

RS95F36 150A Top-Side Cooled Smart Power Stage for High-Density AI Power

Features

Power & Performance

- Wide 3.5V to 8V input voltage range
- 3.3V VDD supply for internal logic
- Integrated high-side and low-side power MOSFETs and drivers
- 150A maximum output current
- 80A TDC output current
- Operating frequency up to 3MHz with 5V VIN

Thermal & Monitoring

- Top-side cooled package for enhanced thermal management
- Integrated current sense
- Integrated temperature sense

Control & Protection

- Compatible with 3.3V tri-state PWM input
- VIN and VDD/VDRV undervoltage lockout (UVLO)
- High-side overcurrent protection
- Cycle-by-cycle overcurrent limiting
- Overtemperature protection (OTP)

Package & Compliance

- Compact 6mm × 6mm TLGA-40 package
- RoHS compliant and Green

Applications

- Server and Telecom Voltage Regulators
- Graphics Card Core Regulators
- Power Modules

Description

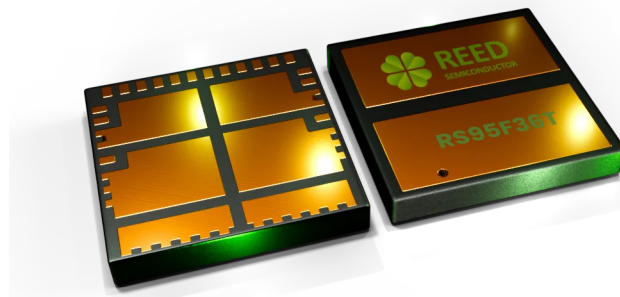
The RS95F36T is a highly integrated 150A Smart Power Stage designed to deliver scalable power for AI and other high-current multiphase point-of-load applications. Operating from 3.5V to 8V, the device integrates high-side and low-side power MOSFETs, gate drivers, current sensing, and temperature sensing in a compact 6mm × 6mm top-side cooled TLGA package.

The RS95F36T supports 150A maximum and 80A TDC output current. Its top-side cooled construction provides a direct thermal path to the system cooling solution, enabling efficient heat removal in high-current, high-power-density designs.

