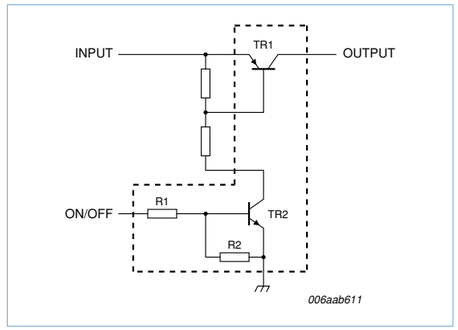
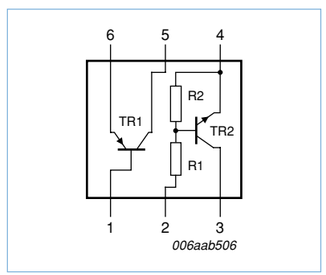
Application example

A small control (on/off) current (= base TR2) switches a high output (= collector TR1) current

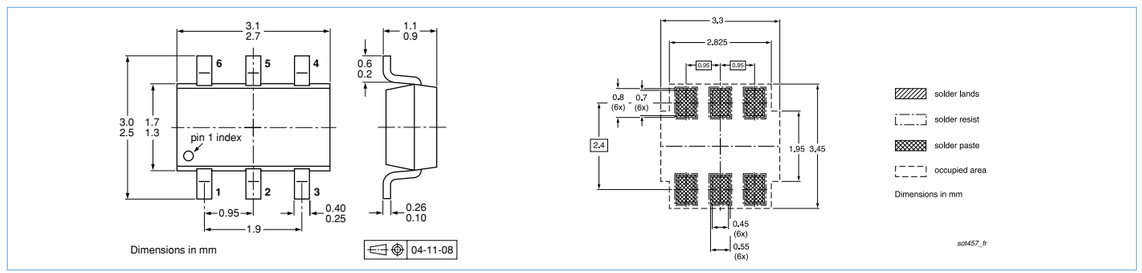


Configuration for new load switch families in SOT457



Modification of pinning compared to existing load switches due to optimized lead frame.

Outline drawing and soldering footpoint of SOT457 (SC-74)



NXP low V_{CEsat} load switches PBLS20xD and PBLS60xD

Load switches with best-in-class current capability and lowest saturation voltage

Designed to simplify circuit design and reduce pick-and-place costs, these load switches combine an energy-saving low V_{CEsat} transistor with a resistor-equipped transistor (RET) in a single package. They're housed in SOT457 packages, offer the highest current-per-footprint ratings on the market, and are ideal for switching positive supply rails or ground-referenced loads.

Key features

- PNP low V_{CEsat} transistor and NPN RET in small SOT457 SMD package
- V_{CEO} of 20 V or 60 V, with four resistor values available
- First to offer improved current capability
  - I_C: 1.8 A for 20 V
  - I_C: 1.5 A for 60 V
- Highest current per footprint area in loadswitch portfolio: 160 mA/mm² vs. 80-90 mA/mm²
- Reduction of V_{CEsat} by ~ 50% vs. last generation

Key benefits

- Space-saving solution
- Simplifies circuit design, reduces component count from four to one
- Fewer solder points for increased reliability
- Reduces pick-and-place costs
- Low threshold voltage (<1 V) compared to MOSFET
- AEC-Q101 qualified

Key applications

- Supply-line switches
- Battery-charger switches
- High-side switches for LEDs, drivers, and backlights
- Portable equipment

