

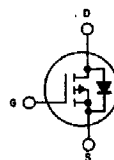
RFM5P12, RFM5P15, RFP5P12, RFP5P15

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

5 A, 120 V — 150 V
 $r_{DS(on)}$: 1 Ω

Features:

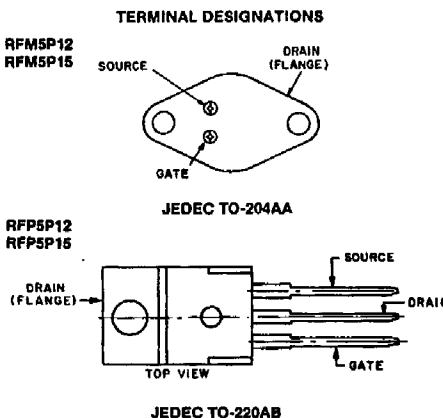
- SOA is power-dissipation limited
- Nanosecond switching speeds
- Linear transfer characteristics
- High input impedance
- Majority carrier device



P-CHANNEL ENHANCEMENT MODE

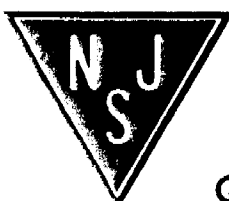
The RFM5P12 and RFM5P15 and the RFP5P12 and RFP5P15 are P-Channel enhancement-mode silicon gate power field-effect transistors designed for high-speed applications such as switching regulators, switching converters, relay drivers, and drivers for high-power bipolar switching transistors.

The RFM-Series types are supplied in the JEDEC TO-204AA metal package and the RFP-Series types in the JEDEC TO-220AB plastic package. All these types are supplied without an internal gate Zener diode.



MAXIMUM RATINGS, Absolute-Maximum Values ($T_C = 25^\circ\text{C}$):

	RFM5P12	RFM5P15	RFP5P12	RFP5P15		
DRAIN-SOURCE VOLTAGE	V_{DS}	-120	-150	-120	-150	V
DRAIN-GATE VOLTAGE ($R_{GS} = 1M\Omega$)	V_{DG}	-120	-150	-120	-150	V
GATE-SOURCE VOLTAGE	V_{GS}	±20				V
DRAIN CURRENT RMS Continuous	I_D	5				A
Pulsed	I_{DM}	15				A
POWER DISSIPATION	P_T	75	75	60	60	W
@ $T_C = 25^\circ\text{C}$		0.6	0.6	0.48	0.48	W/°C
Derate above $T_C = 25^\circ\text{C}$						°C
OPERATING AND STORAGE TEMPERATURE	T_1, T_{stg}	-55 to +150				°C



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

RFM5P12, RFM5P15, RFP5P12, RFP5P15

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS				UNITS
			RFM5P12 RFP5P12		RFM5P15 RFP5P15		
			Min.	Max.	Min.	Max.	
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D = 1 \text{ mA}$ $V_{GS} = 0$	-120	—	-150	—	V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{GS} = V_{DS}$ $I_D = 1 \text{ mA}$	-2	-4	-2	-4	V
Zero-Gate Voltage Drain Current	I_{OSS}	$V_{DS} = -100 \text{ V}$ $V_{GS} = -120 \text{ V}$	—	1	—	—	μA
		$T_C = 125^\circ\text{C}$ $V_{DS} = -100 \text{ V}$ $V_{GS} = -120 \text{ V}$	—	50	—	—	
			—	—	—	50	
Gate-Source Leakage Current	I_{OSS}	$V_{DS} = \pm 20 \text{ V}$ $V_{GS} = 0$	—	100	—	100	nA
Drain-Source On Voltage	$V_{DS(on)}^*$	$I_D = 2.5 \text{ A}$ $V_{GS} = -10 \text{ V}$	—	-2.5	—	-2.5	V
		$I_D = 5 \text{ A}$ $V_{GS} = -10 \text{ V}$	—	-8	—	-8	
Static Drain-Source On Resistance	$r_{DS(on)}^*$	$I_D = 2.5 \text{ A}$ $V_{GS} = -10 \text{ V}$	—	1	—	1	Ω
Forward Transconductance	g_{fs}^*	$V_{DS} = 10 \text{ V}$ $I_D = 2.5 \text{ A}$	0.75	—	0.75	—	mho
Input Capacitance	C_{iss}	$V_{DS} = 25 \text{ V}$	—	700	—	700	pF
Output Capacitance	C_{oss}	$V_{GS} = 0 \text{ V}$	—	300	—	300	
Reverse-Transfer Capacitance	C_{rss}	$f = 1 \text{ MHz}$	—	100	—	100	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 1/2 BV_{DSS}$	20(typ.)	60	20(typ.)	60	ns
Rise Time	t_r	$I_D = 2.5 \text{ A}$	36(typ.)	100	36(typ.)	100	
Turn-Off Delay Time	$t_{d(off)}$	$R_{GS} = R_{DS} = 50\Omega$	83(typ.)	150	83(typ.)	150	
Fall Time	t_f	$V_{GS} = 10 \text{ V}$	40(typ.)	100	40(typ.)	100	
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	RFM5P12, RFM5P15	—	1.67	—	1.67	$^\circ\text{C/W}$
		RFP5P12, RFP5P15	—	2.083	—	2.083	

*Pulsed: Pulse duration = 300 μs max., duty cycle = 2%.

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS				UNITS
			RFM5P12 RFP5P12		RFM5P15 RFP5P15		
			Min.	Max.	Min.	Max.	
Diode Forward Voltage	V_{SD}	$I_{SD} = 2.5 \text{ A}$	—	1.4	—	1.4	V
Reverse Recovery Time	t_{rr}	$I_F = 4 \text{ A}$ $dI_F/dt = 100 \text{ A}/\mu\text{s}$	300(typ.)		300(typ.)		ns

*Pulse Test: Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2\%$.