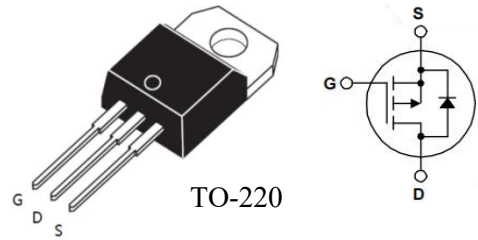


# FQP3P50 MOSFET

## ●DESCRIPTION:

The FQP3P50 is a P-Channel enhancement mode power MOSFET. This power MOSFET is usually used in high-speed switching switched mode power supplies, audio amplifier DC motor control, and variable switching power applications.



## ●ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V <sub>DSS</sub>	Drain-Source Voltage		-500	V
V <sub>GSS</sub>	Gate-Source Voltage		±30	V
I <sub>D</sub>	Continuous Drain Current	T <sub>c</sub> =25°C	-2.7	A
		T <sub>c</sub> =100°C	-1.71	A
I <sub>DM</sub>	Pulsed Drain Current		-10.8	A
P <sub>tot</sub>	Power Dissipation (T <sub>c</sub> =25°C)	To-220C	85	W
T <sub>j</sub>	Junction Temperature		150	°C
T <sub>stg</sub>	Operation and Storage Temperature		-55-150	°C
E <sub>AS</sub>	Avalanche Energy		250	mJ

## ●ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C, unless otherwise specified)

Symbol	Parameter	Test Condition	Value			Unit
			Min	Type	Max	
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> = 0V, I <sub>D</sub> =- 250μA	-500			V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>D</sub> S=-500V, V <sub>G</sub> S=0V			-1	μA
		V <sub>D</sub> S=-400V, V <sub>G</sub> S=0V, T <sub>c</sub> =125°C			-100	μA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>G</sub> S= ±30V			±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>D</sub> S= V <sub>G</sub> S, I <sub>D</sub> = - 250μA	-3.0		-5.0	V
R <sub>DS(ON)</sub>	Static Drain-Source On-State Resistance	V <sub>G</sub> S= -10V, I <sub>D</sub> = -1A			5	Ω
ΔBV <sub>DSS</sub> / ΔT <sub>J</sub>	Breakdown Voltage Temperature Coefficient	I <sub>D</sub> = -250 μA,		0.42		V/°C

Symbol	Parameter	Test Condition	Value			Unit
			Min	Type	Max	
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =-25V, f= 1MHz		510	660	pF
C <sub>oss</sub>	Output Capacitance			70	90	
C <sub>rss</sub>	Reverse Transfer Capacitance			9.5	12	
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> = -400V V <sub>GS</sub> = -10V I <sub>D</sub> = -2.7A		18	23	nC
Q <sub>gs</sub>	Gate-Source Charge			3.6		
Q <sub>gd</sub>	Gate-Drain Charge			9.2		
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =-250V, I <sub>D</sub> =-2.7A, R <sub>G</sub> =25Ω		12	35	nS
T <sub>r</sub>	Turn-On Rise Time			56	120	
T <sub>d(off)</sub>	Turn-Off Delay Time			35	80	
T <sub>f</sub>	Turn-Off Fall Time			45	100	
I <sub>SD</sub>	Maximum Continuous Drain-Source Diode Forward Current				-2.7	A
I <sub>SM</sub>	Maximum Pulsed Drain-Source Diode, Forward Current				-10.8	A
V <sub>SD</sub>	Drain-Source Diode Forward Voltage	I <sub>S</sub> =-2.7A,V <sub>GS</sub> =0V			-5	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>S</sub> =-2.7A,di/dt=100A/ μ s		270		nS
Q <sub>rr</sub>	Reverse Recovery Charge			1.5		uC

Notes:

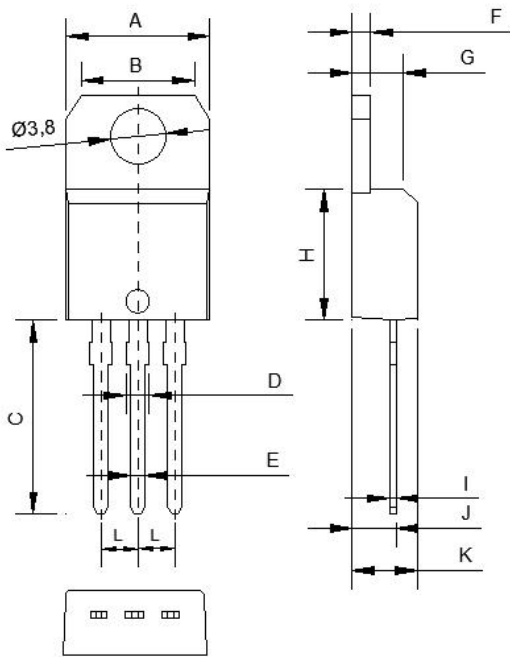
- 1.Repetitive rating: Pulse width limited by maximum junction temperature
- 2.Starting T<sub>j</sub>=25°C, V<sub>DD</sub> =50V, L=62mH, R<sub>G</sub> =25Ω, I<sub>AS</sub>=-2.7A
- 3.I<sub>SD</sub> ≤ -2.7A, di/dt ≤ 200A/μs, V<sub>DD</sub> ≤ BVDSS, Starting T<sub>J</sub> = 25°C
- 4.Breakdown Voltage Temperature Coefficient

