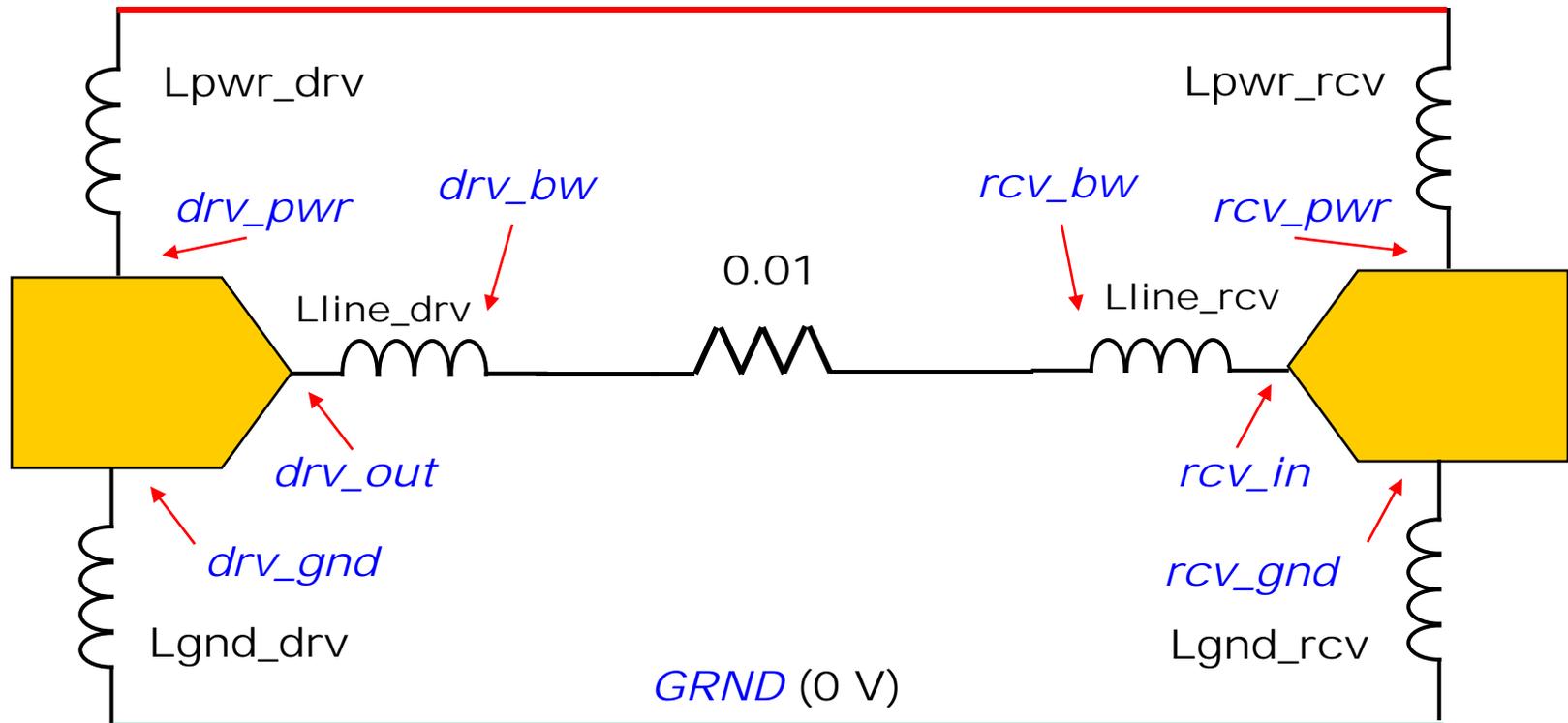


General Case

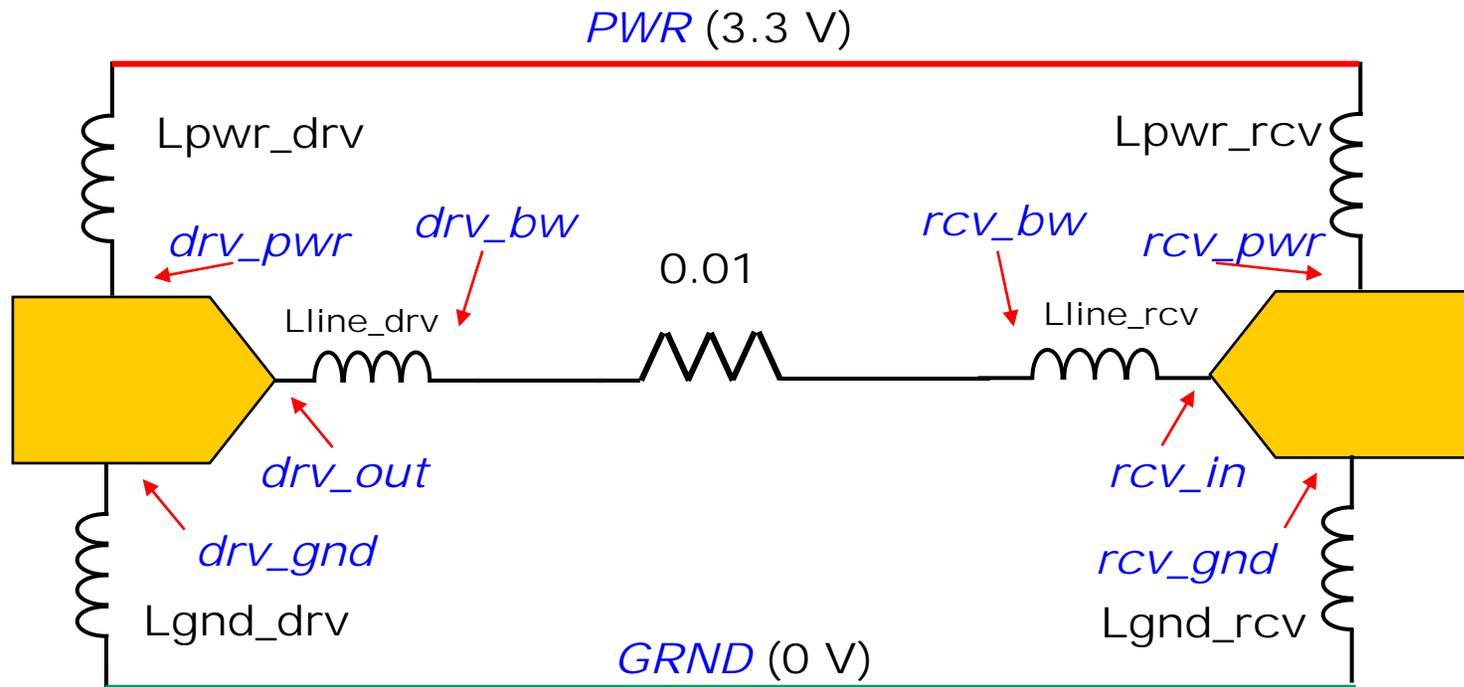
- Adapted from Hall, Hall and McCall, “High-Speed Digital System Design,” p.121
- “Orange polygon” is Arpad’s SPICE model

PWR (3.3 V)



