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# ST Standard Products Experience counts



**STANDARD  
PRODUCTS**



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# ST Standard Products

## Experience counts

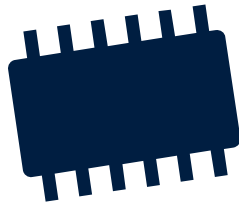
Standard products are in virtually every design and they need to be readily available with no fuss, no hurdles. ST ensures you can get what you need, the easy way and with the confidence that you have made the right choice.

We have one of the broadest ranges of industry-standard and drop-in replacements for general-purpose analog ICs, discretes and serial EEPROMs with thousands of references to help you optimize your supply base.

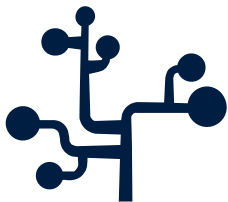
We manufacture them in the billions to the highest quality standards – many references are AEC-Q100 qualified for automotive applications – and you can source them through one of the largest global and local distribution partner networks or directly with us depending on your needs.

You can also find a comprehensive set of design aids including SPICE and IBIS models and simulation tools to make adding them to your design as easy as possible and help shorten your development cycle.

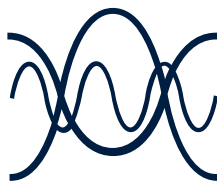
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## STANDARD PRODUCTS



**EEPROM**



**ANALOG**



**DISCRETE**

# Amplifiers and Comparators

ST's Amplifier and Comparator portfolio includes a broad range of general-purpose and industry-standard, pin-to-pin replacement products.

In addition to our popular LM3 and LM29 series of low-power comparators, precision op amps with supply voltages up to 44 V, you will find our TL06/07/08 series of junction field-effect transistor (JFET) low input bias current op amps as well as our TSZ series of zero-drift, high-precision op amps.

Many references are available with automotive-grade qualification (AEC-Q100-compliant) and they all provide the highest quality and robustness.

ST op amps help enhance the signal chain and are the perfect companion to microcontrollers and analog sensors.

Here's a selection from our large portfolio of industry standard op amps and comparators.



## Amplifiers

Part Number	General description	I <sub>cc</sub> (μA) typ	V <sub>io</sub> (mV) max	GBW (MHz)	Packages
TL084	JFET inputs, low input bias current	1400	10	4	S014;TSSOP14
TL082	JFET inputs, low input bias current	1400	10	4	S08;TSSOP8
TL074	JFET inputs, low input bias current	1400	6	4	S014
TL072	JFET inputs, low input bias current	1400	6	4	S08
TL064	JFET inputs, low input bias current	200	6	1	S014
TL062	JFET inputs, low input bias current	200	6	1	S08
MC4558	Widebandwidth dual bipolar	1150	5	5.5	S08;TSSOP8
MC33172	Low consumption versus speed	200	4.5	2.1	S08
MC33079	Low-noise, quad	2000	2.5	15	S014
MC33078	Low-noise, dual	2000	2	15	S08
LM358	Low power, dual, low input bias current, bipolar	700	7	1.1	DFN8 2x2;MiniS08;S08;TSSOP8
LM324	Low power, quad, low input bias current, bipolar	700	7	1.3	S014;TSSOP14;QFN16 3x3
LM2904	Low power, dual, bipolar	350	7	1.1	DFN8 2x2;MiniS08;S08;TSSOP8
LM2902	Low power, quad, bipolar	375	7	1.3	S014;TSSOP14;QFN16 3x3

## Comparators

Part Number	General description	Icc ( $\mu$ A)	Response Time ( $\mu$ s)	Packages
LM393	Low power, dual, bipolar	200	1.3	MiniSO8;SO8;TSSOP8;DFN8 2x2
LM339	Low power, quad, bipolar	275	1.3	SO14;TSSOP14;QFN16 3x3
LM2903	Low power, dual, bipolar	400	1.3	MiniSO8;SO8;TSSOP8;DFN8 2x2
LM2901	Low power, quad, bipolar	275	1.3	SO14;TSSOP14;QFN16 3x3

Analog filter and comparator design tool (eDesignSuite signal conditioning module).

<https://my.st.com/analogsimulator/>

(You will have to create an account on my.ST.com to access these resources)

Download ST OP AMPS APP that helps select the best fit for your application.

[www.st.com/opamps-app](http://www.st.com/opamps-app)



# Interface ICs

ST offers interface ICs complying with the most popular industry-standard protocols including RS-232, RS-422, RS-423, and RS-485. They are available in a choice of transmitter/receiver configurations with data rates up to 30 Mbit/s.

To meet requirements for the harsh industrial environment, they are available in a 3 to 5.5 V operating voltage range with enhanced ESD protections (15 kV HBM, 8 kV contact discharge) and extended temperature range (-40 to 125°C).

Here's a selection from our large portfolio of industry-standard interface ICs.



## Interface ICs

Part Number	General description	Supply Voltage (V)	Number of Drivers / Receivers	Data Rate (kbps) min	Packages
ST1480	3.3 V powered, ESD protected transmit at up to 12Mbps true RS-485/RS422 transceiver	3.3	1/1	12000	S08
ST232B	5 V powered multi-channel RS-232 drivers and receivers	5	2/2	120	S016;TSSOP16
ST232C	5 V powered multi-channel RS-232 drivers and receivers	5	2/2	120	S016;TSSOP16
ST232EB	15 kV ESD protected 5V RS-232 transceiver	5	2/2	230	S016;TSSOP16
ST232EC	15 kV ESD protected 5V RS-232 transceiver	5	2/2	230	S016;TSSOP16
ST3222B	3 to 3.6 V, low power, up to 400 kbps RS-232 drivers and receivers	3.3	2/2	250	TSSOP20
ST3222EB	15 kV ESD protected 3 to 5.5V, low power, up to 250 kbps RS-232 drivers and receivers	3 to 5.5	2/2	250	SSOP20;TSSOP20
ST3222EC	15 kV ESD protected 3 to 5.5V, low power, up to 250 kbps RS-232 drivers and receivers	3 to 5.5	2/2	250	SSOP20;TSSOP20
ST3232B	3 to 5.5 V, low power, up to 400 kbps RS-232 drivers and receivers	3 to 5.5	2/2	300	S016;TSSOP16
ST3232C	3 to 5.5 V, low power, up to 400 kbps RS-232 drivers and receivers	3 to 5.5	2/2	300	S016;TSSOP16
ST3232EB	15 kV ESD protected, 3 to 5.5V low power up to 250 kbps, RS232 drivers and receivers	3 to 5.5	2/2	250	S016;TSSOP16
ST3232EC	15 kV ESD protected, 3 to 5.5V low power up to 250 kbps, RS232 drivers and receivers	3 to 5.5	2/2	250	S016;TSSOP16
ST3485EB	3.3 V powered, 15 kV ESD protected, up to 12 Mbps RS-485/RS-422 transceiver	3.3	1/1	12000	S08
ST3485EC	3.3 V powered, 15 kV ESD protected, up to 12 Mbps RS-485/RS-422 transceiver	3.3	1/1	12000	S08
ST485B	Low power RS-485/RS-422 transceiver	5	1/1	2500	S08
ST485C	Low power RS-485/RS-422 transceiver	5	1/1	2500	S08
ST485EB	+/-15 Kv ESD protected, low power RS-485/RS-422 transceiver	5	1/1	5000	S08
ST485EC	+/-15 Kv ESD protected, low power RS-485/RS-422 transceiver	5	1/1	5000	S08
ST4485EB	3.3 V powered, 15 kV ESD protected, up to 20 Mbps RS-485/RS-422 transceiver	3.3	1/1	20000	S08
ST75185C	Multiple RS-232 drivers and receivers	5.5	3/5	120	S020;TSSOP20

