

Spectra Trading (Pty) Ltd

Reg No: 2025/525554/07

Transistor Types & Key Specifications

Transistor Type	Voltage Range	Current Range	Polarity	Key Specs	Typical Applications
NPN BJT (Bipolar Junction)	20V – 1,000V	0.1A – 50A	NPN	Gain (hFE), Collector-Emitter Saturation	Amplifiers, switching, motor drivers, power control
PNP BJT	20V – 1,000V	0.1A – 50A	PNP	Same as NPN but with reversed polarity	Complementary switching, analog signal paths
N-Channel MOSFET	20V – 1,200V	0.5A – 100A	N-Channel	Gate Threshold Voltage ($V_{GS(th)}$). On-	Power supplies, high-speed switching, DC-DC converters
P-Channel MOSFET	20V – 600V	0.5A – 30A	P-Channel	Similar specs to N-Channel MOSFETs	Low-side switching, battery protection
IGBT (Insulated Gate Bipolar)	300V – 1,800V	10A – 600A	NPN-like	Collector-Emitter Saturation Voltage	Industrial motor drives, inverters, high-voltage
JFET (Junction FET)	15V – 50V	10mA – 500mA	N- or P-Channel	Gate Cutoff Voltage ($V_{GS(off)}$). Drain	Low-noise amplifiers, analog signal control
Darlington Transistor	30V – 100V	0.5A – 20A	NPN or PNP	High Current Gain ($hFE > 1000$), Slow Switching	Relay drivers, high-current switching
Phototransistor	5V – 30V	1mA – 100mA	NPN or PNP	Light Sensitivity (lux), Response Time, Collector	Light detection, opto-isolators, sensor interfaces
Unijunction Transistor (UJT)	10V – 30V	1mA – 100mA	N-type	Intrinsic Stand-off Ratio (η), Peak Point Voltage	Oscillators, pulse generation, triggering