G5 HVIC New Product Offering: IRS210(9,94)

Energy Saving Products
International Rectifier
El Segundo, CA

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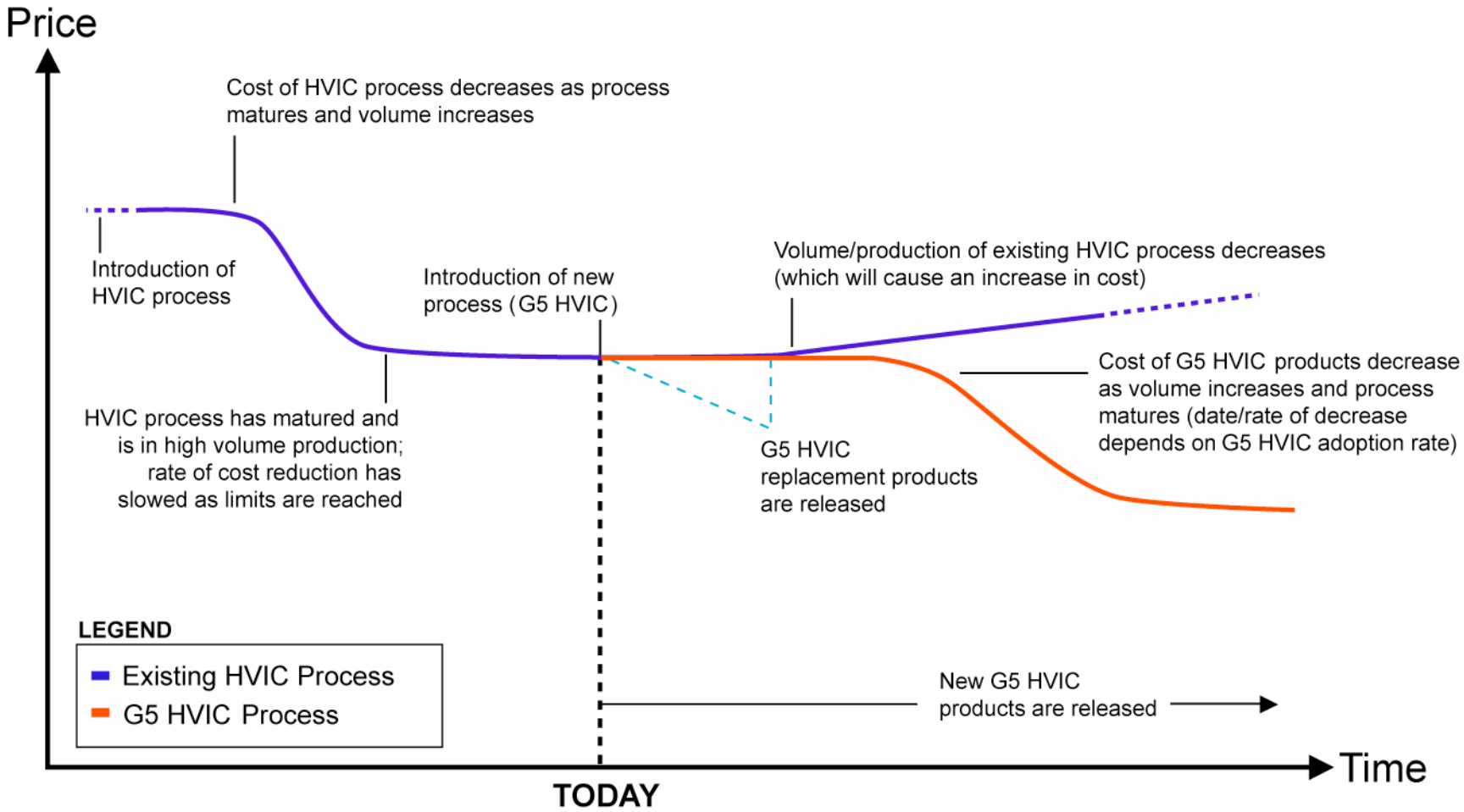
HVIC Evolution

International Rectifier has invested (and continues to invest) in a new IC process that will support the continued improvement of our HVICs and allow these improvements to be realized while keeping price under control. This new process is referred to as G5 HVIC.

