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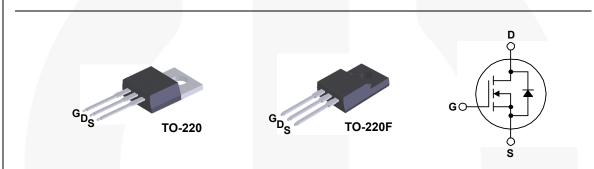
FQP6N80C / FQPF6N80C **N-Channel QFET® MOSFET** 800 V, 5.5 A, 2.5 Ω

Description

This N-Channel enhancement mode power MOSFET is • 5.5 A, 800 V, R_{DS(on)} = 2.5 Ω (Max.) @ V_{GS} = 10 V, produced using Fairchild Semiconductor's proprietary planar stripe and DMOS technology. This advanced MOSFET technology has been especially tailored to reduce on-state • Low Gate Charge (Typ. 21 nC) resistance, and to provide superior switching performance • Low Crss (Typ. 8 pF) and high avalanche energy strength. These devices are suitable for switched mode power supplies, active power • 100% Avalanche Tested factor correction (PFC), and electronic lamp ballasts.

Features

- I_D = 2.75 A



Absolute Maximum Ratings T_c = 25°C unless otherwise noted.

Symbol	Parameter		FQP6N80C	FQPF6N80C / FQPF6N80CT	Unit
V _{DSS}	Drain-Source Voltage	8	V		
I _D	Drain Current - Continuous ($T_C = 25^{\circ}C$)		5.5	5.5 *	А
	- Continuous (T _C = 100°C)		3.2	3.2 *	А
I _{DM}	Drain Current - Pulsed	(Note 1)	22	22 *	А
V _{GSS}	Gate-Source Voltage	±	V		
E _{AS}	Single Pulsed Avalanche Energy	(Note 2)	680		mJ
I _{AR}	Avalanche Current	(Note 1)	5	А	
E _{AR}	Repetitive Avalanche Energy	(Note 1)	1	mJ	
dv/dt	Peak Diode Recovery dv/dt (Note 3)		4	V/ns	
P _D	Power Dissipation ($T_C = 25^{\circ}C$)	158	51	W	
	- Derate above 25°C	1.27	0.41	W/°C	
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to	°C		
ΤL	Maximum Lead Temperature for Soldering, 1/8" from Case for 5 Seconds.	3	°C		

Thermal Characteristics

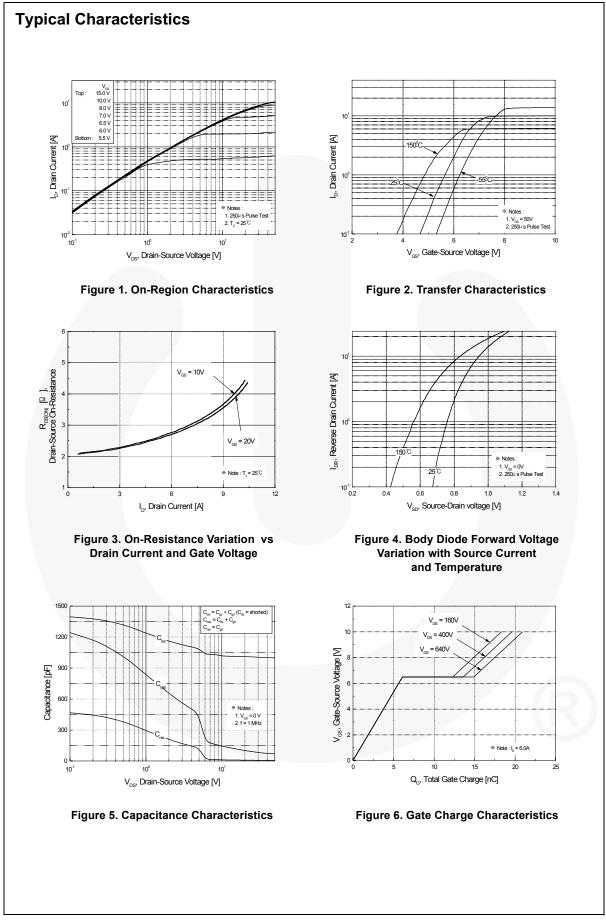
Symbol	Parameter	FQP6N80C	FQPF6N80C / FQPF6N80CT	Unit °C/W	
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case, Max.	0.79	2.45		
$R_{\theta CS}$	Thermal Resistance, Case-to-Sink Typ, Max.	0.5		°C/W	
$R_{ ext{ heta}JA}$	Thermal Resistance, Junction-to-Ambient, Max.	62.5	62.5	°C/W	

