

FDB031N08 N-Channel PowerTrench[®] MOSFET **75 V, 235 A, 3.1 m**Ω

Features

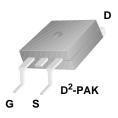
- $R_{DS(on)} = 2.4 \text{ m}\Omega \text{ (Typ.)} \otimes V_{GS} = 10 \text{ V}, I_D = 75 \text{ A}$
- · Fast Switching Speed
- · Low Gate Charge
- High Performance Trench Technology for Extremely Low R_{DS(on)}
- High Power and Current Handling Capability
- RoHS Compliant

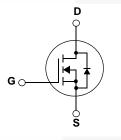
Description

This N-Channel MOSFET is produced using Fairchild Semiconductor®'s adcanced 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



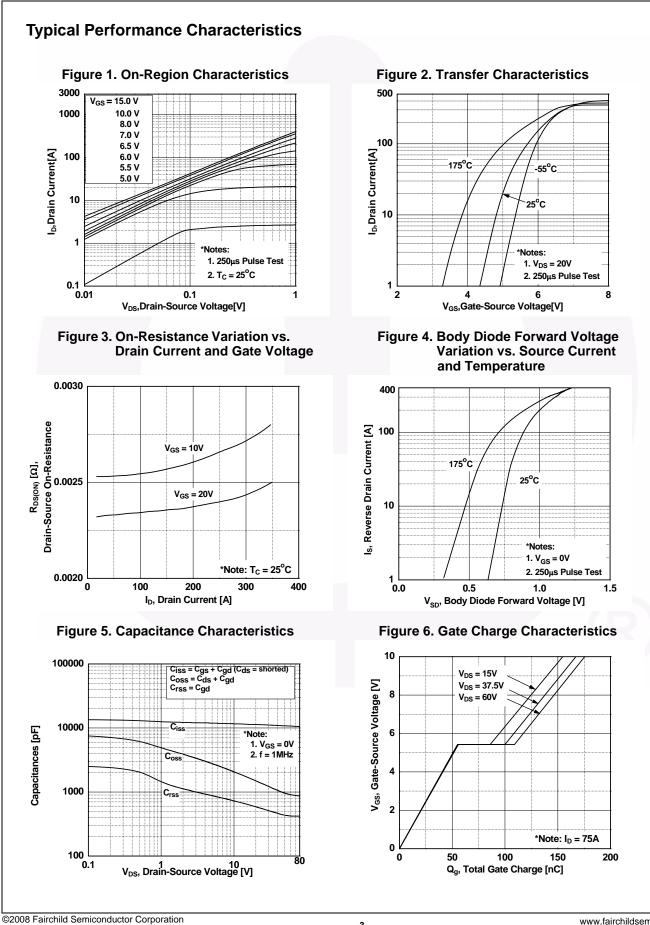


MOSFET Maximum Ratings T_C = 25°C unless otherwise noted*

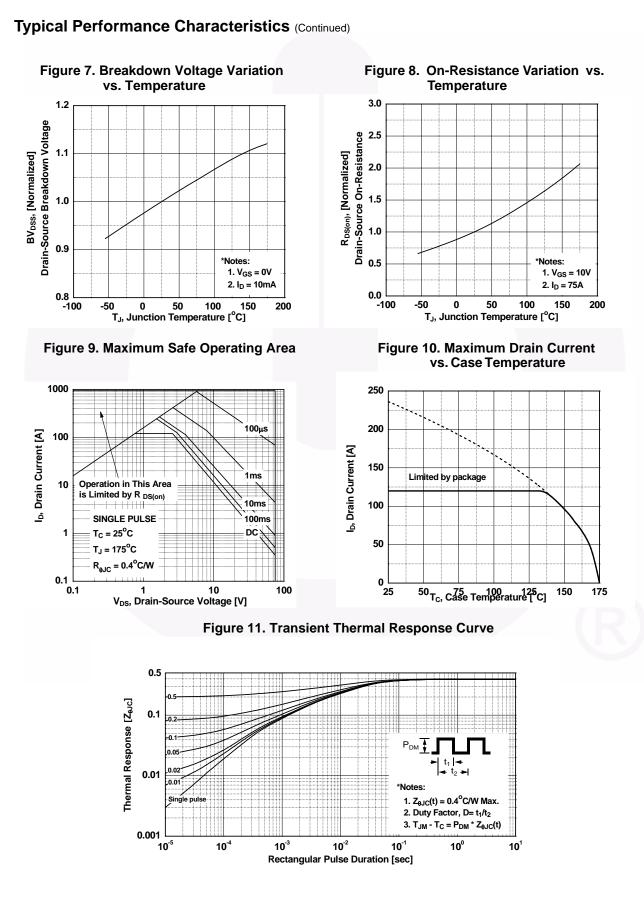
Symbol	Parameter			FDB031N08	Unit
V _{DSS}	Drain to Source Voltage	e Voltage		75	V
V _{GSS}	Gate to Source Voltage			±20	V
ID	Drain Current - Continuous ($T_c = 25^{\circ}C$, Silicon Limited)			235*	Α
	 Continuous (T_C = 100°C, Silicon Limited) Continuous (T_C = 25°C, Package Limited) 			165*	Α
			d)	120	А
I _{DM}	DrainCurrent	- Pulsed (Note 1)	940	A
E _{AS}	Single Pulsed Avalanche Energy (Note 2)		Note 2)	1995	mJ
dv/dt	Peak Diode Recovery dv/dt (Note 3)		Note 3)	5.5	V/ns
P _D	Dawen Diagin stien	$(T_{\rm C} = 25^{\rm o}{\rm C})$		375	W
	Power Dissipation	- Derate above 25°C		2.5	W/ºC
T _J , T _{STG}	Operating and Storage Temperature Range			-55 to +175	°C
TL	Maximum Lead Temperature for Soldering Purpose, 1/8" from Case for 5 Seconds			300	°C
	tinuous current based on maximum allow Characteristics	vable junction temperature. Package limita	tion current is	3 120A.	
Symbol	Parameter			FDB031N08	Unit
Raic	Thermal Resistance, Junction to Case, Max.			0.4	