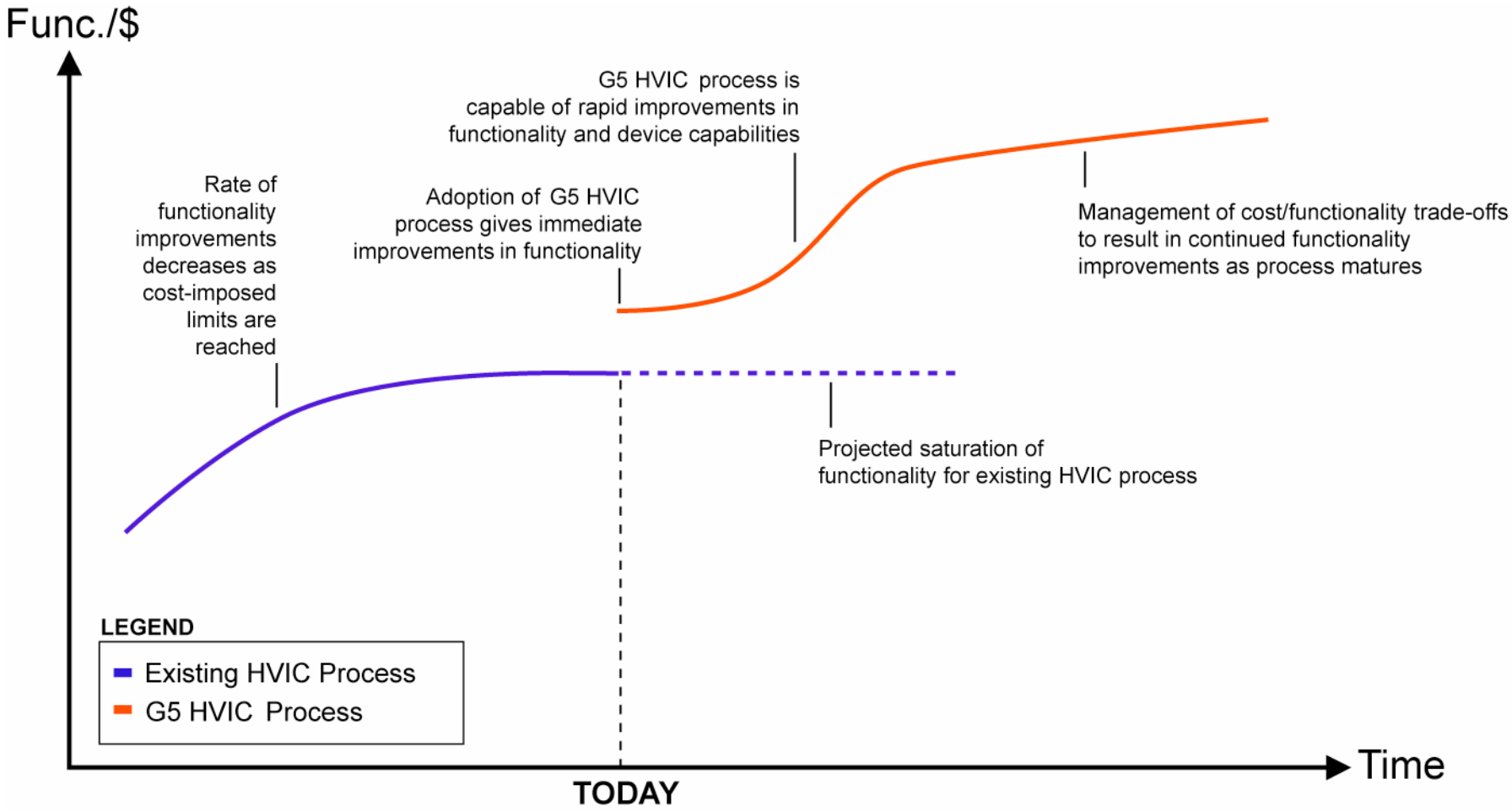
The adoption of a new IC process as an existing IC process approaches its limits is part of the natural progression in IC evolution. The G5 HVIC process allows improvements in device capabilities, tighter specifications, temperature stability, functions/$, and the integration of previously unavailable features at an attractive price point.

Two categories of products have emerged from this new technology; G5 HVIC new products, and G5 HVIC replacement products (to replace existing HVIC products).

Process Comparison: HVIC & G5 HVIC



Process Comparison: HVIC & G5 HVIC



Process Comparison: HVIC & G5 HVIC

- **G5 HVIC products are grouped in two categories**
  - New products (e.g., with integrated bootstrap functionality, PFC, brake drive, etc.)
  - Upgraded version of existing HVICs (e.g., improved input filters, etc.)

