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FDP24N40 N-Channel UniFET[™] MOSFET **400 V, 24 A, 175 m**Ω

Features

- $R_{DS(on)}$ = 140 m Ω (Typ.) @ V_{GS} = 10 V, I_D = 12 A
- Low Gate Charge (Typ. 46 nC)
- Low C_{rss} (Typ. 25 pF)
- 100% Avalanche Tested
- RoHS Compliant

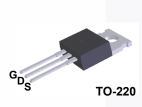
Applications

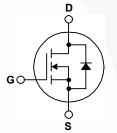
- Uninterruptible Power Supply
- AC-DC Power Supply

FDP24N40 — N-Channel UniFETTM MOSFET

Description

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 energy 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 ballasts.





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

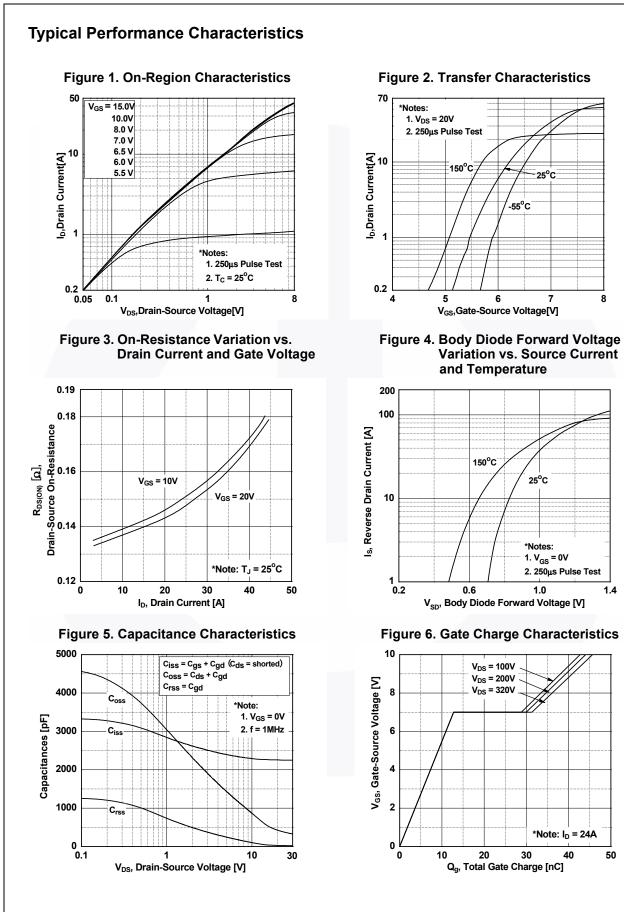
Symbol	Parameter			FDP24N40	Unit	
V _{DSS}	Drain to Source Voltage			400	V	
V _{GSS}	Gate to Source Voltage			±30	V	
I _D	DrainCurrent	- Continuous (T _C = 25 ^o C)		24		
		- Continuous (T _C = 100 ^o C)		14.4	A	
I _{DM}	Drain Current	- Pulsed	(Note 1)	96	A	
E _{AS}	Single Pulsed Avalanche Energy (Note 2)		(Note 2)	1296	mJ	
I _{AR}	Avalanche Current (Note 1		(Note 1)	24	Α	
E _{AR}	Repetitive Avalanche Energy (No		(Note 1)	22.7	mJ	
dv/dt	Peak Diode Recovery dv/	dt	(Note 3)	4.5	V/ns	
P _D	Dewer Dissingtion	(T _C = 25°C)		227	W	
	Power Dissipation	- Derate Above 25°C		1.8	W/ºC	
T _J , T _{STG}	Operating and Storage Temperature Range			-55 to +150	°C	
TL	Maximum Lead Temperat	ure for Soldering, 1/8" from Case for 5	Seconds	300	°C	

Thermal Characteristics

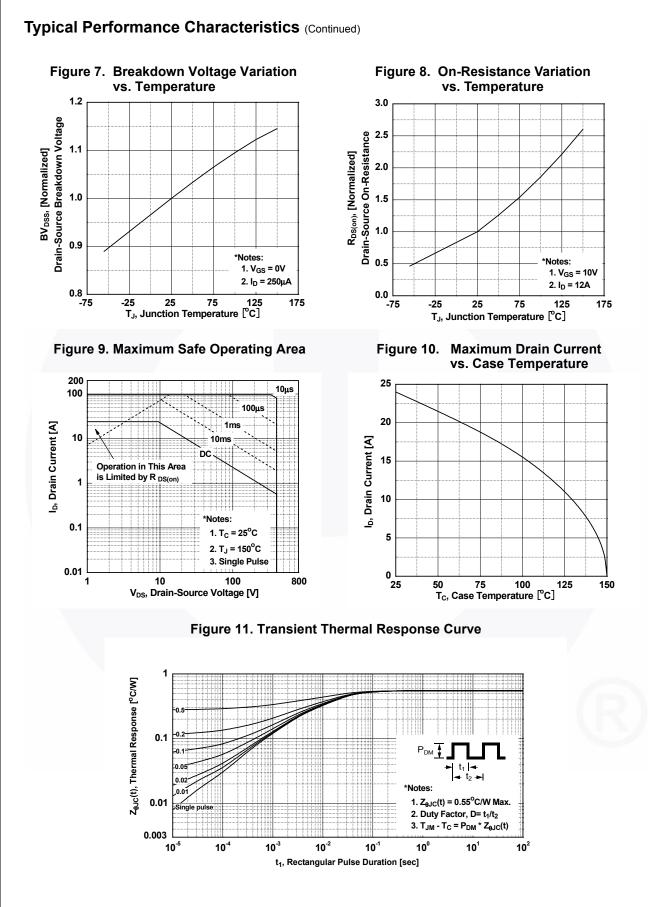
Symbol	Parameter	FDP24N40	Unit
R _{0JC} Thermal Resistance, Junction to Case, Max.		0.55	°C/W
R_{\thetaJA}	Thermal Resistance, Junction to Ambient, Max.	62.5	0/00

