

November 2013

FDPF035N06B N-Channel PowerTrench[®] MOSFET 60 V, 88 A, 3.5 m Ω

Features

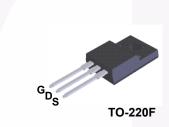
- $R_{DS(on)}$ = 2.91 m Ω (Typ.) @ V_{GS} = 10 V, I_D = 88 A
- Low FOM R_{DS(on)}*Q_G
- Low Reverse Recovery Charge, Q_{rr}
- Soft Reverse Recovery Body Diode
- Enables Highly Efficiency in Synchronous Rectification
- · Fast Switching Speed
- 100% UIL Tested
- RoHS Compliant

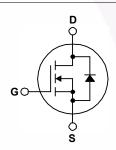
Description

This N-Channel MOSFET is produced using Fairchild Semiconductor's advanced PowerTrench[®] process that has been tailored to minimize the on-state resistance while maintaining superior switching performance.

Applications

- Synchronous Rectification for ATX / Server / Telecom PSU
- Battery Protection Circuit
- · Motor Drives and Uninterruptible Power Supplies
- Renewable System





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

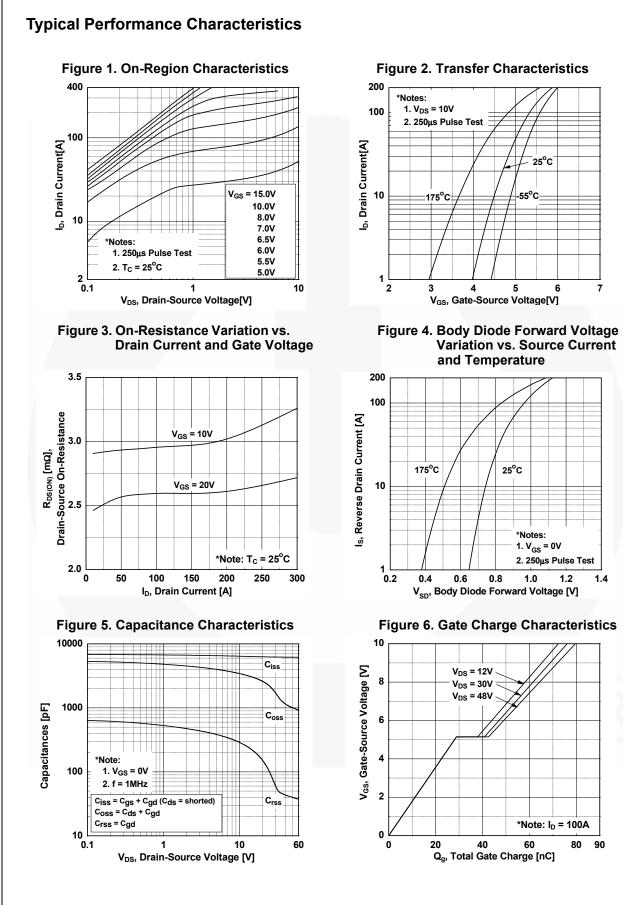
Symbol		FDPF035N06B_F152	Unit		
V _{DSS}	Drain to Source Voltage			60	V
V _{GSS}	Gate to Source Voltage		±20	V	
	Drain Current	- Continuous (T _C = 25°C,	- Continuous (T _C = 25°C, Silicon Limited)		٨
D	Drain Current	- Continuous (T _C = 100°C	C, Silicon Limited)	62	A
I _{DM}	Drain Current	- Pulsed	(Note 1)	352	А
E _{AS}	Single Pulsed Avalanche Energy (Note 2)		600	mJ	
dv/dt	Peak Diode Recovery dv/dt (Note 3)		6.0	V/ns	
P _D	Dower Dissinction	(T _C = 25°C)		46.3	W
	Power Dissipation	- Derate Above 25°C		0.31	W/ºC
T _J , T _{STG}	Operating and Storage Temperature Range			-55 to +175	°C
TL	Maximum Lead Temperature for Soldering, 1/8" from Case for 5 Seconds		or 5 Seconds	300	°C