Symbol	Parameter	FDB031N08	Unit	
$R_{\theta JC}$	Thermal Resistance, Junction to Case, Max.	0.4	°C/W	
R_{\thetaJA}	Thermal Resistance, Junction to Ambient, Max.	62.5	-0/10	

1N08 iCS rameter eakdown Volta Temperature Drain Current age Current tage ce On Resista luctance e capacitance at 10V e Charge	$ _{D} = \frac{ _{D} = _{D$	330mm Test Conditions 250μ A, V _{GS} = 0V, T _C = 250μ A, Referenced to $= 75V$, V _{GS} = 0V $= 75V$, V _{GS} = 0V $= 75V$, V _C = 150°C $= ±20V$, V _{DS} = 0V $= ±20V$, V _{DS} = 0V $= ±20V$, V _{DS} = 0V $= ±20V$, I _D = 75A $= 10V$, I _D = 75A $= 25V$, V _{GS} = 0V MHz $= 60V$, I _D = 75A $= 10V$	- 25°C 25°C	m flin. 75 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 -	Typ. - 0.05 - - 3.5 2.4 180 11400 1360 595 169	800 Max. - - 1 500 ±100 4.5 3.1 - 15160 1810 800	Unit V V/°C μA nA V mΩ S PF pF
rameter eakdown Volta Temperature Drain Current age Current tage cce On Resista luctance e capacitance at 10V e Charge	$ _{D} = \frac{ _{D} = _{D$	250 μ A, V _{GS} = 0V, T _C = 250 μ A, Referenced to = 75V, V _{GS} = 0V = 75V, T _C = 150°C = ±20V, V _{DS} = 0V = 10V, I _D = 250 μ A = 10V, I _D = 75A = 10V, I _D = 75A = 25V, V _{GS} = 0V	- 25°C 25°C	75 - - - 2.5 - - - - - - - -	- 0.05 - - - 3.5 2.4 180 11400 1360 595	- - ±100 ±100 4.5 3.1 - 15160 1810 800	V V/°C μA nA V mΩ S pF pF
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age Current tage rce On Resista luctance apacitance at 10V e Charge	V _{GS} ance V _{GS} V _{DS} V _{DS}	$= \pm 20V, V_{DS} = 0V$ $= V_{DS}, I_{D} = 250\mu A$ $= 10V, I_{D} = 75A$ $= 10V, I_{D} = 75A$ $= 25V, V_{GS} = 0V$ IMHz $= 60V, I_{D} = 75A$		- - - -	- 3.5 2.4 180 11400 1360 595	±100 4.5 3.1 - 15160 1810 800	nA V mΩ S pF pF
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e Charge	VGS VDS VDS f = VDS	$I_{\rm D} = 10V, I_{\rm D} = 75A$ = 10V, $I_{\rm D} = 75A$ = 25V, $V_{\rm GS} = 0V$ MHz = 60V, $I_{\rm D} = 75A$		- - - -	2.4 180 11400 1360 595	3.1 - 15160 1810 800	mΩ S pF pF
luctance e sapacitance at 10V e Charge	V _{DS}	= 10V, I _D = 75A = 25V, V _{GS} = 0V MHz = 60V, I _D = 75A		-	180 11400 1360 595	- 15160 1810 800	S pF pF