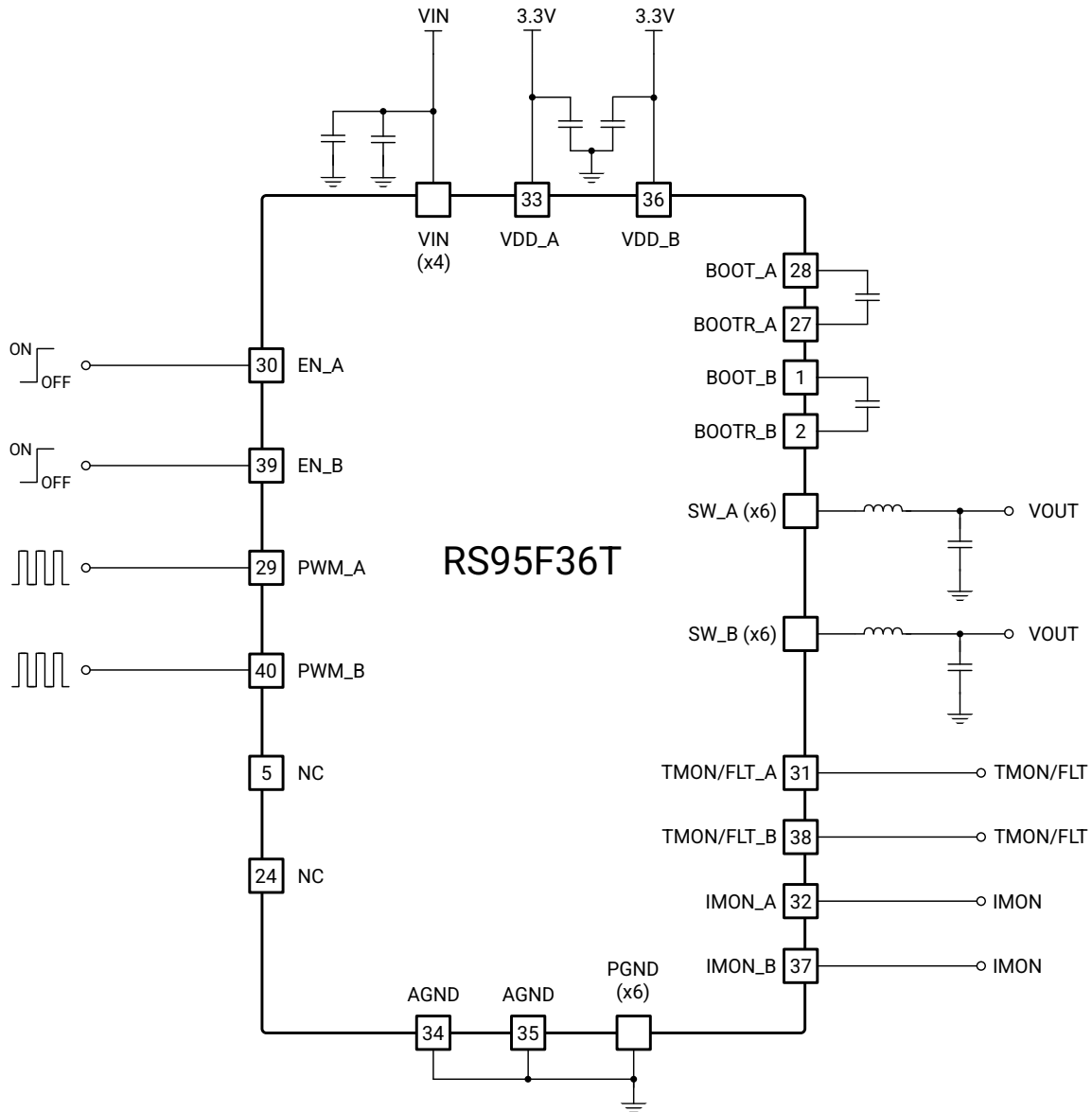
Compatible with 3.3V tri-state PWM controllers, the RS95F36T supports switching frequencies from 100kHz to 3MHz with a 5V input. Integrated current and temperature sensing provide real-time power-stage information for monitoring, protection, and power management. Protection features include VIN and VDD/VDRV UVLO, high-side overcurrent protection, cycle-by-cycle overcurrent limiting, and overtemperature protection.

The RS95F36T can be paired with Reed Semiconductor multiphase controllers to create scalable voltage-regulator solutions for GPUs, CPUs, AI accelerators, ASICs, and other high-performance processors, allowing designers to optimize phase count, efficiency, thermal performance, and power density as load-current requirements increase.

PART NUMBER	PACKAGE	SIZE
RS95F36	TLGA-40	6 × 6mm



Typical Application Schematic



Ordering Information

PART NUMBER	PACKAGE	SIZE	MSL RATING	SHIPPING METHOD	PACKAGE MARKING
RS95F36TR	TLGA-40	6 × 6mm	Level 3	3000u Tape & Reel	R5F36T

Top Marking

RSYYWW
 PPPPPP
 LLLLLS
 XXYYZZ
 ○

Line 1

- RS: Prefix of Reed Semiconductor (RS is replaced by RE for engineering lots)
- YY: Year code
- WW: Week code

