CMD4504

5-CH Motor Drive IC

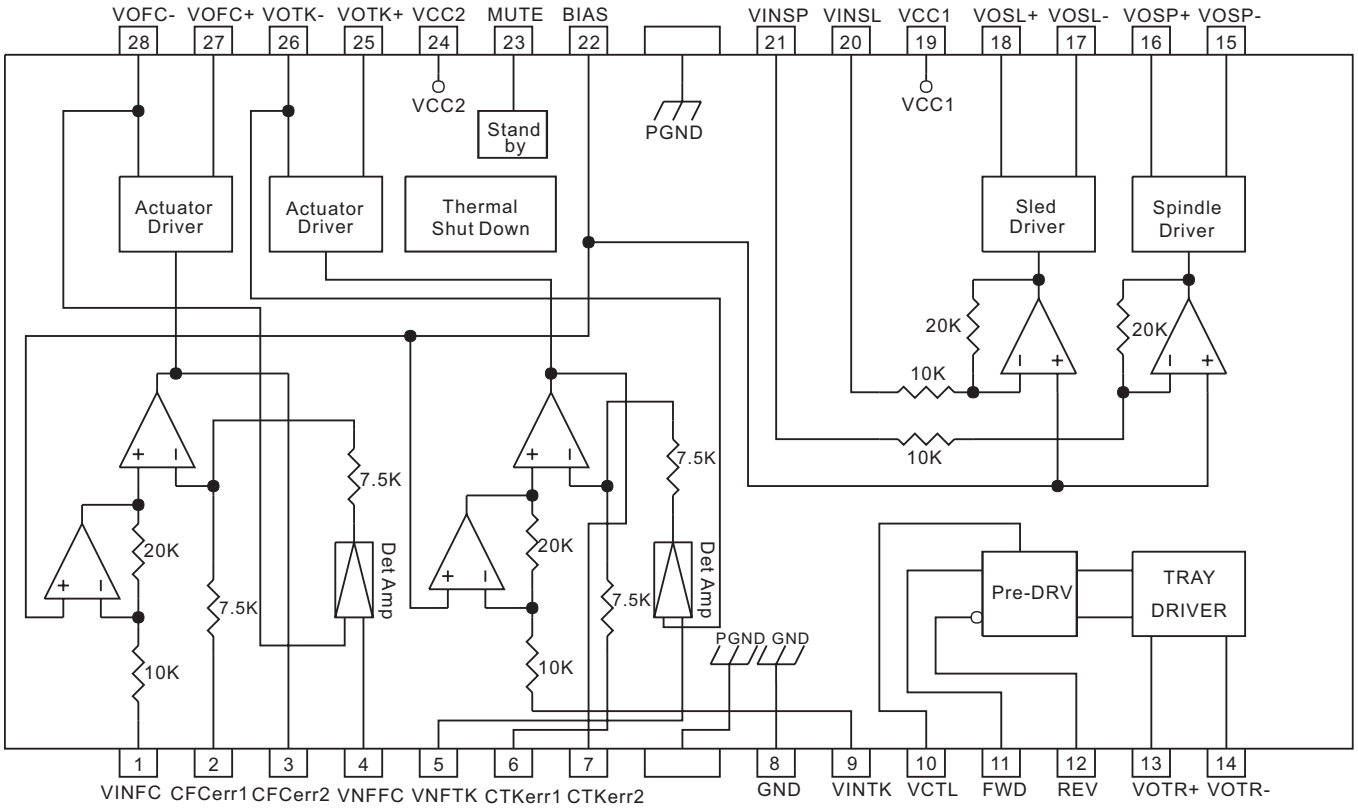
Features

- 2-CH BTL driver
- 2-CH BTL driver with current feedback
- 1-CH forward/reverse control DC motor driver
- Built-in motor speed control circuit
- Built-in TSD (thermal shut down) circuit
- Built-in mute circuit
- Operating supply voltage (4.5V~13.2V)

Descriptions

The CMD4504 is a 5CH motor driver for CD-p/VCD/DVD systems. It is composed of 2-CH BTL driver, 2-CH driver with current feedback and 1-CH forward/reverse control DC motor driver.