# Reset and supervisor ICs

Reset and supervisor ICs are often mandatory building blocks for ensuring that electronic systems are properly monitored, especially in critical industrial applications where relying on the often available on-chip supervisory function of modern microcontrollers might not meet safety requirements. Our range comprises various functions like microprocessor supervisors, reset and voltage detectors, watchdog timers, and voltage protection ICs available in an extremely wide and granular set of monitor voltages as well as on-off controllers and smart reset ICs for consumer-oriented applications.

Here's a selection from our broad portfolio of reset and supervisor ICs.



## Reset and Supervisors

Part Number	General description	RST Threshold (V)	Manual Reset Input	Packages
TS831	Micropower voltage supervisor with reset active low	4.50 : 4.33 : 2.71	No	S08;T092;TSS0P8
STM809	Active Low, Push-Pull Reset	2.63 : 4.38	No	SOT23-3
STM810	High, Push-Pull Reset	2.63 : 4.63	No	SOT23-3
STM811	Active Low, Push-Pull Reset	2.63 : 4.63	Yes	SOT143-4
STM812	Active High, Push-Pull Reset	2.63 : 4.63	Yes	SOT143-4
STM1001	Active Low, Open Drain Reset	2.63 : 4.63	No	SOT23-3
STM1061	Low power voltage detector	1.6 to 5.5	No	SOT23-3; SC70-3
STM1810	Low Power Reset Circuit	4.37 : 4.62	No	SOT23-3
STM1811	Low Power Reset Circuit	4.37 : 4.62	No	SOT23-3
STM1816	Low Power Reset Circuit	2.55 : 3.06	No	SOT23-3
STM1818	Low Power Reset Circuit Voltage detector with sense input and external delay capacitor	2.55 : 3.06	No	SOT23-3
STM1831	Open Drain Microprocessor Reset	1.6 to 5.7	No	SOT23-5
STM6315	5V Supervisor	2.63 : 4.63	Yes	SOT143-4
STM817	Reset + Watchdog	4.4;4.65	No	S0-8
STM6321	Reset + Manual Reset	2.63;2.93;3.08;4.39;4.63	Yes	SOT23-5
STM6322	Reset + Watchdog	2.63;2.93;3.08;4.39;4.63	Yes	SOT23-5
STM6821	Reset + Watchdog	2.63;2.93;3.08;4.39;4.63	Yes	SOT23-5
STM6822	Reset + Watchdog	2;2.3;2.63;2.93;3.08;4.39;4.63	Yes	SOT23-5
STM6823	Reset + Watchdog	2.63;2.93;3.08;4.39;4.63	Yes	SOT23-5
STM6824	Reset + Watchdog	2.63;2.93;3.08;4.39;4.63	No	SOT23-5



# Linear voltage regulators

ST's linear regulator portfolio provides the best answer to any clean power supply requirement. It doesn't matter which performance you are looking for, a solution is always available among our products! In addition to the well-recognized leadership and outstanding quality of our standard regulators for both positive and negative outputs, the ever-expanding high performance families address all the major trends in the modern industrial era. The world's smallest form factor package is the striking result of our continuous improvement activity as well as the unrestrained research for the best performance – be it the lowest possible dropout voltage and quiescent current or the best transient response, ripple rejection and low noise.

Here's a selection from our broad portfolio of linear voltage regulators.



## Linear Voltage Regulators

Part number	General Description	DC Input Voltage Max (V)	Vdrop Typ (V)	Packages
LM2931	100mA Very Low Drop Voltage Regulator with Inhibit	40	0.25	DPAK, S08, T092
LExx	100mA Very Low Drop Voltage Regulator with Inhibit	18	0.2	S08, T092
LK112	150mA Low Noise and Low Drop Voltage Regulator	14	0.29	SOT23-5L
LK112S	200mA Low Noise and Low Drop Voltage Regulator	14	0.35	SOT23-5L
L4931	250mA Very Low Drop Voltage Regulator with Inhibit	20	0.4	DPAK, S08, T092
LFxx	0.5A Very Low Drop Voltage Regulator with Inhibit	16	0.45	DPAK, PPAK, T0220,
KFxx	0.5A Very Low Drop Voltage Regulator with Inhibit	20	0.45	DPAK, S08
LD2980	50mA Very Low Drop Voltage Regulator with Inhibit	16	0.12	SOT23-5L
LD2981	100mA Very Low Drop Voltage Regulator with Inhibit	16	0.17	SOT23-5L, SOT89
LD2985	150mA Very Low Drop Voltage Regulator with Inhibit	16	0.28	SOT23-5L
LD3985	150mA Ultra Low Drop Low Noise Voltage Regulator	6	0.15	SOT23-5L
LDS3985	0.3A Ultra Low Drop Low Noise Voltage Regulator	6	0.3	SOT23-5L, DFN 6L 3x3
L4940	1.5 Very Low Drop Voltage Regulator	17	0.45	D2PAK, T0220
L4941	1A Very Low Drop Voltage Regulator	16	0.45	DPAK, T0220
L78Lxx	100mA Positive STD DROP Voltage Regulator	30	1.7	S08, SOT89, T092
L78Mxx	0.5A Positive STD DROP Voltage Regulator	35	2	T0220, T0220FP, DPAK

Part number	General Description	DC Input Voltage Max (V)	Vdrop Typ (V)	Packages
L78xx	1.5A Positive STD DROP Voltage Regulator	35	2	D2PAK, T0220, T0220FP, DPAK
L78Sxx	2A Positive STD DROP Voltage Regulator	35	2	T0220
L79Lxx	0.1A Negative STD DROP Voltage Regulator	-30	1.7	S08, SOT89, T092
L79xx	1.5A Negative STD DROP Voltage Regulator	-35	1.1	D2PAK, T0220, T0220FP
LM217/317L	100mA Output 1.2V to 37V Adjustable Voltage Regulator	40	2	S08, T092
LM217/317M	0.5A Output 1.2V to 37V Adjustable Voltage Regulator	40	2	DPAK
LM217/317	1.5A Output 1.2V to 37V Adjustable Voltage Regulator	40	2	DPAK, T0220, T0220FP, D2PAK
LD1117/A	0.8A/1A Low Drop Voltage Regulator	15	1.1	S08, SOT223, T0220, DPAK
LDL1117	1.2A Low Drop Regulator (High perf. LD1117)	18	0.38	SOT223
LD1084	5A Low Drop Adjustable Voltage Regulator	30	1.3	T0220
LD1085	3A Low Drop Voltage Regulator	30	1.3	T0220, T0220FP, D2PAK
LD1086	1.5A Low Drop Voltage Regulator	30	1.3	DPAK, D2PAK, T0220, DFN8L 4x4
LD29080	800mA Very Low Drop Voltage Regulator	13	0.4	DPAK, PPAK, SOT223
LD29150	1.5A Very Low Drop Voltage Regulator	13	0.4	DPAK, PPAK
LD29300	3.0A Very Low Drop Voltage Regulator	13	0.4	P2PAK
LD39080	0.8A Ultra Low Drop BiCMOS Voltage Regulator	6	0.15	PPAK
LD39150	1.5A Ultra Low Drop BiCMOS Voltage Regulator	6	0.2	DPAK, PPAK, DFN6L

Download ST-VREG-FINDER that helps select the best fit for your application.