Line 2

- PPPPPP: Truncated part number

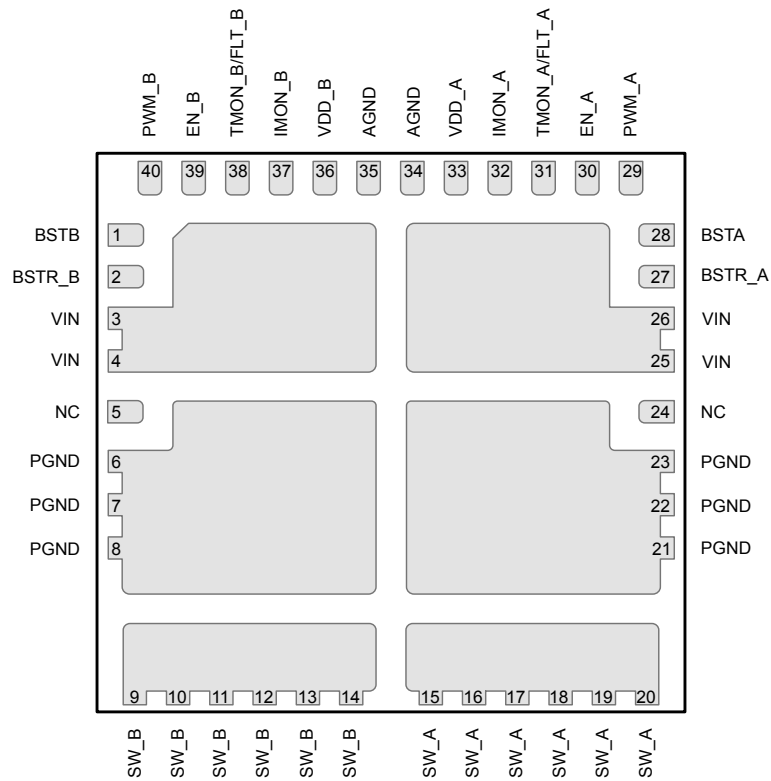
Line 3

- LLLLL: Lot code
- S: Assembly site code

Line 4

- XX: Substrate strip number
- YY: Vertical coordinate
- ZZ: Horizontal coordinate

Package Reference



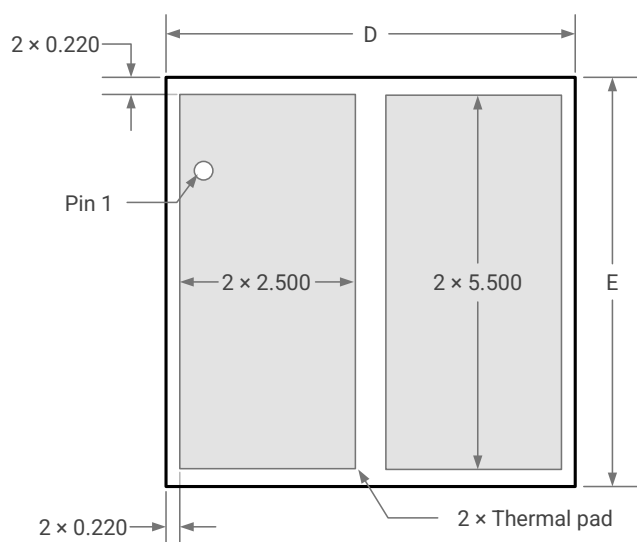
TLGA-40 (6 × 6mm)

