

# RFM12P08/12P10 RFP12P08/12P10

## P-Channel Enhancement-Mode Power Field-Effect Transistors

### Features

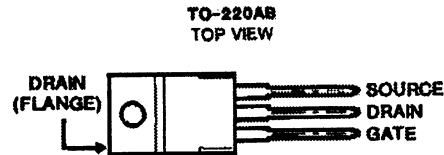
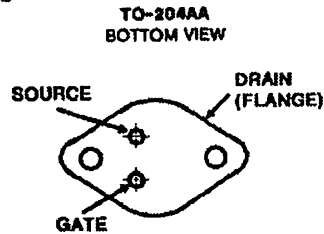
- -12A, -80V and -100V
- $r_{DS(on)} = 0.3\Omega$
- SOA is Power-Dissipation Limited
- Nanosecond Switching Speeds
- Linear Transfer Characteristics
- High Input Impedance
- Majority Carrier Device

### Description

The RFM12P08 and RFM12P10 and the RFP12P08 and RFP12P10 are p-channel enhancement-mode silicon gate power field-effect transistors designed for applications such as switching regulators, switching converters, motor drivers, relay drivers, and drivers for high-power bipolar switching transistors requiring high speed and low gate-drive power. These types can be operated directly from integrated circuits.

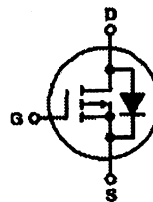
The RFM series types are supplied in the JEDEC TO-204AA steel package and the RFP series types in the JEDEC TO-220AB plastic package.

### Packages



### Terminal Diagram

P-CHANNEL ENHANCEMENT MODE



### Absolute Maximum Ratings ( $T_C = 25^\circ\text{C}$ ) Unless Otherwise Specified

	RFM12P08	RFM12P10	RFP12P08	RFP12P10	UNITS
Drain-Source Voltage	-80	-100	-80	-100	V
Drain-Gate Voltage ( $R_{GS} = 1\text{m}\Omega$ )	-80	-100	-80	-100	V
Continuous Drain Current	12	12	12	12	A
RMS Pulsed Drain Current	30	30	30	30	A
Gate-Source Voltage	$\pm 20$	$\pm 20$	$\pm 20$	$\pm 20$	V
Maximum Power Dissipation	100	100	75	75	W
$T_C = +25^\circ\text{C}$	0.8	0.8	0.6	0.6	W/ $^\circ\text{C}$
Above $T_C = +25^\circ\text{C}$ , Derate Linearly					$^\circ\text{C}$
Operating and Storage Junction Temperature Range	-55 to +150	-55 to +150	-55 to +150	-55 to +150	



Quality Semi-Conductors

## Specifications RFM12P08, RFM12P10, RFP12P08, RFP12P10

**ELECTRICAL CHARACTERISTICS, At Case Temperature (T<sub>c</sub>): 25° C unless otherwise specified.**

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	LIMITS				UNITS
			RFM12P08 RFP12P08		RFM12P10 RFP12P10		
			MIN.	MAX.	MIN.	MAX.	
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	I <sub>D</sub> =1 mA V <sub>GS</sub> =0	-80	—	-100	—	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> =V <sub>DS</sub> I <sub>D</sub> =1 mA	-2	-4	-2	-4	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>GS</sub> =-65 V	—	1	—	—	μA
		V <sub>GS</sub> =-80 V	—	—	—	1	
Gate-Source Leakage Current	I <sub>oSS</sub>	T <sub>c</sub> =125° C	—	50	—	—	nA
		V <sub>GS</sub> =-65 V V <sub>DS</sub> =-80 V	—	—	—	50	
Drain-Source On Voltage	V <sub>DS(on)</sub> <sup>a</sup>	V <sub>GS</sub> =±20 V V <sub>DS</sub> =0	—	100	—	100	nA
Static Drain-Source On Resistance	r <sub>DS(on)</sub> <sup>a</sup>	I <sub>D</sub> =6 A V <sub>GS</sub> =-10 V	—	-1.8	—	-1.8	V
		I <sub>D</sub> =12 A V <sub>GS</sub> =-10 V	—	-4.8	—	-4.8	
Forward Transconductance	g <sub>m</sub> <sup>a</sup>	I <sub>D</sub> =6 A V <sub>GS</sub> =-10 V	—	.3	—	.3	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-25 V V <sub>GS</sub> =0 V	—	1500	—	1500	pF
Output Capacitance	C <sub>oss</sub>	f = 1MHz	—	700	—	700	
Reverse Transfer Capacitance	C <sub>rss</sub>		—	300	—	300	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DS</sub> =50 V I <sub>D</sub> =6 A	18(typ)	60	18(typ)	60	ns
Rise Time	t <sub>r</sub>	R <sub>gen</sub> =R <sub>th</sub> =50 Ω	90(typ)	175	90(typ)	175	
Turn-Off Delay Time	t <sub>d(off)</sub>	V <sub>GS</sub> =-10 V	144(typ)	275	144(typ)	275	
Fall Time	t <sub>f</sub>		94(typ)	175	94(typ)	175	
Thermal Resistance Junction-to-Case	R <sub>θ,JC</sub>	RFM12P08, RFM12P10	—	1.25	—	1.25	°C/W
		RFP12P08, RFP12P10	—	1.67	—	1.67	

<sup>a</sup>Pulsed: Pulse duration = 300 μs max., duty cycle = 2%.

### SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS				UNITS
			RFM12P08 RFP12P08		RFM12P10 RFP12P10		
			MIN.	MAX.	MIN.	MAX.	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>SD</sub> =6 A	—	1.4	—	1.4	V
Reverse Recovery Time	t <sub>r</sub>	I <sub>F</sub> =4 A d <sub>IF</sub> /d <sub>I</sub> =100 A/μs	200(typ)		200(typ)		ns

<sup>a</sup>Pulse Test: Width ≤ 300 μs, duty cycle ≤ 2%.