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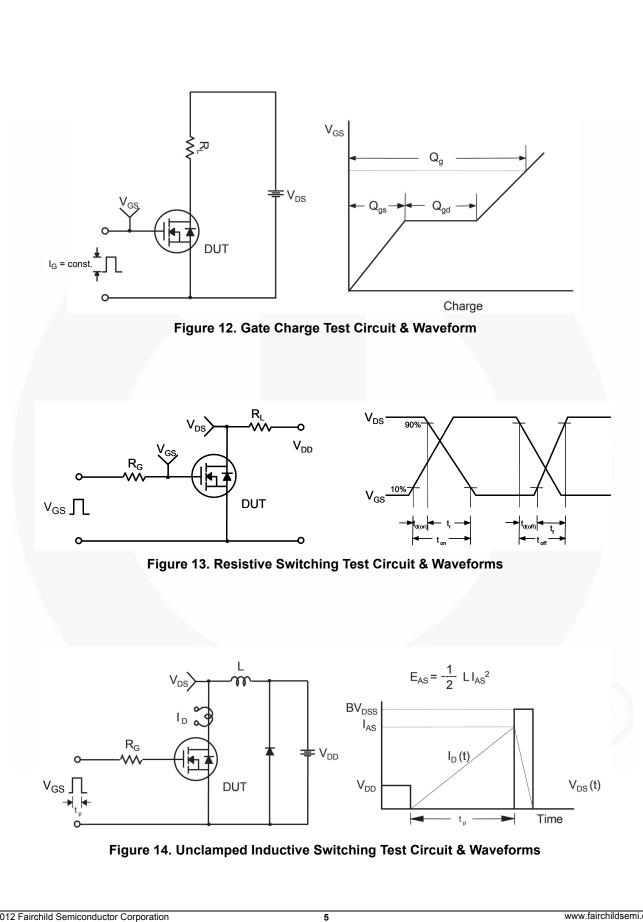
Part Nu	mber	Top Mark	Package	Packing Method	Reel Size	e Ta	ape Width	Qua	antity	
FDP24	N40	FDP24N40	TO-220	Tube	N/A		N/A		50 units	
Electrica	l Chara	acteristics T _c = 25°C	C unless oth	erwise noted.						
Symbol		Parameter		Test Condition	s	Min.	Тур.	Max.	Unit	
off Charac	toristics				¹					
				-25001(0.)(0.)(- 2500	400			V	
BV _{DSS} ABV _{DSS}	Drain to Source Breakdown Voltage Breakdown Voltage Temperature			$I_D = 250 \ \mu A, V_{GS} = 0 \ V, T_J = 25^{\circ}C$		400	-	-	V	
/ΔTJ	Coefficient		I _D =	= 250 μA, Referenced	to 25 ^o C	-	0.4	-	V/°C	
	Zoro Cato Voltago Drain Current		V _{DS}	_S = 400 V, V _{GS} = 0 V		-	-	1		
280 Zero Gate Voltage Drain Current		VDS	_S = 320 V, T _C = 125 ^o C		-	-	10 ^µ	μA		
GSS	Gate to Body Leakage Current		V _G	$_{\rm S}$ = ±30 V, V _{DS} = 0 V		-	-	±100	nA	
n Charac	teristics									
GS(th)		reshold Voltage	Ve	_S = V _{DS} , I _D = 250 μA		3.0	_	5.0	V	
RDS(on)		ain to Source On Resistance		$_{\rm S} = 10 \text{ V}, \text{ I}_{\rm D} = 12 \text{ A}$		-	0.140	0.175	Ω	
FS	Forward	Transconductance		_S = 20 V, I _D = 12 A		-	34	-	S	
				5 5						
ynamic C	Character	ristics							r	
Piss	Input Cap	pacitance	Va	V _{DS} = 25 V, V _{GS} = 0 V, f = 1 MHz		-	2270	3020	pF	
OSS		apacitance				-	365	490	pF	
rss		Transfer Capacitance				-	25	38	pF	
g(tot)		e Charge at 10V		_S = 320 V, I _D = 24 A,	_	-	46	60	nC	
2 _{gs}		Source Gate Charge	V _G	_S = 10 V		-	12	-	nC	
2 _{gd}	Gate to D	Drain "Miller" Charge			(Note 4)	-	20	-	nC	
witching	Characte	eristics								
-	1						40	90	ne	
d(on)		Delay Time Rise Time	Vor	V _{DD} = 200 V, I _D = 24 A,		-	40 90	190	ns ns	
		Delay Time		$_{\rm S} = 10 \text{ V}, \text{ R}_{\rm G} = 25 \Omega$	_		110	230	ns	
d(off)	Turn-Off			-	(Note 4)		65	140	ns	
					(11010 4)		00	140	113	
		e Characteristics								
6	Maximum	n Continuous Drain to Source	e Diode For	ward Current		-	-	24	A	
SM	Maximum	Pulsed Drain to Source Dic					-	96	Α	
/ _{SD}	Drain to S	Source Diode Forward Voltag	ge V _G	_S = 0 V, I _{SD} = 24 A		-	-	1.4	V	
r 📃	Reverse I	Recovery Time		_S = 0 V, I _{SD} = 24 A,		-	360	-	ns	
2 _{rr}	Reverse	Deservery Charge	dl-/	dI _F /dt = 100 A/μs		-	4.7	-	μC	



