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FDD7N20TM N-Channel UniFETTM MOSFET 200 V, 5 A, 690 mΩ

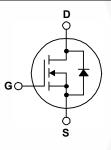
Features

- $R_{DS(on)}$ = 580 m Ω (Typ.) @ V_{GS} = 10 V, I_D = 2.5 A
- Low Gate Charge (Typ. 5 nC)
- Low C_{rss} (Typ. 5 pF)
- 100% Avalanche Tested
- RoHS Compliant

Applications

- LCD/LED/PDP TV
- Consumer Appliances
- Lighting
- Uninterruptible Power
- AC-DC Power Supply





UniFETTM MOSFET is Fairchild Semiconductor's high voltage

MOSFET family based on planar stripe and DMOS technology.

This MOSFET is tailored to reduce on-state resistance, and to provide better switching performance and higher avalanche en-

ergy strength. 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 bal-

Description

lasts.

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

Symbol	Parameter			FDD7N20TM	Unit	
V _{DSS}	Drain to Source Voltage			200	V	
V _{GSS}	Gate to Source Voltage			±30	V	
	DrainCurrent	- Continuous (T _C = 25 ^o C)		5		
		- Continuous (T _C = 100 ^o C)		3	A	
I _{DM}	Drain Current	- Pulsed	- Pulsed (Note 1)		Α	
E _{AS}	Single Pulsed Avalanche Energy (Note 2)		(Note 2)	62.5	mJ	
I _{AR}	Avalanche Current (Note 1)		(Note 1)	5	Α	
E _{AR}	Repetitive Avalanche Energy (Note 1)		(Note 1)	4.3	mJ	
dv/dt	Peak Diode Recovery dv/dt (Note 3)		(Note 3)	4.5	V/ns	
P _D	Devues Dissingtion	(T _C = 25°C)		43	W	
	Power Dissipation	- Derate Above 25 ^o C		0.34	W/ºC	
T _J , T _{STG}	Operating and Storage Temperature Range			-55 to +150	°C	
TL	Maximum Lead Temperatur	e for Soldering, 1/8" from Case for 5 Sec	onds	300	°C	

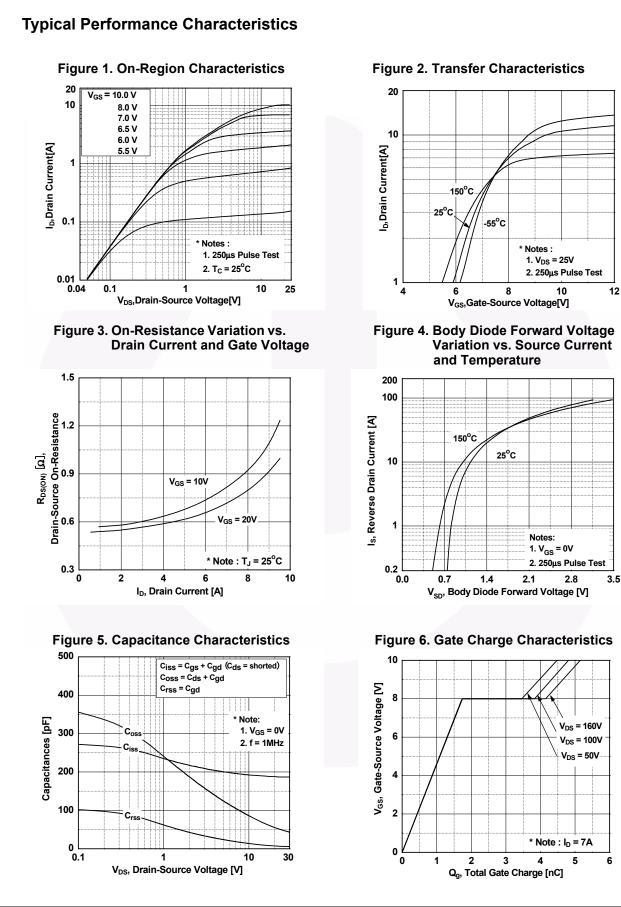
Thermal Characteristics

Symbol	Parameter	FDD7N20TM	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case, Max.	2.9	°C/W
$R_{ extsf{ heta}JA}$	Thermal Resistance, Junction to Ambient, Max.	110	°C/W