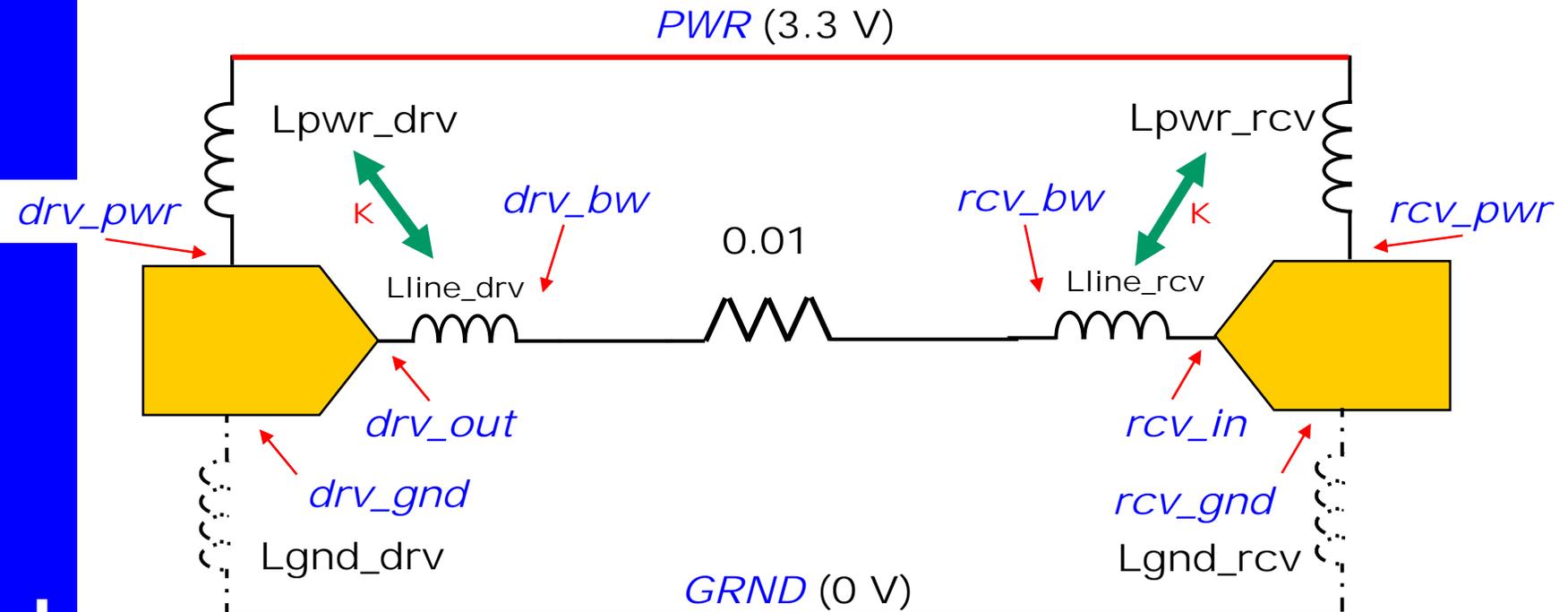
Cases 1 & 7

- $L_{pwr_drv} = 9 \text{ nH}$
- $L_{gnd_drv} = 7.5 \text{ nH}$
- $L_{pwr_rcv} = 9 \text{ nH}$
- $L_{gnd_rcv} = 7.5 \text{ nH}$
- $L_{line_drv} = 9 \text{ nH}$
- $L_{line_rcv} = 9 \text{ nH}$