[www.st.com/vreg-app](http://www.st.com/vreg-app)



# Voltage reference

Make sure the voltage reference you are looking for is a real reference in the market! Need to design a simple wall adapter or an ultra-precise robot for non-invasive surgery?...Don't worry! ST provides you with the best solution and no compromises. Inside the ST portfolio a wide range of fixed and adjustable voltage references ranging from general-purpose highpower shunts, suitable for industrial and SMPS applications coexists with a selection of state-of-the-art high-precision and low-consumption devices, suitable for battery-powered applications or high-accuracy equipment working in sensitive environments such as automotive and avionics or laboratory instrumentation.



Here's a selection from our broad portfolio of voltage references.

## Voltage Reference

Voltage References	Description	Reference Voltage (V)	Precision (%) (typ)	Maximum Temperature Coefficient (ppm/°C)	Packages
TL431	Adjustable Shunt voltage Reference	2.5 - 36	1; 2	/	SOT23-3L, SOT23-5L, S08, SOT323-6L, T092
TL1431	Adjustable Shunt voltage Reference	2.5 - 36	0.25; 0.4	110	SOT23-3L, SOT23-5L, S08, SOT323-6L, T092
TS2431	Adjustable Shunt voltage Reference	2.5 - 24	0.5; 1; 2	100	SOT23-3L
TS4040	Fixed Shunt Voltage Reference	2.5	1; 2	150	SOT23-3L
TS4041	Fixed Shunt Voltage Reference	1.225	0.5; 1; 2	150	SOT23-3L
TS3431	Adjustable Shunt voltage Reference	1.24 - 24	0.25; 0.5; 1; 2	100	SOT23-3L
TS431	Adjustable Shunt Voltage Reference	1.24 - 6	0.5; 1; 2	100	SOT23-5L, T092
TS432	Adjustable Shunt Voltage Reference	1.24 - 10	0.5; 1	100	SOT23-3L
TLVH431	Adjustable Shunt voltage Reference	1.24 - 18	0.25; 0.5; 1; 1.5	100	SOT23-3L, SOT23-5L, SOT323-6L
TS4431	Open Collector Shunt Voltage Reference	1.224	0.5; 1	100	SOT23-5L
TS4436	Open Collector Shunt Voltage Reference	0.6	0.5; 1	150	SOT323-5L
TS821	Micropower Shunt Voltage Reference	1.225	0.5; 1; 2	120	SOT23-3L
TS822	Micropower Shunt Voltage Reference	2.5	1; 2	100	SOT23-3L
TS824-2.5	High Thermal Stability Micropower Shunt Voltage reference	2.5	0.5; 1	50	SOT23-3L
TS824-1.2	High Thermal Stability Micropower Shunt Voltage reference	1.225	1	50	SOT23-3L
LM4041	Precision Micro Power Shunt Voltage Reference	1.225	0.1; 0.2; 0.5; 1	100	SOT23-3L, SOT323-5L

# Temperature sensors

ST's temperature sensor portfolio includes both analog and digital temperature sensor ICs

Our analog temperature sensors feature low power consumption, good linearity, and accuracy as high as  $\pm 0.5\text{ }^{\circ}\text{C}$  flat across the whole temperature operating range. Featuring power consumption as low as  $20\text{ }\mu\text{A}$  with up to 12-bit resolution able to digitize temperatures to a resolution up to  $0.0625\text{ }^{\circ}\text{C}$ , our digital temperature sensors ensure high accuracy across the entire operating range.

Additional features include an I2C/SMBus output with selectable addresses, energy-saving one-shot temperature reading, a dedicated pin for interrupt or thermostat/comparator function and programmable threshold with hysteresis.

The STTS series with its digital output (I2C and SMBUS) specifically targets computer platforms, consumer electronics as well as a variety of industrial applications



## Digital temperature sensors

Part number	General description	I/O Interface	Operating voltage min-max (V)	Package size	Packages
STCN75	Digital temperature sensor and thermal watchdog	SMBus/I2C compatible	2.7-5.5	3 x 3 mm	MSOP(TSSOP8)
STDS75	Digital temperature sensor and thermal watchdog	SMBus/I2C compatible	2.7-5.5	3 x 3 mm	MSOP(TSSOP8)
STLM75	Digital temperature sensor and thermal watchdog	SMBus/I2C compatible	2.7-5.5	3 x 3 mm, 4.90 x 3.90 mm	MSOP(TSSOP8), SO-8
STTS75	Digital temperature sensor and thermal watchdog	SMBus/I2C compatible	2.7-5.5	3 x 3 mm, 4.90 x 3.90 mm	MSOP(TSSOP8), SO-8
STTS751	2.25 V low-voltage local digital temperature sensor	SMBus/I2C compatible	2.25-3.6	2 x 2 mm	UDFN-6L

## Analog Temperature Sensors

Part number	General description	Precision (%)	Operating Temperature (°C)	Packages
STLM20	Ultra-low current 2.4 V precision analog temperature sensor	-	-40 to 130	UDFN-4L, SOT323-5L
LM135Z	Precision temperature sensor	3	-55 – 150	T0-92
LM235DT	Precision temperature sensor	6	-40 – 125	S0-8
LM235Z	Precision temperature sensor	3	-40 – 125	T0-92
LM335ADT	Precision temperature sensor	3	-40 – 100	S0-8
LM335AZT	Precision temperature sensor	3	-40 – 100	T0-92
LM335DT	Precision temperature sensor	3	-40 – 100	S0-8
LM335Z	Precision temperature sensor	3	-40 to 100	T0-92



# Serial EEPROM

By adopting ST's EEPROM, you benefit from the expertise and long-term commitment of the number 1 EEPROM supplier for more than 14 years (IHS Mars 2019).

ST's comprehensive portfolio offers devices from 1 Kbit up to 4 Mbits with SPI, I2C and Microwire interfaces. Products feature up to 4 million write/erase cycles per byte, over 100 million cycles per device and more than 100 years of safe data retention. Best in class performance guarantee the safest and the most flexible management for parameters, data and small code storage.

Automotive series benefits from our zero-defect approach to offer very robust, high-performance products for high-reliability applications.

ST EEPROM are available in robust mainstream SO8N, TSSOP8, DFN8 packages and in DFN5, WLCSP 8, 5 and 4 balls tiny packages.

Here's a selection of high-density devices.