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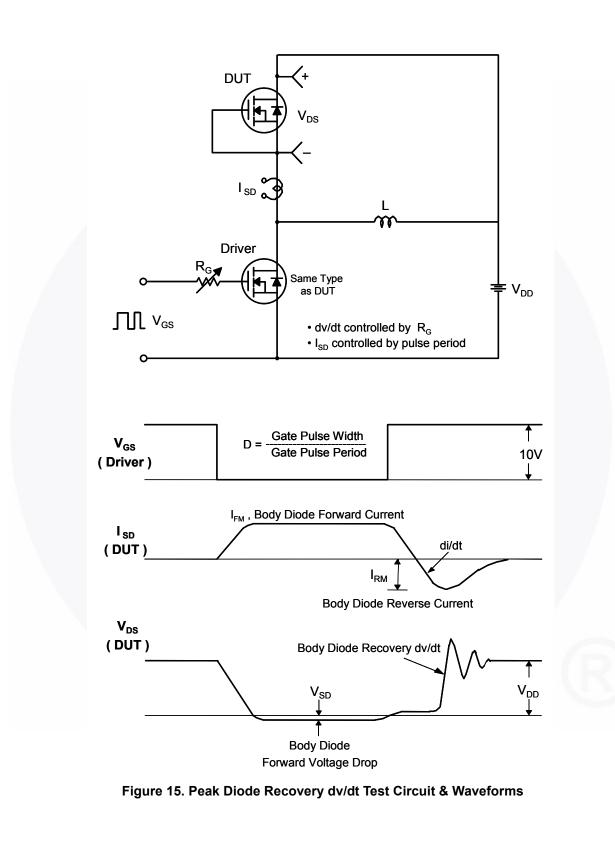


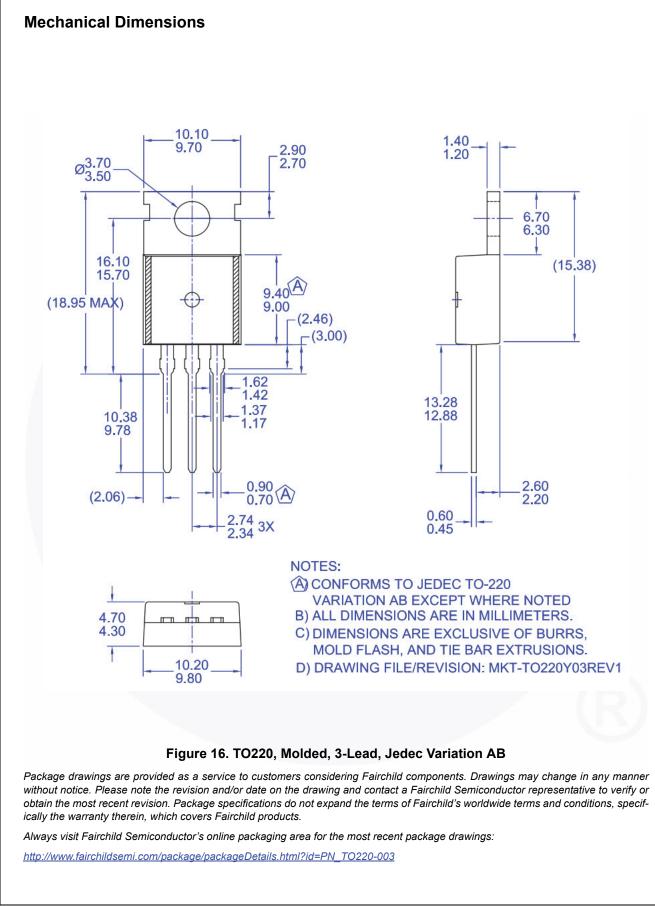
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