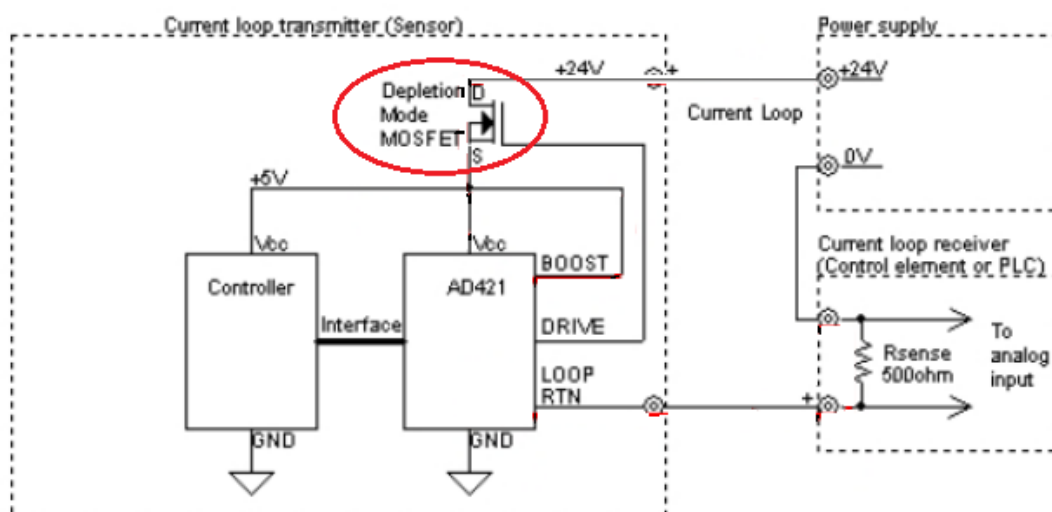


DMX4022 为 AD421 供电——国产 FET 替代 DN3545 等器件

AD421/AD5421 是 ADI 公司推出的一种单片高性能数模转换器(DAC), 它由电流环路供电, 16 位数字信号串行输入, 4~20 mA 电流输出, 完全符合设计智能变送器的工业控制标准信号输出要求, 可实现远程智能工业控制。它内部含有电压调整器, AD421 可提供+5V, +3.3V 或+3V 输出电压, AD5421 可提供 1.8V 至 12V 的调节输出电压, 为其自身或其他电路使用。支持 HART 通信协议, AD421 标准三线串行接口能够以 10 Mbit/s (AD5421 高速串行接口以 30MHz) 速率工作, 便于与微处理器或微控制器相连。



AD421/AD5421 电流环路示意如上图。红色所标识器件为 Depletion-Mode MOSFET, 其功能主要是给 4mA~20mA 数模转换电路 AD421 供电。其主要参数需达到如下要求:

FET Type	N-Channel Depletion Mode
I _{DSS}	24mA min
BV _{DS}	(V _{Loop} - V _{CC}) min
V _{PINCHOFF}	V _{CC} max
Power Dissipation	24mA × (V _{Loop} - V _{CC}) min

ADI 公司推荐使用以下型号的 MOSFET 与之供电:

Device Number	BV _{DSX} Min	R _{DS(ON)} Max	VGS(off)		I _{DSS} @ VGS=0V	
			Min V	Max V	Min mA	Max mA
DN2530	250V	12 Ohm	-1 V	-3.5 V	200 mA	
DN2535	350V	25 Ohm	-1.5 V	-3.5 V	150 Ma	
DN2540	400V	25 Ohm	-1.5 V	-3.5 V	150 mA	
DN3125	250V	20 Ohm	-1.5 V	-3.5 V	300 mA	
DN3135	350V	35 Ohm	-1.5 V	-3.5 V	180 mA	
DN3145	450V	60 Ohm	-1.5 V	-3.5 V	120 mA	
DN3525	250V	6 Ohm	-1.5 V	-3.5 V	300 mA	
DN3535	350V	10 Ohm	-1.5 V	-3.5 V	200 mA	
DN3545	450V	20 Ohm	-1.5 V	-3.5 V	200 mA	
LND150	500V	1000 Ohm	-1 V	-3 V	1 mA	3 mA
LND250	500V	1000 Ohm	-1 V	-3 V	1 mA	3 mA

ARK（成都方舟微电子有限公司）出品的 DMS4022/DMX4022，DMZ1072 也是一款典型 N 沟道耗尽型垂直 DMOS 场效应管(N-Channel Depletion-Mode Vertical DMOS FETS)，该器件具有高输入电阻，低输入电容，快速开关速度、低导通电阻、无二次击穿、较低漏电流，主要用于：常开开关、固态继电器、线性放大器、恒流源、电源供电电路等电路中，参数达到 AD 公司推荐产品指标，并增加了高性能的 ESD 保护功能。

