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RFM12N18/12N20
RFP12N18/12N20

N-Channel Enhancement Mode Power Field Effect Transistors

Absolute Maximum Ratings (T_C = 25°C), Unless Otherwise Specified

		RFM12N18	RFM12N20	RFP12N18	RFP12N20	UNITS
Drain-Source Voltage	V_{DSS}	180	200	180	200	V
Drain-Gate Voltage (R_{GS} = 1mΩ)	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°C	P_D	100	100	75	75	W
Above T_C = +25°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_a)=25° C unless otherwise specified*

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS				UNITS
			RFM12N18 RFP12N18		RFM12N20 RFP12N20		
			Min.	Max.	Min.	Max.	
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=1 mA, V_{GS}=0	180	—	200	—	V
Gate-Threshold Voltage	$V_{GS}(th)$	V_{GS}=V_{DS}, I_D=1 mA	2	4	2	4	V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=145 V	—	1	—	—	μA
		V_{DS}=160 V	—	—	—	1	
		T_C=125° C, V_{DS}=145 V	—	50	—	—	
		T_C=125° C, V_{DS}=160 V	—	—	—	50	
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20 V, V_{DS}=0	—	100	—	100	nA
Drain-Source On Voltage	$V_{DS}(on)$[a]	I_D=6 A, V_{GS}=10 V	—	1.5	—	1.5	V
		I_D=12 A, V_{GS}=10 V	—	3.6	—	3.6	
Static Drain-Source On Resistance	$r_{DS}(on)$[a]	I_D=6 A, V_{GS}=10 V	—	0.25	—	0.25	Ω
Forward Transconductance	g_{fs}[a]	V_{DS}=10 V, I_D=6 A	4	—	4	—	mho
Input Capacitance	C_{iss}	V_{DS}=25 V, V_{GS}=0 V, f=1 MHz	—	1700	—	1700	pF
Output Capacitance	C_{oss}		—	600	—	600	
Reverse-Transfer Capacitance	C_{rss}		—	300	—	300	
Turn-On Delay Time	$t_d(on)$	V_{DD}=100 V, I_D=6 A, R_{gen}=R_{gs}=50 Ω, V_{gs}=10 V	35(typ)	50	35(typ)	50	ns
Rise Time	t_r		130(typ)	200	130(typ)	200	
Turn-Off Delay Time	$t_d(off)$		120(typ)	180	120(typ)	180	
Fall Time	t_f		105(typ)	160	105(typ)	160	
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	RFM12N18, RFM12N20	—	1.25	—	1.25	°C/W
		RFP12N18, RFP12N20	—	1.67	—	1.67	

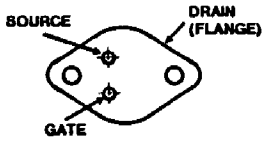
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS				UNITS
			RFM12N18 RFP12N18		RFM12N20 RFP12N20		
			MIN.	MAX.	MIN.	MAX.	
Diode Forward Voltage	V_{SD}[a]	I_{SD}=6 A	—	1.4	—	1.4	V
Reverse Recovery Time	t_{rr}	I_F=4 A $-dI_F/dt$=100 A/μs	325(typ)		325(typ)		ns

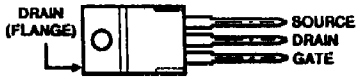
[a]Pulsed: Pulse duration=300 μs max., duty cycle=2%.

Packages

TO-204AA



TO-220AB
TOP VIEW



Terminal Diagram

N-CHANNEL ENHANCEMENT MODE