



## FDB2572 / FDP2572

N-Channel PowerTrench® MOSFET  
150V, 29A, 54mΩ

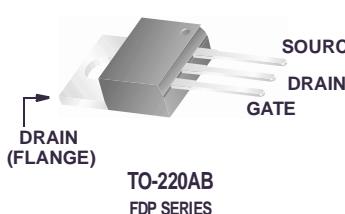
### Features

- $r_{DS(ON)} = 45\text{m}\Omega$  (Typ.),  $V_{GS} = 10\text{V}$ ,  $I_D = 9\text{A}$
- $Q_g(\text{tot}) = 26\text{nC}$  (Typ.),  $V_{GS} = 10\text{V}$
- Low Miller Charge
- Low  $Q_{RR}$  Body Diode
- UIS Capability (Single Pulse and Repetitive Pulse)
- Qualified to AEC Q101

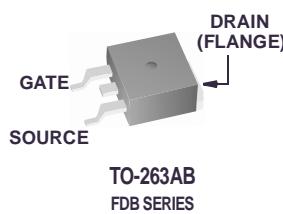
Formerly developmental type 82860

### Applications

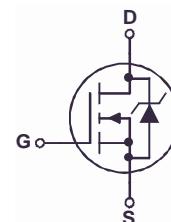
- DC/DC converters and Off-Line UPS
- Distributed Power Architectures and VRMs
- Primary Switch for 24V and 48V Systems
- High Voltage Synchronous Rectifier
- Direct Injection / Diesel Injection Systems
- 42V Automotive Load Control
- Electronic Valve Train Systems



TO-220AB  
FDP SERIES



TO-263AB  
FDB SERIES



### MOSFET Maximum Ratings $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Ratings	Units
$V_{DSS}$	Drain to Source Voltage	150	V
$V_{GS}$	Gate to Source Voltage	$\pm 20$	V
$I_D$	Drain Current Continuous ( $T_C = 25^\circ\text{C}$ , $V_{GS} = 10\text{V}$ )	29	A
	Continuous ( $T_C = 100^\circ\text{C}$ , $V_{GS} = 10\text{V}$ )	20	A
	Continuous ( $T_{amb} = 25^\circ\text{C}$ , $V_{GS} = 10\text{V}$ , $R_{θJA} = 43^\circ\text{C/W}$ )	4	A
	Pulsed	Figure 4	A
$E_{AS}$	Single Pulse Avalanche Energy (Note 1)	36	mJ
$P_D$	Power dissipation	135	W
	Derate above $25^\circ\text{C}$	0.9	W/ $^\circ\text{C}$
$T_J$ , $T_{STG}$	Operating and Storage Temperature	-55 to 175	$^\circ\text{C}$

### Thermal Characteristics

$R_{θJC}$	Thermal Resistance Junction to Case TO-220, TO-263	1.11	$^\circ\text{C/W}$
$R_{θJA}$	Thermal Resistance Junction to Ambient TO-220, TO-263 (Note 2)	62	$^\circ\text{C/W}$
$R_{θJA}$	Thermal Resistance Junction to Ambient TO-263, 1in <sup>2</sup> copper pad area	43	$^\circ\text{C/W}$

This product has been designed to meet the extreme test conditions and environment demanded by the automotive industry. For a copy of the requirements, see AEC Q101 at: <http://www.aecouncil.com/>  
Reliability data can be found at: <http://www.fairchildsemi.com/products/discrete/reliability/index.html>.  
All Fairchild Semiconductor products are manufactured, assembled and tested under ISO9000 and QS9000 quality systems certification.

## Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
FDB2572	FDB2572	TO-263AB	330mm	24mm	800 units
FDP2572	FDP2572	TO-220AB	Tube	N/A	50 units

## Electrical Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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### Off Characteristics

$B_{VDSS}$	Drain to Source Breakdown Voltage	$I_D = 250\mu\text{A}, V_{GS} = 0\text{V}$	150	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 120\text{V}$	-	-	1	$\mu\text{A}$
		$V_{GS} = 0\text{V}$	$T_C = 150^\circ\text{C}$	-	250	
$I_{GSS}$	Gate to Source Leakage Current	$V_{GS} = \pm 20\text{V}$	-	-	$\pm 100$	nA

### On Characteristics

$V_{GS(TH)}$	Gate to Source Threshold Voltage	$V_{GS} = V_{DS}, I_D = 250\mu\text{A}$	2	-	4	V
$r_{DS(ON)}$	Drain to Source On Resistance	$I_D = 9\text{A}, V_{GS} = 10\text{V}$	-	0.045	0.054	$\Omega$
		$I_D = 4\text{A}, V_{GS} = 6\text{V}$	-	0.050	0.075	
		$I_D = 9\text{A}, V_{GS} = 10\text{V}, T_C = 175^\circ\text{C}$	-	0.126	0.146	

### Dynamic Characteristics

$C_{ISS}$	Input Capacitance	$V_{DS} = 25\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$	-	1770	-	pF	
$C_{OSS}$	Output Capacitance		-	183	-	pF	
$C_{RSS}$	Reverse Transfer Capacitance		-	40	-	pF	
$Q_{g(TOT)}$	Total Gate Charge at 10V	$V_{GS} = 0\text{V to } 10\text{V}$	-	26	34	nC	
$Q_{g(TH)}$	Threshold Gate Charge	$V_{GS} = 0\text{V to } 2\text{V}$	$V_{DD} = 75\text{V}$	-	3.3	4.3	nC
$Q_{gs}$	Gate to Source Gate Charge	$I_D = 9\text{A}$	$I_g = 1.0\text{mA}$	-	8	-	nC
$Q_{gs2}$	Gate Charge Threshold to Plateau		$I_g = 1.0\text{mA}$	-	5	-	nC
$Q_{gd}$	Gate to Drain "Miller" Charge		$I_g = 1.0\text{mA}$	-	6	-	nC

### Resistive Switching Characteristics ( $V_{GS} = 10\text{V}$ )

$t_{ON}$	Turn-On Time	$V_{DD} = 75\text{V}, I_D = 9\text{A}$ $V_{GS} = 10\text{V}, R_{GS} = 11.0\Omega$	-	-	36	ns
$t_{d(ON)}$	Turn-On Delay Time		-	11	-	ns
$t_r$	Rise Time		-	14	-	ns
$t_{d(OFF)}$	Turn-Off Delay Time		-	31	-	ns
$t_f$	Fall Time		-	14	-	ns
$t_{OFF}$	Turn-Off Time		-	-	66	ns

### Drain-Source Diode Characteristics

$V_{SD}$	Source to Drain Diode Voltage	$I_{SD} = 9\text{A}$	-	-	1.25	V
		$I_{SD} = 4\text{A}$	-	-	1.0	V
$t_{rr}$	Reverse Recovery Time	$I_{SD} = 9\text{A}, dI_{SD}/dt = 100\text{A}/\mu\text{s}$	-	-	74	ns

### Notes:

1: Starting  $T_J = 25^\circ\text{C}$ ,  $L = 0.2\text{mH}$ ,  $I_{AS} = 19\text{A}$ .

2: Pulse Width = 100s