

## UPD70F3939AGJA-GAE-G

## **EOL Announced Products**

**EOL Announced Products:** 

Discontinuation of production has been announced for these products. They should no longer be used in new designs.

The V850E/Sx3-H are 32-bit single-chip microcontrollers that include the V850E1 CPU core and peripheral functions such as ROM/RAM, a timer/counter, serial interfaces, an A/D converter, and a D/A converter. The V850E/Sx3-H include an IEBusTM (Inter Equipment BusTM) controller for the automotive LAN, and some of the models also include a CAN (Controller Area Network) controller and enable extremely high cost performance for automotive use multimedia equipment such as car audio systems.

## **PARAMETRICS**

Memory         1024 KB Flash memory           RAM         76 KB           CPU (Bit, Clock, DMA, External Bus etc)         V850E1 (32-bit)           CPU         V850E1 (32-bit)           Max. Frequency         48 MHz           Sub-Clock (32.768 kHz)         YES           PLL         YES           Real-Time Clock (RTC)         YES           Low Voltage Detection         YES           DMA Remarks         DMAC x 4 ch           External Address/Data Bus         YES           External Interrupt Pins         11           I/O Ports         128           Timers           16-bit Timers         13 ch           Watchdog Timers         1 ch           PWM Output         10           A/D Converters         10-bit x 16 ch           D/A Converters         8-bit x 2 ch           Interfaces         CAN           CSIs         8 ch           UARTS         8 ch           LIN         6 ch           IEBus         1 ch           Operating Conditions         -40 to 85 °C (Ambient Temperature)           Remarks         Automotive	Parameters	UPD70F3939AGJA-GAE-G
Program memory         1024 KB Flash memory           RAM         76 KB           CPU (Bit, Clock, DMA, External Bus etc)         V850E1 (32-bit)           CPU         V850E1 (32-bit)           Max. Frequency         48 MHz           Sub-Clock (32.768 kHz)         YES           PLL         YES           Real-Time Clock (RTC)         YES           Low Voltage Detection         YES           DMA Remarks         DMAC x 4 ch           External Address/Data Bus         YES           External Interrupt Pins         11           I/O Ports         128           Timers           16-bit Timers         13 ch           Watchdog Timers         1 ch           PVM Output         10           Analog         A/D Converters           A/D Converters         10-bit x 16 ch           D/A Converters         8-bit x 2 ch           Interfaces         CAN           CAN         2 ch           CSIs         8 ch           UARTS         8 ch           IZES         6 ch           LIN         6 ch           LIS         6 ch           LIS         6 ch	- arameters	or broi ssssright and a
76 KB           CPU (Bit, Clock, DMA, External Bus etc)           CPU         ∨850E1 (32-bit)           Max. Frequency         48 MHz           Sub-Clock (32.768 kHz)         YES           PLL         YES           Real-Time Clock (RTC)         YES           Low Voltage Detection         YES           DMA Remarks         DMAC x 4 ch           External Address/Data Bus         YES           External Interrupt Pins         11           I/O Ports         128           Timers           16-bit Timers         13 ch           Watchdog Timers         1 ch           PWM Output         10           Analog         Analog           A/D Converters         10-bit x 16 ch           D/A Converters         8-bit x 2 ch           Interfaces         CAN           CAN         2 ch           CSIs         8 ch           UARTS         8 ch           I2Cs         6 ch           LIN         6 ch           LIBBUS         1 ch           Operating Conditions         2.85 to 3.6 V           Operating Temperature         -40 to 85 °C (Ambient Temperature) </td <td>Memory</td> <td></td>	Memory	
