

RFM15N05L, RFM15N06L, RFP15N05L, RFP15N06L

Power Logic Level MOSFETs

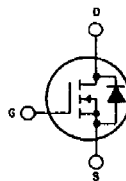
N-Channel Logic Level
 Power Field-Effect Transistors (L² FET)

15 A, 50 and 60 V
 $r_{os(on)}$: 0.14 Ω

Features:

- Design optimized for 5 volt gate drive
- Can be driven directly from Q-MOS, N-MOS, TTL Circuits
- Compatible with automotive drive requirements
- SOA is power-dissipation limited
- Nanosecond switching speeds
- Linear transfer characteristics
- High input impedance
- Majority carrier device

TERMINAL DIAGRAM



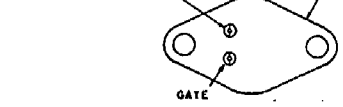
N-CHANNEL ENHANCEMENT MODE

The RFM15N05L and RFM15N06L and the RFP15N05L and RFP15N06L* are N-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.

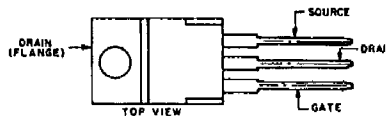
The RFM-series types are supplied in the JEDEC TO-204AA steel package and the RFP-series types in the JEDEC TO-220AB plastic package.

Because of space limitations branding (marking) on type RFP15N05L is F15N05L and on type RFP15N06L is F15N06L.

TERMINAL DESIGNATIONS



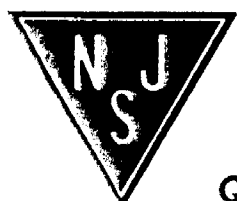
JEDEC TO-204AA



JEDEC TO-220AB

MAXIMUM RATINGS, Absolute-Maximum Values ($T_c = 25^\circ C$):

	RFM15N05L	RFM15N06L	RFP15N05L	RFP15N06L		
DRAIN-SOURCE VOLTAGE	V_{DSS}	50	60	50	60	V
DRAIN-GATE VOLTAGE ($R_{gs} = 1 M\Omega$)	V_{DGR}	50	60	50	60	V
GATE-SOURCE VOLTAGE	V_{GS}	±10				V
DRAIN CURRENT, RMS Continuous	I_{o}	15				A
..... Pulsed	I_{oM}	40				A
POWER DISSIPATION @ $T_c = 25^\circ C$	P_r	75	75	60	60	W
Derate above $T_c = 25^\circ C$		0.6	0.6	0.48	0.48	W/ $^\circ C$
OPERATING AND STORAGE TEMPERATURE	T_r, T_{stg}	-55 to +150				$^\circ C$



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.

RFM15N05L, RFM15N06L, RFP15N05L, RFP15N06L

ELECTRICAL CHARACTERISTICS, All Case Temperature ($T_C = 25^\circ\text{C}$) unless otherwise specified

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS				UNITS
			RFM15N05L RFP15N05L		RFM15N06L RFP15N06L		
			MIN.	MAX.	MIN.	MAX.	
Drain-Source Breakdown Voltage	BV_{DS}	$I_D = 1\text{ mA}$ $V_{GS} = 0$	50	—	60	—	V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$ $I_D = 1\text{ mA}$	1	2	1	2	V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 40\text{ V}$	—	1	—	—	μA
		$V_{DS} = 50\text{ V}$	—	—	—	1	
		$T_C = 125^\circ\text{C}$	—	50	—	—	μA
		$V_{DS} = 50\text{ V}$	—	—	—	50	
Gate-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 10\text{ V}$ $V_{DS} = 0$	—	100	—	100	nA
Drain-Source On Voltage	$V_{DS(on)}^{\text{a}}$	$I_D = 7.5\text{ A}$ $V_{GS} = 5\text{ V}$	—	1.125	—	1.125	V
		$I_D = 15\text{ A}$ $V_{GS} = 5\text{ V}$	—	3.0	—	3.0	
Static Drain-Source On Resistance	$r_{DS(on)}^{\text{a}}$	$I_D = 7.5\text{ A}$ $V_{GS} = 5\text{ V}$	—	0.14	—	0.14	Ω
Forward Transconductance	g_{fs}^{a}	$V_{DS} = 10\text{ V}$ $I_D = 7.5\text{ A}$	4.0	—	4.0	—	mho
Input Capacitance	C_{iss}	$V_{DS} = 25\text{ V}$	—	900	—	900	pF
Output Capacitance	C_{oss}	$V_{GS} = 0\text{ V}$	—	450	—	450	
Reverse-Transfer Capacitance	C_{rss}	$f = 1\text{ MHz}$	—	180	—	180	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 30\text{ V}$ $I_D = 7.5\text{ A}$ $R_{\theta(jc)} = \infty$ $R_{GS} = 6.25\ \Omega$ $V_{GS} = 5\text{ V}$	16(typ)	40	16(typ)	40	ns
Rise Time	t_r		250(typ)	325	250(typ)	325	
Turn-Off Delay Time	$t_{d(off)}$		200(typ)	325	200(typ)	325	
Fall Time	t_f		225(typ)	325	225(typ)	325	
Thermal Resistance Junction-to-Case	$R\theta_{jc}$	RFM15N05L, RFM15N06L	—	1.67	—	1.67	$^\circ\text{C/W}$
		RFP15N05L, RFP15N06L	—	2.083	—	2.083	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS				UNITS
			RFM15N05L RFP15N05L		RFM15N06L RFP15N06L		
			MIN.	MAX.	MIN.	MAX.	
Diode Forward Voltage	V_{SD}^{a}	$I_{SD} = 7.5\text{ A}$	—	1.4	—	1.4	V
Reverse Recovery Time	t_{rr}	$I_F = 4\text{ A}$, $dI_F/dt = 100\text{ A}/\mu\text{s}$	225 (typ.)		225 (typ.)		ns

^a Pulsed: Pulse duration = 300 μs , duty cycle = 2%.