



RC-D2 family for refrigerators

May 2022

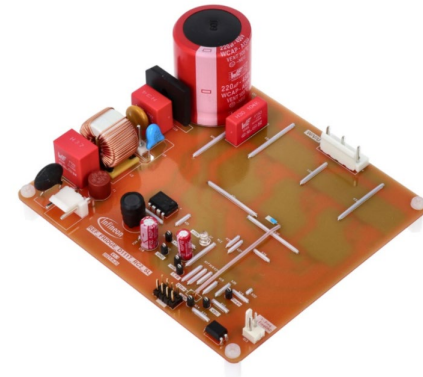


Refrigerators and freezers – Product overview

Fridge

- › **Motor controller:** PSoC™, XMC™ and **iMOTION™** family
- › **Inverter (Discrete):** IGBTs (650 V TRENCHSTOP™ IGBT6 & **RC-D2** series), MOSFETs (CoolMOS™ PFD7) and gate drivers (e.g. EiceDRIVER™)
- › **Inverter (integration):** CIPOS™ Micro IPMs
- › **PFC:** TRENCHSTOP™ IGBTs, Rapid and CoolSiC™ diodes, PFC gate drivers
- › **Auxiliary power:** CoolSET™

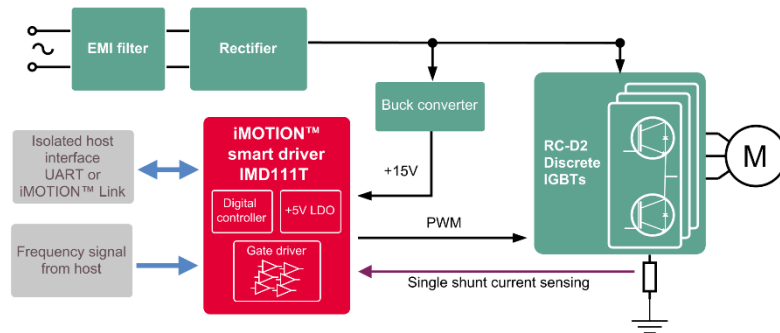
Energy Efficiency



Connectivity

- › AIROC™ Combo Bluetooth / Wi-Fi **connectivity**
- › XENSIV™ MEMS microphone for **voice control**
- › OPTIGA™ Trust M for **secured communication**
- › PSoC™ 6 microcontroller