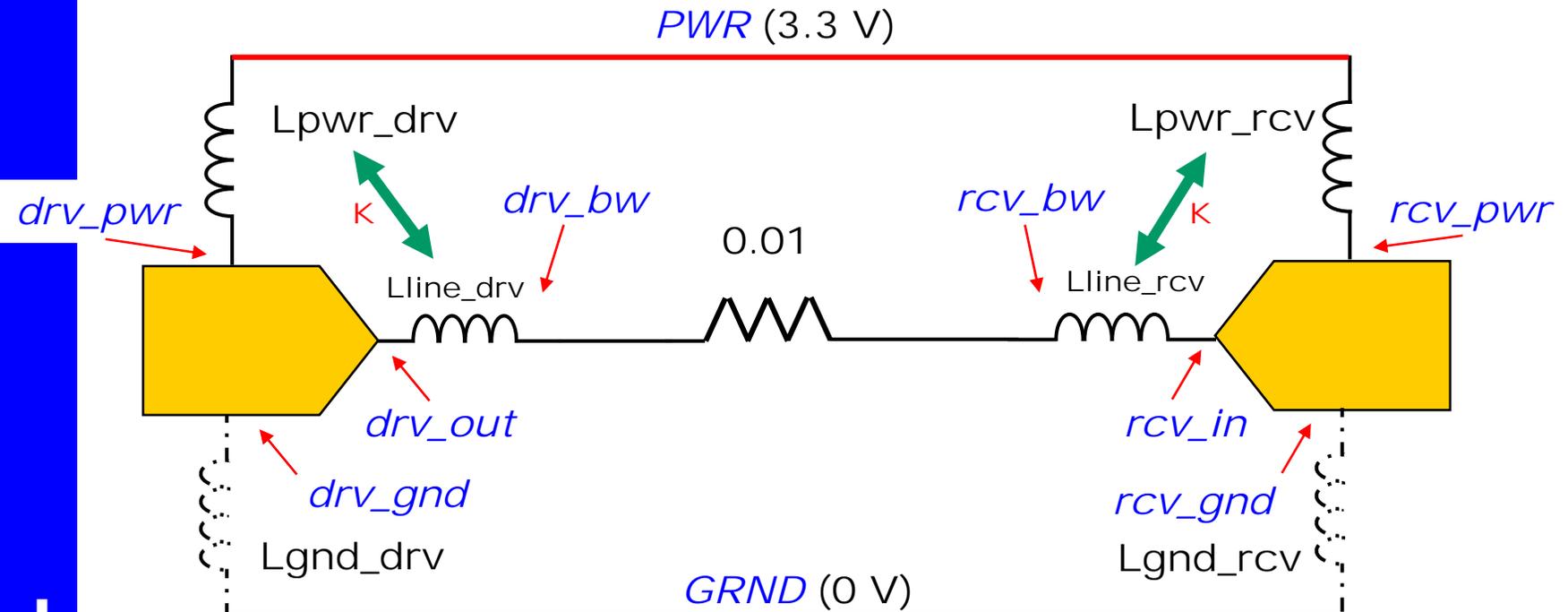
Cases 2 & 8

- $L_{pwr_drv} = 16.5 \text{ nH}$
- $L_{gnd_drv} = 0 \text{ nH}$
- $L_{pwr_rcv} = 16.5 \text{ nH}$
- $L_{gnd_rcv} = 0 \text{ nH}$
- $L_{line_drv} = 16.5 \text{ nH}$
- $L_{line_rcv} = 16.5 \text{ nH}$
- $K_{drv} = 0.45454545$
- $K_{rcv} = 0.45454545$