- **G5 HVIC replacement products are pin-to-pin compatible with their predecessors**

- **Process identification**
  - IRSxxxx part numbers (G5 HVIC technology)
  - IR2(0,1,3,5)xx & IR44xx part numbers (existing HVIC technology)

Adopting G5 HVIC: IRS210(9,94)

Immediate improvements in functionality/$

Capable of rapid improvements in functionality & capability

Previously unavailable features integrated at attractive price

- Improved clamping structure provides additional spike protection
- Higher output sink/source capability
- Improved matching time
- Improved temperature stability
- Higher signal to noise rejection at input and improved logic threshold values
- Improved DC operation under negative V_s conditions
- Pin-to-pin compatible IR2109(S): IRS2109(S), IRS2004(S), & IRS2104(S); IR21094(S): IRS21094(S)

Adopting G5 HVIC: IRS210(9,94)

	(units)	IRS2003	IRS2004	IRS2103	IRS2104	IRS2108	IRS21084	IR2109	IRS2109	IR21094	IRS21094	IRS2111	IRS2183	IRS21834	IRS2184	IRS21844	IRS2302	IRS2304	IRS2308
Offset voltage	V	200	200	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600
Matched prop. delay	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Programmable DT	-	No	No	No	No	No	Yes	No	No	Yes	Yes	No	No	Yes	No	Yes	No	No	No
SD Pin	-	No	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No
INPUT LOGIC																			
Logic compatibility	V	3.3, 5, 15	3.3, 5, 15	3.3, 5, 15	3.3, 5, 15	3.3, 5, 15	3.3, 5, 15	3.3, 5, 15	3.3, 5, 15	3.3, 5, 15	3.3, 5, 15	10-20	3.3, 5	3.3, 5	3.3, 5	3.3, 5	3.3, 5, 15	3.3, 5, 15	3.3, 5, 15
HIN, LIN/N	-	Yes		Yes									Yes	Yes					
HIN/N, LIN	-					Yes	Yes												
HIN, LIN	-																	Yes	Yes
IN	-		Yes		Yes			Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes		
OUTPUT																			
V_{out}	V	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	5-20	10-20	10-20
I_{O+}	mA	290	290	290	290	290	290	200	290	200	290	290	1900	1900	1900	1900	290	290	290
I_{O-}	mA	600	600	600	600	600	600	350	600	350	600	600	2300	2300	2300	2300	600	600	600
UVLO																			
V_{BSUV+}	V	-	-	-	-	8.9	8.9	8.9	8.9	8.9	8.9	8.6	8.9	8.9	8.9	8.9	4.1	8.9	8.9
V_{BSUV-}	V	-	-	-	-	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	3.8	8.2	8.2
V_{BSUVH}	V	-	-	-	-	0.7	0.7	0.7	0.7	0.7	0.7	-	0.7	0.7	0.7	0.7	0.3	0.7	0.7
V_{CCUV+}	V	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.6	8.9	8.9	8.9	8.9	4.1	8.9	8.9
V_{CCUV-}	V	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	3.8	8.2	8.2
V_{CCUVH}	V	-	-	-	-	0.7	0.7	0.7	0.7	0.7	0.7	-	0.7	0.7	0.7	0.7	0.3	0.7	0.7
TIMING																			
t_{on}	ns	680	680	680	680	220	220	750	750	750	750	750	180	180	680	680	750	150	220
t_{off}	ns	150	150	150	150	200	200	200	200	200	200	150	220	220	270	270	200	150	200
t_{sd}	ns		160		160			200	200	200	200				180	180	200		
t_r	ns	70	70	70	70	100	100	150	100	150	100	75	40	40	40	40	100	70	100
t_f	ns	35	35	35	35	35	35	50	35	50	35	35	20	20	20	20	35	35	35
MT	ns	60 (max)	60 (max)	60 (max)	60 (max)			70 (max)	70 (max)	70 (max)	70 (max)	30	35 (max)	35 (max)	90/40	90/40		50 (max)	
DT	ns	520	520	520	520	540	540-5000	540	540	540-5000	540-5000	650	400	400-5000	400	400-5000	540	100	540
MDT	ns					60 (max)	60-600	60 (max)	60 (max)	60-600	60-600		50	50-600	50	50-600	60 (max)		60 (max)

Half-Bridge Driver Comparison

G5 HVIC Tools

- **IRS210(9,94)**
  - Datasheet
  - Samples
  - HVIC Comparison Document
  - Test/Demo Board

Q&A

- **Will my existing HVIC be able to be replaced by its G5 HVIC counterpart?**
  - The G5 HVIC replacement products are designed to allow direct replacements of the existing HVIC parts in most applications. In many cases, the design will be able to take advantage of the new integrated bootstrap circuit (i.e., “D-series” HVICs).
- **When will the existing HVIC products no longer be available?**
  - This event will depend on the adoption rate of the G5 HVIC process and other market forces. Customers will be informed of this event and normal procedures will occur.
- **When will the I see a reduction in cost for G5 HVIC products?**
  - This will depend on the adoption rate (volume) of the new technology and the maturing of the process. IR has a history of passing on cost savings to our customers as the processes are refined and improved (matured).
- **Will I be able to use the new D-series HVICs in place of my existing HVIC?**
  - In most cases, yes. Not all D-series HVICs are recommended for all applications (please check for details in the datasheet). Not all HVIC models are available with the integrated bootstrap functionality.

Additional Q&A information posted at http://www.irf.com/product-info/hvic/g5hvic.html