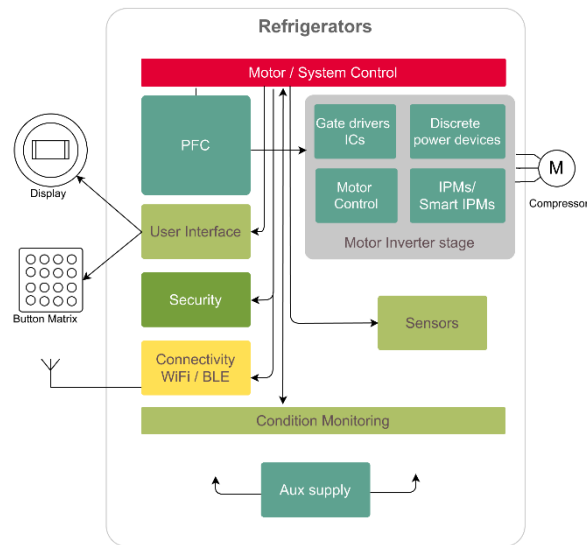
IoT



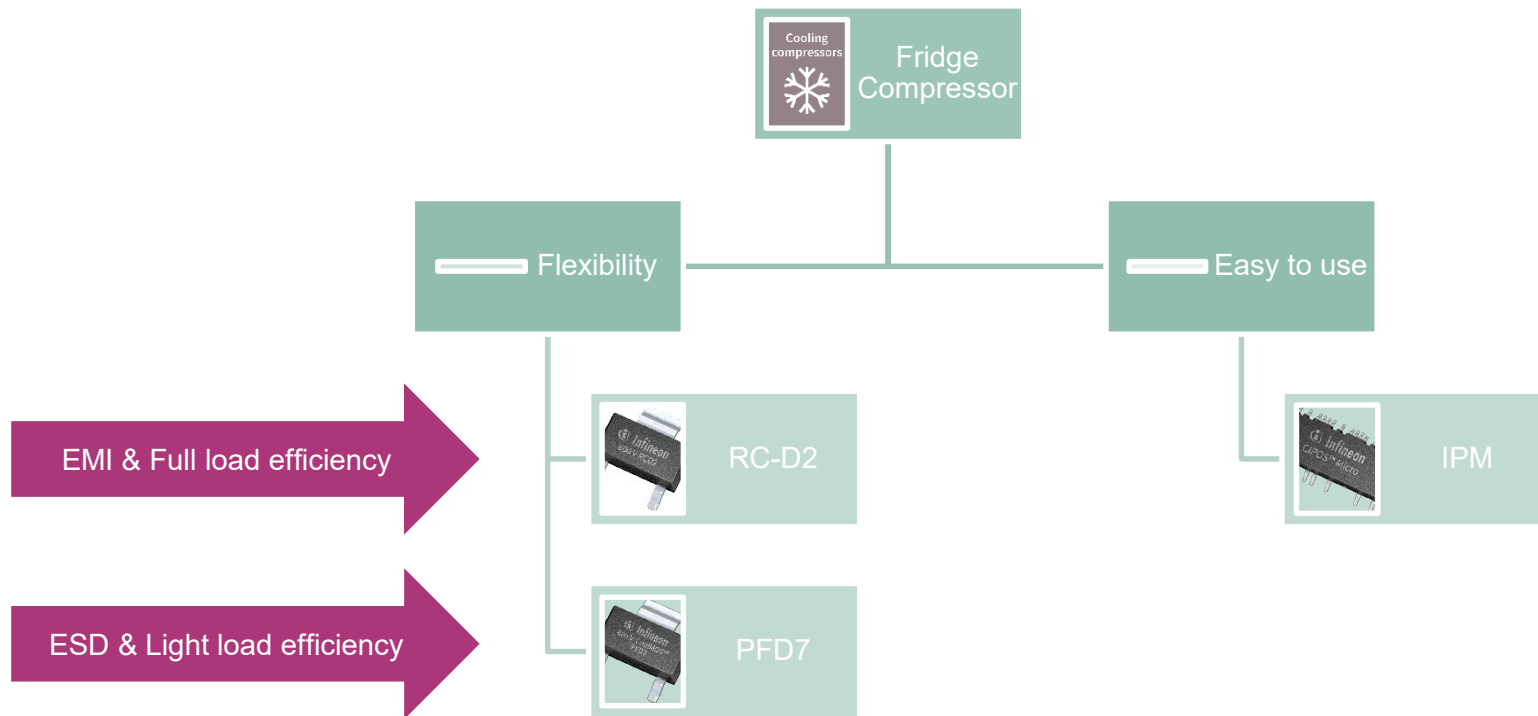
Modern refrigerators brings higher energy efficiency and connectivity features



Featuring **higher efficiency** and **smart connectivity** modern refrigerators can help to reduce waste of energy as well as waste of food



RC-D2 offers high flexibility & efficiency fulfilling EMI standards



600 V RC-D2 for fridges

Optimized for low power drive <300 W



Key features 600 V RC-D2

Key value



New price/ performance standard

Optimized for consumer drives



Great trade-off between price and performance



Broad portfolio

DPAK: offered in 4 variants with a collector current IC ranging from 4 to 15 A; SOT-223 package variants ranging from 1 to 6 A



Drop in **replacement**



Improved EMI

Enhanced controllability to reduce EMI noise compared to previous RC-D technologies