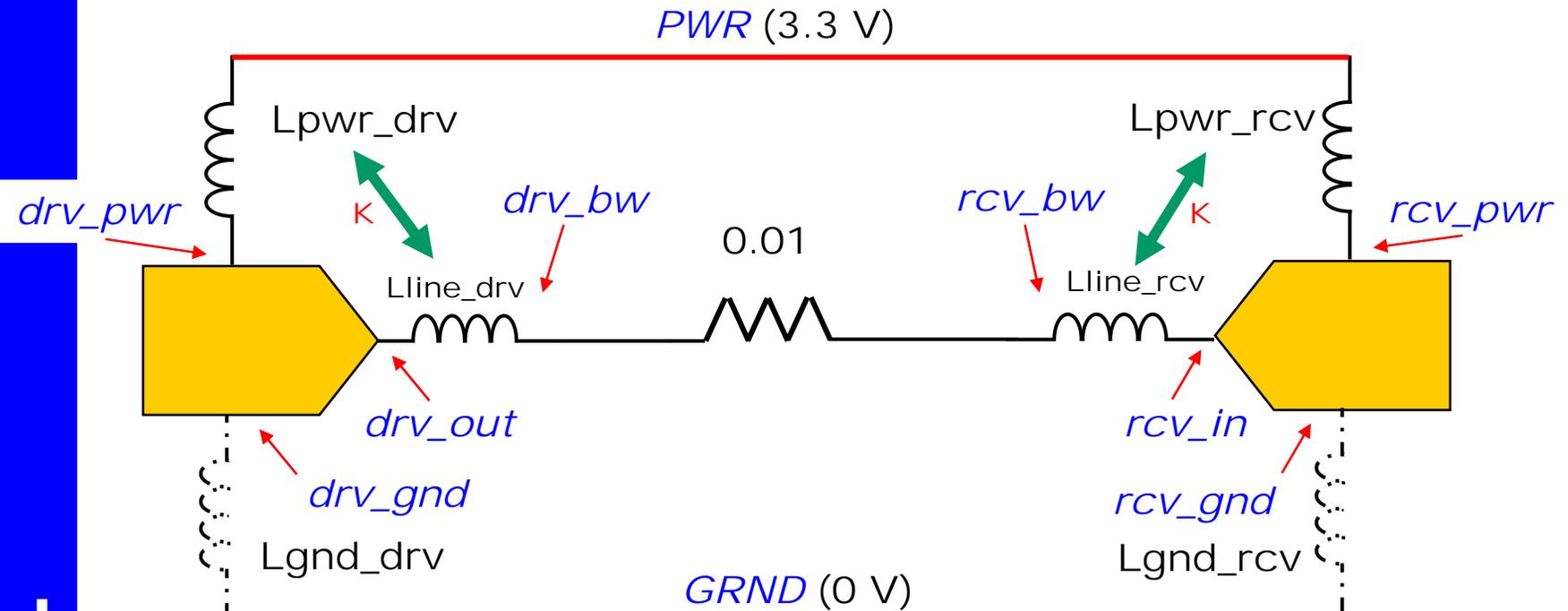
Cases 3, 5, 9 & 11

- $L_{pwr_drv} = 9 \text{ nH}$
- $L_{gnd_drv} = 9 \text{ nH}$
- $L_{pwr_rcv} = 9 \text{ nH}$
- $L_{gnd_rcv} = 9 \text{ nH}$
- $L_{line_drv} = 9 \text{ nH}$
- $L_{line_rcv} = 9 \text{ nH}$
- $K_{drv} = 0$
- $K_{rcv} = 0$



Cases 4, 6, 10 & 12

- $L_{pwr_drv} = 18 \text{ nH}$
- $L_{gnd_drv} = 0 \text{ nH}$
- $L_{pwr_rcv} = 18 \text{ nH}$
- $L_{gnd_rcv} = 0 \text{ nH}$
- $L_{line_drv} = 18 \text{ nH}$
- $L_{line_rcv} = 18 \text{ nH}$
- $K_{drv} = 0.5$
- $K_{rcv} = 0.5$



Settings & Results



- All cases run in HSPICE 2005.09
- No transmission lines used
- Other settings varied include
 - RMAX
 - METHOD
 - Timestep
- Correction from previous: Receiver nodes connected to local supplies, not to universal PWR and GND

← Receiver input pad vs. receiver local ground

File	Max Rcvr Diff.	Method	RMAX	Timestep	Lpwr_drv	Lgnd_drv	Lline_drv	Lpwr_rcv	Lgnd_rcv	Lline_rcv	Kdrv_pwr_line	Krcv_pwr_line
Case1	6.52400E-07	GEAR	0.5	10p	9n	7.5n	9n	9n	7.5n	9n	0	0
Case2		GEAR	0.5	10p	16.5n	0n	16.5n	16.5n	0n	16.5n	0.45454545	0.45454545
Case3	3.30000E-09	GEAR	0.5	1p	9n	9n	9n	9n	9n	9n	0	0
Case4		GEAR	0.5	1p	18n	0n	18n	18n	0n	18n	0.5	0.5
Case5	4.77811E-06	GEAR	Default	1p	9n	9n	9n	9n	9n	9n	0	0
Case6		GEAR	Default	1p	18n	0n	18n	18n	0n	18n	0.5	0.5
Case7	2.96000E-08	Default	0.5	10p	9n	7.5n	9n	9n	7.5n	9n	0	0
Case8		Default	0.5	10p	16.5n	0n	16.5n	16.5n	0n	16.5n	0.45454545	0.45454545
Case9	2.80000E-09	Default	0.5	1p	9n	9n	9n	9n	9n	9n	0	0
Case10		Default	0.5	1p	18n	0n	18n	18n	0n	18n	0.5	0.5
Case11	1.63000E-08	Default	Default	1p	9n	9n	9n	9n	9n	9n	0	0
Case12		Default	Default	1p	18n	0n	18n	18n	0n	18n	0.5	0.5



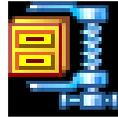
10/16/05

*Other brands and names are the property of their respective owners



Decks

- Decks are embedded below....



Package