Thermal Characteristics

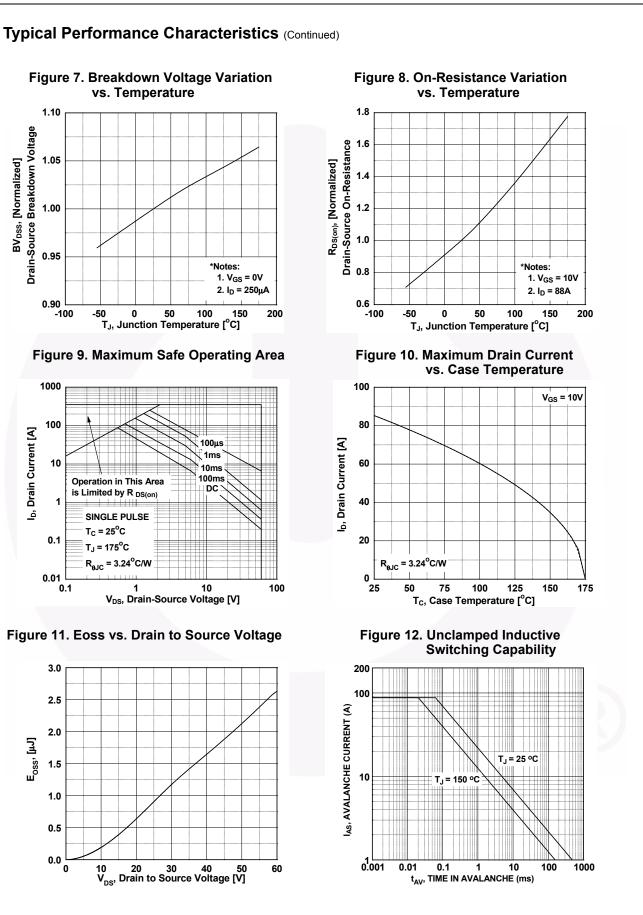
Symbol	Parameter	FDPF035N06B_F152	Unit
$R_{ extsf{ heta}JC}$	Thermal Resistance, Junction to Case, Max.	3.24	°C/W
$R_{ hetaJA}$	Thermal Resistance, Junction to Ambient, Max.	62.5	0/11