November 2013

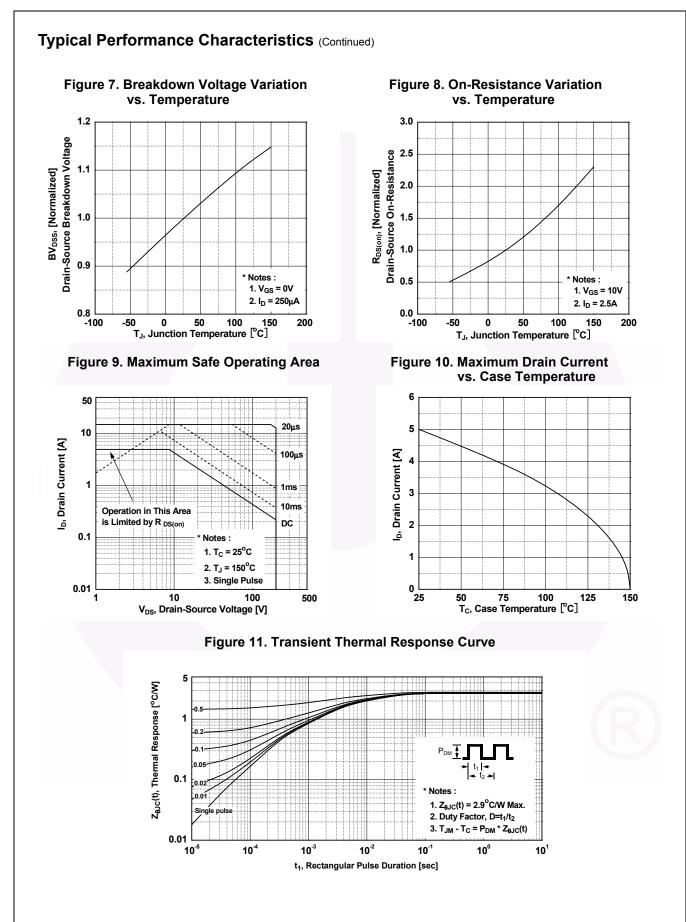
FDD7N20
TM — N-Ch
nannel UniFE
FET TM MO
) SFET