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apacitance at 10V e Charge	f = 7	IMHz , = 60V, I _D = 75A		-	1360 595	1810 800	pF
apacitance at 10V e Charge	f = 7	IMHz , = 60V, I _D = 75A		-	1360 595	1810 800	pF
apacitance at 10V e Charge	f = 7	IMHz , = 60V, I _D = 75A		-	595	800	pF
at 10V e Charge	VDS	. = 60V, I _D = 75A					nF
e Charge				-	169		pi
						220	nC
r" Charge	VGS	= 10V		-	60	-	nC
		V _{GS} = 10V (Note 4)		-	47	-	nC
			<u> </u>			. <u></u>	
2				-	230	470	ns
5	Vpr	$V_{DD} = 37.5V, I_D = 75A$ $R_{GEN} = 25\Omega, V_{GS} = 10V$ (Note 4)		-			ns
9				-			ns
-				-	121	252	ns
otoriotico			(
	urao Diada Far	word Current				225	•
			-			A	
				-			V
	-						ns
				-			nC
	rain to Source de Forward V Fime Charge imum junction terr b, Starting $T_J = 25^{\circ}$ rting $T_J = 25^{\circ}$	VDD P Cteristics us Drain to Source Diode Forward de Forward Voltage VGS Fime VGS Charge dIF/d ay Starting TJ = 25°C	$V_{DD} = 37.5V, I_D = 75A$ $R_{GEN} = 25\Omega, V_{GS} = 10V$ Cteristics us Drain to Source Diode Forward Current rain to Source Diode Forward Current de Forward Voltage $V_{GS} = 0V, I_{SD} = 75A$ Fime $V_{GS} = 0V, I_{SD} = 75A$ Charge $dI_F/dt = 100A/\mu s$ imum junction temperature a, Starting T_J = 25°C rting T_J = 25°C	$V_{DD} = 37.5V, I_D = 75A$ $R_{GEN} = 25\Omega, V_{GS} = 10V$ (Note 4) Cteristics us Drain to Source Diode Forward Current rain to Source Diode Forward Current de Forward Voltage $V_{GS} = 0V, I_{SD} = 75A$ Fime $V_{GS} = 0V, I_{SD} = 75A$ Charge $dI_F/dt = 100A/\mu s$ imum junction temperature a, Starting T_J = 25°C rting T_J = 25°C	$V_{DD} = 37.5V, I_D = 75A$ $R_{GEN} = 25\Omega, V_{GS} = 10V$ $(Note 4)$ $-$ $Cteristics$ $us Drain to Source Diode Forward Current$ $rain to Source Diode Forward Current$ $-$ $de Forward Voltage$ $V_{GS} = 0V, I_{SD} = 75A$ $-$ $Time$ $V_{SS} = 0V, I_{SD} = 75A$ $-$ $Time$ $V_{GS} = 0V, I_{SD} = 75A$ $-$ $-$ $Time$ $V_{GS} = 0V, I_{SD} = 75A$ $-$ $-$ $Time$ $-$ $Time$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