Part Nu	Part Number Top Mark Pa		Package	Packing Metho	od	Reel Size)	Tape Width	Qu	antity	
FDPF035N0	06B_F152	FDPF035N06B	TO-220F	-		N/A		N/A	50	50 units	
Electrica	I Charac	cteristics T _C =2	5 ⁰ C unless o	therwise noted.	i				I		
Symbol		Parameter		Test Cond	ditions		Min.	Тур.	Max.	Unit	
Off Charac	teristics										
BV _{DSS}		ource Breakdown Vol	tage	I _D = 250 μA, V _{GS} = 0	0 V		60	-	-	V	
ΔBV_{DSS}		n Voltage Temperatur	~			00					
$/\Delta T_{J}$	Coefficient	U	•	I_D = 250 µA, Referenced to 25°C			-	0.03	-	V/ºC	
I _{DSS}	Zero Gate	Voltage Drain Curren	t	V _{DS} = 48 V, V _{GS} = 0	V		-	-	1	μA	
I _{GSS}	Gate to Bo	ody Leakage Current		$V_{GS} = \pm 20 \text{ V}, \text{ V}_{DS} =$	0 V		-	-	±100	nA	
	toriotion					1		1 1		1	
On Charac							0				
V _{GS(th)}		shold Voltage	4	$V_{GS} = V_{DS}, I_D = 250 \mu A$			2	-	4	V	
R _{DS(on)}		n to Source On Resis	tance	$V_{GS} = 10 \text{ V}, \text{ I}_{D} = 88$			-	2.91	3.5	mΩ	
9 _{FS}	Forward I	ransconductance		V _{DS} = 10 V, I _D = 88	A		-	176	· · ·	S	
Dynamic C	haracteri	stics									
C _{iss}	Input Capa					-	6035	8030	pF		
C _{oss}	Output Ca	pacitance		V _{DS} = 30 V, V _{GS} = 0 f = 1 MHz	0 V,	_	-	1685	2240	pF	
C _{rss}	Reverse T	ransfer Capacitance				_	-	55	-	pF	
C _{oss(er)}	Energy Re	lated Output Capacita	ance	$V_{DS} = 30 V, V_{GS} = 0$	0 V		-	2619	-	pF	
Q _{g(tot)}	Total Gate	Charge at 10V					-	76	99	nC	
Q _{gs}	Gate to So	ource Gate Charge		$V_{DS} = 30 \text{ V}, \text{ I}_{D} = 100 \text{ A},$ $V_{GS} = 10 \text{ V}$		-	29	-	nC		
Q _{gd}	Gate to Dr	ain "Miller" Charge				-	12	-	nC		
V _{plateau}	Gate Plate	au Volatge				(Note 4)	-	5.2	-	V	
Q _{sync}		Charge Sync.		$V_{DS} = 0 V, I_{D} = 50 A$	4	. ,	-	67.3	-	nC	
Q _{oss}	Output Cha	arge		$V_{DS} = 30 \text{ V}, \text{ V}_{GS} = 0$			-	92.4	-	nC	
ESR	Equivalent	Series Resistance (C	G-S)	f = 1 MHz			-	2.0	-	Ω	
Switching	Character	riation				1					
Switching											
t _{d(on)}		on Delay Time				-	32	74	ns		
t _r	Turn-On R			V_{DD} = 30 V, I _D = 100 A, V_{GS} = 10 V, R _G = 4.7 Ω		-	33	76	ns		
t _{d(off)}	Turn-Off D				.,	-	-	56	122	ns	
t _f	Turn-Off Fall Time			(Note 4)		-	23	56	ns		
Drain-Sou	rce Diode	Characteristics									
I _S	Maximum Continuous Drain to Source Diode Forward Current					-	-	88	Α		
I _{SM}	Maximum I	Maximum Pulsed Drain to Source Diode I		orward Current		-	-	352	Α		
V _{SD}	Drain to Sc	ource Diode Forward	Voltage	V _{GS} = 0 V, I _{SD} = 88	А		-	-	1.25	V	
t _{rr}	Reverse R	ecovery Time		V _{GS} = 0 V, I _{SD} = 100	0 A,		-	71	-	ns	
Q _{rr}	Reverse R	ecovery Charge		$dI_F/dt = 100 A/\mu s$			-	78	· · ·	nC	
Notes: 1. Repetitive rating 2. L = 3 mH, I_{AS} = 3 3. $I_{SD} \le 100$ A, di/d	: pulse-width limi 20 A, starting T _J : t ≤ 200 A/μs, V _{DI}	ted by maximum junction ter). D.						U	y	