Part Number Top Mark P		Packa	-	king Method	Reel Size	e Tape Width		Quantity		
FDD7N2	FDD7N20TM FDD7N20		DPAł	K Taj	be and Reel	330 mm		16 mm	250	0 units
Electrical	Chara	cteristics T _C = 25	^o C unless	otherwise	noted.					
Symbol		Parameter			Test Conditions	S	Min.	Тур.	Max.	Unit
Off Charact	eristics									
BV _{DSS}	Drain to S	ource Breakdown Voltag	le	I _D = 250 μ	A, V _{GS} = 0 V, T	₁ = 25 ^o C	200	-	-	V
∆BV _{DSS}		n Voltage Temperature	,					0.2		V/°C
$/\Delta T_{J}$	Coefficien	t		$I_D = 250 \ \mu$ A, Referenced to 25° C			-	0.2	-	V/ C
I _{DSS}	Zero Gate	Voltage Drain Current		$V_{DS} = 200 \text{ V}, V_{GS} = 0 \text{ V}$			-	-	1	μA
		-			V, $T_{C} = 125^{\circ}C$		-	-	10	μA
IGSS	Gate to Bo	ody Leakage Current		$V_{GS} = \pm 30$	V, V _{DS} = 0 V		•	-	±100	nA
On Charact	eristics									
V _{GS(th)}	Gate Thre	shold Voltage		$V_{GS} = V_{DS}$	_s , I _D = 250 μA		3.0	-	5.0	V
R _{DS(on)}		in to Source On Resistar	nce		V, I _D = 2.5 A		-	0.58	0.69	Ω
9 _{FS}	Forward T	ransconductance			V, I _D = 2.5 A		-	6.2	-	S
	horootori	iatiaa		-				1 1		1
Dynamic Cl	1			1						
C _{iss}	Input Cap			V _{DS} = 25	V _{DS} = 25 V, V _{GS} = 0 V,	_	-	185	250	pF
C _{oss}		pacitance	_	f = 1 MHz		-	-	45	65	pF
C _{rss}		ransfer Capacitance					-	5	10	pF
2 _g		Charge at 10V		V _{DS} = 160 V, I _D = 7 A,		_	-	5	6.7	nC
Q _{gs}		Gate to Source Gate Charge Gate to Drain "Miller" Charge		V _{GS} = 10 V (Note 4)			-	1.7	-	nC
Q _{gd}	Gale to Di	an willer Charge				. ,	-	2.4	-	nC
Switching (Characte	ristics								
t _{d(on)}	Turn-On D	elay Time					-	9	28	ns
t _r	Turn-On R	,		V _{DD} = 100) V, I _D = 7 A,	-	-	30	70	ns
t _{d(off)}	Turn-Off D	Furn-Off Delay Time		V_{GS} = 10 V, R_{G} = 25 Ω		-	13	36	ns	
t _f	Turn-Off Fall Time			(Note 4)			-	10	30	ns
	oo Diodo	Characteristics		r						
		Characteristics						г – – г		
s		Continuous Drain to Sou					-	-	5	A
SM		Pulsed Drain to Source I					-	-	20	A
V _{SD}		ource Diode Forward Vo	Itage	V _{GS} = 0 V, I _{SD} = 5 A			-	-	1.4	V
t _{rr}	$\begin{tabular}{lllllllllllllllllllllllllllllllllll$						-	120	· -	ns
Q _{rr}				-	0.4	-	μC			
L =5 mH, I_{AS} = 5 Å. L _{SD} ≤ 5 Å, di/dt ≤ 2	A, V _{DD} = 50 V, 200 A/μs, V _{DD} :	ited by maximum junction tempe $R_G = 25 Ω$, starting $T_J = 25°C$. ≤ BV_{DSS} , starting $T_J = 25°C$. ating temperature typical characteristic temperature typical starts								

