

DUAL COOL™ PACKAGED POWER TRENCH® MOSFETS

Fairchild's Offering

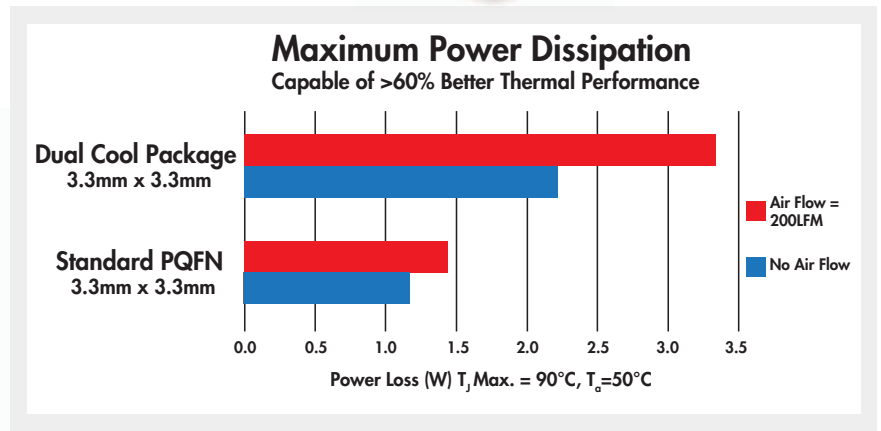
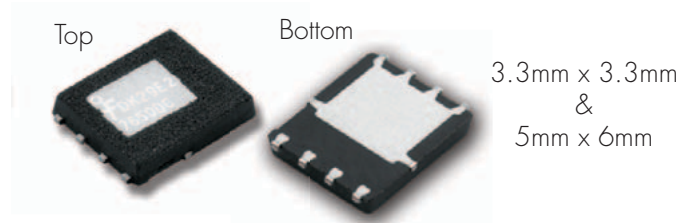
Dual Cool™ packaging, our latest innovation, provides both bottom and topside cooling in a PQFN package. Not only is the PQFN an industry standard, but it also gives the designer performance flexibility within its standard PQFN footprint. With enhanced dual path thermal performance and improved parasitics over its wire-bonded predecessors, the use of a heat sink with Dual Cool packaging provides even more impressive results. Test results show a heat sinked Dual Cool package allows synchronous Buck converters to deliver higher output current, thus increasing power density. With Fairchild's world-class trench silicon technology, Dual Cool packaging proves to be a clear leader in power density and thermal performance. Dual Cool package products are green, lead-free, and RoHS compliant; and are now available in 3.3mm x 3.3mm and 5mm x 6mm QFN packages.

Features & Benefits

- Top Side Cooling – lower thermal resistance from junction to top
- Same land pattern as 5mm x 6mm and 3.3mm x 3.3mm 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

Applications

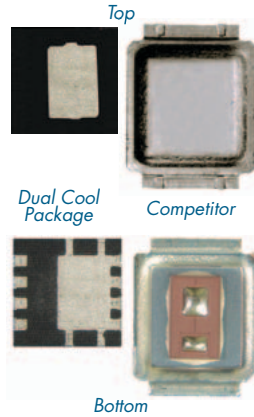
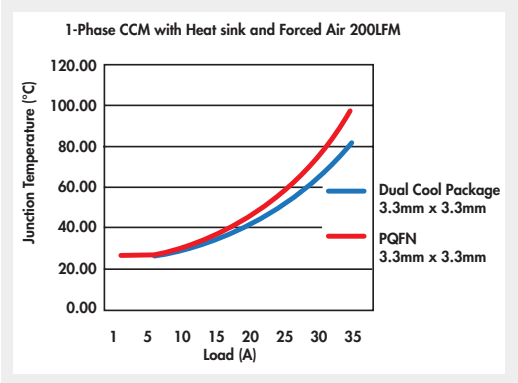
- Point-of-load (POL) synchronous Buck conversion
- Desktop, notebook, and server
- Telecommunications, routing, and switching



5mm x 6mm ² Package Interconnect	Q_{JA} (°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



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

5mm x 6mm Package							
Product Number	SyncFET™ MOSFET	BV _{DSS} (V)	V _{gs} (V)	R _{DS(ON)} Max.		Gate Charge (typ)	
				10V	4.5V	Q _g (4.5)	Q _{gd}
				(mΩ)	(mΩ)	(nC)	(nC)
FDMS2502SDC	Y	25	20	1.2	1.6	43	8.8
FDMS2504SDC	Y	25	20	1.3	1.8	39	9.7
FDMS2506SDC	Y	25	20	1.5	2.1	30	7.5
FDMS2508SDC	Y	25	20	2.0	2.9	22	5.5
FDMS2510SDC	Y	25	20	2.9	4.2	15	4
FDMS7650DC*	-	30	20	0.99	1.6	63	13
FDMS3006SDC*	Y	30	20	1.7	2.4	30	8.1
FDMS3008SDC*	Y	30	20	2.2	3.2	22	5.5
FDMS3016DC*	-	30	20	6.2	9.0	7	2.5

3.3mm x 3.3mm Package							
Product Number	SyncFET™ MOSFET	BV _{DSS} (V)	V _{gs} (V)	R _{DS(ON)} Max.		Gate Charge (typ)	
				10V	4.5V	Q _g (4.5)	Q _{gd}
				(mΩ)	(mΩ)	(nC)	(nC)
FDMC2512SDC*	Y	25	20	2.0	2.9	22	5.5
FDMC2514SDC*	Y	25	20	2.9	4.7	14	3.8
FDMC3011SDC*	Y	30	20	1.7	2.5	22	5.9
FDMC7660DC	-	30	20	2.2	3.3	24	5.5
FDMC3020DC*	-	30	20	6.2	9.0	7	2.5

* Under Development