POWER SUPPLY CHECK MICROCIRCUIT WITH HOST PRIMARY SUPPLY MONITORING CIRCUIT

IN1705D microcircuit is purposed to check power supply and to start up microcontroller and microprocessor systems. It is applied to ensure regular standard operation of the circuit when the device is switched on\off and also when there is alarm emergency dropping of supply voltage.

Physically the microcircuit is made in 8-pin SO-package MS012AA.

LSIIC Characteritics:

- Standard supply voltage 5,0 B
- Operation temperature range T_A = from -40°to +85°C
- RESET signal generation when power supply is provided for regular start-up of microprocessor

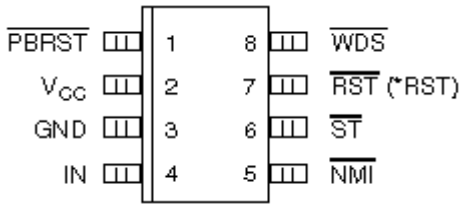
RESET signal generation when power supply is dropped below operation one to exclude incorrect operation of microprocessor.

- RESET signal generation when reset key is pressed
- Option of threshold voltage programming when RESET signal is generated

Microcircuit includes:

- reference voltage source
- two analog comparators
- guard timer
- digitizer, (digital sampler)
- digital delay

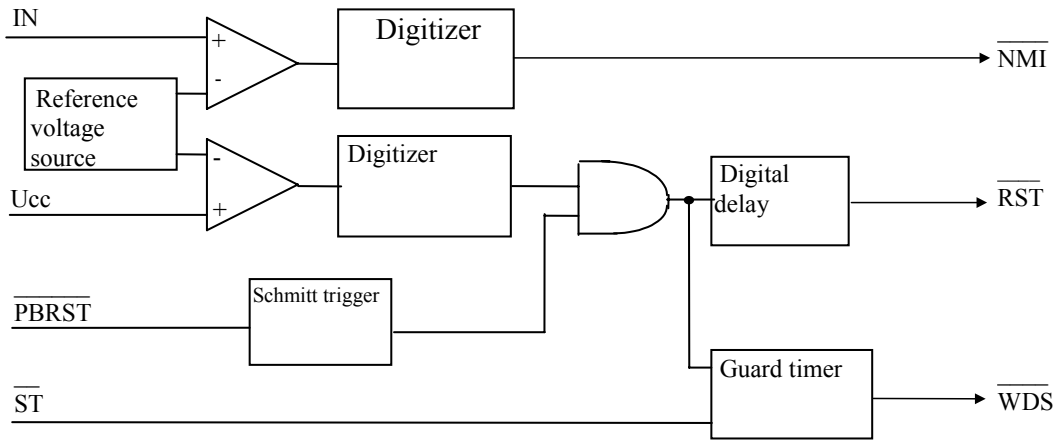
Pins' designation in package



Functions performed

- RESET signal generation by fixed supply voltage level
- RESET signal generation from external RESET key
- Generation of guard timer state signal
  Alarm interrupt of host power supply

Architecture diagramme



Microcircuit pins' purpose

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Pin	Symbol	Name	Type
01	$\overline{PBRST}$	Reset form external key	Input
02	Ucc	Supply voltage pin	-
03	GND	Common pin	-
04	IN	Host source check	Input
05	$\overline{NMI}$	Non-masked interrupt	Output
06	$\overline{ST}$	Guard timer strobe	Input
07	$\overline{RST}$	Reset actibe low	Output
08	$\overline{WDS}$	Guard timer state	Output

Operation temperature range

Operation temperature range от -40°C до +85°C.

Limiting\tolerable conditions

Parameter Symbol	Name	Norm		Units
		not less	not more	
U_{CC}	Supply voltage	4,5	5,5	V
U_{IH}	High level input voltage	2,0	U_{CC}+0,3	V
U_{IL}	Low level input voltage	-0,03	0,5	V
T_A	Operation temperature range	-40	+85	°C

Tolerable conditions

Parameter symbol	Name	Norm		Unit
		not less	not more	
U_{CC}	Supply voltage	-0,5	7,0	V
U_{IH}	High level input voltage	-	U_{CC}+0,5	V
U_{IL}	Low level input voltage	-0,5	-	V
T_{stg}	Storage temperature	-60	+125	°C

Microcircuit serviceability is not guaranteed when limiting conditions are applied. After limiting conditions are withdrwn the serviceability will be guaranteed in limiting tolerable condition.

