

FDP10N60NZ / FDPF10N60NZ N-Channel UniFETTM II MOSFET 600 V, 10 A, 750 mΩ

Features

- R_{DS(on)} = 640 mΩ (Typ.) @ V_{GS} = 10 V, I_D = 5 A
- Low Gate Charge (Typ. 23 nC)
- Low C_{rss} (Typ. 10 pF)
- · 100% Avalanche Tested
- · Improved dv/dt Capability
- · ESD Improved Capability
- RoHS Compliant

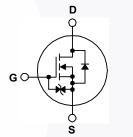
Applications

- LCD/ LED/ PDP TV
- Lighting
- Uninterruptible Power Supply

Description

UniFETTM II MOSFET is Fairchild Semiconductor's high voltage MOSFET family based on advanced planar stripe and DMOS technology. This advanced MOSFET family has the smallest on-state resistance among the planar MOSFET, and also provides superior switching performance and higher avalanche energy strength. In addition, internal gate-source ESD diode allows UniFET II MOSFET to withstand over 2kV HBM surge stress. This device family is suitable for switching power converter applications such as power factor correction (PFC), flat panel display (FPD) TV power, ATX and electronic lamp ballasts.





MOSFET Maximum Ratings T_C = 25°C unless otherwise noted.

TO-220

Symbol	Parameter			FDP10N60NZ	FDPF10N60NZ	Unit
V _{DSS}	Drain to Source Voltage			6	V	
V _{GSS}	Gate to Source Voltage			±	V	
ID	Drain Current	- Continuous (T _C = 25 ^o C)		10 10*		•
	Drain Current	- Continuous (T _C = 100 ^o C)		6	6*	A
I _{DM}	Drain Current	- Pulsed (Note 1)		40	40 40*	
E _{AS}	Single Pulsed Avalanche Energy (Note 2)			5	mJ	
I _{AR}	Avalanche Current		(Note 1)	10		А
E _{AR}	Repetitive Avalanche Energy		(Note 1)	18.5		mJ
dv/dt	Peak Diode Recovery dv/dt (Note 3		(Note 3)	10		V/ns
P _D	Dewen Dissingtion	(T _C = 25 ^o C)		185	38	W
	Power Dissipation	- Derate Above 25°C		1.5	0.3	W/ºC
T _J , T _{STG}	Operating and Storage Temperature Range			-55 to	°C	
TL	Maximum Lead Temperature for Soldering, 1/8" from Case for 5 Seconds			3	°C	

GDS

Dran current limited by maximum junction temperature.

Thermal Characteristics

Symbol	Parameter	FDP10N60NZ	FDPF10N60NZ	Unit
$R_{ extsf{ heta}JC}$	Thermal Resistance, Junction to Case, Max.	0.68	3.3	°C/W
R_{\thetaJA}	Thermal Resistance, Junction to Ambient, Max.	62.5	62.5	°C/W