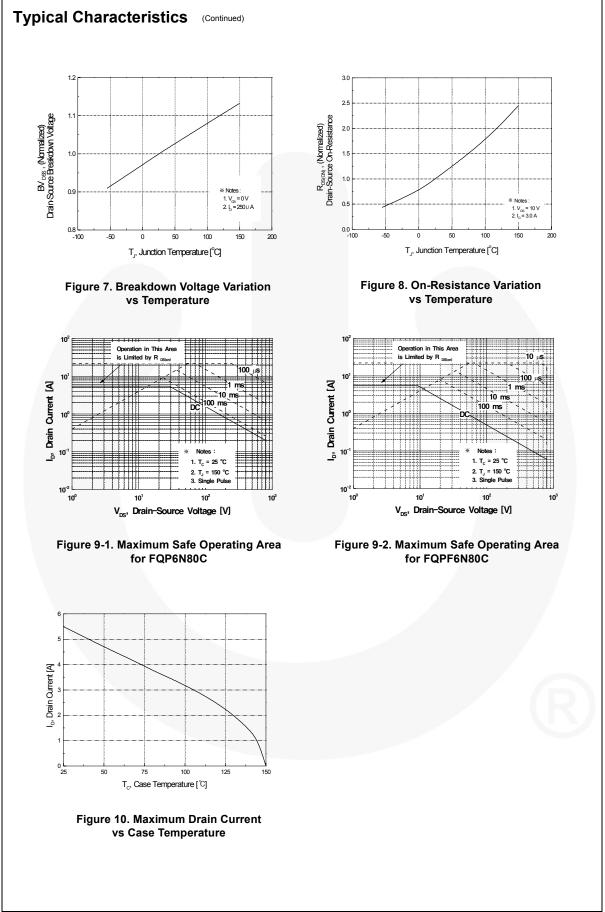
December 2013

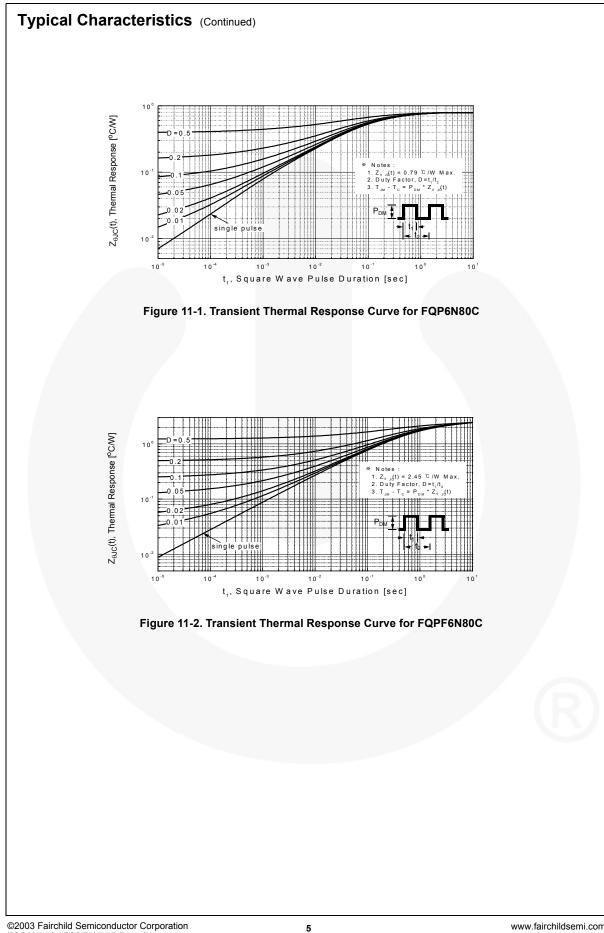
Part Number FQP6N80C FQPF6N80C		Top Mark	Pac	kage Packing Method Ree		Reel	Size	Tape Width		Quantity	
		FQP6N80C	TO-	-220	Tube	N//	۹.	N/A		50 units	
		FQPF6N80C	TO-2	220F Tube N/A		4	N/A		50 units		
FQPF	6N80CT	FQPF6N80CT	TO-220F		Tube	N/A		N/A		50 units	
lectri	cal Cha	racteristics	T _C = 25°0	C unless oth	erwise noted.		ŀ				
Symbol		Parameter			Test Conditions		Min.	Тур.	Max.	Unit	
Off Cha	aracterist	ice									
BV _{DSS}	1	urce Breakdown Voltage		V _{GS} = 0 V, I _D = 250 μA			800			V	
ΔBV _{DSS} / ΔT _J		Breakdown Voltage Temperature Coefficient		$I_D = 250 \ \mu$ A, Referenced to 25°C				0.97		V/°C	
I _{DSS}			V _{DS} = 800 V, V _{GS} = 0 V					10	μA		
	Zero Gate	e Voltage Drain Curre	ent	$V_{DS} = 640 \text{ V}, \text{ T}_{C} = 125^{\circ}\text{C}$					100	μA	
I _{GSSF}	Gate-Bod	y Leakage Current, F	orward	V _{GS} =	V _{GS} = 30 V, V _{DS} = 0 V		-		100	nA	
I _{GSSR}	Gate-Bod	y Leakage Current, F	Reverse	V _{GS} =	-30 V, V _{DS} = 0 V	1	-		-100	nA	
On Cha	aracterist	ics									
V _{GS(th)}	1	eshold Voltage	-	V _{DS} =	V _{GS} , I _D = 250 μA		3.0		5.0	V	
R _{DS(on)}	Static Dra On-Resist			V _{GS} =	10 V, I _D = 2.75 A		ł	2.1	2.5	Ω	
9 _{FS}	Forward T	ransconductance		V _{DS} =	50 V, I _D = 2.75 A		-	5.4		S	