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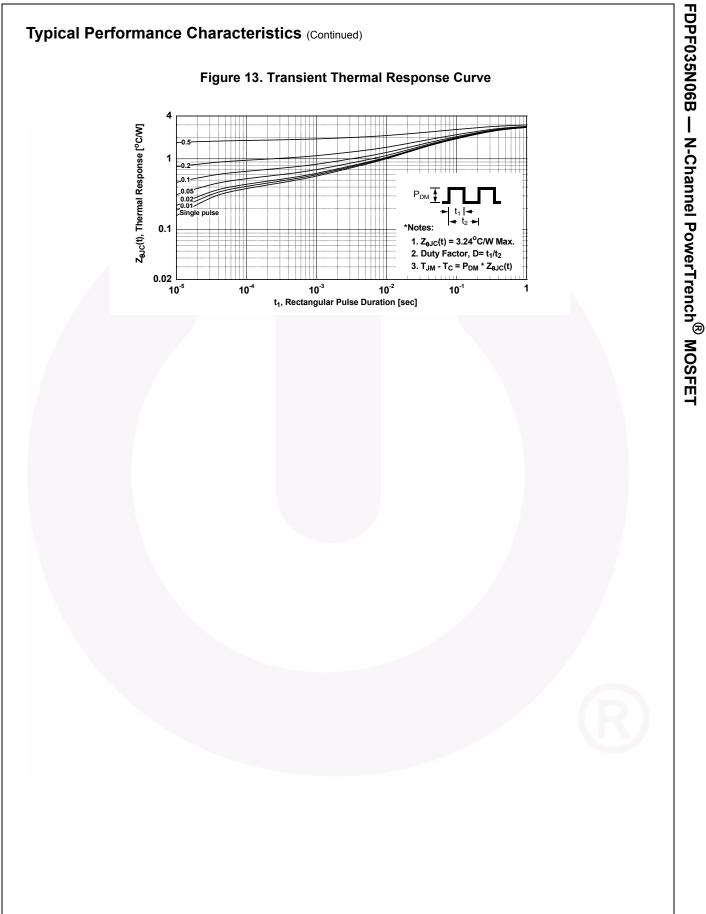
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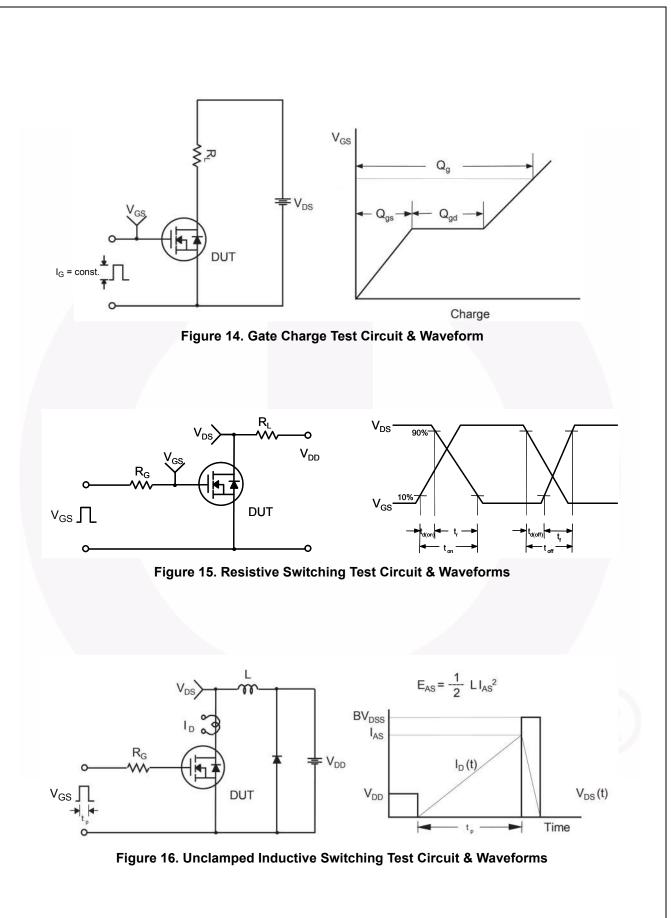
Drain-Source Breakdown Voltage

I_b, Drain Current [A]

E_{oss}, [µJ]

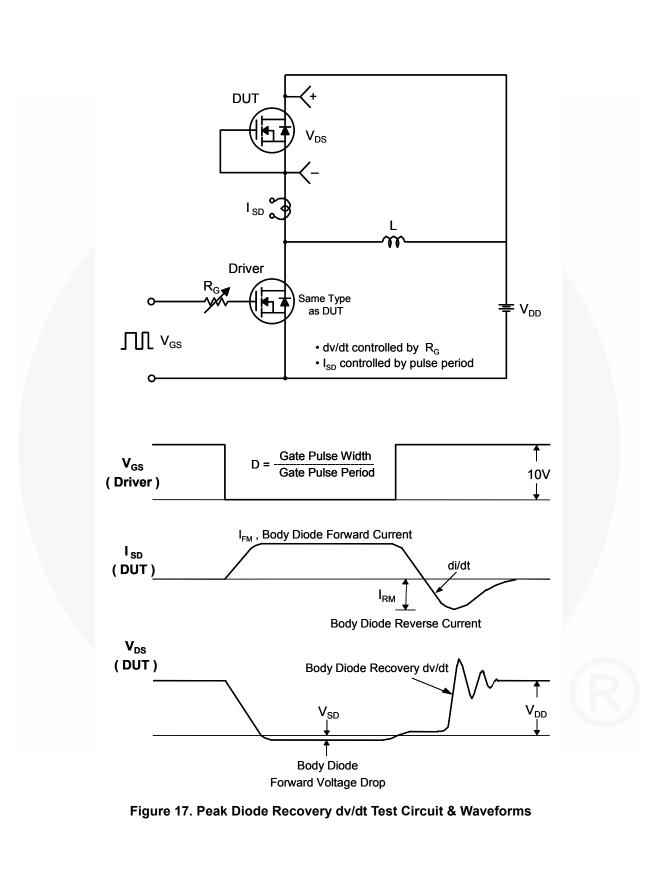
BV_{DSS}, [Normalized]