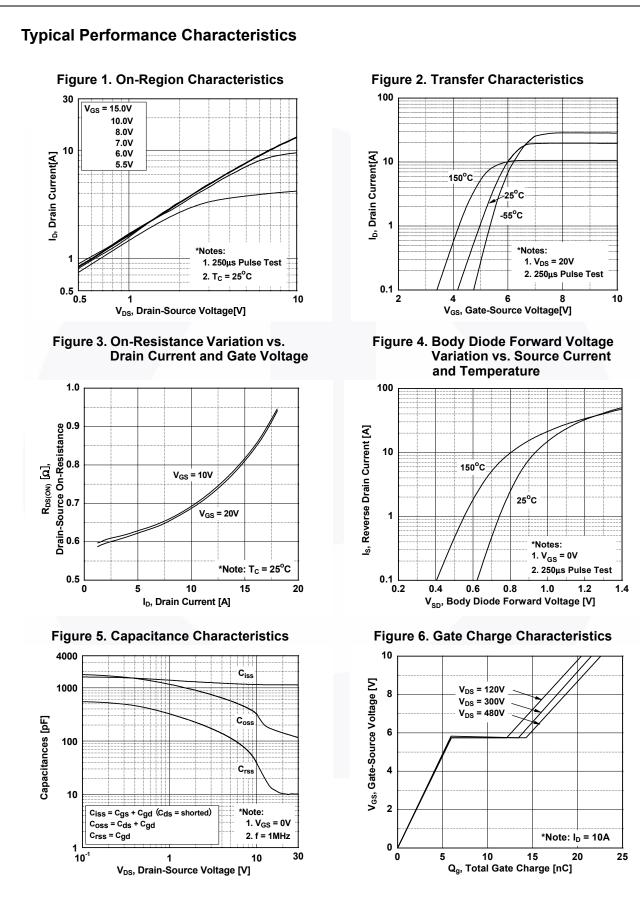
FDP10N60NZ FDP10N60NZ		Package	PackagePacking MethodReel SizeTO-220TubeN/ATO-220FTubeN/A		e Tape Width N/A N/A		Qu	antity	
		TO-220					50 units		
		TO-220F					50 units		
Electrica	l Chara	icteristics T _C = 25°C	; unless oth	erwise noted.					
Symbol		Parameter		Test Condition	s	Min.	Тур.	Max.	Unit
Off Charao	cteristics								1
BV _{DSS}	1	Source Breakdown Voltage	e In	= 250 μA, V _{GS} = 0 V, T	_ = 25°C	600	-	-	V
ΔBV _{DSS} /ΔTJ	Breakdown Voltage Temperature Coefficient			$I_D = 250 \ \mu\text{A}, \text{ Referenced to } 25^{\circ}\text{C}$			0.6	-	V/ºC
	Zero Gate Voltage Drain Current			_{DS} = 600 V, V _{GS} = 0 V		-	-	1	μA
DSS		.		_{DS} = 480 V, T _C = 125 ^o C		-	-	10	μΛ
I _{GSS}	Gate to E	Body Leakage Current	Vc	$_{\rm SS}$ = ±25 V, V _{DS} = 0 V		-	-	±10	μA
On Charac	cteristics								
V _{GS(th)}	Gate Threshold Voltage		V	V _{GS} = V _{DS} , I _D = 250 μA			-	5.0	V
R _{DS(on)}	Static Drain to Source On Resistance		ce V ₍	V _{GS} = 10 V, I _D = 5 A			0.64	0.75	Ω
9 _{FS}	Forward Transconductance		V	$V_{DS} = 20 \text{ V}, \text{ I}_{D} = 5 \text{ A}$			14	-	S
Dynamic (Character	ristics							
C _{iss}	Input Cap	pacitance		V _{DS} = 25 V, V _{GS} = 0 V, f = 1 MHz		-	1110	1475	pF
C _{oss}	Output C	apacitance				-	130	175	pF
C _{rss}	Reverse	Transfer Capacitance	I ~			-	10	15	pF
Qg	Total Gat	e Charge at 10V	V	_{DS} = 480 V, I _D = 10 A,	= 480 V, I _D = 10 A,	-	23	30	nC
Q _{gs}	Gate to S	Source Gate Charge	V	_{GS} = 10 V		-	6	-	nC
Q _{gd}	Gate to Drain "Miller" Charge			(Note 4)			8	-	nC
Switching	Characte	eristics							
t _{d(on)}		Delay Time	V.	V _{DD} = 300 V, I _D = 10 A,		-	25	60	ns
t _r	Turn-On Rise Time			$V_{GS} = 10 \text{ V}, \text{ R}_{G} = 25 \text{ W}$			50	110	ns
t _{d(off)}	Turn-Off I	Delay Time					70	150	ns
t _f	Turn-Off I			(Note 4)		50	110	ns	
Drain-Sou	rce Diod	e Characteristics							
I _S		Continuous Drain to Sour	ce Diode Fo	orward Current		-	-	10	Α
I _{SM}	Maximum Pulsed Drain to Source Diod			e Forward Current			-	40	Α
V _{SD}	Drain to Source Diode Forward Voltage		age V _c				-	1.4	V
t _{rr}	Reverse I	Recovery Time		_{SS} = 0 V, I _{SD} = 10 A,		-	300	-	ns
Q _{rr}		Recovery Charge		dl _F /dt = 100 A/μs		-	2.0	-	μC

