Switches Quick-Ref Cheatsheet

One-page reference for Analog Switch/MUX and Load-Switch/eFuse IC selection.

Signal-Path (Analog Switch / MUX) — Key Specs

Spec	What it affects	Rule of thumb / Notes
R_ON & flatness	Gain error, settling	Lower is better; check vs source impedance and S/H
Leakage (ON/OFF)	Bias, drift	Beware at µV/mV-level signals; temperature depende
Charge injection	Code jumps at ADC	Prefer low-Q devices; add buffering; increase t_acq
Bandwidth / THD	Audio/AC accuracy	Audio-grade for audio; precision for DC meas.
t_ON / t_OFF, BBM	Glitches	Use break-before-make for MUX trees
Voltage range	Headroom	Rail-to-rail for single-supply sensors

Power-Path (Load-Switch / eFuse) — Key Specs

Spec	What it affects	Rule of thumb / Notes
I_LIM (accuracy)	Fault ride-through	≥1.3–1.6× peak load; check blanking time/foldback
dV/dt control	Inrush	Choose slope to keep $I_{inrush}=C\cdot dV/dt < I_{LIM}$
R_ON	Loss & heat	Estimate $P\approx I^2\cdot R$; verify at high temp
Reverse blocking	Back-powering	Ideal-diode/ORing needed for multi-source rails
Protection (OVP/UVLO)	Safety	Interface/USB rails need surge + ESD robustness
Telemetry/Reporting	Debug	Fault pins and I/V sense help qualification

Seven-Brand Quick Lines

Brand	Series / Notes
TI	TMUX/TS3A/TS5A/HD3SS; TPS229xx (load), TPS259x/TPS266x (eFuse)
ST	STG/HC; STMPS / STEF series
NXP	NX3L4051 / CBT* switches; interface power parts
Renesas	ISL618x/ISL8xxx USB/eFuse; selected switches
onsemi	NCP38x/NCP36x/NIS502x eFuse/Hot-swap
Microchip	MIC20xx/MIC254xx load switches; switch families
Melexis	Automotive subsystems; distribution/protection options

Use this sheet with the on-page tables: Signal-Path vs Power-Path. For automotive, also check ISO 7637-2/load-dump and AEC-Q100.