D											
Dynam C _{iss}	Input Cap	cteristics acitance	-					1010	1310	pF	
C _{oss}		apacitance	_	$V_{DS} = 25 V, V_{GS} = 0 V,$				90	115	pF	
C _{rss}		Fransfer Capacitance		1 = 1.0	f = 1.0 MHz			8	11	pF	
	4	acteristics								p.	
t _{d(on)}		Delay Time	-					26	60	ns	
t _r	Turn-On F	,		$-V_{DD} = 400 \text{ V}, \text{ I}_{D} = 5.5 \text{ A},$				65	140	ns	
d(off)		Delay Time		R _G = 2	5 12			47	105	ns	
t _f	Turn-Off F			+		(Note 4)		44	90	ns	
Qg	Total Gate				640 V, I _D = 5.5 A,			21	30	nC	
Q _{gs}		rce Charge		V _{DS} =			-	6		nC	
Q _{gd}	Gate-Drai			- 68		(Note 4)		9		nC	
3-				1				I			
Drain-S		ode Characteri			-						
I _S	Maximum	n Continuous Drain-Source Diode Forward Current						5.5	А		
1	Maximum	Pulsed Drain-Sourc	e Diode F						22	A	
				1/ -	0 V, I _S = 5.5 A				1.4	V	
I _{SM} V _{SD}	Drain-Sou	Irce Diode Forward \	/oltage						1.4	v	
		Irce Diode Forward \ Recovery Time	/oltage	V _{GS} =	0 V, I _S = 5.5 A, = 100 A/μs			615		ns	

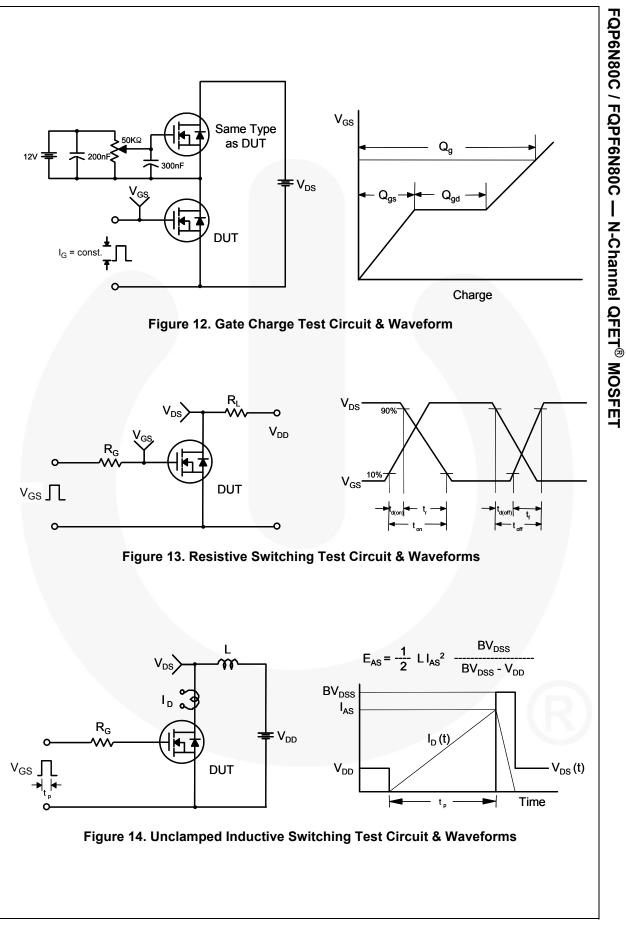
Notes: 1. Repetitive rating : pulse-width limited by maximum junction temperature. 2. L = 42 mH, I_{AS} = 5.5 A, V_{DD} = 50 V, R_G = 25 Ω , starting T_J = 25°C. 3. I_{SD} \leq 5.5 A, di/dt \leq 200 A/µs, V_{DD} \leq BV_{DSS} starting T_J = 25°C. 4. Essentially independent of operating temperature.

