

RFM12N18/12N20 RFP12N18/12N20

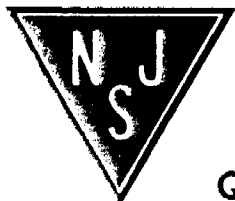
**N-Channel Enhancement Mode
Power Field Effect Transistors**

Absolute Maximum Ratings ($T_C = 25^\circ\text{C}$), Unless Otherwise Specified						
	RFM12N18	RFM12N20	RFP12N18	RFP12N20	UNITS	
Drain-Source Voltage	V_{DS}	180	200	180	200	V
Drain-Gate Voltage ($R_{GS} = 1\text{m}\Omega$)	V_{DGR}	180	200	180	200	V
Continuous Drain Current						
RMS Continuous	I_D	12	12	12	12	A
Pulsed Drain Current	I_{DM}	30	30	30	30	A
Gate-Source Voltage	V_{GS}	± 20	± 20	± 20	± 20	V
Maximum Power Dissipation						
$T_C = +25^\circ\text{C}$	P_D	100	100	75	75	W
Above $T_C = +25^\circ\text{C}$, Derate Linearly		0.8	0.8	0.6	0.6	W/°C
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	-55 to +150	-55 to +150	-55 to +150	°C

ELECTRICAL CHARACTERISTICS, At Case Temperature (T_c) = 25°C unless otherwise specified

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS				UNITS
			RFM12N18		RFM12N20		
			Min.	Max.	Min.	Max.	
Drain-Source Breakdown Voltage	BV_{DS}	$I_D = 1\text{ mA}$ $V_{GS} = 0$	180	—	200	—	V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$ $I_D = 1\text{ mA}$	2	4	2	4	V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 145\text{ V}$	—	1	—	—	μA
		$V_{DS} = 180\text{ V}$	—	—	—	1	
		$T_C = 125^\circ\text{C}$ $V_{DS} = 145\text{ V}$ $V_{GS} = 180\text{ V}$	—	50	—	—	
Gate-Source Leakage Current	I_{GSS}	$V_{DS} = \pm 20\text{ V}$ $V_{GS} = 0$	—	100	—	100	nA
Drain-Source On Voltage	$V_{DS(on)}$	$I_D = 6\text{ A}$ $V_{GS} = 10\text{ V}$	—	1.5	—	1.5	V
		$I_D = 12\text{ A}$ $V_{GS} = 10\text{ V}$	—	3.6	—	3.6	
		$I_D = 6\text{ A}$ $V_{GS} = 10\text{ V}$	—	0.25	—	0.25	
Forward Transconductance	g_m	$V_{GS} = 10\text{ V}$ $I_D = 6\text{ A}$	4	—	4	—	mho
Input Capacitance	C_{iss}	$V_{DS} = 25\text{ V}$ $V_{GS} = 0\text{ V}$	—	1700	—	1700	pF
Output Capacitance	C_{oss}	$f = 1\text{ MHz}$	—	600	—	600	
Reverse-Transfer Capacitance	C_{rss}		—	300	—	300	
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 100\text{ V}$ $I_D = 6\text{ A}$	35 (typ)	50	35 (typ)	50	ns
Rise Time	t_r	$R_{DS(on)} = 50\ \Omega$ $V_{GS} = 10\text{ V}$	120 (typ)	200	130 (typ)	200	
Turn-Off Delay Time	$t_{d(off)}$		105 (typ)	180	120 (typ)	180	
Fall Time	t_f		105 (typ)	180	105 (typ)	180	
Thermal Resistance Junction-to-Case	$R_{\theta jc}$	RFM12N18,	—	1.25	—	1.25	°C/W
		RFM12N20	—	1.67	—	1.67	
		RFP12N18,	—	1.25	—	1.25	
		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

^aPulsed: Pulse duration=300 μs max., duty cycle=2%.