Static parameters

Parameter symbol	Nme	Measurement conditons	Norm		Units
			not less	not more	
U_{IL}	Low level input voltage	U_{CC}=from 4,5 to 5,5V	-	0,5	V
U_{IH}	High level input voltage	U_{CC}=from 4,5 to 5,5V	2,0		V
I_{OL}	Low level output current	U_{CC}=from 4,5 to 5,5V U_{OL}=0,4V	10,0	-	mA
U_{OH}	High level output voltage	U_{CC}=from 4,5 to 5,5B I_{OH}=-500 mkA	U_{CC}-0,3	-	V
$-I_{LIL}$	Low level input leakage current (IN)	U_{CC}=from 4,5 to 5,5V U_I =U_{CC} or U_{SS}	-	1,0	mkA
$-I_{LIL}$	Low level input leakage current (ST)	U_{CC}=from 4,5 to 5,5V U_I =U_{CC} or U_{SS}	10	100	mkA
$-I_{LIL}$	Low level input leakage current (PBRST)	U_{CC}=from 4,5 to 5,5B U_I =U_{CC} orU_{SS}	50	450	mkA
I_{LIH}	High level input leakage current	U_{CC}=from 4,5 to 5,5V U_I =U_{CC} or U_{SS}	-	1,0	mkA
I_{CC}	Dynamic consumption current	U_{CC}=from 4,5 to 5,5V U_{IL}= U_{SS}, U_{IH}=U_{CC}	-	60	mkA
U_{CCTP}	Source voltagewhen reset signal is generated	U_{CC}=from 4,5 to 5,5V U_{IL}= U_{SS}, U_{IH}=U_{CC}	4,5	4,75	V
U_{TP}	IN input voltage when interrupt is generatedop	U_{CC}=from 4,5 to 5,5V U_{IL}= U_{SS}, U_{IH}=U_{CC}	1,2	1,3	V

Dynamic parameters

U_{CC}= from 4,5 to 5,5V, T_A = from -40° to+85°C

Parameter symbol	Name	Norm		Unit
		not less	not more	
t_{TD}	Guard timer reflow time	1,0	2,2	s
t_{PDLY}	Setting time for reset by PBRST signal	-	250	ns
t_{RST}	Reset hold-in time by PBRST signal	130	285	ms
t_{RPD}	Setting time for reset by U_{CC}	-	8,0	mks
t_{RPU}	Hold-in time for reset by U_{CC}	130	285	ms
t_{IPD}	Interrupt setting time for IN input	-	8,0	mks
t_{PB}	Key press duration ($\overline{PBRST}$= U_{IL})	150	-	ns
t_{ST}	Strobe pulse width	10	-	ns

Time diagrammes

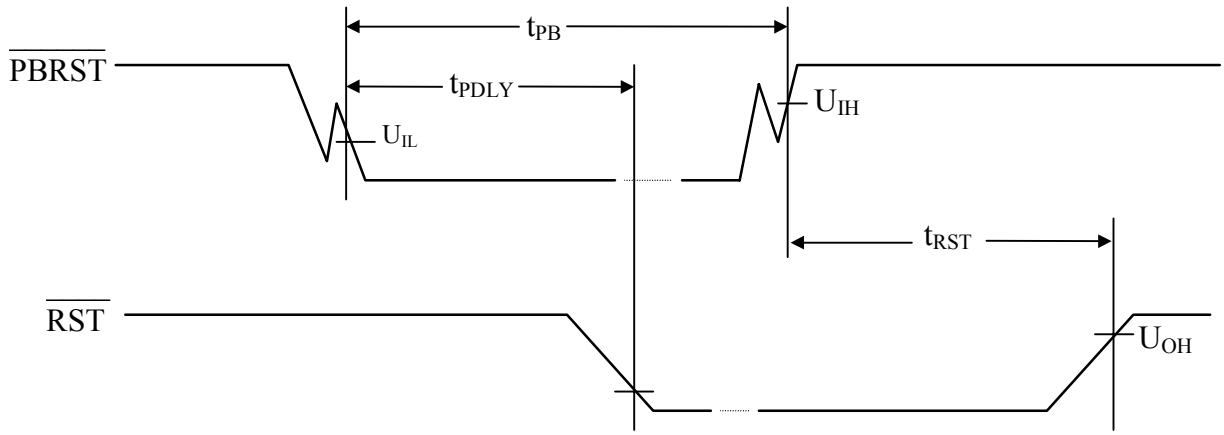

Fig.1 - Time diagramme of generation guard timer state signal.

