

RFL1N18, RFL1N20

1A, 180V and 200V, 3.65 Ohm,
N-Channel Power MOSFETs

Features

- 1A, 180V and 200V
- $r_{DS(ON)} = 3.65\Omega$
- SOA is Power Dissipation Limited
- Nanosecond Switching Speeds
- Linear Transfer Characteristics
- High Input Impedance
- Majority Carrier Device

Description

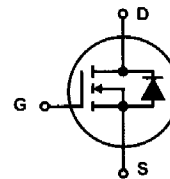
These are N-Channel enhancement mode silicon gate power field effect transistors designed for applications such as switching regulators, switching converters, motor drivers, relay drivers and drivers for high power bipolar switching transistors requiring high speed and low gate drive power. These types can be operated directly from integrated circuits.

Ordering Information

PART NUMBER	PACKAGE	BRAND
RFL1N18	TO-205AF	RFL1N18
RFL1N20	TO-205AF	RFL1N20

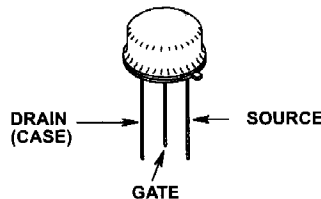
NOTE: When ordering, use the entire part number.

Symbol

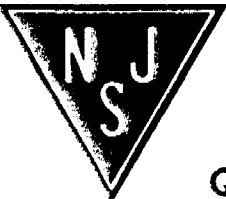


Packaging

JEDEC TO-205AF



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Absolute Maximum Ratings $T_C = 25^\circ\text{C}$, Unless Otherwise Specified

	RFL1N18	RFL1N20	UNITS	
Drain to Source Breakdown Voltage (Note 1).....	V_{DS}	180	200	V
Drain to Gate Voltage ($R_{GS} = 1M\Omega$) (Note 1).....	V_{DGR}	180	200	V
Continuous Drain Current.....	I_D	1	1	A
Pulsed Drain Current.....	I_{DM}	5	5	A
Gate to Source Voltage.....	V_{GS}	± 20	± 20	V
Maximum Power Dissipation.....	P_D	8.33	8.33	W
Linear Derating Factor.....		0.0667	0.0667	W/ $^\circ\text{C}$
Operating and Storage Temperature.....	T_J, T_{STG}	-55 to 150	-55 to 150	$^\circ\text{C}$
Maximum Temperature for Soldering				
Leads at 0.063in (1.6mm) from Case for 10s.....	T_L	300	300	$^\circ\text{C}$
Package Body for 10s, See Techbrief 334.....	T_{pkg}	260	260	$^\circ\text{C}$

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

NOTE:

- $T_J = 25^\circ\text{C}$ to 125°C .

Electrical Specifications $T_C = 25^\circ\text{C}$, Unless Otherwise Specified

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS	
Drain to Source Breakdown Voltage RFL1N18	BV_{DSS}	$I_D = 250\mu\text{A}, V_{GS} = 0\text{V}$	180	-	-	V	
			200	-	-	V	
RFL1N20							
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu\text{A}$, (Figure 8)	2	-	4	V	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 0.8 \times \text{Rated } BV_{DSS}$	$T_C = 25^\circ\text{C}$	-	-	1	μA
			$T_C = 125^\circ\text{C}$	-	-	25	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$	-	-	± 100	nA	
Drain to Source On-Voltage (Note 2)	$V_{DS(ON)}$	$I_D = 1\text{A}, V_{GS} = 10\text{V}$	-	-	3.65	V	
			$I_D = 2\text{A}, V_{GS} = 10\text{V}$	-	-	8.3	V
Drain to Source On Resistance (Note 2)	$r_{DS(ON)}$	$I_D = 1\text{A}, V_{GS} = 10\text{V}$, (Figures 6, 7)	-	-	3.65	Ω	
Forward Transconductance (Note 2)	g_{fs}	$I_D = 1\text{A}, V_{DS} = 10\text{V}$, (Figure 10)	400	-	-	S	
Turn-On Delay Time	$t_{d(ON)}$	$I_D = 1\text{A}, V_{DD} = 100\text{V}, R_{GS} = 50\Omega, V_{GS} = 10\text{V}$, (Figures 11, 12, 13)	-	15	25	ns	
Rise Time	t_r		-	20	30	ns	
Turn-Off Delay Time	$t_{d(OFF)}$		-	25	40	ns	
Fall Time	t_f		-	30	50	ns	
Input Capacitance	C_{ISS}	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$, (Figure 9)	-	-	200	pF	
Output Capacitance	C_{OSS}		-	-	60	pF	
Reverse Transfer Capacitance	C_{RSS}		-	-	25	pF	
Thermal Resistance Junction to Case	$R_{\theta JC}$		-	-	15	$^\circ\text{C/W}$	

Source to Drain Diode Specifications

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Source to Drain Diode Voltage (Note 2)	V_{SD}	$I_{SD} = 1\text{A}$	-	-	1.4	V
Diode Reverse Recovery Time	t_{rr}	$I_{SD} = 2\text{A}, dI_{SD}/dt = 50\text{A}/\mu\text{s}$	-	200	-	ns