

RT7075AGPL Electrical Characteristic Data

Parameter	Symbol	DS spec.				Statistical Data			NOTE
		Min	Typ	Max	Unit	mean	std	Cpk	
Clock section									
System Frequency	f _{SCLK}	58.8	60	61.2	MHz				monitor by other frequency (950KHz, 1850KHz)
Slow clock for sleep mode	f _{LCLK}	77.6	80	82.4	KHz	79.91	0.33	2.36	
Power management section									
Turn-On Voltage of V5V	V _{V5V_ON}	--	4.15	--	V	3.95			go-no go item
V5V On-Off Hysteresis	V _{V5V_HYS}	--	0.3	--	V	0.30			go-no go item
LDO Output for Internal Operation Voltage	V _{V1P8}	--	1.8	--	V	1.77	0.01	2.59	
V5V Current at Operation Mode	I _{V5V_OPER}	--	18	--	mA	21.69	0.21	14.70	
V5V Current at Deep Sleep Mode	I _{V5V_DSLP}	--	400	--	uA	394.50	2.72	19.05	
VDAC Section (0V to 4V, 8-Bit for Short and Over-Current) (Note 5)									
Minimum Conversion Voltage	V _{O_MIN}	--	0	--	V	0.01	0.00	3.39	
Maximum Conversion Voltage	V _{O_MAX}	--	4	--	V	4.04	0.01	2.14	
DAC Offset	V _{OFFSET}	--	2	--	LSB	1.25	0.10	5.21	
Output Resistance of DAC	R _O	--	5	--	Kohm				guaranteed by design
IDAC Section (0 to 126uA, 6-Bit for Current Sink) (Note 5)									
IDAC Output Bias Voltage Range	V _{BIAS}	0.2	--	5	V				guaranteed by design
Minimum Sink Current	I _{O_MIN}	--	0	--	uA	-0.03	0.01	20.46	
Maximum Sink Current	I _{O_MAX}	--	126	--	uA	124.84	3.80	2.09	
Average Current Step	I _{LSB}	--	2	--	uA	1.98	0.06	3.77	
DAC Offset	I _{OFFSET}	--	0	--	uA	0.03	0.01	74.81	
Current Limit Comparator Section (Short and Over-Current)									
Comparator Offset	V _{OFFSET}	-10	0	10	mV	3.00			go-no go item
Input Voltage Range of Comparator	V _{IN}	1	--	4	V				guaranteed by design
Over-Current Level Range	V _{OC}	0.5	--	4	V				guaranteed by design
General Purposed Comparator (Note 6)									
Comparator Offset	V _{OFFSET}	-5	0	5	mV	2.00			guaranteed by design
Input Voltage Range of Comparator	V _{IN}	0	--	3	V	2.02			
IO of P0_6 to P0_7 Section									
Input High Voltage	V _{HI}	--	--	0.7V*V5V	V	2.85			go-no go item
Input Low Voltage	V _{LI}	0.3V*V5V	--	--	V	1.90			go-no go item
Pull-Down Resistor	R _{DOWN}	--	90	--	Kohm	95.13	2.45	3.79	
High Level Output Current	I _{OH}	--	15	--	mA	16.00			go-no go item
Low Level Output Current	I _{OL}	--	15	--	mA	16.00			go-no go item
IO of P0_8 to P0_11 section									
Input High Voltage	V _{HI}	--	--	0.7V*V5V	V	2.85			go-no go item
Input Low Voltage	V _{LI}	0.3V*V5V	--	--	V	1.90			go-no go item
Pull-Down Resistor	R _{UP}	--	70	--	Kohm	72.34	1.23	6.07	
High Level Output Current	I _{OH}	--	15	--	mA	16.00			go-no go item
Low Level Output Current	I _{OL}	--	15	--	mA	16.00			go-no go item
IO of AD0 to AD9 section and P0_15									
Input High Voltage	V _{HI}	--	--	2.7	V	2.30			go-no go item
Input Low Voltage	V _{LI}	0.6	--	--	V	0.80			go-no go item
Current Source for External Bias	I _{BIAS1}	97	100	103	uA	100.17	0.51	3.17	
Current Source for External Bias	I _{BIAS2}	--	50	--	uA	48.79	0.30	6.38	
Low Level Output Current	I _{OL}	--	2	--	mA	2.20			go-no go item
RSTN Pin Pull-Up Resistor	R _{UP}	--	10	--	Kohm	9.77	0.08	12.07	
Low-Side Power Supply Section									
V15V Under-Voltage Lockout Threshold (On)	V _{THON_V15V}	9	10.5	12	V	10.50			go-no go item
V15V Under-Voltage Lockout Threshold (Off)	V _{THOFF_V15V}	8	9.5	11	V	9.50			go-no go item
V15V Under-Voltage Lockout Hysteresis	V _{HYS_V15V}	--	1	--	V	1.00			go-no go item
V15V Quiescent Current	I _{Q_V15V}	--	1000	--	uA	912.49	81.25	2.82	
V15V Operating Current	I _{P_V15V}	--	1000	--	uA	952.78	81.53	2.65	
Bootstrapped Power Supply Section									
VBU/W-VSU/W Under-Voltage Lockout Threshold (On)	V _{THON_VBSx}	9	10.5	12	V	10.50			go-no go item
VBU/W-VSU/W Under-Voltage Lockout Threshold (Off)	V _{THOFF_VBSx}	8	9.5	11	V	9.50			go-no go item
VBU/W-VSU/W Quiescent Current for Each Channel	I _{Q_VBSx}	--	100	200	uA	102.14	2.36	12.05	
VBU/W-VSU/W Under-Voltage Lockout Hysteresis	V _{HYS_VBSx}	--	1	--	V	1.00			go-no go item
VBU/W Leakage Current	I _{VSx}	--	--	80	uA	32.17	0.58	11.49	
VBU/W-to-VSU/W Operating Current	I _{P_VBSx}	--	--	600	uA	0.38	0.01		
Gate Driver Output Section (HOU/W, LOU/W)									
High Side / Low Side Output Voltage	VOH	--	50	200	mV	1.08	0.18	363.45	
High Side / Low Side Output Voltage	VOL	--	20	100	mV	2.10	1.22	26.73	
High Side / Low Side Sourcing Current	IO+	--	290	--	mA				guaranteed by design
High Side / Low Side Sinking Current	IO-	--	600	--	mA				guaranteed by design
Dynamic Electrical Characteristics									
Turn-On Propagation Delay	t _{ON}	300	500	700	ns	513.09	19.87	3.14	
Turn-Off Propagation Delay	t _{OFF}	300	500	700	ns	495.90	20.09	3.25	
Gate Driver Output Turn-On Rising Time	t _R		70		ns	14.06	1.40	12.90	
Gate Driver Output Turn-Off Falling Time	t _F		35		ns	10.08	0.66	25.40	
Gate Driver Output Dead Time	DT	350	500	650	ns	456.22	21.48	2.42	
Delay Matching	MT			120	ns	42.78	9.01	1.95	
Dead-Time Matching to All Channels	MDT			120	ns	18.34	6.68	1.41	