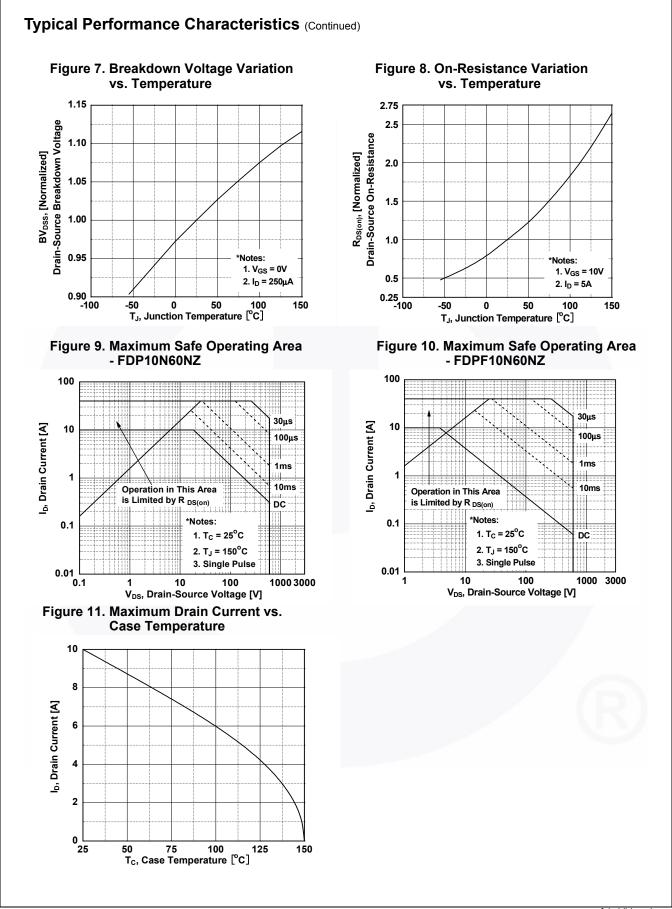
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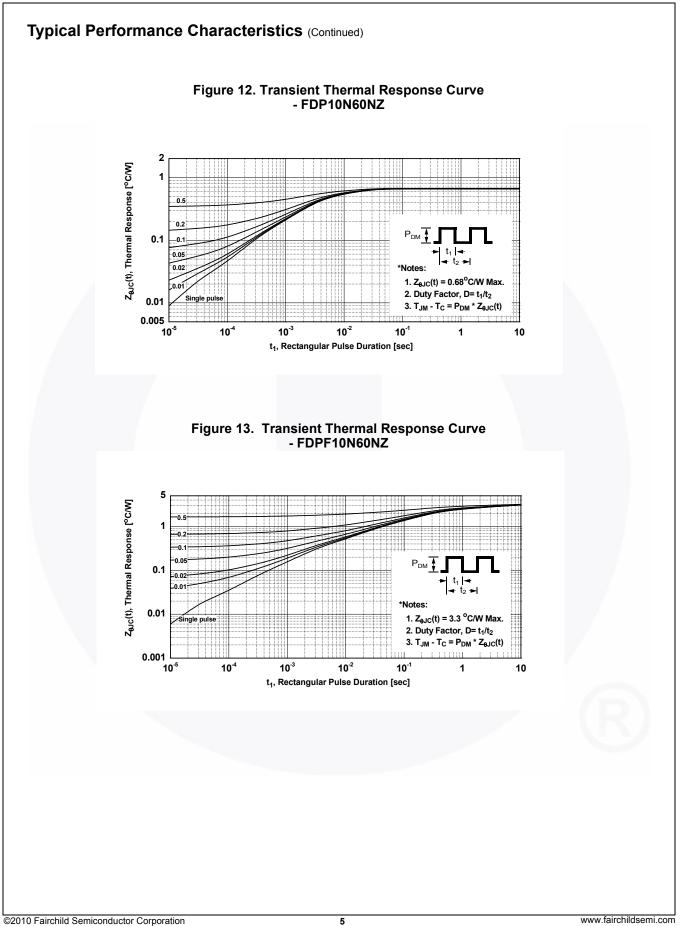
4. Essentially independent of operating temperature typical characteristics.

