



## Product Brief

# RC-Drive and RC-Drive Fast

## Cost-optimized IGBT for consumer drive applications

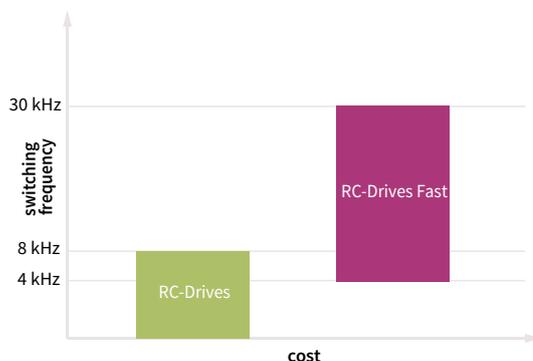
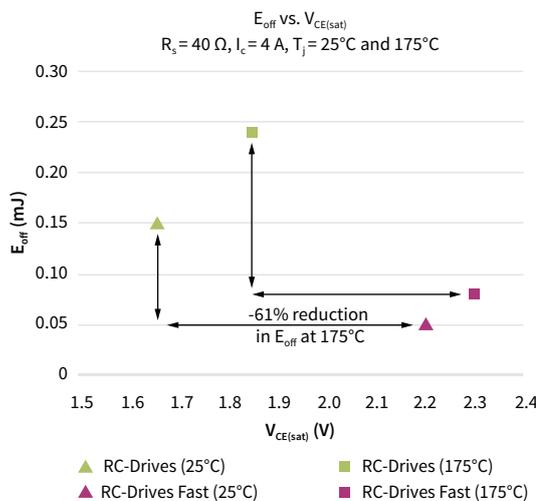
The RC-Drives (RC-D) IGBT technology is a cost-optimized solution for permanent magnet synchronous and brushless DC motors in the price-sensitive consumer drives market.

The RC-Drives Fast (RC-DF) family extension was developed to provide outstanding performance at switching frequencies above 8 kHz.

- > IGBT and diode were optimized to reduce losses at frequencies of 18–30 kHz
- > Audible noise can be reduced to absolutely silent level for high efficiency inverters operating above 16 kHz

Highly precise vector control techniques can be used to provide more torque in operation at low speed and high performance dynamics in the control at high speed. Furthermore, the small size of RC-Drives allows high power density designs with less system costs.

Due to different trade-off between conduction and switching losses, either RC-Drives or RC-Drives Fast can be offered depending on switching frequency.



### Main Features

- > Optimized  $E_{on}$ ,  $E_{off}$  and  $Q_{rr}$  for up to 20% lower switching losses
- > Operating range of DC to 30 kHz
- > Max. junction temperature 175°C
- > Short circuit capability of 5  $\mu s$
- > Very tight parameter distribution
- > Best-in-Class current versus package size performance
- > Smooth switching performance leading to low EMI levels
- > Complete product portfolio and PSpice models on the internet

### Main Benefits

- > Excellent cost/performance for hard switching applications
- > Outstanding temperature stability
- > Very good EMI behavior
- > Up to 60% space saving on the PCB
- > Higher reliability due to monolithically integrated IGBT & diode due to less thermal cycling during switching

### Applications

- > Fridge and aircon compressors
- > Pumps
- > Fans
- > Hard switching topologies up to 1.0 kW
- > General purpose inverters
- > Washing machines



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### Product specifications for RC-Drives and RC-Drives Fast

Partnumber	Package Type	Power [W]	Recomm. switching frequency [kHz]	V <sub>CE</sub> [V]	I <sub>C</sub> [A]		V <sub>CE(sat)</sub> [V]		E <sub>ts</sub> [mJ]		t <sub>SC</sub> [μs]	V <sub>F</sub> [V]		Q <sub>rr</sub> [μC]	
					25 °C	100 °C	25 °C	175 °C	25 °C	175 °C		25 °C	175 °C	25 °C	175 °C
IKD03N60RF	DPAK	40...80	4...30	600	5	2.5	2.2	2.3	0.09*	0.14*	5	2.1	2.0	0.06*	0.19*
IKD04N60RF	DPAK	80...150	4...30	600	8	4	2.2	2.3	0.11*	0.19*	5	2.1	2.0	0.09*	0.26*
IKD06N60RF	DPAK	150...250	4...30	600	12	6	2.2	2.3	0.18*	0.28*	5	2.1	2.0	0.16*	0.34*
IKD10N60RF	DPAK	250...600	4...30	600	20	10	2.2	2.3	0.35*	0.52*	5	2.1	2.0	0.27*	0.62*
IKD15N60RF	DPAK	600...1 kW	4...30	600	30	15	2.2	2.3	0.52*	0.78*	5	2.1	2.0	0.42*	1.0*
IKD04N60R	DPAK	80...150	DC...5	600	8	4	1.65**	1.85**	0.24	0.4	5	1.7**	1.7**	0.22	0.52
IKD06N60R	DPAK	150...250	DC...5	600	12	6	1.65**	1.85**	0.33	0.56	5	1.7**	1.7**	0.37	0.8
IKD10N60R	DPAK	250...600	DC...8	600	20	10	1.65**	1.85**	0.59	0.93	5	1.7**	1.7**	0.56	1.22
IKD15N60R	DPAK	600...1 kW	DC...8	600	30	15	1.65**	1.85**	0.9	1.25	5	1.7**	1.7**	0.76	1.7

\* Speed optimization

\*\*Conduction optimization

For more information visit RC-Drives promo page on [www.infineon.com/rcdf](http://www.infineon.com/rcdf)



Published by  
Infineon Technologies Austria AG  
9500 Villach, Austria

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