Pin Descriptions

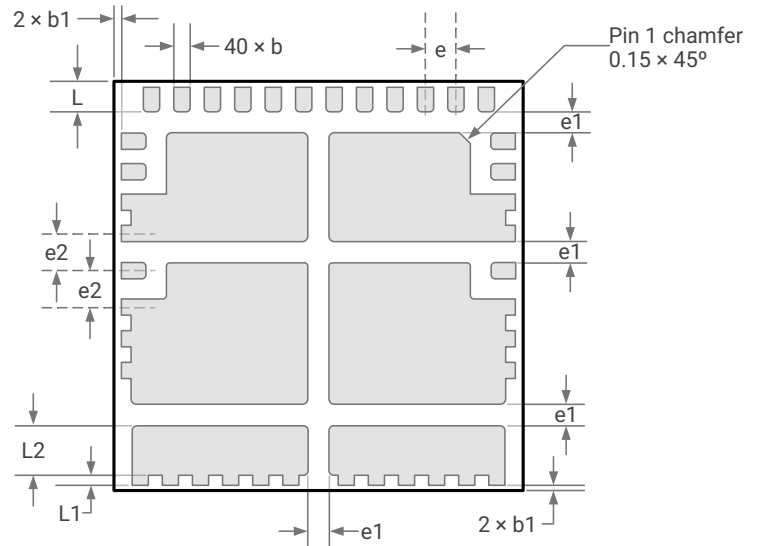
PIN	NAME	TYPE	DESCRIPTION
1	BSTA	O	Bootstrap supply for the Channel A high-side driver. Connect a 0.1μF to 1μF ceramic capacitor between BSTA and BSTR_A.
2	BSTR_A	I	Bootstrap return for the Channel A high-side driver.
3, 4, 25, 26	VIN	P	Main input power supply. Place input ceramic capacitors close to the VIN and PGND pins to minimize switching-current loops and input-voltage spikes.
5, 24	NC	—	No connect.
6 – 8, 21 – 33	PGND	G	Power ground. Connect to the PCB ground plane using multiple vias to minimize parasitic impedance and improve thermal performance.
9 – 14	SW_B	P	Channel B switch-node connection between the high-side and low-side power MOSFETs.
15 – 20	SW_A	P	Channel A switch-node connection between the high-side and low-side power MOSFETs.
27	BSTR_B	I	Bootstrap return for the Channel B high-side driver.
28	BSTB	O	Bootstrap supply for the Channel B high-side driver. Connect a 0.1μF to 1μF ceramic capacitor between BSTB and BSTR_B.
29	PWM_A	I	PWM control input for Channel A.
30	EN_A	I	Enable input for Channel A.
31	TMON_A/ FLT_A	O	Channel A temperature monitor and fault output.
32	IMON_A	O	Channel A current-monitor output. 5μA/A.
33	VDD_A	P	3.3V supply input for the Channel A internal control circuitry. Place a 1μF or larger ceramic bypass capacitor close to the VDD_A and AGND pins.
34,35	AGND	G	Analog ground.
36	VDD_B	P	3.3V supply input for the Channel B internal control circuitry. Place a 1μF or larger ceramic bypass capacitor close to the VDD_B and AGND pins.
37	IMON_B	O	Channel B current-monitor output. 5μA/A.
38	TMON_B/ FLT_B	O	Channel B temperature monitor and fault output.
39	EN_B	I	Enable input for Channel B.
40	PWM_B	I	PWM control input for Channel B.

Type: I = Input, O = Output, I/O = Bidirectional, P = Power, G = Ground, — = No Connect.