Internal Block Diagram



* All specs and applications shown above subject to change without prior notice.

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Pin Assignments



Pin Definitions

NO	SYMBOL	FUNCTION	NO	SYMBOL	FUNCTION
1	VINFC	Input for focus driver	15	VOSP-	Spindle driver output (-)
2	CRCerr1	Connection of capacitor for the error amp filter	16	VOSP+	Spindle driver output (+)
3	CRCerr2	Connection of capacitor for the error amp filter	17	VOSL-	Sled driver output (-)
4	VNFFC	Focus driver feedback pin	18	VOSL+	Sled driver output (+)
5	VNFTK	Input for tracking driver	19	VCC1	Vcc for pre-driver block and power block of sled and tray
6	CTKerr1	Connection of capacitor for the error amp filter	20	VINSL	OPAMP input for the sled driver
7	CTKerr2	Connection of capacitor for the error amp filter	21	VINSP	Input for spindle driver
8	GND	Ground	22	BIAS	Input for reference voltage
9	VINTK	Feedback for tracking driver	23	MUTE	Input for mute control
10	VCTL	Speed control input of tray driver	24	VCC2	Vcc for power block of spindle, tracking and focus
11	FWD	Tray driver forward input	25	VOTK+	Tracking driver output (+)
12	REV	Tray driver reverse input	26	VOTK-	Tracking driver output (-)
13	VOTR+	Tray driver output (+)	27	VOFC+	Focus driver output (+)
14	VOTR-	Tray driver output (-)	28	VOFC-	Focus driver output (-)

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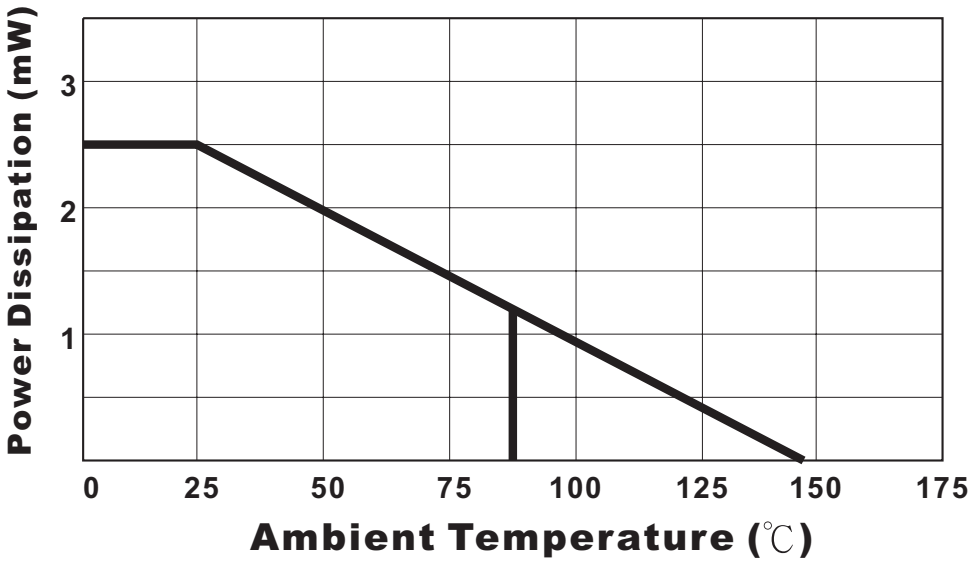
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Absolute Maximum Ratings (Ta=25℃)

CHARACTERISTICS	SYMBOL	VALUE	UNIT
Maximum supply voltage	VCC max	18	V
Power dissipation	Pd	2.5*	W
Operating temperature	Topr	-35~+85	℃
Storage temperature	Tstg	-55~+150	℃