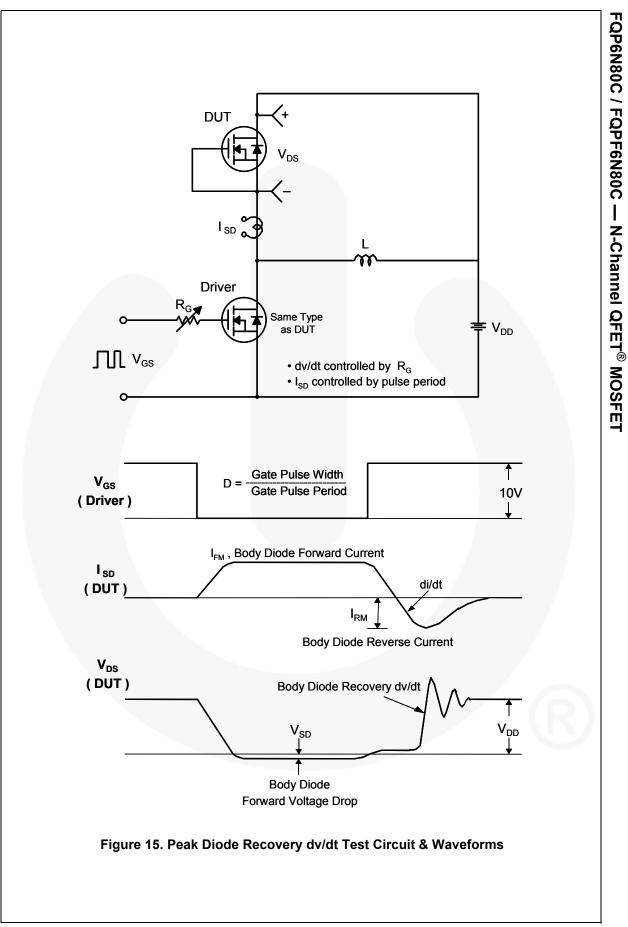
FQP6N80C / FQPF6N80C — N-Channel QFET[®] MOSFET