## Standard series – Industrial 85°C

Part Number	Density	Bus Interface	Power supply	Clock Speed	Packages
M24256-DF	256Kbit	I2C	1.7V to 5.5V	Up to 1MHz	SO8N, TSSOP, DFN8, DFN5, WLCSP
M24512-DF	512Kbit				
M24M01-DF	1Mbit				
M24M02-DR	2Mbit				
M95256-DF	256Kbit	SPI	1.7V to 5.5V	Up to 20MHz	SO8N, TSSOP, DFN8, WLCSP
M95512-DF	512Kbit				
M95M01-DF	1Mbit				
M95M02-DR	2Mbit				
M95M04-DR	4Mbit				

## Standard series – Industrial Plus 105°C

Part Number	Density	Bus Interface	Power supply	Clock Speed	Packages
M24C256-DRE	256Kbit	I <sup>2</sup> C	1.7V to 5.5V	Up to 1MHz	S08N, TSSOP8
M24512-DRE	512Kbit				
M95256-DRE	256Kbit	SPI	1.7V to 5.5V	Up to 20MHz	S08N, TSSOP8
M95512-DRE	512Kbit				

## Automotive series – 125°C

Part Number	Density	Bus Interface	Power supply	Clock Speed	Packages
M24512-A125	512Kbit	I <sup>2</sup> C	1.7V to 5.5V	Up to 1MHz	S08N, TSSOP, DFN8
M24M01-A125	1Mbit				
M24M02-A125	2Mbit				
M95512-A125	512Kbit	SPI	1.7V to 5.5V	Up to 16MHz	S08N, TSSOP, DFN8
M95M01-A125	1Mbit				
M95M02-A125	2Mbit				

Learn more at: <http://www.st.com/en/memories/serial-eeeprom.html>



Selection Guides and link to EEPROM finder APP are available at:



# Protection devices



Electrical overstress (EOS), surge, and electrostatic discharge (ESD) protection solutions are provided in a complete portfolio offering high-volume, cost-effective, stock-shippable and pin-to-pin compatible devices.

High-current crowbar and high-efficiency clamping protection solutions provide designers with the best choice to elevate their products with the most reliable and innovative offer, including density-powered flat packages, micro-meter sized single line and high-surge/high-density protection. With our broad portfolio and the widest range of packages, ST's mission is to maintain strong leadership to help our customers pass all industry-standard requirements without any headaches.

Here's a selection from our broad portfolio of protection devices:

## Protection Devices / EOS 8/20 microsecond surge protection / Power Rail

Part Number	Directionality	Peak pulse current (A) (@ 8/20µs) max	Junction Temperature (°C) max	Package
ESDA13P70-1U1M	Uni-Directional	70	150	ST1610
ESDA15P60-1U1M	Uni-Directional	57	150	ST1610
ESDA17P100-1U2M	Uni-Directional	160	150	DFN6L
ESDA17P50-1U1M	Uni-Directional	46	150	ST1610
ESDA22P150-1U3M	Uni-Directional	150	150	DFN3L
ESDA24P140-1U3M	Uni-Directional	140	150	DFN3L
ESDA25P35-1U1M	Uni-Directional	35	150	ST1610
ESDA7P120-1U1M	Uni-Directional	120	150	ST1610
ESDA7P60-1U1M	Uni-Directional	60	150	ST1610
ESDA8P30-1T2	Uni-Directional	30	150	SOD-882T
ESDA8P80-1U1M	Uni-Directional	80	150	ST1610

## Protection Devices / EOS 10/1000 microsecond surge protection / 600W TVS

Part Number	Breakdown Voltage (V) nom	Power (W) (10/1000 µs @ 25°C) nom	Junction Temperature (°C) max	Package
SMA6FxxA*	6.74 to 220	600	175	SMA Flat
SMB6FxxA*	6.74 to 220	600	175	SMB Flat

\* xx 5.0 to 188



## Protection Devices / ESD protection / General Purpose ESD Protection

Part Number	Directionality	Number of protected lines nom	Breakdown Voltage (V) min	Capacitance (pF) typ	IEC 61000-4-2 (kV) (Contact Discharge) min	Package
ESDA14V2SC6	Uni-Directional	4	14.2	100	30	SOT23-6L
ESDA17-5SC6	Uni-Directional	5	17	33	8	SOT23-6L
ESDA19SC6	Uni-Directional	4	19	80	30	SOT23-6L
ESDA25SC6	Uni-Directional	4	25	60	30	SOT23-6L
ESDA37W	Uni-Directional	2	37	48	25	SOT-323
ESDA5V3SC6	Uni-Directional	4	5.3	280	30	SOT23-6L
ESDA6V1-4BC6	Bi-Directional	4	6.1	45	8	SOT23-6L
ESDA6V1-5M6	Uni-Directional	5	6.1	70	8	uQFN-6L
ESDA6V1-5SC6	Uni-Directional	5	6.1	50	15	SOT23-6L
ESDA6V1BC6	Bi-Directional	4	6.1	20	8	SOT23-6L
ESDA6V1U1	Uni-Directional	6	6.1	100	8	SO-8
ESDA8V2-1J	Uni-Directional	1	8.2	210	30	SOD-323
ESDAL	Uni-Directional	2	14.2,25,5.3,6.1	140,220,50,90	9	SOT23,SOT23-3L
ESDALC12-1T2	Uni-Directional	1	12	15	20	SOD-882T
ESDALC5-1BT2	Bi-Directional	1	5	26	30	SOD-882T
ESDALC6V1-5P6/M6	Uni-Directional	5	6.1	12	8	SOT 666, uQFN-6L
ESDALC6V1Px/W5	Uni-Directional	4	6.1	12	8	SOT 666 EXPAD,SOT-666, SOT323-5L
ESDALCL6-2SC6	Uni-Directional	2	6	2.5	15	SOT23-6L
ESDAULC6-3BP6	Bi-Directional	3	6	1	15	SOT 666
ESDAXLC6-1MY2	Uni-Directional	1	6	0.3	8	uQFN-2L
ESDAxxxP6	Bi-Directional, Uni-Directional	4,5	14.2,25,6.1	22,25,70	8	SOT 666,SOT 666 EXPAD
ESDAxxxWx	Uni-Directional	2,4,5	25,6.1	30,50,65,90	8	SOT-323,SOT323-5L,- SOT323-6L

## Protection Devices / ESD protection / High-speed port protection

Part Number	Directionality	Number of protected lines nom	Breakdown Voltage (V) min	Bandwidth (GHz) (@ -3dB) typ	Capacitance (pF) (Line to Ground) typ	IEC 61000-4-2 (kV) (Contact Discharge) min	Package
DSILC6-4P6	Uni-Directional	4	6	2.2	1.8	8	SOT 666
ESDAULC6-1U2	Uni-Directional	1	6	5.2	0.8	17	DFN2
ESDAXLC5-1U2	Uni-Directional	1	5.5	11.4	0.55	16	DFN2
HDMIULC6-4SC6	Uni-Directional	4	6	6	0.8	8	SOT23-6L
HSP051-4M10	Uni-Directional	4	4.5	14.6	0.4	8	uQFN-10L
HSP051-4M5	Uni-Directional	4	5.7	11.5	0.35	20	uDFN-5L