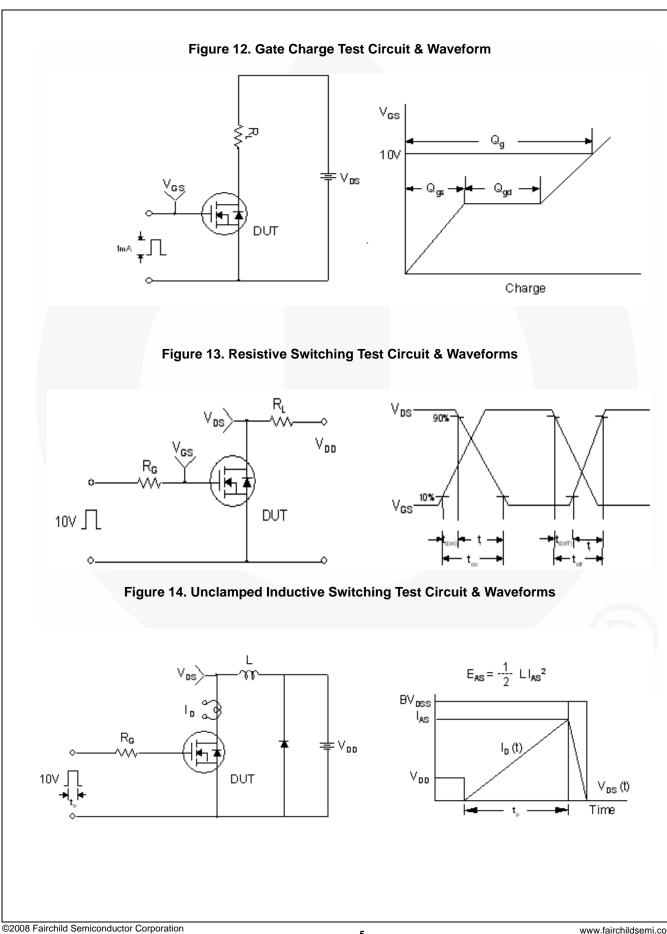


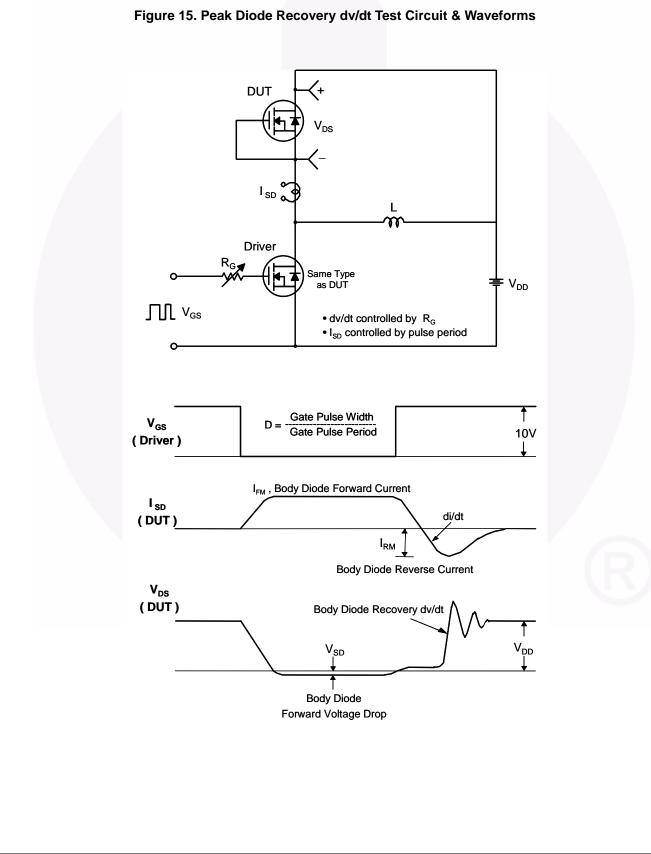
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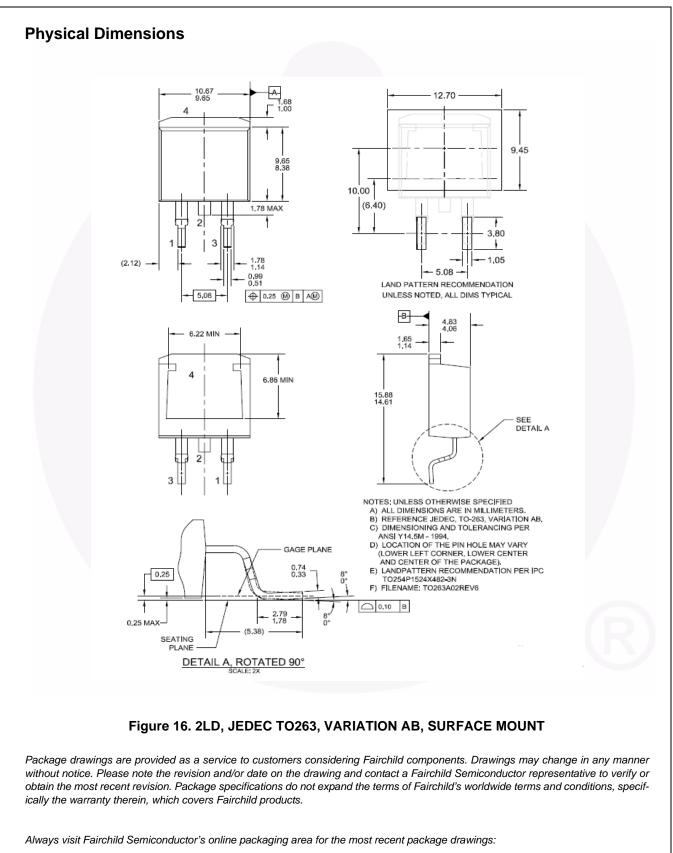


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BitSiC™
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CorePLUS™
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