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PBLS2021D

20 V, 1.8 A, R1/2 = 2.2 kΩ, SOT457 (SC-74)

PBLS6021D

60 V, 1.5 A, R1/2 = 2.2 kΩ, SOT457 (SC-74)

PBLS2022D

20 V, 1.8 A, R1/2 = 4.7 kΩ, SOT457 (SC-74)

PBLS6022D

60 V, 1.5 A, R1/2 = 4.7 kΩ, SOT457 (SC-74)

PBLS2023D

20 V, 1.8 A, R1/2 = 10 kΩ, SOT457 (SC-74)

PBLS6023D

60 V, 1.5 A, R1/2 = 10 kΩ, SOT457 (SC-74)

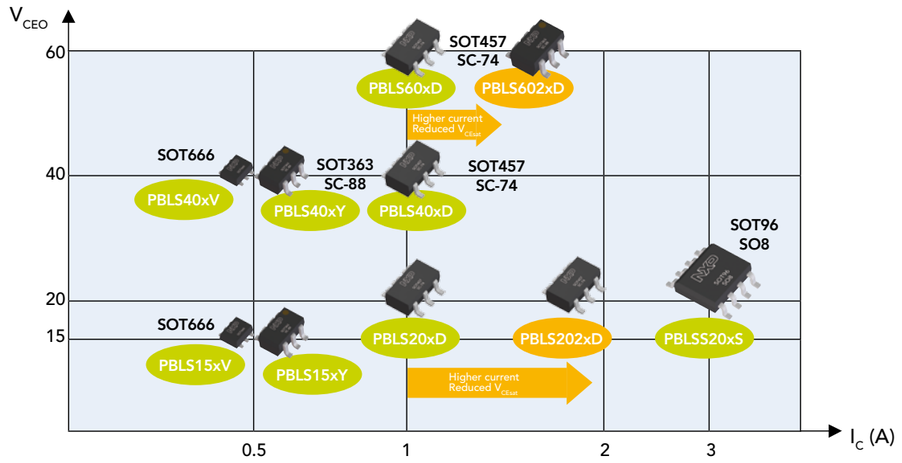
PBLS2024D

20 V, 1.8 A, R1/2 = 22 kΩ, SOT457 (SC-74)

PBLS6024D

60 V, 1.5 A, R1/2 = 22 kΩ, SOT457 (SC-74)

Portfolio extension: low V_{CEsat} load switches with improved current capability



Selection guide: low V_{CEsat} load switches

Package				SOT96 (SO8)	SOT457 (SC-62)	SOT363 (SC-88)	SOT666
Size (mm)				4.9 x 3.9 x 1.75	2.9 x 1.5 x 1.0	2.0 x 1.25 x 0.95	1.6 x 1.2 x 0.55
P_{tot} (mW)				1500 [1]	600 [1]	300 [2]	300 [2]
V_{CEO} (V)	I_C (A)	V_{CEsat} typ (mV); I_C = 0.5 A	R1, R2 (kΩ)				
15	0.5	250	2.2			PBLS1501Y	PBLS1501V
			4.7			PBLS1502Y	PBLS1502V
			10			PBLS1503Y	PBLS1503V
			22			PBLS1504Y	PBLS1504V
20	1	150	2.2		PBLS2001D		
			4.7		PBLS2002D		
			10		PBLS2003D		
			22		PBLS2004D		
20	1.6	70	2.2		**PBLS2021D**		
			4.7		**PBLS2022D**		
			10		**PBLS2023D**		
			22		**PBLS2024D**		
20	3	75	2.2	PBLS2001S			
			4.7	PBLS2002S			
			10	PBLS2003S			
40	1	170	2.2		PBLS4001D		
			4.7		PBLS4002D		
			10		PBLS4003D		
			22		PBLS4004D		
			47		PBLS4005D		
60	1	180	2.2		PBLS6001D		
			4.7		PBLS6002D		
			10		PBLS6003D		
			22		PBLS6004D		
			47		PBLS6005D		
60	1.3	100	2.2		**PBLS6021D**		
			4.7		**PBLS6022D**		
			10		**PBLS6023D**		
			22		**PBLS6024D**		

[1] Device mounted on a ceramic PCB, Al_2O_3, standard footprint
[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint
Types in **bold blue** represent new products and are included as samples