DMS4022/DMX4022，DMZ1072 目前已被智能仪器仪表、汽车传感器、工业控制等领域客户广泛采用，可靠性、稳定性完全到达进口器件指标，供货保障。

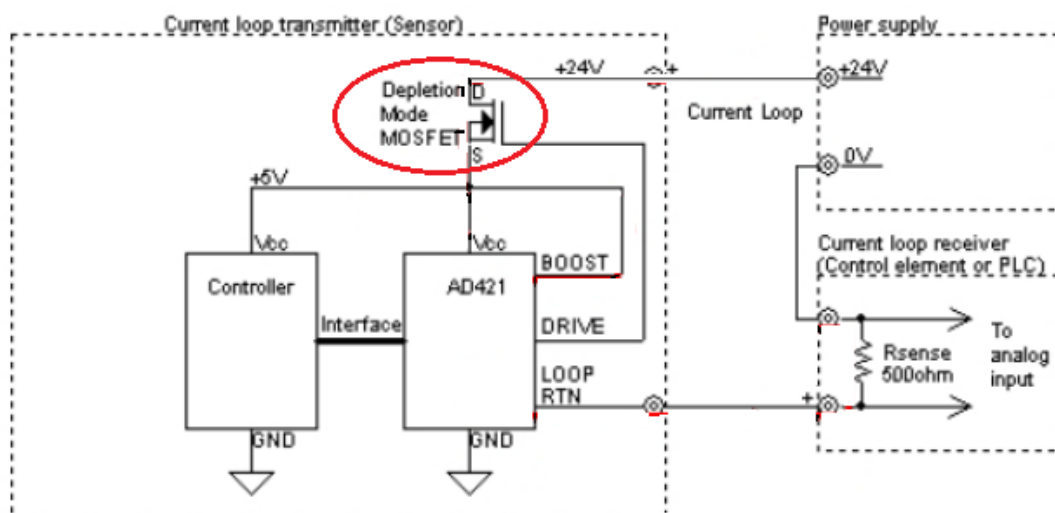
BV _{DSX}	R _{DS(ON)} (Max.)	I _D
400V	25Ω	0.2A



DMX4022 Supplies Power to AD421 - Domestic FET

Replace DN3545 and Other Devices

AD421 / AD5421 is a monolithic high-performance digital to analog converter (DAC) launched by ANALOG DEVICES company. It is powered by current loop, 16 bit digital signal serial input and 4 mA~ 20 mA output. It fully meets the needs of smart transmitter manufacturers in the Industrial Control industry. It contains a voltage regulator to power itself and other devices in the transmitter. AD421 can provide + 5V, + 3.3V or + 3V regulated output voltage, and AD5421 can provide 1.8V to 12V regulated output voltage for its own or other circuits. It supports HART communication protocol. The AD421 with a standard three -wire serial interface can work at the rate of 10 Mbps (the ad5421 high-speed serial interface is 30MHz), which is easy to connect with microprocessor or microcontroller.



The diagram of AD421 / AD5421 current loop is shown as above. The device identified in red is the depletion mode MOSFET, which is mainly used to supply power to the 4mA ~ 20mA digital to analog conversion circuit AD421 / AD5421. The main parameters shall meet the following requirements:

FET Type	N-Channel Depletion Mode
I _{DSS}	24mA min
BV _{DS}	(V _{Loop} - V _{CC}) min
V _{PINCHOFF}	V _{CC} max
Power Dissipation	24mA × (V _{Loop} - V _{CC}) min

ADI recommends the following models of MOSFET for power supply:

Device Number	BV _{DSX} Min	R _{DS(ON)} Max	V _{GS(off)}		I _{DSS} @ V _{GS} =0V	
			Min V	Max V	Min mA	Max mA
DN2530	250V	12 Ohm	-1 V	-3.5 V	200 mA	
DN2535	350V	25 Ohm	-1.5 V	-3.5 V	150 Ma	
DN2540	400V	25 Ohm	-1.5 V	-3.5 V	150 mA	
DN3125	250V	20 Ohm	-1.5 V	-3.5 V	300 mA	
DN3135	350V	35 Ohm	-1.5 V	-3.5 V	180 mA	
DN3145	450V	60 Ohm	-1.5 V	-3.5 V	120 mA	
DN3525	250V	6 Ohm	-1.5 V	-3.5 V	300 mA	
DN3535	350V	10 Ohm	-1.5 V	-3.5 V	200 mA	
DN3545	450V	20 Ohm	-1.5 V	-3.5 V	200 mA	
LND150	500V	1000 Ohm	-1 V	-3 V	1 mA	3 mA
LND250	500V	1000 Ohm	-1 V	-3 V	1 mA	3 mA

DMS4022 / DMZ4022 and DMZ1072 produced by ARK (Chengdu ARK Micro-electronics Co., Ltd.) are also typical N-channel Depletionmode Vertical DMOS FETs. The device has high input resistance, low input capacitance, fast switching speed, low on resistance, no secondary breakdown and low leakage current. It is mainly used for: normally open switch. The parameters of solid-state relay, linear amplifier, constant current source, power supply circuit and other circuits meet the product indexes recommended by ANALOG DEVICEScompany, and

high-performance ESD protection function is added.

At present, DMS4022 / DMZ4022 and DMZ1072 have been widely used by customers in intelligent instruments, automotive sensors, industrial control and other fields. Their reliability and stability fully meet the indicators of imported devices and supply guarantee.



BV_{DSX}	$R_{DS(ON)} (Max.)$	I_D
400V	25Ω	0.2A