Part Number	Directionality	Number of protected lines nom	Breakdown Voltage (V) min	Bandwidth (GHz) (@ -3dB) typ	Capacitance (pF) (Line to Ground) typ	IEC 61000-4-2 (kV) (Contact Discharge) min	Package
HSP053-4M5	Uni-Directional	4	5.3	20	0.25	10	uDFN-5L
DVIULC6-2x6	Uni-Directional	2	6	6	0.6	8	uQFN-6L

## USB Port protection

Part Number	Directionality	Number of protected lines nom	Comments	Package
USB6B1	Uni-Directional	3	Unidirectional 2 lines Filter + ESD + Vbus	SO-8
USBLC6-2	Uni-Directional	2	ESD Protection for USB 2.0 High Speed	SOT 666,SOT23-6L
USBLC6-4	Uni-Directional	4	ESD Protection for USB 2.0 High Speed	SOT23-6L
USBULC6-2M6	Uni-Directional	2	Ultra large bandwidth ESD protection	uQFN-6L

Select your protection device with the TSV SMART SELECTOR

[www.st.com/tvs-smartselector](http://www.st.com/tvs-smartselector)



# Rectifiers

Car LED lights need switching power supplies with rather large current for their size. Plug and power adapters for portable appliances and DC/DC point-of-load (POL) modules have the same need for compactness. The small size itself is a goal, and the consequence is a need for very small power losses as the space-consuming heatsinking is kept to a minimum. Water-resistant enclosures further limit heat sinking.

For these applications, STMicroelectronics recently developed an essential complement to the SMD range of low voltage drop, low leakage Schottky diodes. The SMA Flat, SMB Flat, PowerFlat, SOD123 and SOD123Flat devices make room for 1 to 8 A, 30 to 150 V switcher designs at a budget compatible with these applications. Datasheets which include helpful thermal impedance values and avalanche pulse curves are available for engineers to fine-tune their designs to ensure a robust finished product.

Here's a selection from our broad portfolio of diodes and rectifiers.



## Diodes and Rectifiers

Part Number	Description	Reverse voltage (V)	Current (A)	Packages
STPS1150	150 V, 1 A Power Schottky Rectifier	150	1	DO 41 PLASTIC,SMA,SMA Flat
STPS1170	170 V, 1 A Power Schottky rectifier	170	1	SMA Flat
STPS120M	20 V, 1 A STmite Power Schottky Rectifier	20	1	STmite
STPS120MF	20 V, 1 A Stmite flat Power Schottky Rectifier	20	1	STmiteFLAT
STPS130	30 V, 1 A Power Schottky Rectifier	30	1	SMA,SMA Flat,SMB
STPS140	40 V, 1 A Power Schottky Rectifier	40	1	SMA,SMA Flat,SMB
STPS160	60 V, 1 A Power Schottky Rectifier	60	1	SMA,SMA Flat,SMB
STPS1H100	100 V, 1 A Power Schottky Rectifier	100	1	SMA,SMA Flat,SMB
STPS1H100MF	100 V, 1 A STmite flat Power Schottky Rectifier	100	1	STmiteFLAT
STPS1L20M	20 V, 1 A STmite Low Drop Power Schottky Rectifier	20	1	STmite
STPS1L20MF	20 V, 1A STmite flat Low Drop Power Schottky Rectifier	20	1	STmiteFLAT
STPS1L30	30 V, 1 A Low Drop Power Schottky Rectifier	30	1	SMA,SMA Flat,SMB
STPS1L30M	30 V, 1 A STmite Low Drop Power Schottky Rectifier	30	1	STmite
STPS1L30MF	30 V, 1 A STmite flat Low Drop Power Schottky Rectifier	30	1	STmiteFLAT
STPS1L40	40 V, 1 A Low Drop Power Schottky Rectifier	40	1	SMA,SMA Flat,SMB,SOD123Flat
STPS1L40M	40 V, 1 A STmite Low Drop Power Schottky Rectifier	40	1	STmite
STPS1L60	60 V, 1 A Low Drop Power Schottky Rectifier	60	1	DO 41 PLASTIC,SMA,SMA Flat,-SOD123Flat,STmiteFLAT
STPS2150	150 V, 2 A Power Schottky Rectifier	170	2	DO-15,SMA,SMA Flat
STPS2200	200 V, 2 A High Voltage Power Schottky diode	200	2	SMB,SMB Flat
STPS2H100	100 V, 2 A Power Schottky Rectifier	100	2	SMA,SMA Flat,SMB,SMB Flat
STPS2H100ZF	100 V, 2 A SOD-123Flat Power Schottky rectifier	100	2	SOD123Flat