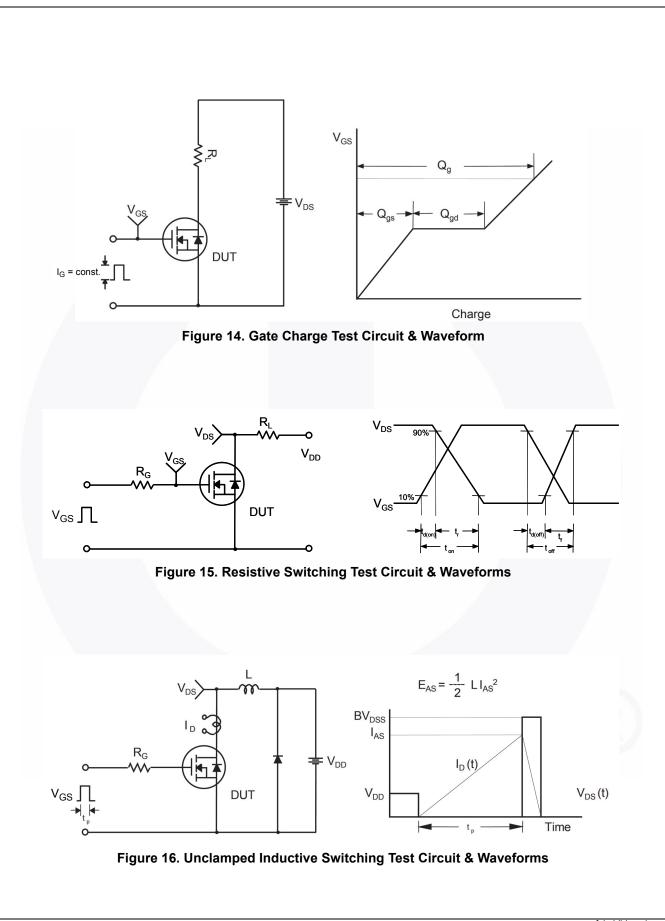
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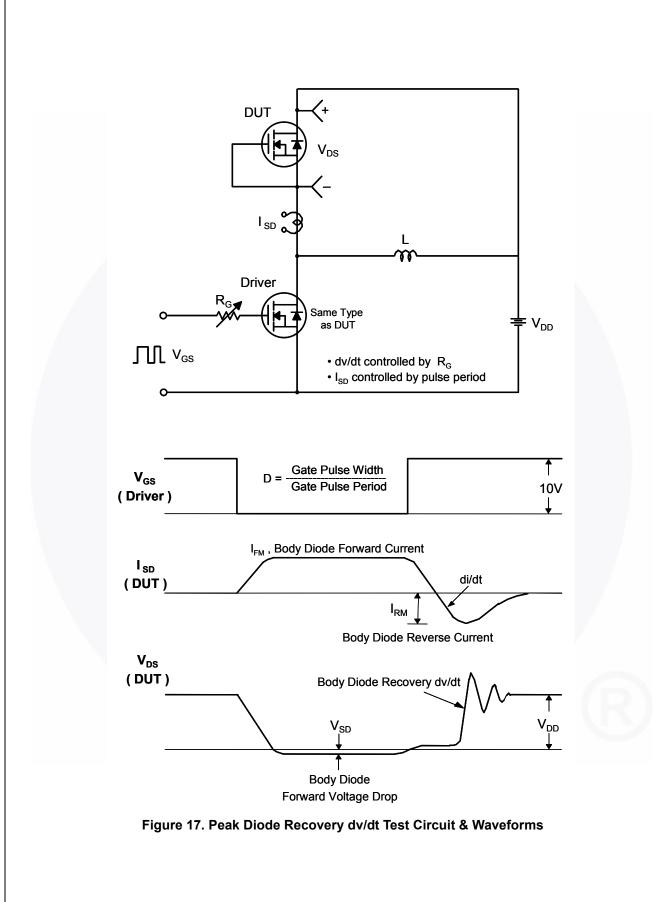