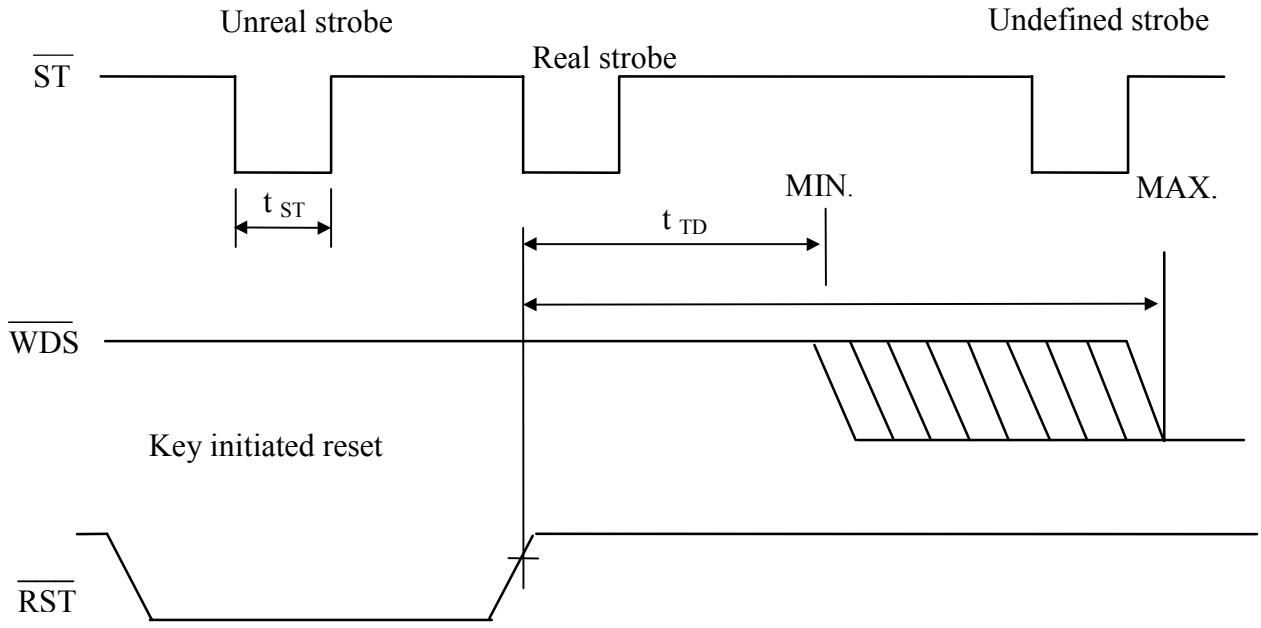

Fig.2 - Time diagramme of generation guard timer state signal (strobed input)