CPU (Bit, Clock, DMA, External Bus etc)  CPU V850E1 (32-bit)  Max. Frequency 48 MHz  Sub-Clock (32.768 kHz) YES  PLL YES  Real-Time Clock (RTC) YES  Low Voltage Detection YES  DMA Remarks DMAC x 4 ch  External Address/Data Bus YES  External Interrupt Pins 11  I/O Ports 128  Timers  16-bit Timers 13 ch  Watchdog Timers 10 ch  PWM Output 10  Analog  A/D Converters 10-bit x 16 ch  D/A Converters 8-bit x 2 ch  Interfaces  CAN 2 ch  CSIs 8 ch  UARTS 8 ch  UARTS 8 ch  I2CS 6 ch  LIN 6 ch  IEBUS 1 ch  Operating Conditions  Operating Conditions  Operating Temperature 40 to 85 °C (Ambient Temperature)  Remarks	Program memory	1024 KB Flash memory
CPU         V850E1 (32-bit)           Max. Frequency         48 MHz           Sub-Clock (32.768 kHz)         YES           PLL         YES           Real-Time Clock (RTC)         YES           Low Voltage Detection         YES           DMA Remarks         DMAC x 4 ch           External Address/Data Bus         YES           External Interrupt Pins         11           I/O Ports         128           Timers           G-bit Timers         13 ch           Watchdog Timers         1 ch           PWM Output         10           Analog         A/D Converters           D/A Converters         10-bit x 16 ch           D/A Converters         10-bit x 2 ch           Interfaces         CAN           CSIS         8 ch           UARTS         8 ch           LIN         6 ch           LIS         6 ch           LEBus         1 ch           Operating Conditions         2.85 to 3.6 V           Operating Temperature         -40 to 85 °C (Ambient Temperature)	RAM	76 KB
Max. Frequency         48 MHz           Sub-Clock (32.768 kHz)         YES           PLL         YES           Real-Time Clock (RTC)         YES           Low Voltage Detection         YES           DMA Remarks         DMAC x 4 ch           External Address/Data Bus         YES           External Interrupt Pins         11           I/O Ports         128           Timers           16-bit Timers         13 ch           Watchdog Timers         1 ch           PWM Output         10           Analog         A/D Converters           D/A Converters         10-bit x 16 ch           D/A Converters         8-bit x 2 ch           Interfaces         CSIs           CAN         2 ch           CSIs         8 ch           UARTS         8 ch           I2Cs         6 ch           LIN         6 ch           IEBus         1 ch           Operating Conditions         -40 to 85 °C (Amblent Temperature)           Remarks	CPU (Bit, Clock, DMA, External Bus etc)	)
Sub-Clock (32.768 kHz) PLL YES  Real-Time Clock (RTC) YES  Low Voltage Detection YES  DMA Remarks DMAC × 4 ch External Address/Data Bus External Interrupt Pins I1 I/O Ports 128  Timers  16-bit Timers 13 ch Watchdog Timers 1 tch PWM Output 10  Analog  A/D Converters D/A Converters D/A Converters B-bit × 2 ch  Interfaces  CAN 2 ch CSIS 8 ch UARTS 8 ch I2CS 6 ch LIN 16 ch IEBus 1 ch  Operating Conditions Operating Voltage 2.85 to 3.6 V Operating Temperature Remarks	СРИ	V850E1 (32-bit)