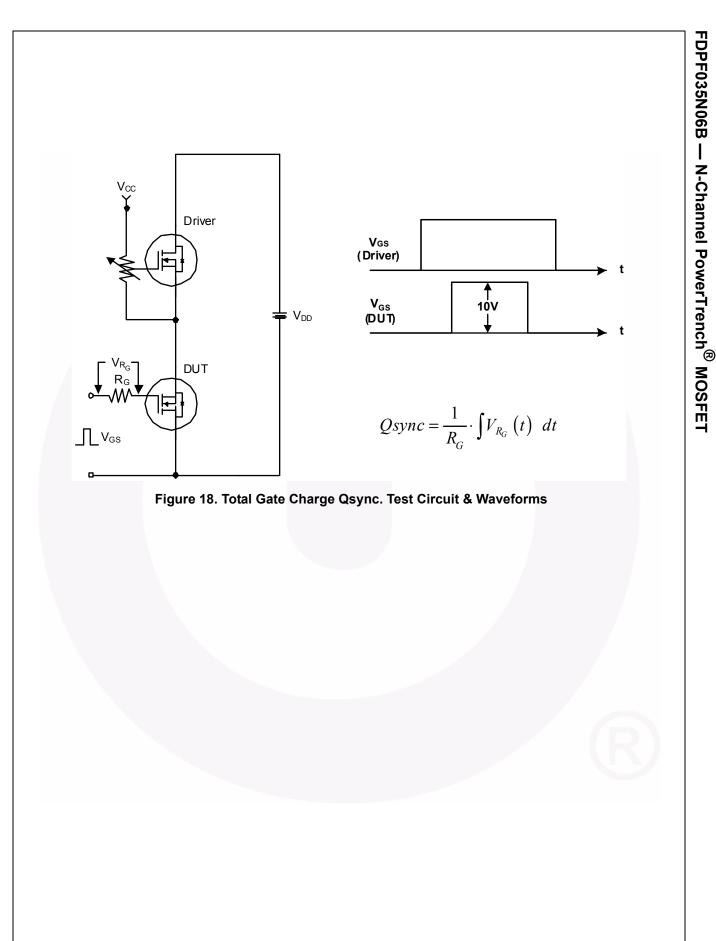




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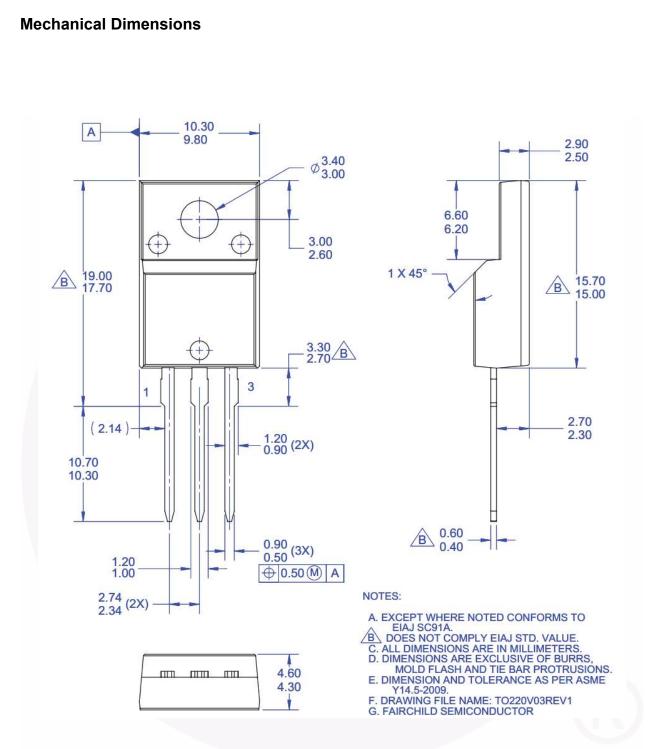


Figure 19. TO220, Molded, 3-Lead, Full Pack, EIAJ SC91, Takcheong

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