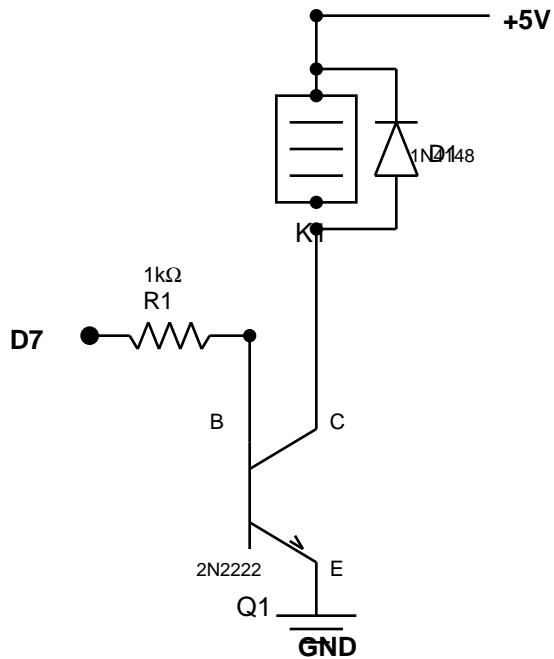


# 4-Loop MIDI Switcher - Relay Driver Circuit

Schematic shows one relay driver circuit (multiply by 4 for complete system)



## Circuit Notes:

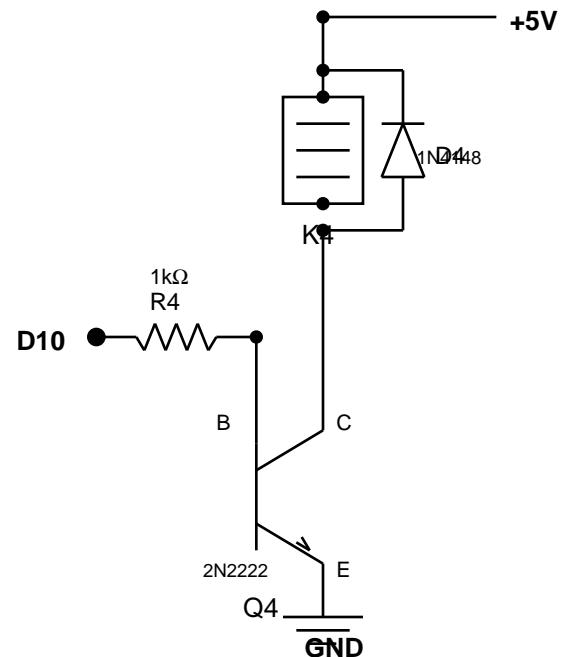
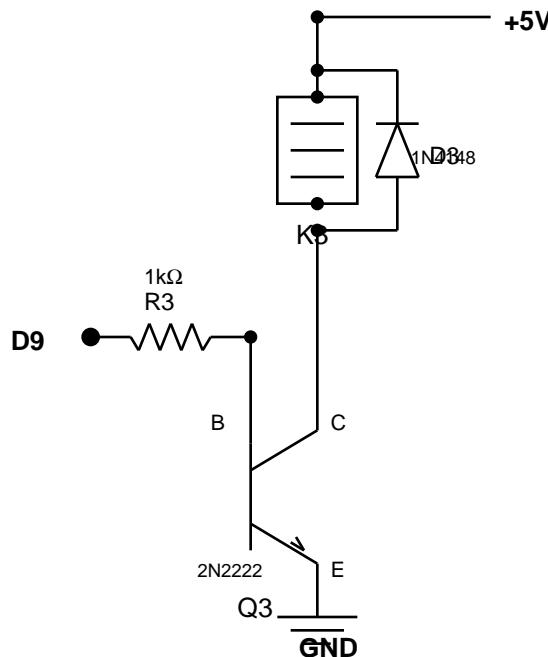
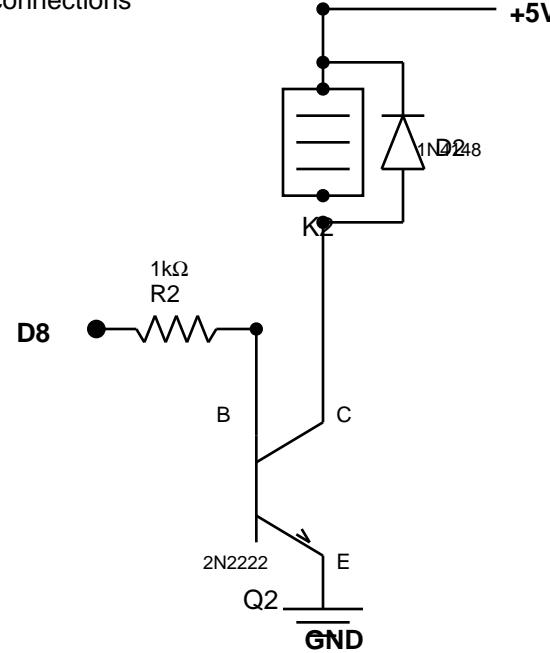
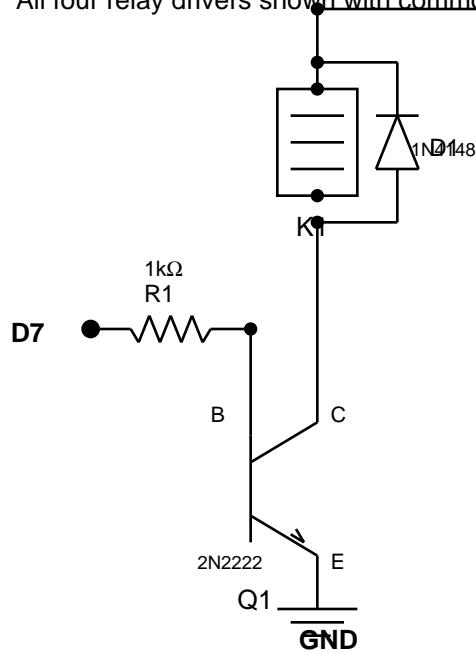
1. Each of the 4 relays (K1-K4) uses an identical driver circuit
2. Arduino pins D7, D8, D9, D10 control relays 1-4 respectively
3. All emitters connect to common ground (GND)
4. All relay coils and flyback diodes connect to common +5V rail
5. Flyback diode polarity is CRITICAL: Cathode (band) to +5V, Anode to collector
6. Without flyback diodes, back-EMF will damage transistors and Arduino
7. Relay coil current: ~60mA per relay, 240mA total for all 4 relays
8. Arduino GPIO current: ~4.3mA per relay (well within 40mA limit)

## Bill of Materials (per relay):

Qty	Reference	Value	Part Number	Notes
1	Q1-Q4	NPN Transistor	2N2222/BC547/2N3904	$hFE \geq 100$ , $I_c \geq 100mA$
1	R1-R4	1kΩ Resistor	$1k\Omega \pm 5\% 1/4W$	Brown-Black-Red-Gold
1	D1-D4	Flyback Diode	1N4148/1N4001	$\geq 100V$ reverse voltage
1	K1-K4	DPDT Relay	FINDER 36.11.9.005	5VDC, 60mA coil

# Complete 4-Channel Relay Driver Circuit

All four relay drivers shown with common power and ground connections



## Common Connections:

- All GND connections tie together
- All +5V connections tie together
- +5V rail must supply minimum 600mA (240mA for relays + overhead)