Note:
1. When mounted on 50mm * 50mm * 1mm PCB (Phenolic resin material).
2. Power dissipation reduces 20mW/℃ for using above Ta=25℃
3. Do not exceed Pd and SOA

Power Dissipation Curve



Recommended Operating Conditions

CHARACTERISTICS	SYMBOL	VALUE	UNIT
Supply voltage	VCC1	4.5~13.2	V
Supply voltage	VCC2	4.5~13.2	V

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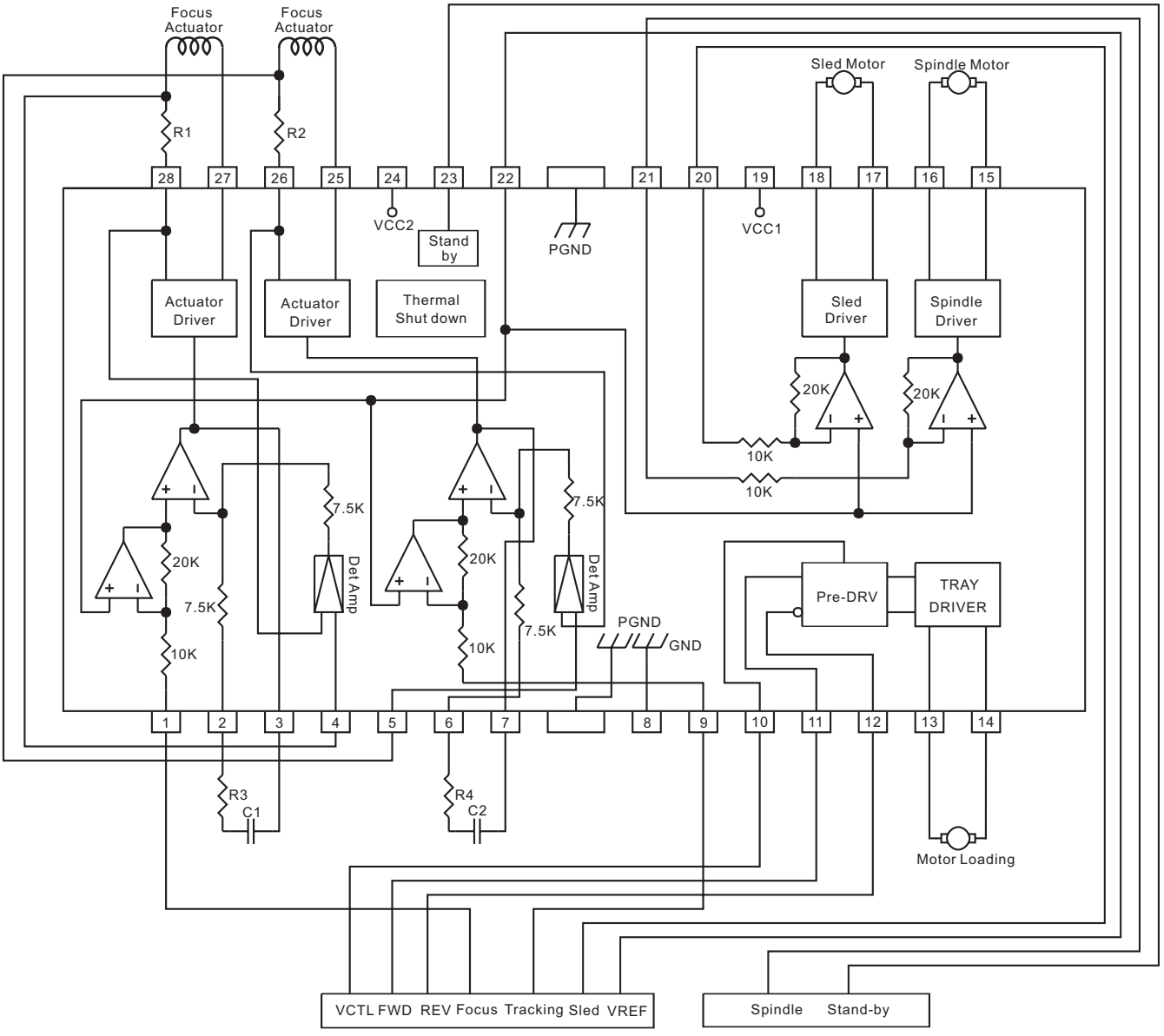
Electrical Characteristics

(VCC1=8V, VCC2=5V, f=1kHz, RL =8Ω, Rs =0.5Ω, Ta=25℃ unless otherwise specified.)