Part Number	Description	Reverse voltage (V)	Current (A)	Packages
STPS2L25	25 V, 2 A Low Drop Power Schottky Rectifier	25	2	SMA Flat,SMB
STPS2L30	30 V, 2 A Low Drop Power Schottky Rectifier	30	2	SMA,SMA Flat
STPS2L40	40 V, 2 A Low Drop Power Schottky Rectifier	40	2	SMA Flat,SMB,SMB Flat
STPS2L60	60 V, 2 A Low Drop Power Schottky Rectifier	60	2	DO 41 PLASTIC,SMA,SMA Flat,SMB Flat
STPS3L60	60 V, 3 A Low Drop Power Schottky Rectifier	60	3	DO-15,SMB,SMB Flat
STPS3150	150 V, 3 A Power Schottky rectifier	170	3	DO-201AD,SMA Flat,SMB,SMB Flat
STPS3170	170 V, 3 A Power Schottky Rectifier	170	3	SMA Flat,SMB Flat
STPS340	40 V, 3 A SMD Power Schottky rectifier	40	3	DPAK,SMA Flat,SMB,SMB Flat,SMC
STPS360	60 V , 3 A Schottky Barrier, Power Schottky	60	3	SOD128Flat
STPS3H100	100 V, 3 A Schottky rectifier	100	3	SMB,SMB Flat
STPS3H100AFN	100 V, 3 A SOD128Flat Power Schottky rectifier	100	3	SOD128Flat
STPS3H100UFN	100 V, 3 A Schottky Rectifier	100	3	SMB Flat
STPS3L40	40 V, 3 A SMD Low Drop Power Schottky Rectifier	40	3	SMB Flat,SMC
STPS3L45AF	45 V, 3 A Low Drop Low Drop Power Schottky Rectifier	45	3	SMA Flat
STPS4S200	200 V, 4 A Schottky rectifier	200	4	DPAK,SMB Flat,SMC
STPS5L60	60 V, 5 A Low Drop Power Schottky Rectifier	60	5	DO-201AD,SMB,SMB Flat,SMC
STPS5H100	100V , 5 A Power Schottky Rectifier	100	5	DPAK
STPS5H100AF	100 V, 5 A SOD128Flat Power Schottky Rectifier	100	5	SOD128Flat
STPS5H100UFN	100 V, 5 A Schottky Rectifier	100	5	SMB Flat
STPS5L25	25 V, 5 A Low Drop Power Schottky Rectifier	25	5	DPAK
STPS640C	40 V, 6 A Power Schottky Rectifier	40	6	DPAK
STPS745	45 V, 7 A Power Schottky Rectifier	45	7	D2PAK,TO-220AC,TO-220FPAC
STPS8H100	100 V, 8A TO-220 D2PAK Power Schottky rectifier	100	8	D2PAK,TO-220AC,TO-220FPAC
STPS8L30	30 V, 8 A DPAK Low Drop Power Schottky rectifier	30	8	DPAK
STPS10150C	150 V, 10 A dual Power Schottky Rectifier	150	10	D2PAK,TO-220AB,TO-220FPAB
STPS10170C	170 V, 10 A dual Power Schottky Rectifier	170	10	D2PAK,DPAK
STPS1045B	45 V, 10 A DPAK Power Schottky Rectifier	45	10	DPAK
STPS10H100C	100 V, 10 A dual Power Schottky Rectifier	100	10	D2PAK,TO-220AB,TO-220FPAB
STPS10L25	25 V, 10 A Low Drop Power Schottky Rectifier	25	10	D2PAK,TO-220AC
STPS10L40C	40 V, 10 A dual Low Drop Power Schottky Rectifier	40	10	D2PAK,TO-220AB
STPS1545	45 V, 15 A Power Schottky Rectifier	45	15	D2PAK,TO-220AC,TO-220FPAC
STPS1545C	45 V, 15 A dual Power Schottky Rectifier	45	15	D2PAK,I2PAK,TO-220AB
STPS15H100C	100 V, 15 A dual Power Schottky Rectifier	100	15	DPAK
STPS15L30C	30 V, 15 A dual DPAK Low Drop Power Schottky Rectifier	30	15	DPAK
STPS15L45C	45 V, 15 A dual Low Drop Power Schottky Rectifier	45	15	DPAK
STPS15L60C	60 V, 15 A dual Low Drop Power Schottky Rectifier	60	15	DPAK
STPS16170C	170 V, 16 A dual Power Schottky Rectifier	170	16	D2PAK,DPAK
STPS16H100C	100 V, 16 A dual Power Schottky Rectifier	100	16	D2PAK
STPS20120C	120 V, 20 A dual Power Schottky Rectifier	120	20	DPAK,I2PAK,TO-220AB
STPS20150C	150 V, 20 A dual Power Schottky Rectifier	150	20	D2PAK,I2PAK,TO-220AB,TO-220FPAB
STPS20170C	170 V, 20 A dual Power Schottky Rectifier	170	20	D2PAK,TO-220AB,TO-220FPAB
STPS20200C	200 V, 20 A dual Power Schottky diode	200	20	D2PAK,TO-220AB,TO-220FPAB
STPS2045C	45 V, 20 A dual TO-220 D2PAK Power Schottky Rectifier	45	20	D2PAK,TO-220AB,TO-220FPAB
STPS20H100C	100 V, 20 A dual Power Schottky Rectifier	100	20	D2PAK,I2PAK,TO-220AB,TO-220FPAB
STPS20L15	15 V, 20 A Low Drop OR-Ing Power Schottky Rectifier	15	20	D2PAK,TO-220AC
STPS20L25C	25 V, 20 A dual Low Drop Power Schottky Rectifier	25	20	D2PAK,TO-220AB
STPS20L45C	45 V, 20 A dual Low Drop Power Schottky Rectifier	40	20	D2PAK,TO-220AB,TO-220FPAB
STPS20L60C	60 V, 20 A dual Low Drop Power Schottky Rectifier	60	20	D2PAK,TO-220AB

Part Number	Description	Reverse voltage (V)	Current (A)	Packages
STPS20LCD80C	80 V, 2 x 10 A power Schottky	80	20	D2PAK,I2PAK,TO-220AB
STPS20M100S	100 V, 20 A 3-lead single Low Drop Power Schottky Rectifier	100	20	D2PAK,TO-220AB
STPS20M60S	60 V, 20 A 3-lead single Low Drop Power Schottky rectifier	60	20	D2PAK
STPS40170C	170 V, 40 A dual Power Schottky Rectifier	100,170	20,40	D2PAK,TO-220AB,TO-247
STPS2545C	45 V, 25 A dual Power Schottky rectifier	45	25	D2PAK,TO-220AB
STPS30150C	150 V, 2 x 15 A power Schottky	150	30	D2PAK,TO-220AB,TO-220FPAB,TO-247
STPS30170C	170 V, 30 A dual TO-220 Power Schottky Rectifier	150,170	30	D2PAK,TO-247
STPS3030C	30 V, 30 A dual Power Schottky Rectifier	30	30	D2PAK,I2PAK
STPS3045C	45 V, 30 A dual Power Schottky Rectifier	45	30	D2PAK,TO-220AB,TO-247
STPS30H60C	60 V, 30 A dual High Tj Power Schottky Rectifier	60	30	D2PAK,TO-220AB,TO-220FPAB
STPS30L30C	30 V, 30 A dual Low Drop Low Drop Power Schottky Rectifier	30	30	D2PAK,I2PAK,TO-220AB
STPS30L45C	45 V, 30 A dual Low Drop Power Schottky Rectifier	40	30	D2PAK,TO-220AB,TO-220FPAB,TO-247
STPS30L60C	60 V, 30 A dual Low Drop Power Schottky Rectifier	60	30	D2PAK,TO-220AB,TO-247
STPS30M60S	60 V, 30 A 3-lead single Low Drop Low Leakage Power Schottky rectifier	60	30	D2PAK,TO-220AB
STPS30SM100S	100 V, 30 A 3-lead single Low Leakage Power Schottky rectifier	100	30	D2PAK,TO-220AB
STPS30SM60S	60 V, 30 A 3-lead Low Leakage Power Schottky rectifier	60	30	D2PAK
STPS40150C	150 V, 40 A dual High Voltage Power Schottky Rectifier	150	40	D2PAK,TO-220AB,TO-247
STPS40L45C	45 V, 40 A dual Low Drop Power Schottky Rectifier	45	40	D2PAK,TO-220AB,TO-247
STPS40M80C	80 V, 40 A dual Low Drop Power Schottky Rectifier	80	40	D2PAK,TO-220AB
STPS41H100C	100 V, 40 A dual Power Schottky Rectifier	100	40	D2PAK,I2PAK,TO-220AB
STPS41L30C	30 A, 40 A dual Low Drop Power Schottky Rectifier	30	40	D2PAK
STPS41L45C	45 V, 41 A dual Low Drop Power Schottky Diode	45	40	D2PAK
STPS41L60C	60 V, 40 A dual Low drop Power Schottky rectifier	60	40	D2PAK,TO-220AB
STPS5045S	45 V, 50 A Power Schottky Rectifier	45	50	D2PAK
STPS1045SF	45V, 10 A PSMC Power Schottky Rectifier	45	10	PSMC-3L-EP
STPS10H60SF	60 V, 10 A Power Schottky Rectifier	60	10	PSMC-3L-EP
STPS10M120SF	120 V, 10 A Low Drop Power Schottky rectifier	120	10	PSMC-3L-EP
STPS10M60SF	60 V, 10 A Low Drop Power Schottky rectifier	60	10	PSMC-3L-EP
STPS1230SF	30 V, 12 A Power Schottky Rectifier	30	12	PSMC-3L-EP
STPS5H100SF	100 V, 5 A PSMC Power Schottky Rectifier	100	5	PSMC-3L-EP
STPS5L60SF	60 V, 5 A PSMC Low Drop Power Schottky Rectifier	60	5	PSMC-3L-EP
STPS6M100SF	100 V power Schottky rectifier	100	6	PSMC-3L-EP

ST DIODE-FINDER: DIODE PRODUCT FINDER APPLICATION FOR ANDROID™ AND IOS™

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WAVEFORM SCHOTTKY AND FERD RECTIFIERS SIMULATOR  
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# SCRs and TRIACs

Silicon Controlled Rectifiers (SCR) or TRIACs are the best way to switch AC mains supply. The improvement of the 150°C junction temperature for ST's thyristors -SCRs and TRIACs – has a sum of benefits for applications with solid-state switches.

