 312 mA	85 %
		± 15 VDC	± 250 mA	85 %

Input Specifications

Input current no load	12 Vin models 24 Vin models 48 Vin models	20 mA 5 mA 3 mA
Input current full load	12 Vin models with 3.3/±5 Vout 12 Vin models with other outputs 24 Vin models with 3.3/±5 Vout 24 Vin models with other outputs 48 Vin models with 3.3/±5 Vout 48 Vin models with other outputs	430 mA / 510 mA typ. 600 mA typ. 210 mA / 250 mA typ. 600 mA typ. 100 mA / 130 mA typ. 150 mA typ.
Start-up voltage / under voltage shut down	12 Vin models 24 Vin models 48 Vin models	6 VDC / 8 VDC typ. 12 VDC / 16 VDC typ. 24 VDC / 32 VDC typ.
Surge voltage (1 sec. max.)	12 Vin models 24 Vin models 48 Vin models	25 V max. 50 V max. 100 V max.
Reverse voltage protection		1.0 A max.
Conducted noise (input)		EN 55022 level A, FCC part 15, class A

Output Specifications

Voltage set accuracy		± 1 %
Regulation	– Input variation Vin min. to Vin max. – Load variation 10 – 100 % – single output models – dual output models balanced load – dual output models unbalanced load	0.3 % max. 1 % max. 1 % max. 2.5 % max.
Ripple and noise (20 MHz Bandwidth)		75 mVpk-pk max.
Temperature coefficient		± 0.02 % / °C
Output current limitation		>120 % of Iout max., constant current
Short circuit protection		fold back, automatic recovery
Capacitive load	3.3 VDC output models 5 VDC single output models other models	680 µF max. 1'500 µF max. 100 µF max.

General Specifications

Temperature ranges	– Operating – Case temperature – Storage	– 40°C ... + 71 °C (no derating) + 105°C max. – 40°C ... + 125 °C
Derating		4 %/K above 71 °C
Humidity (non condensing)		95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217 E)		>1 Mio. h @ + 25 °C
Isolation voltage	Input/Output	1'500 VDC
Isolation capacity	Input/Output	380 pF typ.
Isolation resistance	Input/Output (500 VDC)	> 1'000 MOhm
Switching frequency		300 kHz
Safety standards		IEC / EN 60950, UL 60950
Safety approvals		UL / cUL, CB-report pending

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