PLL YES  Real-Time Clock (RTC) YES  Low Voltage Detection YES  DMA Remarks DMAC x 4 ch  External Address/Data Bus YES  External Interrupt Pins 11  I/O Ports 128  Timers  16-bit Timers 13 ch  Watchdog Timers 100-bit x 16 ch  PWM Output 100-bit x 2 ch  Interfaces  CAN 2 ch  CSIs 8 ch  UARTS 8 ch  LIN 6 ch  LIN 6 ch  LIN 6 ch  LIN 6 ch  Operating Conditions  Operating Conditions  Operating Temperature 4.00 to 85 ℃ (Ambient Temperature)  Remarks	Max. Frequency	48 MHz
Real-Time Clock (RTC) Low Voltage Detection YES  DMA Remarks DMAC x 4 ch  External Address/Data Bus YES  External Interrupt Pins 11 I/O Ports 128  Timers  16-bit Timers 13 ch Watchdog Timers 10-bit x 16 ch PWM Output 10  Analog A/D Converters D/A Converters 10-bit x 2 ch  Interfaces  CAN 2 ch CSIs 8 ch UARTS 8 ch I2CS 6 ch LIN IEBUS 1 ch  Operating Conditions Operating Conditions Operating Temperature  Remarks	Sub-Clock (32.768 kHz)	YES
DMA Remarks DMAC x 4 ch External Address/Data Bus External Interrupt Pins I1 I/O Ports 128  Timers 16-bit Timers 1 ch PWM Output 10  Analog A/D Converters D/A Converters D/A Converters CAN CSIS B & ch UARTS B & ch UARTS LIN LIN LIN Operating Conditions Operating Conditions Operating Temperature  PMAC x 4 ch  PES DMAC x 4 ch  PES S DIAC x 16 LIN Operating Conditions Operating Temperature -40 to 85 °C (Ambient Temperature)	PLL	YES
DMA Remarks  External Address/Data Bus  External Interrupt Pins  I/O Ports  128  Timers  16-bit Timers  1 ch  PWM Output  10  Analog  A/D Converters  D/A Converters  CAN  CSIS  CSIS  B ch  UARTS  12 ch  CSIS  LIN  IEBus  Operating Conditions  Operating Conditions  Operating Temperature  Remarks  DMAC × 4 ch  YES  YES  11  11  12  11  12  12  11  12  12  1	Real-Time Clock (RTC)	YES
External Address/Data Bus  External Interrupt Pins  I1  I/O Ports  128  Timers  16-bit Timers  13 ch  Watchdog Timers  1 ch  PWM Output  10  Analog  A/D Converters  10-bit x 16 ch  D/A Converters  8-bit x 2 ch  Interfaces  CAN  CSIs  8 ch  UARTS  8 ch  IQCS  10-bit x 16 ch  6 ch  ILIN  10 ch  Operating Conditions  Operating Voltage  2.85 to 3.6 V  Operating Temperature  -40 to 85 °C (Ambient Temperature)	Low Voltage Detection	YES
External Interrupt Pins 11  I/O Ports 128  Timers 13 ch  Watchdog Timers 10 ch  PWM Output 10  Analog A/D Converters 10-bit x 16 ch  D/A Converters 8-bit x 2 ch  Interfaces  CAN 2 ch  CSIs 8 ch  UARTS 8 ch  ILIN 6 ch  ILIN 6 ch  Operating Conditions  Operating Conditions  Operating Voltage 2.85 to 3.6 V  Operating Temperature 40 to 85 °C (Ambient Temperature)	DMA Remarks	DMAC x 4 ch
Timers  16-bit Timers  16-bit Timers  11 ch  Watchdog Timers  1 ch  PWM Output  10  Analog  A/D Converters  10-bit x 16 ch  D/A Converters  10-bit x 2 ch  Interfaces  CAN  2 ch  CSIs  8 ch  UARTS  8 ch  I2CS  6 ch  LIN  1 ch  Operating Conditions  Operating Voltage  Operating Temperature  Remarks	External Address/Data Bus	YES
Timers  16-bit Timers  13 ch  Watchdog Timers  1 ch  PWM Output  10  Analog  A/D Converters  10-bit x 16 ch  D/A Converters  8-bit x 2 ch  Interfaces  CAN  2 ch  CSIs  8 ch  UARTS  8 ch  I2Cs  6 ch  LIN  10 ch  1	External Interrupt Pins	11
16-bit Timers  Watchdog Timers  1 ch  PWM Output  10  Analog  A/D Converters  10-bit x 16 ch  D/A Converters  8-bit x 2 ch  Interfaces  CAN  2 ch  CSIs  8 ch  UARTS  8 ch  12Cs  6 ch  LIN  1 ch  Operating Conditions  Operating Voltage  Operating Temperature  Remarks	I/O Ports	128