Easy to design in



HV-H3TRB ruggedness

HV humidity ruggedness improvement to protect the system



High system reliability

Package comparison

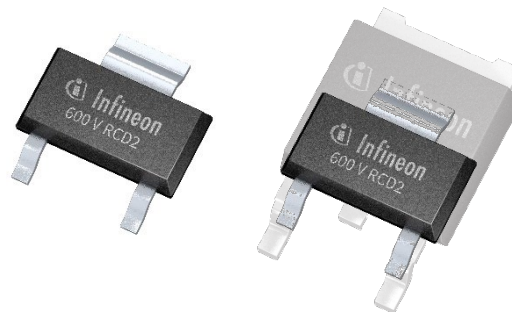
RC-D2 in DPAK vs RC-D2 in SOT-223

TO-252 DPAK



Area: **~75 mm²**

SOT-223

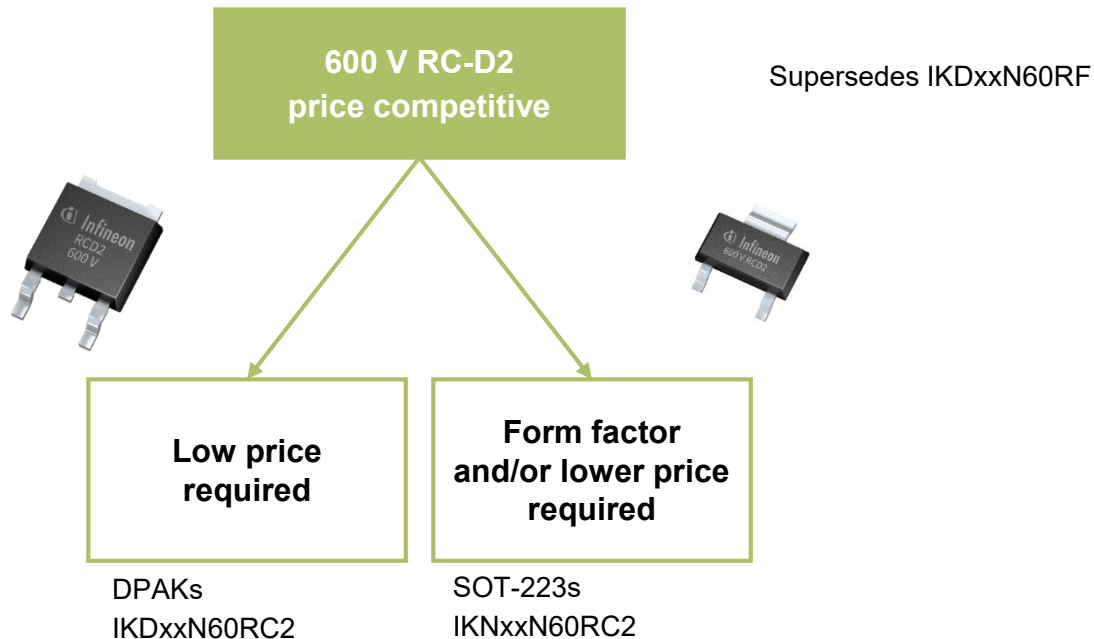


Area: **49 mm²**

Higher power density
Less printed circuit board space

35% shrink in length
25% shrink in height

When to use which package type in fridge application?



600 V RC-D2 is recommended as price competitive solution to supersede the existing 600 V RC-D(F) product family for low power fridge applications

RC-D2 portfolio for fridges

TRENCHSTOP™ RC-D2 family is the successor of TRENCHSTOP™ and RC-D(F) product lines.

IGBTs with monolithically integrated diode

I _c 100°C	SOT-223	DPAK
	RC-D2	RC-D2
1	IKN01N60RC2	
3	IKN03N60RC2	
4	IKN04N60RC2	IKD04N60RC2
6	IKN06N60RC2	IKD06N60RC2
8		
10		IKD10N60RC2
15		IKD15N60RC2
20		

Recommended drivers:

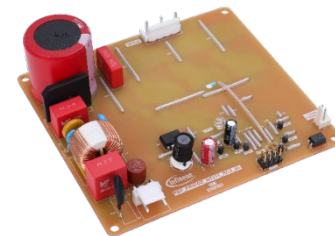
Half-bridge:
2ED2304S06F, IRS2890DS



A reference design, which enables designing cost effective compressor drives for refrigerators without motor control development

Overview

- › Turnkey motor control with the field-proven MCE (Motor Control Engine) that eliminates the need for motor control software development
- › Single-layer PCB for lowest manufacturing costs
- › Proven thermal design and EMI compatibility
- › Features RCD2-600 V IGBTs with the monolithically integrated diode for lowest EMI and losses and maximum design flexibility



REF_FRIDGE_D111T_RC2_SL

Target application

- › Refrigerators



Key featured products

- › [IMD111T-6F040 iMOTION™ driver](#) integrating motor controller and 600 V three phase gate driver in LQFP-40 package
- › [IKD04N60RC2](#), a 600 V, 4 A IGBT Discrete with Reverse Conducting Drive 2-diode in TO-252 package



Part of your life. Part of tomorrow.