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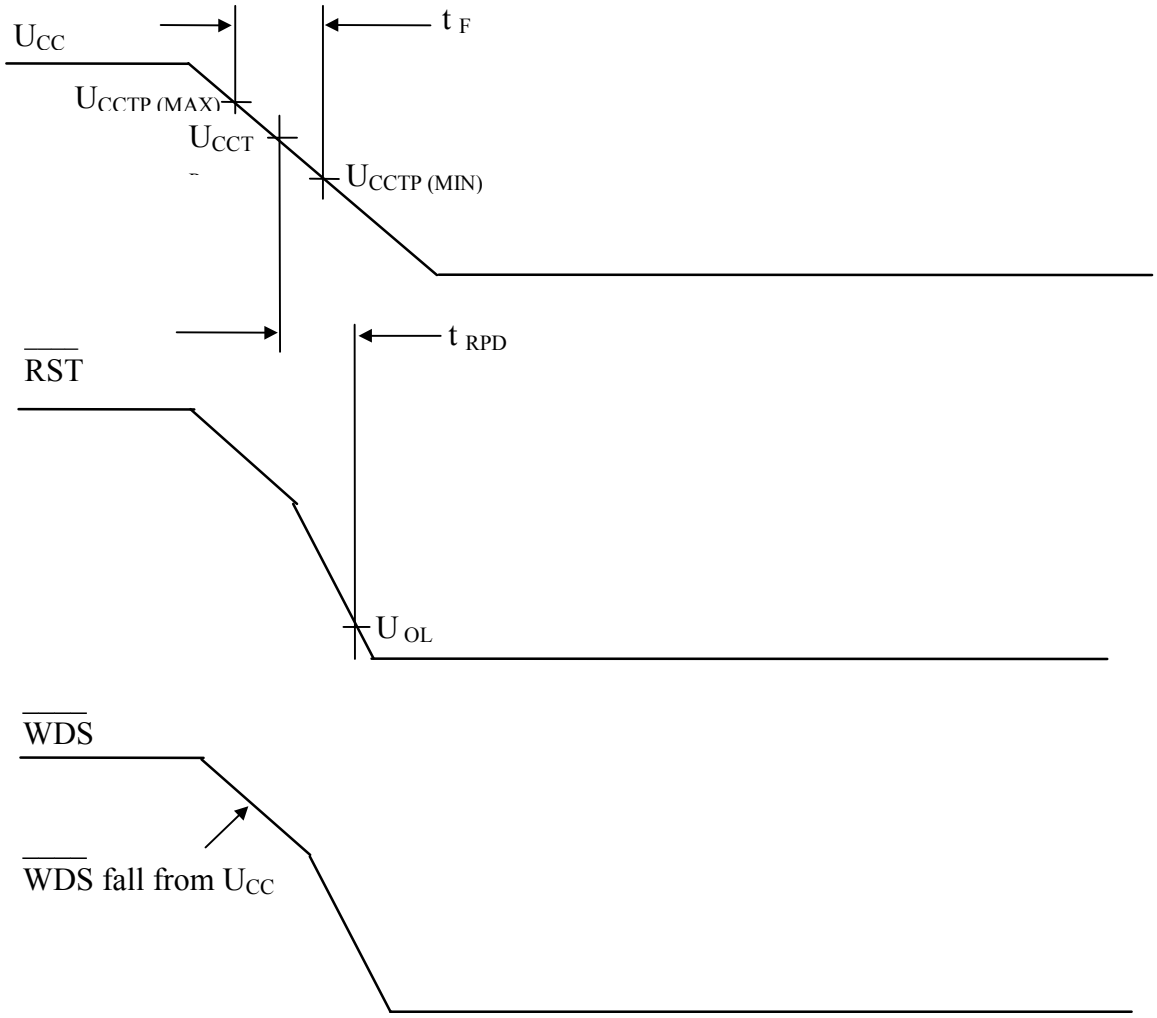

Fig. 3 - Time diagram of generation reset signal when power supply is dropped up to Ustrobe (power supply error)

