FAIRCHILD SEMICONDUCTOR®

November 2013

FQP3P50

P-Channel QFET® MOSFET

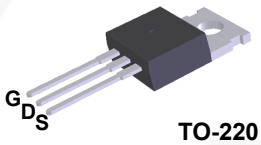
-500 V, -2.7 A, 4.9 Ω

Description

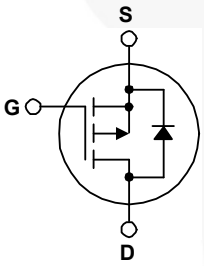
This P-Channel enhancement mode power MOSFET is produced using Fairchild Semiconductor's proprietary planar stripe and DMOS technology. This advanced MOSFET technology has been especially tailored to reduce on-state resistance, and to provide superior switching performance and high avalanche energy strength. These devices are suitable for switched mode power supplies, audio amplifier, DC motor control, and variable switching power applications.

Features

- -2.7 A, -500 V, $R_{DS(on)}$ = 4.9 Ω (Max.) @ V_{GS} = -10 V, I_D = -1.35 A
- Low Gate Charge (Typ. 18 nC)
- Low Crss (Typ 9.5 pF)
- 100% Avalanche Tested



TO-220



Absolute Maximum Ratings

T_C = 25°C unless otherwise noted.

Symbol	Parameter		FQP3P50	Unit
V_{DSS}	Drain-Source Voltage		-500	V
I_D	Drain Current - Continuous (T_C = 25°C)		-2.7	A
	Drain Current - Continuous (T_C = 100°C)		-1.71	A
I_{DM}	Drain Current - Pulsed	(Note 1)	-10.8	A
V_{GSS}	Gate-Source Voltage		± 30	V
E_{AS}	Single Pulsed Avalanche Energy	(Note 2)	250	mJ
I_{AR}	Avalanche Current	(Note 1)	-2.7	A
E_{AR}	Repetitive Avalanche Energy	(Note 1)	8.5	mJ
dv/dt	Peak Diode Recovery dv/dt	(Note 3)	-4.5	V/ns
P_D	Power Dissipation (T_C = 25°C)		85	W
	- Derate above 25°C		0.68	W/°C
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	°C
T_L	Maximum lead temperature for soldering, 1/8" from case for 5 seconds		300	°C

Thermal Characteristics

Symbol	Parameter	FQP3P50	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case, Max.	2.4	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient, Max.	62.5	°C/W