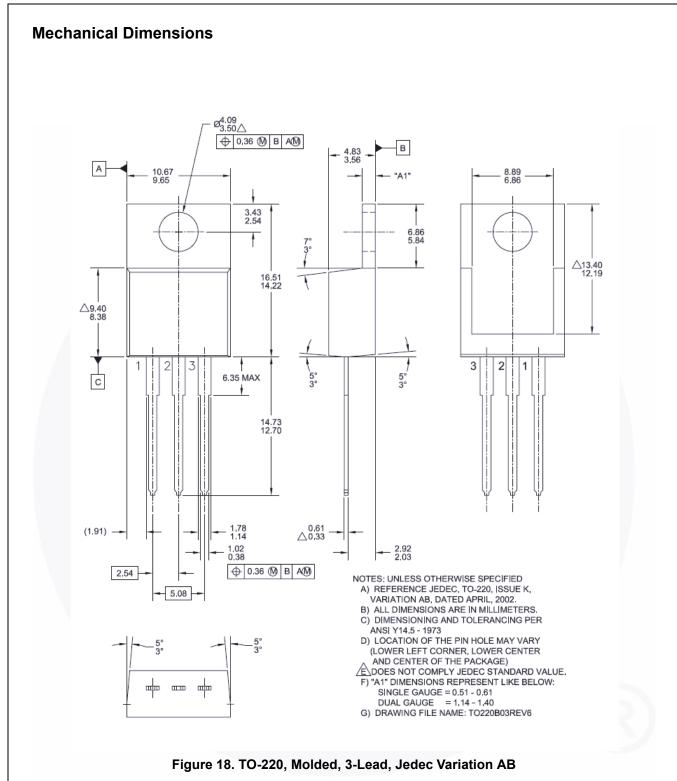










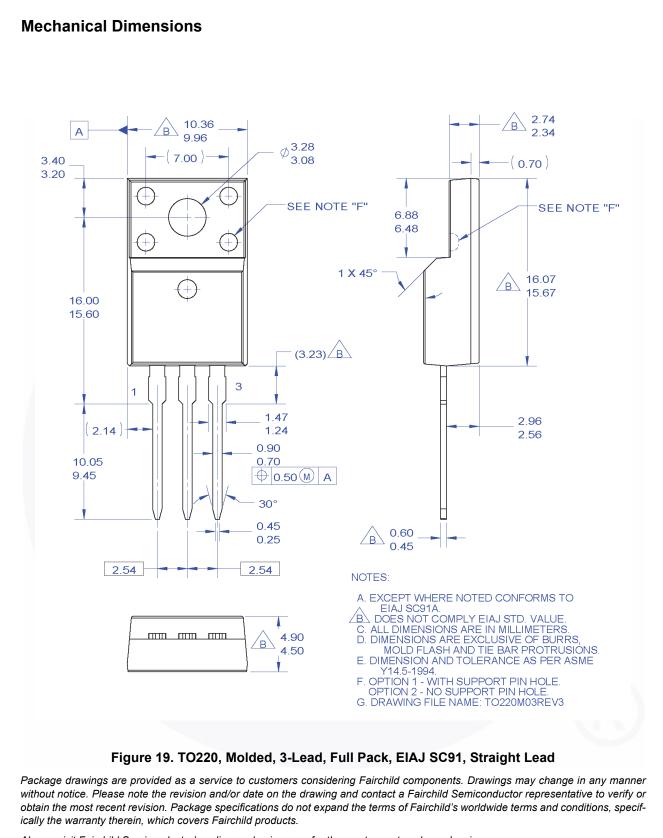


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