

## RFM12N18/12N20 RFP12N18/12N20

N-Channel Enhancement Mode  
Power Field Effect Transistors

Absolute Maximum Ratings (T <sub>C</sub> = 25°C), Unless Otherwise Specified						
	RFM12N18	RFM12N20	RFP12N18	RFP12N20	UNITS	
Drain-Source Voltage	V <sub>DSS</sub>	180	200	180	200	V
Drain-Gate Voltage (R <sub>GS</sub> = 1mΩ)	V <sub>DGR</sub>	180	200	180	200	V
Continuous Drain Current	I <sub>D</sub>	12	12	12	12	A
RMS Continuous	I <sub>DM</sub>	30	30	30	30	A
Pulsed Drain Current	V <sub>GS</sub>	±20	±20	±20	±20	V
Gate-Source Voltage	P <sub>D</sub>	100	100	75	75	W
Maximum Power Dissipation		0.8	0.8	0.8	0.8	W/°C
T <sub>C</sub> = +25°C	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	-55 to +150	-55 to +150	-55 to +150	°C
Above T <sub>C</sub> = +25°C, Derate Linearly						
Operating and Storage Junction Temperature Range						

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS				UNITS
			RFM12N18		RFM12N20		
			Min.	Max.	Min.	Max.	
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> =1 mA V <sub>GS</sub> =0	180	—	200	—	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>DS</sub> =145 V	—	1	—	—	μA
		V <sub>DS</sub> =180 V	—	—	—	1	
		T <sub>C</sub> =125°C V <sub>DS</sub> =145 V V <sub>GS</sub> =180 V	—	50	—	50	
Gate-Source Leakage Current	I <sub>DSS</sub>	V <sub>GS</sub> =±20 V V <sub>DS</sub> =0	—	100	—	100	nA
Drain-Source On Voltage	V <sub>DS(on)</sub> <sup>a</sup>	I <sub>D</sub> =6 A V <sub>GS</sub> =10 V	—	1.5	—	1.5	V
		I <sub>D</sub> =12 A V <sub>GS</sub> =10 V	—	3.6	—	3.6	
		I <sub>D</sub> =6 A V <sub>GS</sub> =10 V	—	0.25	—	0.25	
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	—	0.25	—	0.25	Ω
Forward Transconductance	g <sub>m</sub> <sup>a</sup>	V <sub>GS</sub> =10 V I <sub>D</sub> =6 A	4	—	4	—	mho
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25 V	—	1700	—	1700	pF
Output Capacitance	C <sub>oss</sub>	V <sub>GS</sub> =0 V	—	600	—	600	
Reverse-Transfer Capacitance	C <sub>rss</sub>	f=1 MHz	—	300	—	300	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> =100 V I <sub>D</sub> =6 A	35(typ)	50	35(typ)	50	ns
Rise Time	t <sub>r</sub>	R <sub>DS(on)</sub> =R <sub>GS</sub> =50 Ω	120(typ)	200	130(typ)	200	
Turn-Off Delay Time	t <sub>d(off)</sub>	V <sub>GS</sub> =10 V	120(typ)	180	120(typ)	180	
Fall Time	t <sub>f</sub>		105(typ)	180	105(typ)	180	
Thermal Resistance Junction-to-Case	R <sub>θJC</sub>	RFM12N18,	—	1.25	—	1.25	°C/W
		RFM12N20	—	1.25	—	1.25	
		RFP12N18,	—	1.67	—	1.67	
		RFP12N20	—	1.67	—	1.67	

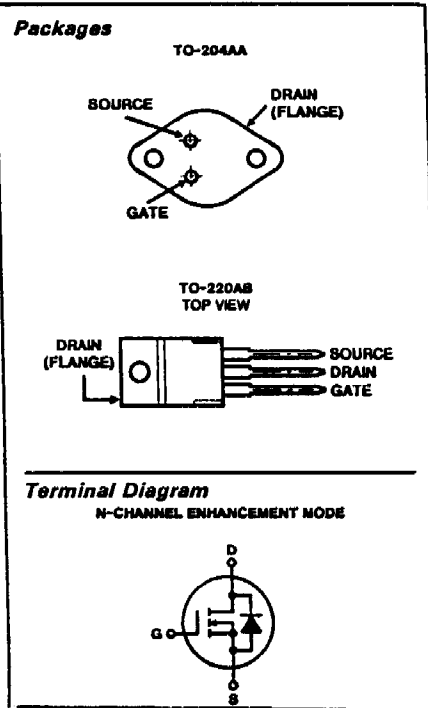
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**SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS**

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS				UNITS
			RFM12N18 RFP12N18		RFM12N20 RFP12N20		
			MIN.	MAX.	MIN.	MAX.	
Diode Forward Voltage	$V_{FD}^a$	$I_{SD}=8\text{ A}$	—	1.4	—	1.4	V
Reverse Recovery Time	$t_r$	$I_F=4\text{ A}$ $dI_F/dt=100\text{ A}/\mu\text{s}$	325(typ)		325(typ)		ns

<sup>a</sup>Pulsed: Pulse duration=300  $\mu\text{s}$  max., duty cycle=2%.



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