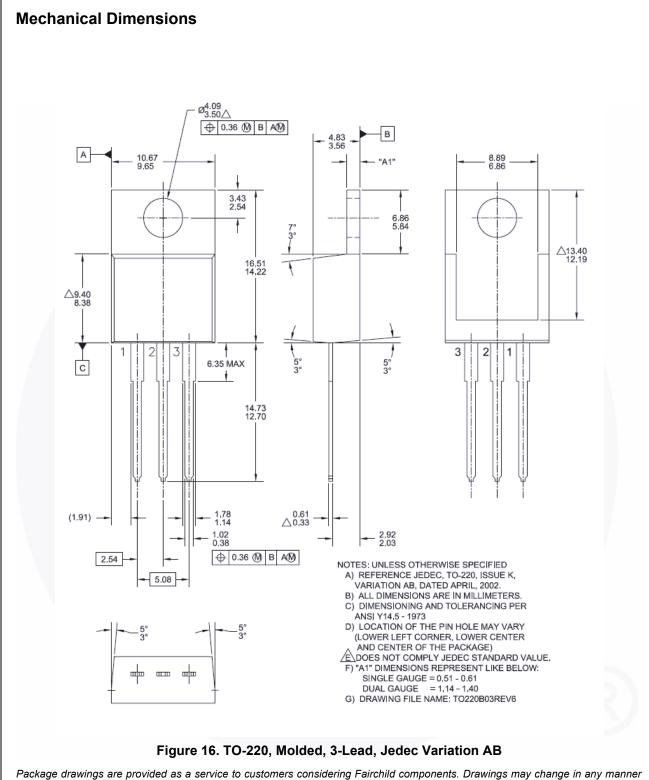








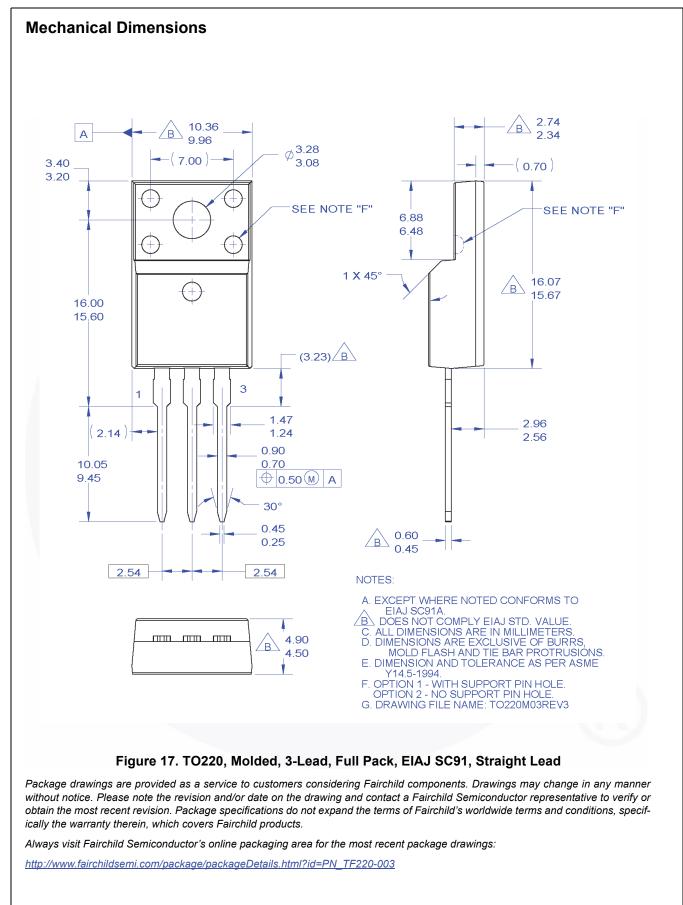


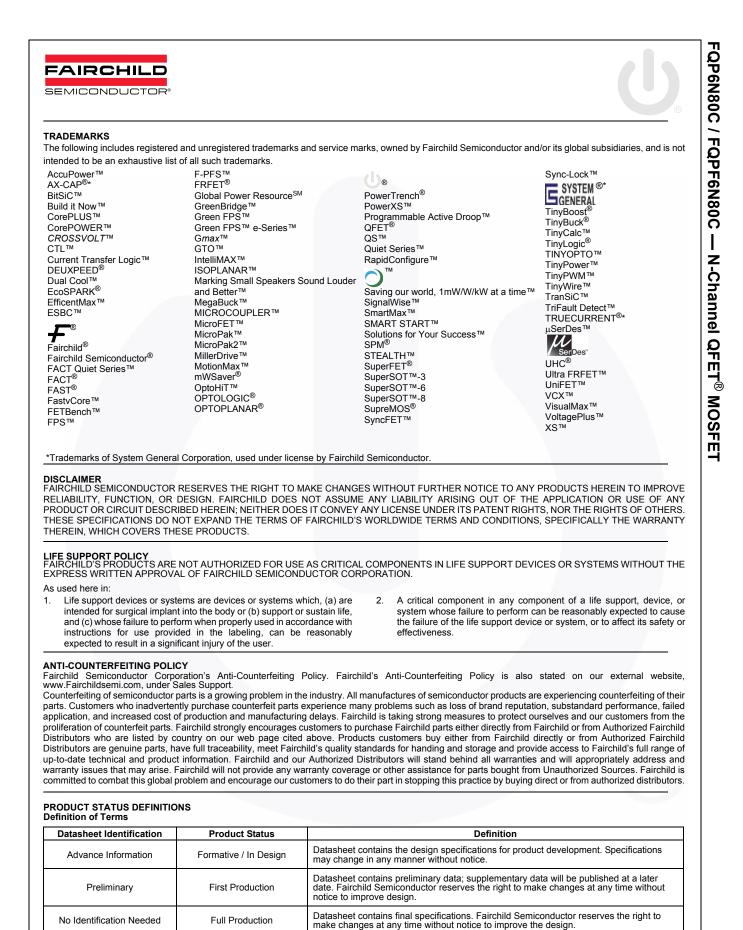


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Rev. 166

Obsolete

Not In Production

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