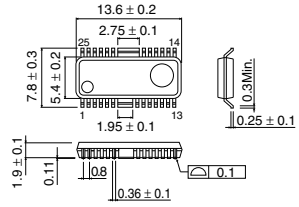
Head coil driver for MD recording
BD7915FP

●Description

BD7915FP is a head coil driver for MD(Mini Disc) that integrates recording head coil peripheral circuit into one chip. In standard head coils this circuit is composed of discrete components. High voltage D-MOS FET, and charge-pump circuit are incorporated to deliver a higher efficient application than conventional products.

●Dimension (Units : mm)



HSOP25

●Features

1) Built-in D-MOS FET and pre-driver enable components reduction.
2) Incorporated regulator for power supply in head drive H bridge.
3) Regulator output voltage can be changed by external resistor.
4) Built-in regulator input voltage descent mute
5) Built-in thermal shut down circuit
6) Built-in charge-pump circuit for VG step-up

●Applications

MD recorder, Mini component stereo, MD radio cassette

● Absolute Maximum Ratings (Ta=25˚C)

Parameter	Symbol	Limits	Unit
Output D-MOS Drain · Source Voltage (GND connection side)	V_{DSH}	80	V
Output N-MOS Drain · Source Voltage (V_M connection side)	V_{DSL}	7	V
Supply Voltage for Driving Power MOS Gate	V_G	15	V
EFM Input, EFM High-level Voltage	EFM_{IN}, V_{DD}	7	V
Mute (Terminal voltage)	V_{MUTE}	7	V
Charge-pump Supply Voltage	V_{CP}	7	V
Input Voltage	V_{REGIN}	7	V
Output Current	I_{REGOUT}	400	mA
Power Dissipation	Pd	1.45 *	W
Operating Temperature Range	Topr	–25 ~ +75	˚C
Storage Temperature Range	Tstg	–55 ~ +150	˚C

*Derating : 11.6mW/˚C for operation above Ta=25˚C
*PCB (70mmx70mm, t=1.6mm) glass epoxy mounting.

● Recommended Operating Conditions (Ta=25˚C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage for power MOS gate drive	V_G	4.0	–	13	V
Supply voltage in H bridge block	V_M	0	–	V_G	V
Supply voltage in charge-pump block	V_{CP}	2.7	–	6.5	V
Regulator input voltage	V_{REGIN}	2.7	–	7.0	V

● Electrical characteristics (Unless otherwise noted; Ta=25˚C, V_{DD}=3.3V, VG=8.0V, V_{REGIN}=5V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
<Magnetic head driver block>						
V_G circuit current	I_G	–	50	400	μA	EFM (No input)
V_{DD} circuit current	I_{VDD}	–	–	20	μA	EFM (No input)
D-MOS breaking current	I_{LEAK}	–	–	50	μA	8-10 or 12-10PIN 80V applied
NMOS ON resistor (Source side)	R_{ON1}	–	0.6	1.2	Ω	I_{DS}=0.3A, V_{GS}=8.0V
DMOS ON resistor (Sink side)	R_{ON2}	–	0.8	1.6	Ω	I_{DS}=0.3A, V_{GS}=8.0V
Turn ON delay time	td(on)	–	70	150	nsec	
Turn OFF delay time	td(off)	–	70	150	nsec	
MUTE pin H level sink current	I_{MTH}	25	43	85	μA	MUTE=5V
MUTE pin L level sink current	I_{MTL}	−20	0	20	μA	MUTE=0V
<Charge-pump block>						
V_{CP} circuit current	I_{CP}	–	0.6	3.0	mA	EFM (No input), V_{CP}=5V
Charge-pump output	V_{GST}	8.8	9.95	12	V	EFM (No input), V_{CP}=5V
Oscillating circuit frequency	fOSC	130	320	450	kHz	6pin waveform monitor, V_{CP}=5V
<Regulator block>						
Circuit current 1	I_{Q1}	–	1.1	5.0	mA	Reg SEL ≥ 2V
Circuit current 2	I_{Q2}	–	0.8	5.0	mA	Reg SEL ≤ 0.5V
Reg SEL pin H level sink current	I_{SLH}	10	29	60	μA	Reg SEL = 5V
Reg SEL pin L level sink current	I_{SLL}	−20	0	20	μA	Reg SEL = 0V
<Regulator block, pin18, emitter follower output>						
Output voltage	V_{REGOUT}	2.23	2.50	2.77	V	I_O=300mA (X2 amplifier)
Output voltage range	V_{REGW}	1.5	–	3.8	V	I_O=300mA
<Regulator block, pin17, external PNP driving output>						
Maximum driving current	I_{REG}	5	–	–	mA	Sink current

● Application Circuit