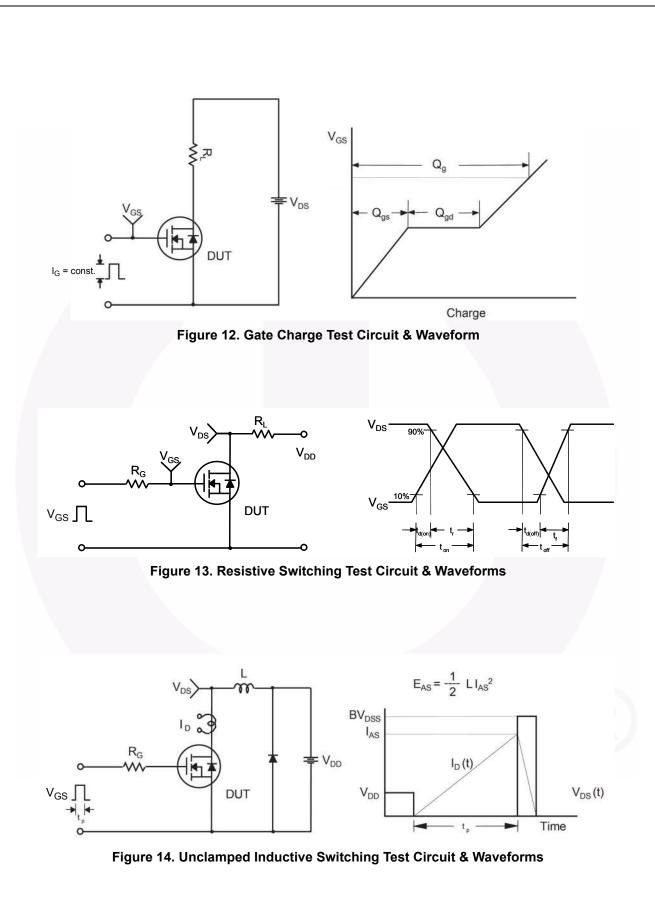


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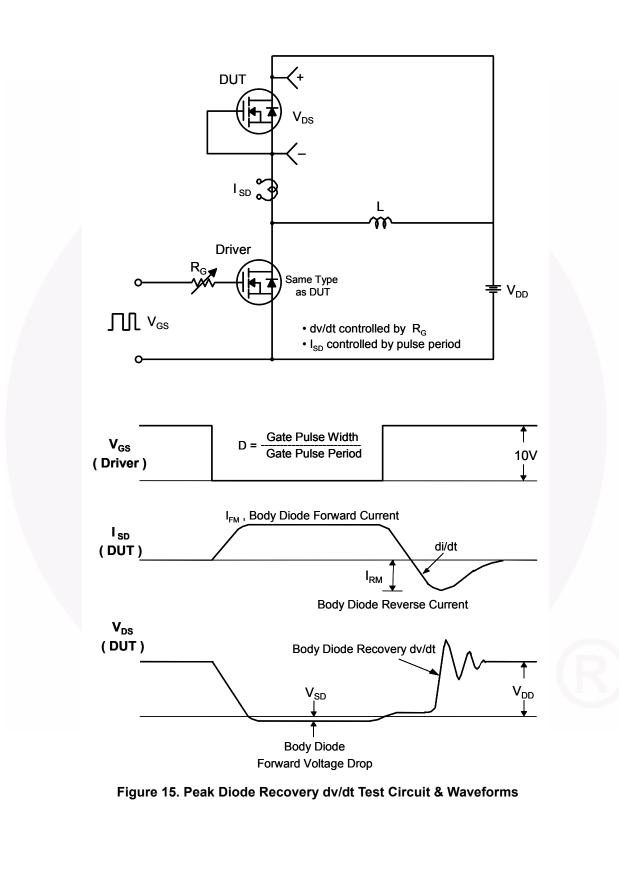


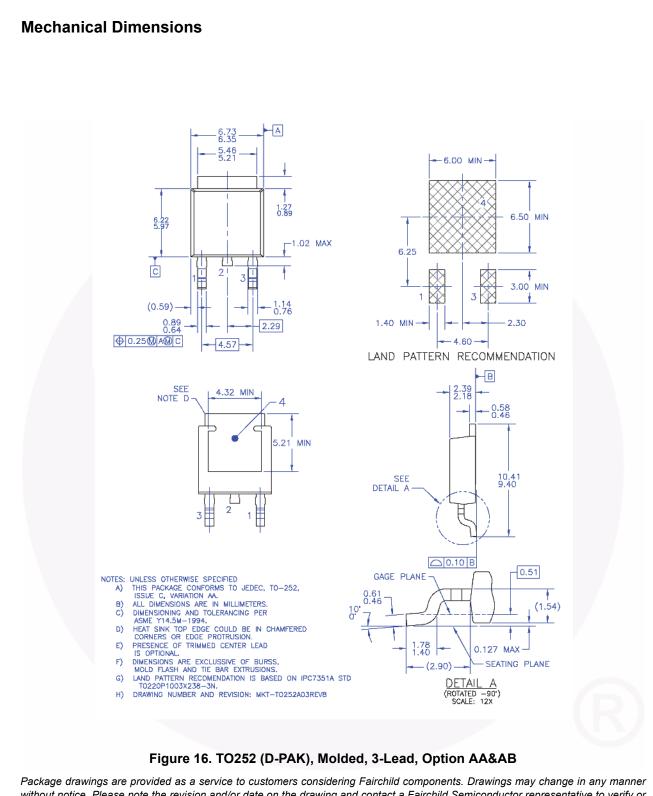
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FDD7N20TM — N-Channel UniFETTM MOSFET

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