

# DUAL COOL™ PACKAGE POWERTRENCH® MOSFETs

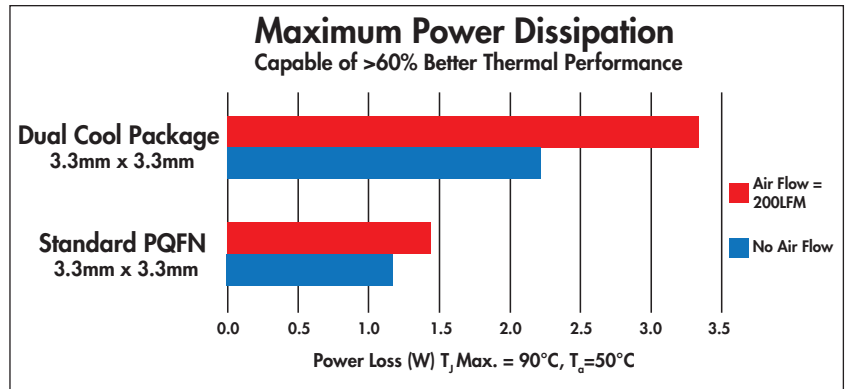
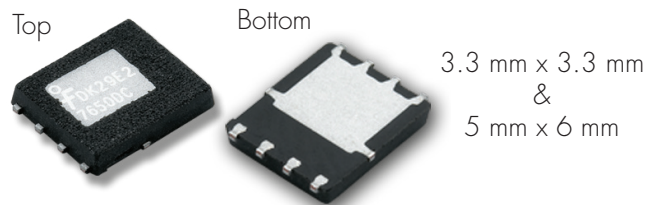
Dual Cool™ packaging technology, provides both bottom- and top-side cooling in a PQFN package. Not only is the PQFN footprint an industry standard, it provides the designer with performance flexibility. With enhanced dual path thermal performance and improved parasitics over its wire-bonded predecessors, the use of a heat sink with Dual Cool packaging technology provides even more impressive results. Test results prove that, when a heat sink is used with our Dual Cool package technology, synchronous buck converters deliver higher output current and increased power density. With Fairchild's trench silicon technology, Dual Cool packaging technology proves to be a clear leader in power density and thermal performance. Our Dual Cool package solutions are lead free and RoHS compliant and are available in 3.3 mm x 3.3 mm and 5 mm x 6 mm PQFN packages.

## Features

- Top-side cooling, lower thermal resistance from junction to top
- Same land pattern as 5 mm x 6 mm and 3.3 mm x 3.3 mm PQFN – JEDEC standard
- Allows higher current and power dissipation
- Highest power density for DC-DC applications
- Use with or without a heat sink, reduces the number of qualified components in the BOM
- Multiple suppliers without cross licensing requirements
- High degree of production commonality with standard PQFN packaging
- 25 V - 150 V portfolio

## Applications

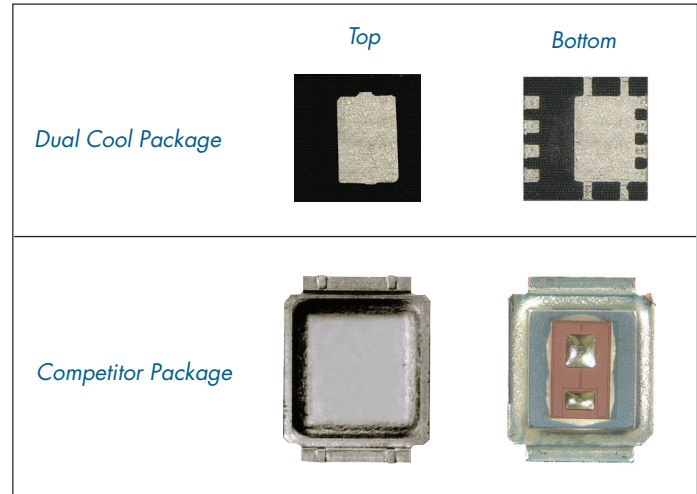
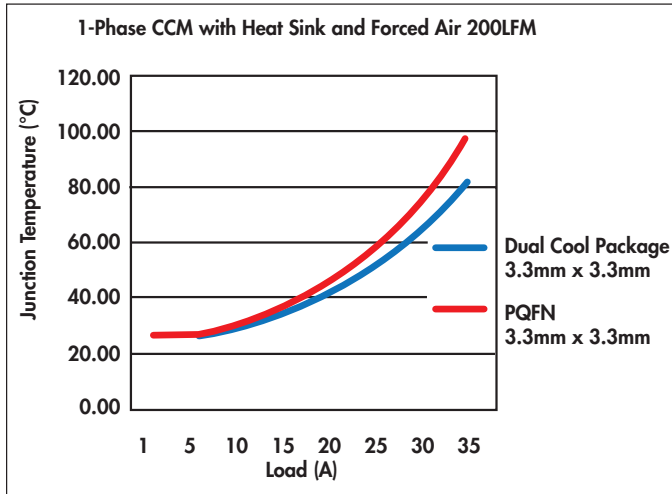
- Point-of-load (POL) synchronous-buck conversion
- Servers
- Telecommunications, routing and switching
- Heat path from top only



5mm x 6mm Package Interconnect	$Q_{JA} (^{\circ}C/W)$	(%) Improvement from Wire Package
PQFN Wire	27.1	-
PQFN Clip	23.8	13.9
Dual Cool Package	17.2	57.5

Environment: Minimum Pad, Heat Sink, 200LFM Forced Air

For data sheets, application notes, samples and more, please visit: [www.fairchildsemi.com](http://www.fairchildsemi.com)



	Board Solderable Component Area	DirectFET	
		% Difference Solderable Area	Total Component Area (Max)
Dual Cool Package 3.3mm x 3.3mm	4.5mm <sup>2</sup>	The new standard	11.56mm <sup>2</sup>
Competitor	3mm <sup>2</sup>	33% less	19.16mm <sup>2</sup>

5mm x 6mm Package									
Product Number	SyncFET™ Technology	BV <sub>DSS</sub>	V <sub>GS</sub>	R <sub>DS(ON)</sub> Max (mΩ)				Qg (nC)	Qgd (nC)
				10V	8V	6V	4.5V		
FDMS8570SDC	Y	25	20	2.8	-	-	3.3	22	4.4
FDMS7650DC	N	30	20	0.99	-	-	1.55	42	9.7
FDMS3006SDC	Y	30	20	1.9	-	-	2.7	26	5.3
FDMS3008SDC	Y	30	20	2.6	-	-	3.3	21	4.3
FDMS3016DC	N	30	20	6	-	-	9	7.6	2.5
FDMS8320LDC	N	40	20	1.1	-	-	1.5	57	16
FDMS86500DC	N	60	20	2.3	3.3	-	-	76	15
FDMS86300DC	N	80	20	3.1	4	-	-	72	14
FDMS86101DC	N	100	20	7.5	-	12	-	31	7
FDMS86200DC	N	150	20	17	-	25	-	30	5.6

3.3mm x 3.3mm Package									
Product Number	SyncFET™ Technology	BV <sub>DSS</sub>	V <sub>GS</sub>	R <sub>DS(ON)</sub> Max (mΩ)				Qg (nC)	Qgd (nC)
				10V	8V	6V	4.5V		
FDMC7660DC	N	30	20	-	-	-	-	-	-
FDMC86520DC	N	60	20	6.3	8.7	-	-	29	5.5