First of all, it gives 25°C margin gain for the power designer which allows more current to sink into the thyristors. Or the immediate effect can also be a reduced size for the heatsink and the control module. The enclosure can use less air cooling or be smaller. The D2PAK makes it even easier.

Secondly, STMicroelectronics specifies higher static and dynamic parameters at the full temperature of 150°C thanks to improved technology. Also the useful ratings at full load are specified in datasheet parametric curves ready for tightly dimensioned design. The improved turn-off capability and immunity of the 800 V 150°C device are clearly reflected and can be put to use starting with hands-on design calculations.

The results can be verified and the calculations can even be refined in the integrated interface of the AC Switch simulator thermal analysis available on ST.com.

Here's a selection from our large portfolio of thyristors, silicon-controlled rectifiers (SCRs), and TRIACs.



## Triacs

Part Number	4A standard triac	RMS on-state current (A) max	Repetitive peak off-state voltage (V) max	Non repetitive surge peak on-state current (A) max	Package
Z00607	0.8A logic level Triacs	0.8	600	9	SOT-223, TO-92
Z01	1A logic level Triacs	1	600,700,800	8	SMB Flat-3L, SOT-223, TO-92
Z0109M1	1 A, logic level Triacs	1	600	8	SO-8
BTB04-600SL	4A Snubberless™ Triacs	4	600	35	TO-220AB
T405, T410	4A logic level Triacs	4	800	30	DPAK, IPAK, TO-220AB
T405Q-600	4A sensitive Triacs	4	600	35	DPAK, IPAK
T405T-6FP	4A Logic Level Triacs	4	600	30	TO-220FPAB
T435	4A Snubberless™ Triacs	4	800	30	DPAK, IPAK, TO-220AB
BTA06 / BTB06	6A standard and Snubberless™ Triacs	6	600, 800	60	TO-220AB Ins , TO-220AB
BTA08 / BTB08	8A standard and Snubberless™ Triacs	8	600, 800	80	TO-220AB Ins , TO-220AB
T810	8A Logic Level Triacs	8	800	80	D2PAK, DPAK
T835, T850	8A Snubberless™ Triacs	8	600,800	80	D2PAK,DPAK,IPAK
BTA10 / BTB10	10A standard and Snubberless™ Triacs	10	600, 800	100	TO-220AB Ins , TO-220AB
T1035	10A - 600V - Snubberless™ Triac	10	600	100	D2PAK
T1050	10A - 800V - Snubberless™ Triac	10	800	100	D2PAK
BTA12 / BTB12	12A standard and Snubberless™ Triacs	12	600,800	120	TO-220AB Ins , TO-220AB

Part Number	4A standard triac	RMS on-state current (A) max	Repetitive peak off-state voltage (V) max	Non repetitive surge peak on-state current (A) max	Package
T1205	12A - 600V - Logic Level Triac	12	600	120	D2PAK
T1210	12A - Logic Level Triac	12	800	120	D2PAK
T1235	12A Snubberless™ Triac	12	800	120	D2PAK
T1250	12A - Snubberless™ Triacs	12	600	120	D2PAK
TPDVvvaa	High-voltage Alternistor Triacs	12, 25, 40	1200,1000, 600,800	120, 230, 350	TO-220AB Ins, TOP3 Ins
BTA16 / BTB16	16A standard and Snubberless™ Triacs	16	600,800	160	TO-220AB Ins , TO-220AB
T1610	16A Logic Level Triacs	16	800	160	D2PAK
T1635, T1650	16A Snubberless™ Triacs	16	600	160	D2PAK
BTA20	20 A Snubberless™ Triacs	20	600,700	200	TO-220AB Ins
BTA24 / BTB24	25A Snubberless™ Triacs	25	600,800	250	TO-220AB Ins , TO-220AB
BTA26 / BTB26	25A standard and Snubberless™ Triacs	25	600,800	250	TOP3 Ins , TOP3
T2535	25A Snubberless™ Triacs	25	800	250	D2PAK
BTA41 / BTB41	40A standard Triacs	40	600,800	400	TOP3 Ins , TOP3

## High temperature Triacs

Part Number	General Description	RMS current (A)	Voltage (V)	Gate current (mA)	Package
T610T-8, T635T-8	6A 150°C Snubberless™ Triacs	6	800	10, 35	TO220AB, TO220FPAB
T810T-8, T835T-8	8A 150°C Snubberless™ Triacs	8	800	10, 35	D2PAK, TO220AB, TO220FPAB, TO220AB Ins.
T1210T-8, T1235T-8	12A 150°C Snubberless™ Triacs	12	800	10, 35	D2PAK, TO220AB, TO220FPAB, TO220AB Ins
T1610T-8, T1635T-8	16A 150°C Snubberless™ Triacs	16	800	10, 35	D2PAK, TO220AB, TO220FPAB, TO220AB Ins
T2035T-8	20A 150°C Snubberless™ Triacs	20	800	35	D2PAK

## SCRs

Part Number	General Description	Voltage (V)	Current (A)	Package
P01	Logic level SCR	200, 400	0.25 - 0.8	SOT-23, TO-92, SOT-223
X0115MUF	Logic level SCR	600	1	SMBFlat
X02	1.25 Logic level SCR	600, 800	1.25	SMBFlat, SOT223, TO-92
TN815	8A Standard SCR	800	8	DPAK
TN1215	12A Standard SCR	800	12	DPAK, D2PAK, IPAK
TN2540	25A Standard SCR	800, 1200V	25	D2PAK
TYN840	40A standard SCR	800	40	TO-220AB
BTW69-1200	40A standard SCR	1200	40	TOP3 Ins., TOP3
TN6050-12PI	60A standard SCR	1200	60	TOP3 Ins.

Triac, SCR and ACS Simulator : <https://my.st.com/edsProvider/acst/#>

ST THYRISTOR-FINDER: PRODUCT FINDER APPLICATION FOR ANDROID™ AND IOS™



# Power MOSFETs

ST provides a large portfolio of standard MOSFETs with breakdown voltages up to 1000 V and  $R_{DS(on)}$  from 25 m $\Omega$  up to 8.5  $\Omega$ .