Typical Characteristics

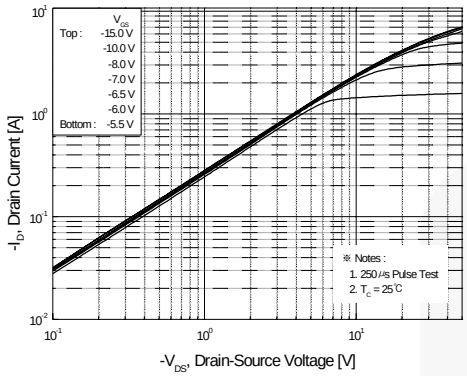


Figure 1. On-Region Characteristics

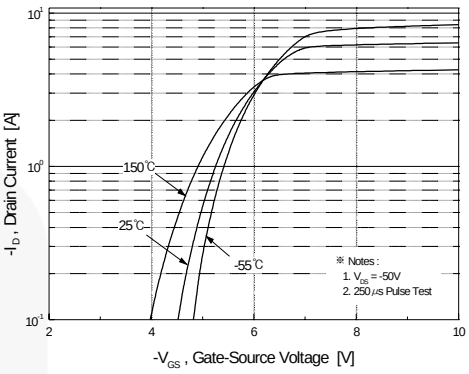


Figure 2. Transfer Characteristics

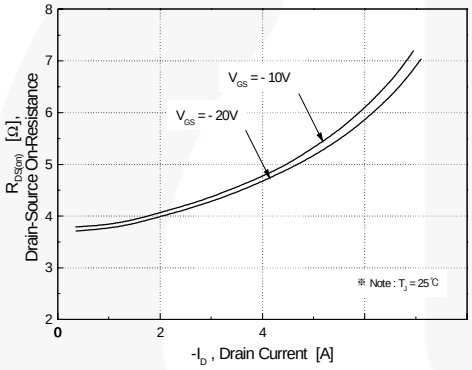


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

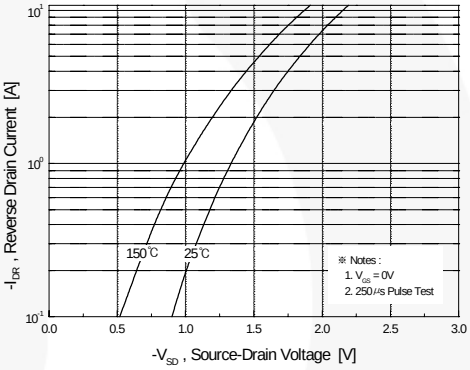


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

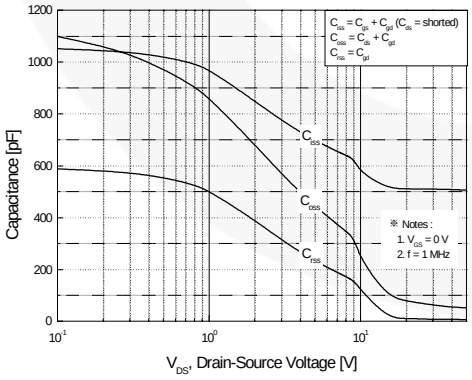