Package Dimensions



TOP VIEW



BOTTOM VIEW



SIDE VIEW

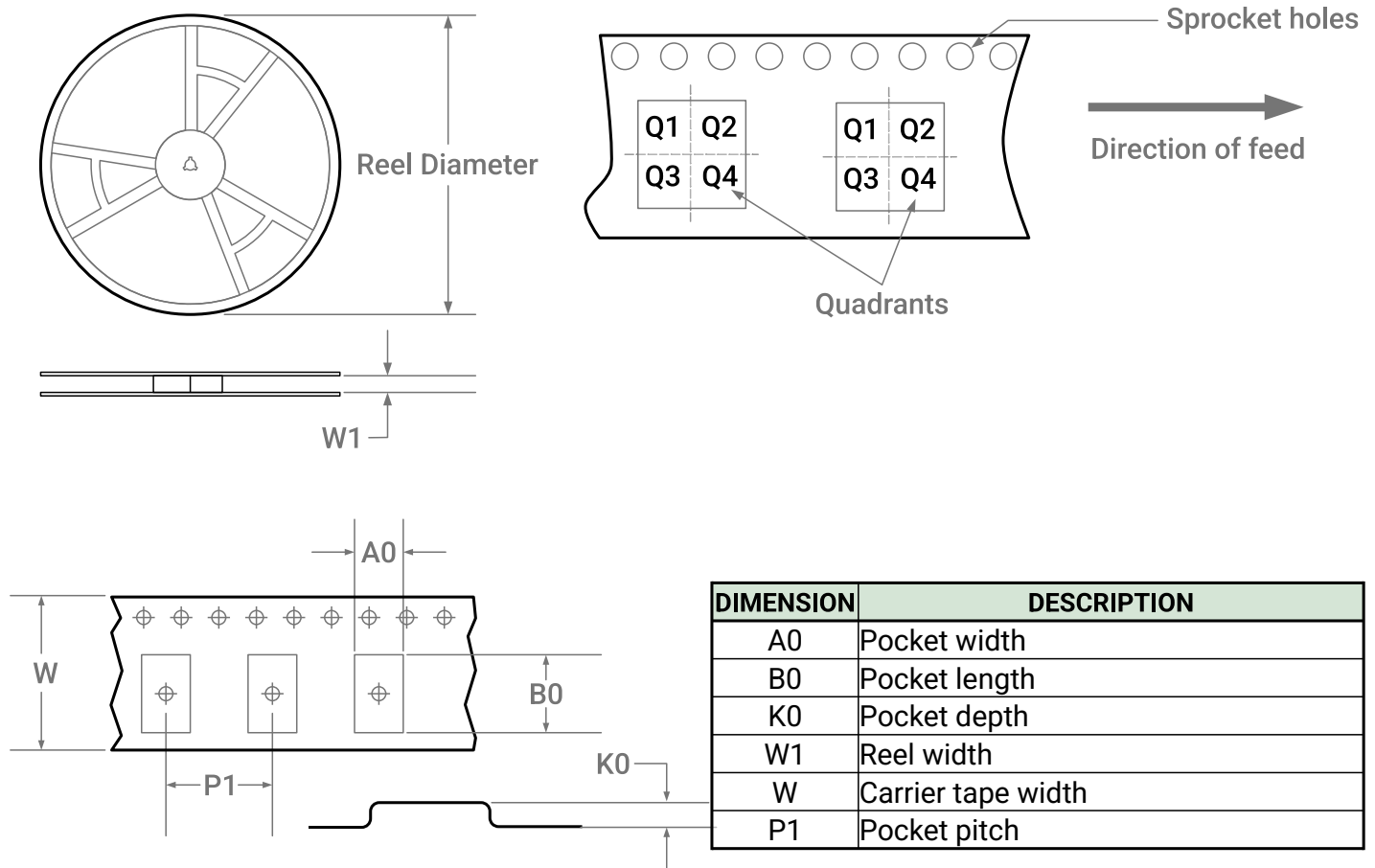
Notes

1. All dimensions are in millimeters.
2. Lead coplanarity shall be 0.1mm max.
3. Drawing is not to scale

REF	MIN	NOM	MAX
A	0.729	0.829	0.929
A1	0.329 Ref.		
D	5.90	6.00	6.10
E	5.90	6.00	6.10
b	0.250 BSC		
e	0.450 BSC		
b1	0.075 BSC		
e1	0.300 BSC		
e2	0.550 BSC		
L	0.325	0.375	0.425
L1	0.100	0.150	0.200
L2	0.675	0.725	0.775