## ● THERMAL CHARACTERISTIC

Symbol	Parameter	Value		Unit
R <sub>thjc</sub>	Thermal Resistance, Junction to Case	MAX	TO-220 1.47	°C/W

● PACKAGE MECHANICAL DATA

To-220



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	9.80	10.20	0.386	0.402
B	7.80	8.00	0.307	0.315
C	13.00	13.55	0.512	0.533
D	1.30	1.60	0.051	0.063
E	0.76	1.00	0.030	0.039
F	1.20	1.40	0.047	0.055
G	3.40	3.60	0.134	0.142
H	8.80	9.10	0.346	0.358
I	0.42	0.48	0.017	0.019
J	2.80	3.10	0.110	0.122
K	4.20	4.70	0.165	0.185
L	2.50	2.60	0.098	0.102

● ELECTRICAL CHARACTERISTICS (CURVES)

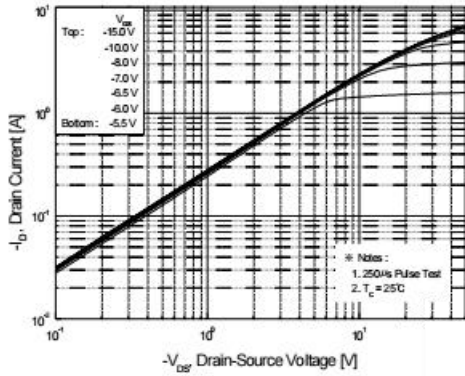


Figure 1. On-Region Characteristics

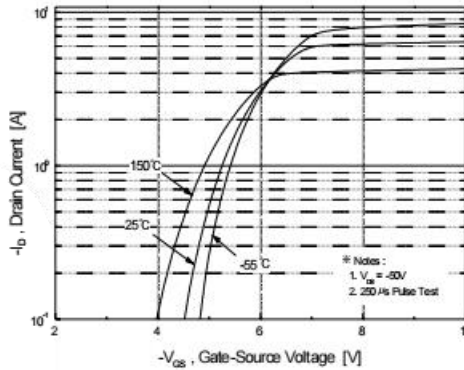


Figure 2. Transfer Characteristics

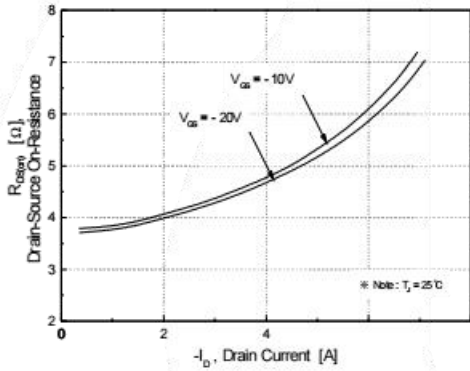