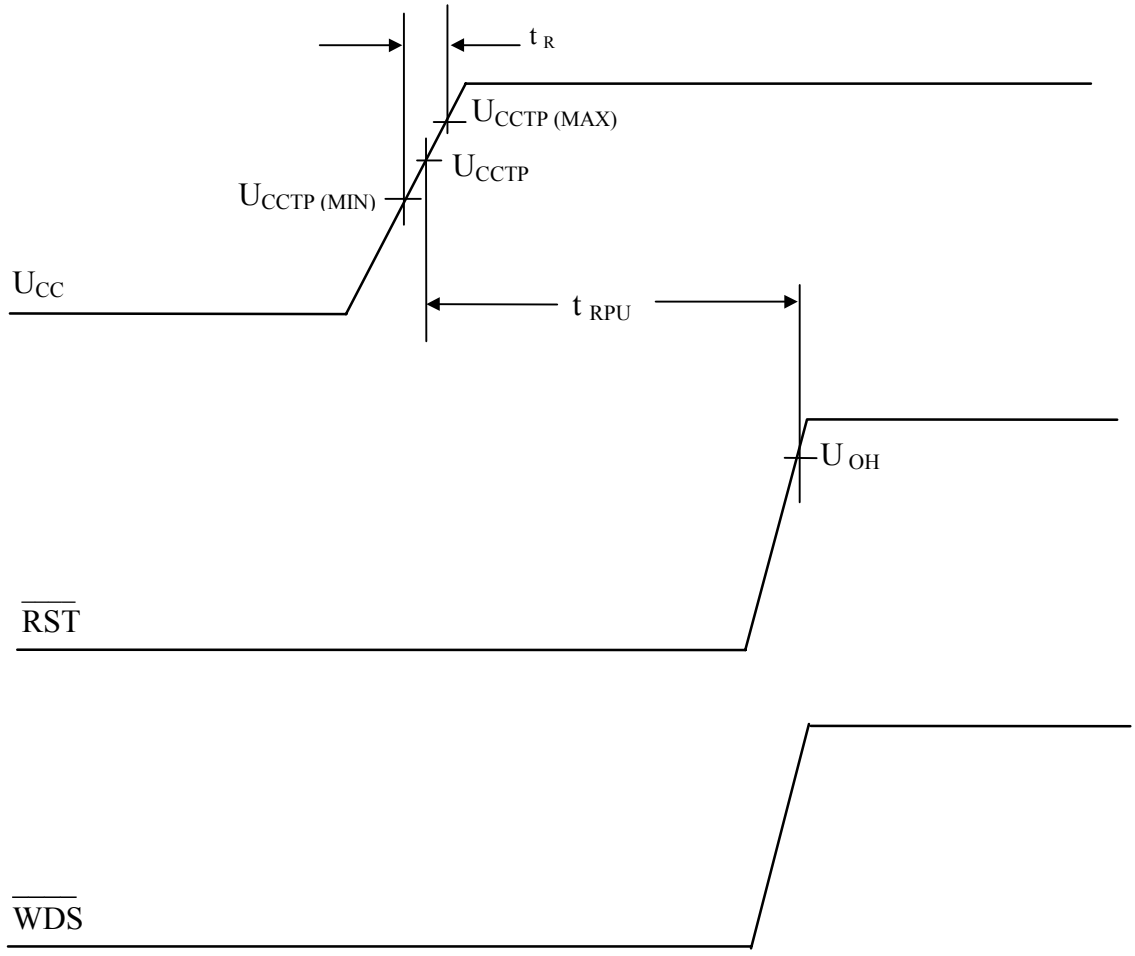

Fig. 4 - Time diagramme fo power supply connection (reset signal is reset active after power supply is transferred to stable state

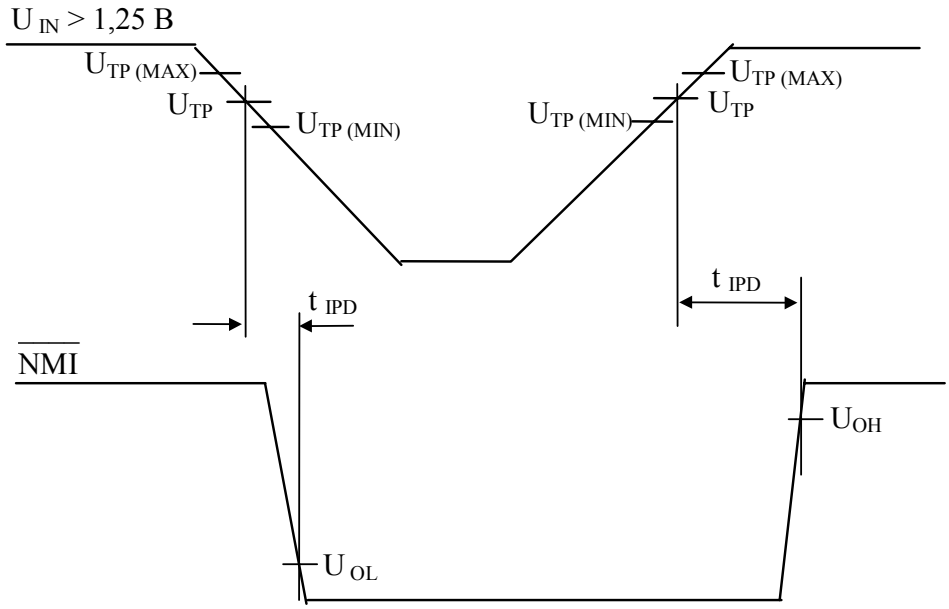

Fig. 5 - Time diagrammed of non-masked interrupt.