1. All dimensions are in millimeters
2. All measurements are nominal
3. Drawing is not to scale

Tape and Reel Information

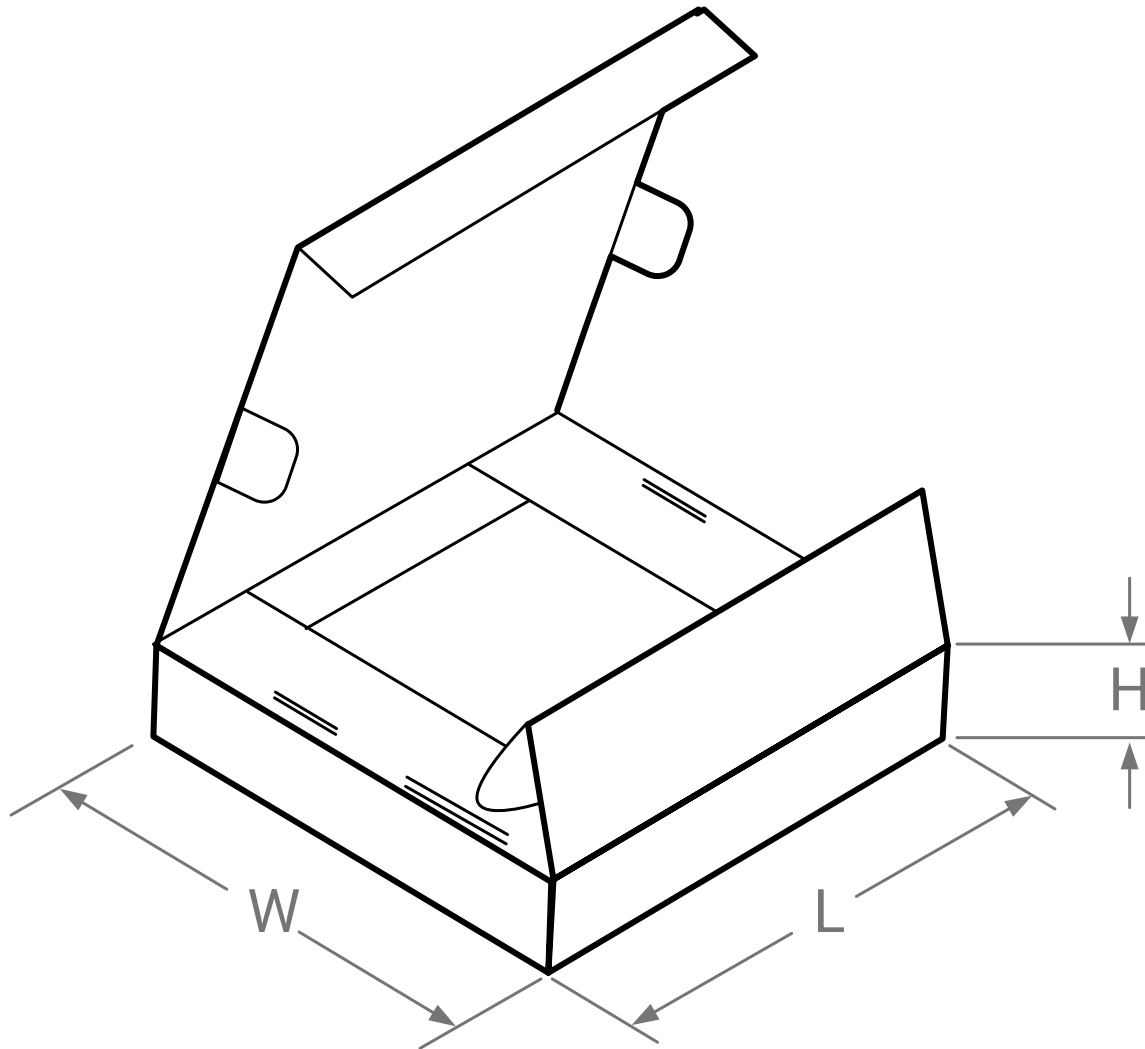


PACKAGE SIZE	REEL DIAMETER	W1	A0	B0	K0	P1	W	QUADRANT
6 × 6	330	16.4	6.3	6.3	1.05	12.00	16.0	Q2

Note:

1. All dimensions are nominal
2. All dimensions are in millimeters (mm)

Pizza Box Dimensions



PACKAGE SIZE	UNITS / BOX	LENGTH	WIDTH	HEIGHT
6 × 6	3000	358	340	50

Notes:

1. All measurements are in millimeters;
2. All measurements are nominal.