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

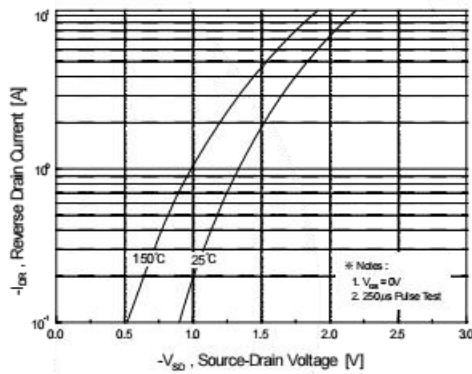


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

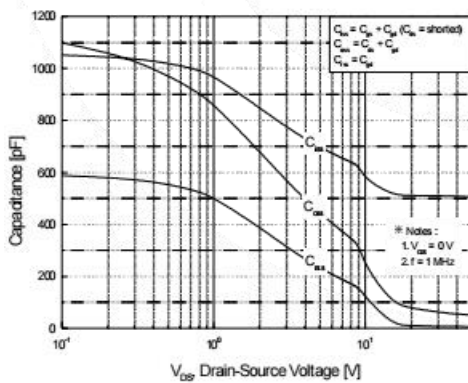


Figure 5. Capacitance Characteristics

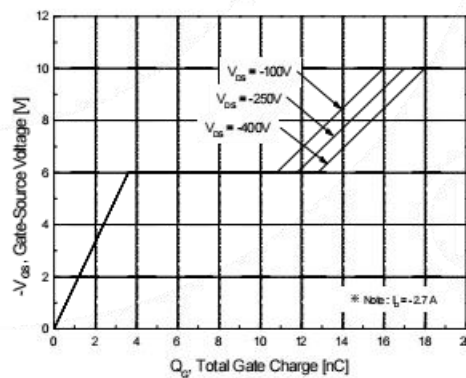


Figure 6. Gate Charge Characteristics

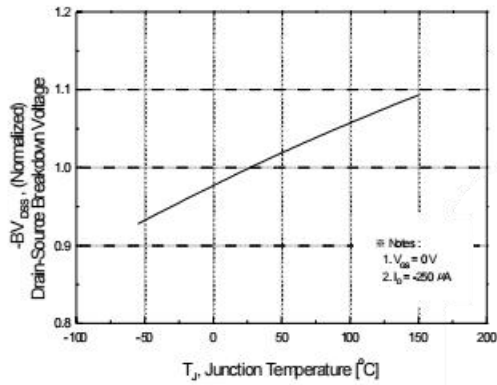


Figure 7. Breakdown Voltage Variation vs. Temperature

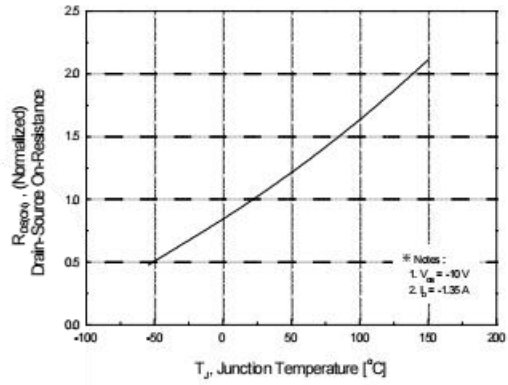


Figure 8. On-Resistance Variation vs. Temperature

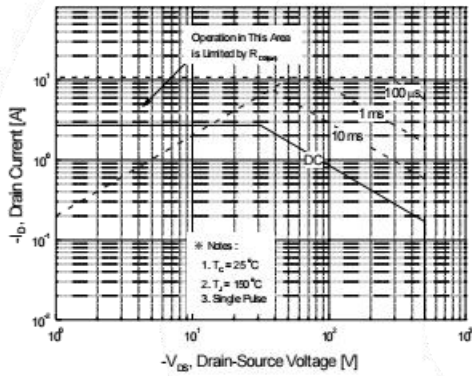


Figure 9. Maximum Safe Operating Area

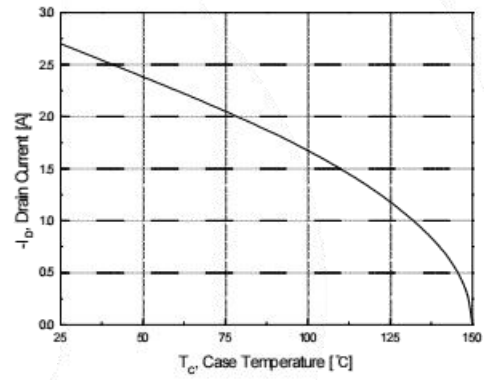


Figure 10. Maximum Drain Current vs. Case Temperature

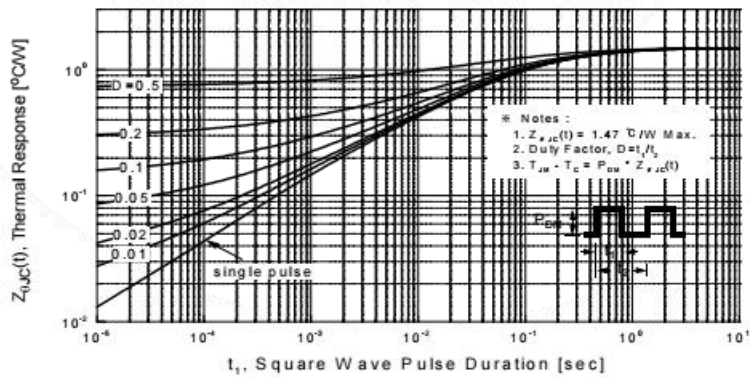


Figure 11. Transient Thermal Response Curve