Figure 5. Capacitance Characteristics

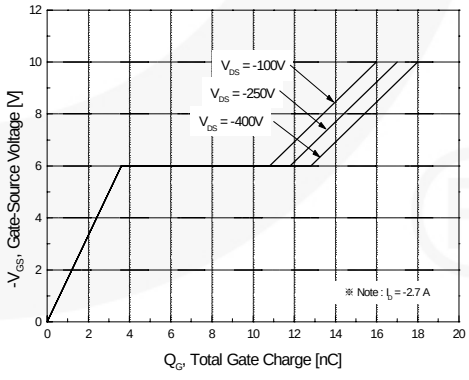


Figure 6. Gate Charge Characteristics

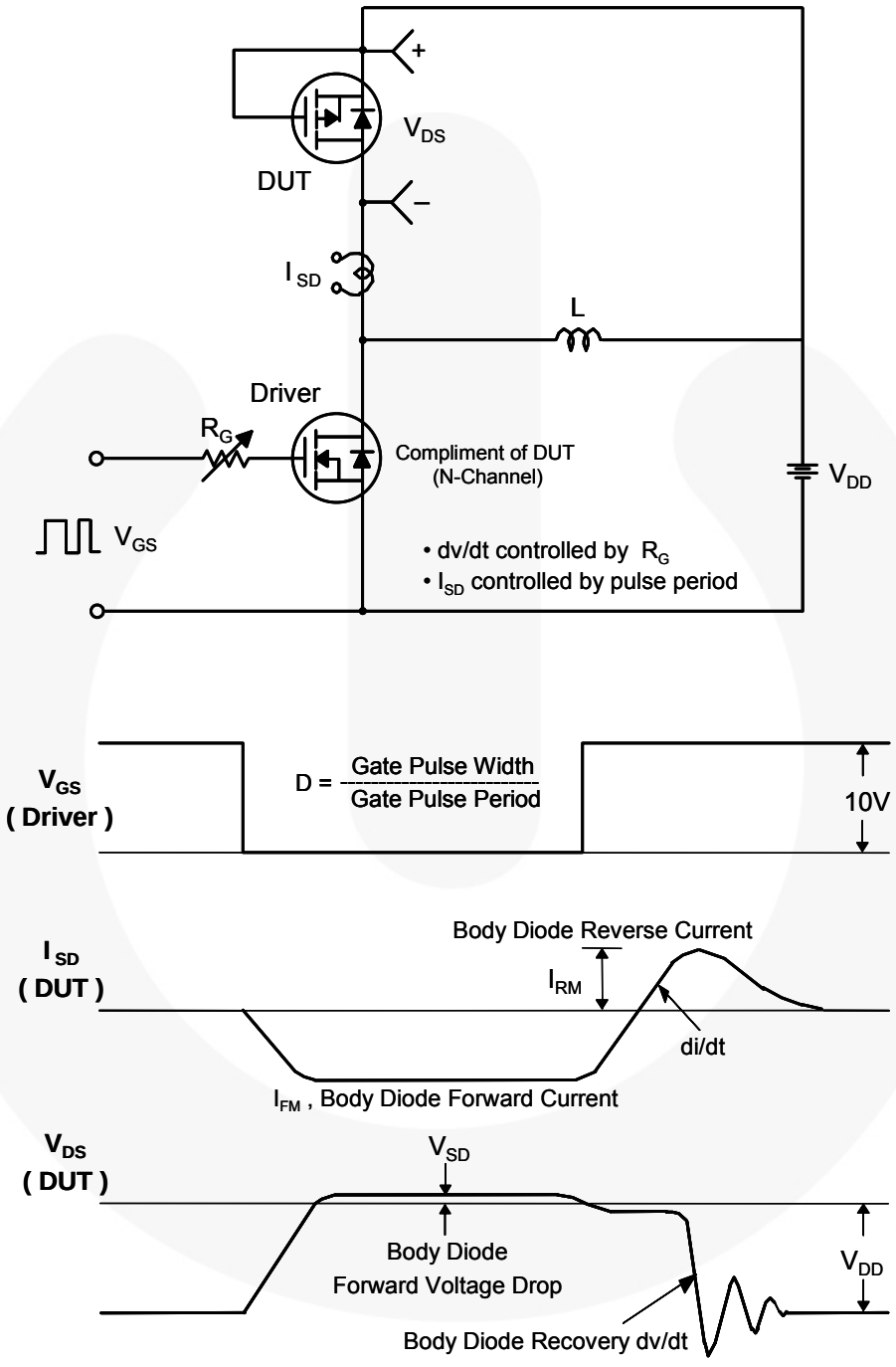


Figure 15. Peak Diode Recovery dv/dt Test Circuit & Waveforms

Mechanical Dimensions

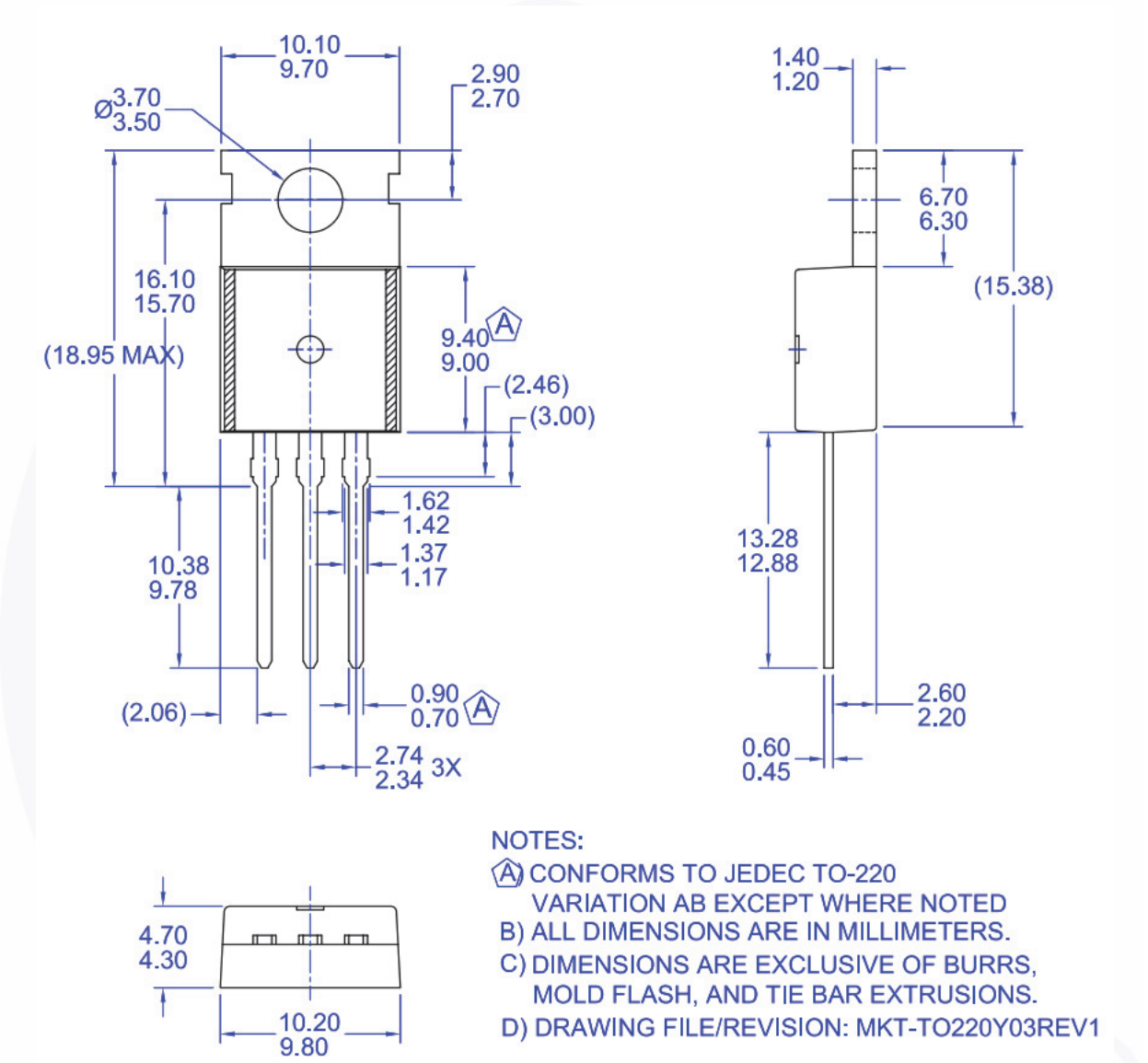


Figure 16. TO220, Molded, 3-Lead, Jedec Variation AB

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