ST's standard MOSFETs help simplify the design and increase the efficiency in applications such as SMPS, monitor and TV adapters, auxiliary power suppliers, motor control, battery chargers, UPS, metering, LED drivers and HF ballasts.

Excellent ruggedness features allow reliable performance even when exposed to large voltage transients.

The product family is available in a wide range of through-hole and SMD packages.

Here's a selection from our large portfolio of standard Power MOSFETs belonging to the STPOWER family.



## Power MOSFETS

Root part number	Description	$V_{DS}$ (V)	$R_{DS(on)}$ max ( $\Omega$ )	Package
STP4NK60ZFP	N-channel SuperMESH Zener protected Power MOSFET	600	2	TO-220FP
STFU10NK60Z	N-channel SuperMESH Zener protected Power MOSFET	600	0.75	TO-220FP ultra narrow leads
STQ1NK80ZR-AP	N-channel SuperMESH Zener protected Power MOSFET	800	16	TO-92
STP4NK80Z	N-channel SuperMESH Zener protected Power MOSFET	800	3.5	TO-220
STD2NK90ZT4	N-channel SuperMESH Zener protected Power MOSFET	900	6.5	DPAK
STD3NK100Z	N-channel SuperMESH Zener protected Power MOSFET	1000	6	DPAK
STP10NK60ZFP	N-channel SuperMESH Zener protected Power MOSFET	600	0.75	TO-220FP
STD3NK80ZT4	N-channel SuperMESH Zener protected Power MOSFET	800	4.5	DPAK
STB120NF10T4	N-channel STripFET II Power MOSFET	100	0.0105	D <sup>2</sup> PAK
STP30NF10	N-channel STripFET II Power MOSFET	100	0.045	TO-220
STP55NF06	N-channel STripFET II Power MOSFET	60	0.018	TO-220



Root part number	Description	V <sub>DS</sub> (V)	R <sub>DS(on)</sub> max (Ω)	Package
STP60NF06	N-channel STripFET II Power MOSFET	60	0.016	TO-220
STF10NM60N	N-channel MDmesh II Power MOSFET	600	0.55	TO-220FP
STF13NM60N	N-channel MDmesh II Power MOSFET	600	0.36	TO-220FP
STF24NM60N	N-channel MDmesh II Power MOSFET	600	0.19	TO-220FP
STF26NM60N	N-channel MDmesh II Power MOSFET	600	0.165	TO-220FP
STL3NM60N	N-channel MDmesh II Power MOSFET	600	1.8	PowerFLAT 3.3x3.3 HV
STH270N4F3-6	N-Channel STripFET F3 Power MOSFET	40	0.0027	H <sup>2</sup> PAK-6
STD95N4F3	N-Channel STripFET F3 Power MOSFET	40	0.0058	DPAK
STD95N4LF3	N-Channel STripFET F3 Power MOSFET	40	0.006	DPAK
STP185N55F3	N-Channel STripFET F3 Power MOSFET	55	0.0038	TO-220
STD65N55F3	N-Channel STripFET F3 Power MOSFET	55	0.0085	DPAK
STL8DN6LF3	N-Channel STripFET F3 Power MOSFET	60	0.03	PowerFLAT 5x6 dual
STH185N10F3-6	N-Channel STripFET F3 Power MOSFET	100	0.0045	H <sup>2</sup> PAK-6
STL8DN10LF3	N-Channel STripFET F3 Power MOSFET	100	0.035	PowerFLAT 5x6 dual
STL8N10LF3	N-Channel STripFET F3 Power MOSFET	100	0.035	PowerFLAT 5x6
STB30NF20L	N-Channel STripFET II Power MOSFET	200	0.075	D <sup>2</sup> PAK
STD25NF20	N-Channel STripFET II Power MOSFET	200	0.125	DPAK

ST-MOSFET-FINDER: MOSFET product finder application for ANDROID™ and iOS™  
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# Power bipolar transistors and IGBTs\*

ST provides a large portfolio of standard power bipolar transistors manufactured with planar, base-island, diffused collector and double-metal process technologies providing high current gain characteristics.

The range includes NPN and PNP Darlington transistors and bipolar junction transistors (BJTs) with high  $h_{FE}$  and low  $V_{CE(sat)}$  and  $V_{CES}$  ranging from 15 to 1500 V and  $I_C$  from 1.5 to 25 A.

The devices are available in small, thin, leadless SMD plastic package with excellent thermal behavior, ideal for general purpose as well industrial and motor control application.

We also have a range of standard IGBTs manufactured with planar (punch-through) technology, featuring negative  $V_{CE(sat)}$  coefficient and smart static vs. dynamic trade-off with increasing temperature.

Intended for general-purpose motor control applications, they are available in a wide range of packages and multiple co-packed diode options.

Here's a selection from our large portfolio of power bipolar transistors and insulated-gate bipolar transistors (IGBTs) belonging to the STPOWER family.



## Power bipolar transistors and insulated-gate bipolar transistors (IGBTs)

Part Number	Description	Package	$V_{CE}$ (V)	$I_C$ (A)
STN0214	Very high voltage NPN power transistor	SOT-223	1400	0.2
BD140	Complementary low voltage NPN power transistor	SOT-32	80	1.5
BD139	Complementary low voltage PNP power transistor	SOT-32	80	1.5
TIP122	Complementary power Darlington transistors	T0-220	100	5
TIP127	Complementary power Darlington transistors	T0-220	100	5
TIP35C	Complementary power transistors	T0-247	100	25
TIP36C	Complementary power transistors	T0-247	100	25
BUL1102E	HV fast-switching NPN power transistor	T0-220	1100	4

\* Insulated-Gate Bipolar Transistors

Part Number	Description	Package	V <sub>CE</sub> (V)	I <sub>c</sub> (A)
BUL216	HV fast-switching NPN power transistor	T0-220	1600	4
BUL381D	HV fast-switching NPN power transistor	T0-220	800	5
BUL742C	HV fast-switching NPN power transistor	T0-220	1050	4
TIP41C	Complementary power transistors	T0-220	100	6
STN2580	HV fast-switching NPN power transistor	SOT-223	800	1
STN83003	HV fast-switching NPN power transistor	SOT-223	700	1.5
STN9260	HV fast-switching PNP power transistor	SOT-223	600	0.5
MJD122	Complementary power transistors	DPAK	100	8
MJD31C	LV NPN power transistor	DPAK	100	3
MJD44H11T4-A	Complementary power transistors	DPAK	80	8
STGD10NC60HT4	Very fast Planar IGBT	DPAK	600	10
STGB7NC60HDT4	Very fast Planar IGBT with ultrafast diode	D <sup>2</sup> PAK	600	14
STGW30NC120HD	Very fast Planar IGBT	T0-247	1200	30
STGW20NC60V	Very fast Planar IGBT	T0-247	600	30
STGW19NC60HD	Very fast Planar IGBT with ultrafast diode	T0-247	600	19
STGP10NC60HD	Very fast Planar IGBT with ultra fast diode	T0-220	600	10

Download the ST-IGBT-FINDER: IGBT product finder application for ANDROID™ and iOS™ at [www.st.com/igbt-finder](http://www.st.com/igbt-finder) or



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