CHARACTERISTICS	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Quiescent circuit current	Icc	No load	-	15	-	mA
All mute in current	Iamute	Pin23=GND	-	-	4	mA
All mute on voltage	Vamon	Pin23=variation	-	-	0.5	V
All mute off voltage	Vamoff	Pin23=variation	2.0	-	-	V
Reference mute on voltage	Vrmon	Pin23=variation	-	-	0.5	V
Reference mute off voltage	Vrmoff	Pin23=variation	2.0	-	-	V
[ACTUATOR PART (CH4,CH5)]						
Output offset current	Ioo	Pin1=Pin9=Pin22=Vref	-	0	-	mA
Maximum output voltage 45	Vom45	Vcc2=5V, RL= 8Ω	-	3.8	-	V
Transmission gain 45	Gm45	Vin=0.1Vrms, f=1kHz	-	1.5	-	A/V
[SPINDLE,SLED PART (CH2,CH3)]						
Output offset voltage 23	Voo23	Vin=Vref	-100	-	+100	mV
Maximum output voltage 23	Vom23	Vcc1=8V,RL=12Ω	-	6.0	-	V
Closed-loop voltage gain 23	Avf23	Vin=0.1Vrms, f=1kHz	16	18	20	dB
Slew rate 23	SR23	Vout=4.0 Vpp, Square	-	1.5	-	V/uS
Ripple rejection ratio 23	RR23	Vin=0.1Vrms, f=120Hz	50	60	-	dB
[TRAY DRIVE PART (CH1)]						
Input high level voltage	Vih	-	2.0	-	-	V
Input low level voltage	Vil	-	-	-	0.5	V
Output voltage	Vo	Vcc=8V, RL=45Ω Pin10=open	-	6	-	V
CTL to output transfer gain	Gv	Vcc=8V, RL=45Ω Pin10=3~4V	-	1	-	V/V
Output offset voltage 1	Voo1	Pin11=Pin12=5V	-50		+50	mV
Output offset voltage 2	Voo2	Pin11=Pin12=0V	-50		+50	mV

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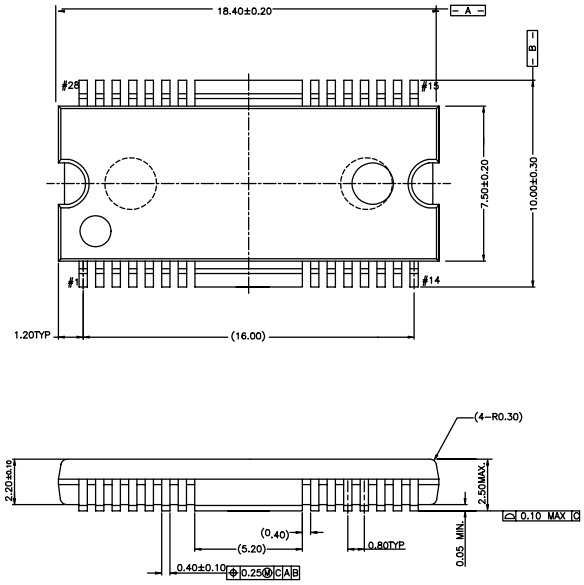
Application Circuit

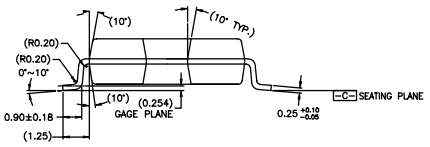


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Mechanical Dimensions

Package





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