16-bit Timers  Watchdog Timers  1 ch  PWM Output  10  Analog  A/D Converters  10-bit x 16 ch  D/A Converters  8-bit x 2 ch  Interfaces  CAN  2 ch  CSIs  8 ch  UARTS  8 ch  I2Cs  6 ch  LIN  1 ch  Operating Conditions  Operating Voltage  Operating Temperature  Remarks	Timers	
Analog  A/D Converters 10-bit x 16 ch  D/A Converters 8-bit x 2 ch  Interfaces  CAN 2 ch  CSIs 8 ch  UARTS 8 ch  I2Cs 6 ch  LIN 6 ch  IEBus 1 ch  Operating Conditions  Operating Voltage 2.85 to 3.6 V  Operating Temperature 10-bit x 16 ch  Remarks	16-bit Timers	13 ch
Analog  A/D Converters 10-bit x 16 ch  D/A Converters 8-bit x 2 ch  Interfaces  CAN 2 ch  CSIs 8 ch  UARTS 8 ch  I2Cs 6 ch  LIN 6 ch  IEBus 1 ch  Operating Conditions  Operating Voltage 2.85 to 3.6 V  Operating Temperature -40 to 85 °C (Ambient Temperature)	Watchdog Timers	1 ch
A/D Converters  D/A Converters  8-bit x 2 ch  Interfaces  CAN 2 ch  CSIs 8 ch  UARTS 8 ch  I2Cs 6 ch  LIN 6 ch  IEBus 1 ch  Operating Conditions  Operating Voltage 2.85 to 3.6 V  Operating Temperature  Remarks	PWM Output	10
A/D Converters  D/A Converters  8-bit x 2 ch  Interfaces  CAN  CSIs  8 ch  UARTS  8 ch  I2Cs  6 ch  LIN  6 ch  IEBus  1 ch  Operating Conditions  Operating Voltage  Operating Temperature  Remarks  10-bit x 16 ch  8-bit x 2 ch  Ch  Ch  2 ch  Ch  Ch  CSIs  8 ch  CSIs  8 ch  CON  CON  CON  CON  CON  CON  CON  CO		
Interfaces  CAN 2 ch  CSIS 8 ch  UARTS 8 ch  I2CS 6 ch  LIN 6 ch  IEBus 1 ch  Operating Conditions  Operating Voltage 2.85 to 3.6 V  Operating Temperature -40 to 85 °C (Ambient Temperature)	Analog	
Interfaces  CAN 2 ch  CSIS 8 ch  UARTS 8 ch  IZCS 6 ch  LIN 6 ch  IEBus 1 ch  Operating Conditions  Operating Voltage 2.85 to 3.6 ∨  Operating Temperature -40 to 85 °C (Ambient Temperature)	A/D Converters	10-bit x 16 ch
CAN 2 ch  CSIS 8 ch  UARTS 8 ch  I2CS 6 ch  LIN 6 ch  IEBus 1 ch  Operating Conditions  Operating Voltage 2.85 to 3.6 ∨  Operating Temperature -40 to 85 °C (Ambient Temperature)  Remarks	D/A Converters	8-bit x 2 ch
CAN 2 ch  CSIS 8 ch  UARTS 8 ch  I2CS 6 ch  LIN 6 ch  IEBus 1 ch  Operating Conditions  Operating Voltage 2.85 to 3.6 ∨  Operating Temperature -40 to 85 °C (Ambient Temperature)  Remarks	Interfaces	
CSIS 8 ch  UARTS 8 ch  I2CS 6 ch  LIN 6 ch  IEBus 1 ch  Operating Conditions  Operating Voltage 2.85 to 3.6 ∨  Operating Temperature -40 to 85 °C (Ambient Temperature)		2 ch
I2Cs6 chLIN6 chIEBus1 chOperating Conditions✓Operating Voltage2.85 to 3.6 VOperating Temperature-40 to 85 °C (Ambient Temperature)	CSIs	8 ch
LIN 6 ch  IEBus 1 ch  Operating Conditions  Operating Voltage 2.85 to 3.6 ∨ Operating Temperature -40 to 85 ℃ (Ambient Temperature)  Remarks	UARTS	8 ch
IEBus       1 ch         Operating Conditions         Operating Voltage       2.85 to 3.6 V         Operating Temperature       -40 to 85 °C (Ambient Temperature)         Remarks	I2Cs	6 ch
Operating Conditions  Operating Voltage 2.85 to 3.6 V  Operating Temperature -40 to 85 °C (Ambient Temperature)  Remarks	LIN	6 ch
Operating Voltage       2.85 to 3.6 V         Operating Temperature       -40 to 85 °C (Ambient Temperature)         Remarks       -40 to 85 °C (Ambient Temperature)	IEBus	1 ch
Operating Voltage       2.85 to 3.6 V         Operating Temperature       -40 to 85 °C (Ambient Temperature)         Remarks       -40 to 85 °C (Ambient Temperature)		
Operating Temperature -40 to 85 °C (Ambient Temperature)  Remarks	Operating Conditions	
Remarks		
	Operating Temperature	-40 to 85 °C (Ambient Temperature)
Remarks Automotive	Remarks	
	Remarks	Automotive