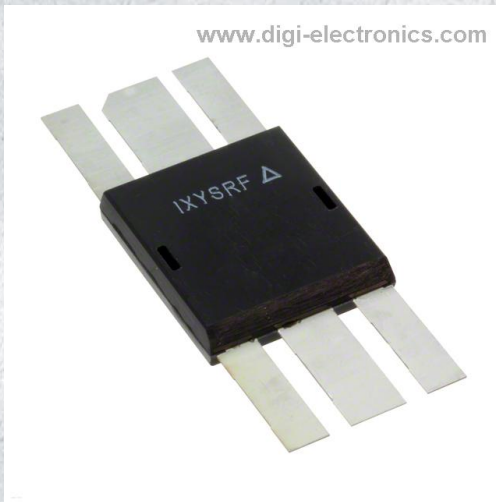


DE375-501N21A Datasheet



DiGi Electronics Part Number	DE375-501N21A-DG
Manufacturer	IXYS-RF
Manufacturer Product Number	DE375-501N21A
Description	RF MOSFET DE375
Detailed Description	RF Mosfet 50MHz 940W DE375

<https://www.DiGi-Electronics.com>

This model DE375-501N21A is available at DiGi Electronics.

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Purchase and inquiry

Manufacturer Product Number:

DE375-501N21A

Series:

DE

Technology:

MOSFET

Frequency:

50MHz

Current Rating (Amps):

25A

Power - Output:

940W

Package / Case:

6-SMD, Flat Lead Exposed Pad

Base Product Number:

DE475

Manufacturer:

IXYS-RF

Product Status:

Obsolete

Configuration:

N-Channel

Gain:

-

Noise Figure:

-

Voltage - Rated:

500 V

Supplier Device Package:

DE375

Environmental & Export classification

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

REACH Status:

REACH Affected

HTSUS:

8541.29.0095



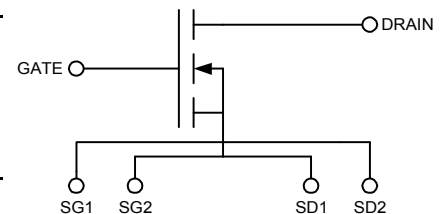
DE375-501N21A RF Power MOSFET

- ◆ N-Channel Enhancement Mode
- ◆ Low Q_g and R_g
- ◆ High dv/dt
- ◆ Nanosecond Switching
- ◆ 50MHz Maximum Frequency

$$\begin{aligned} V_{DSS} &= 500 \text{ V} \\ I_{D25} &= 25 \text{ A} \\ R_{DS(on)} &= 0.35 \Omega \\ P_{DC} &= 940 \text{ W} \end{aligned}$$

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	500	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$	500	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_c = 25^\circ\text{C}$	25	A
I_{DM}	$T_c = 25^\circ\text{C}$, pulse width limited by T_{JM}	150	A
I_{AR}	$T_c = 25^\circ\text{C}$	21	A
E_{AR}	$T_c = 25^\circ\text{C}$	30	mJ
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 0.2 \Omega$	5	V/ns
	$I_S = 0$	>200	V/ns
P_{DC}		940	W
P_{DHS}	$T_c = 25^\circ\text{C}$ Derate $3.7 \text{ W}/^\circ\text{C}$ above 25°C	425	W
P_{DAMB}	$T_c = 25^\circ\text{C}$	4.5	W
R_{thJC}		0.16	C/W
R_{thJHS}		0.36	C/W

Symbol	Test Conditions	Characteristic Values		
		min.	typ.	max.
$T_J = 25^\circ\text{C}$ unless otherwise specified				
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 3 \text{ ma}$	500		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250 \mu\text{a}$	3.0		5.5 V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}_{DC}$, $V_{DS} = 0$			$\pm 100 \text{ nA}$
I_{DSS}	$V_{DS} = 0.8 V_{DSS}$, $T_J = 25^\circ\text{C}$ $V_{GS} = 0$, $T_J = 125^\circ\text{C}$			50 μA 1 mA
$R_{DS(on)}$	$V_{GS} = 15 \text{ V}$, $I_D = 0.5 I_{D25}$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2\%$			0.35 Ω
g_{fs}	$V_{DS} = 100 \text{ V}$, $I_D = 0.5 I_{D25}$, pulse test	6.5	7.6	9.0 S
T_J		-55		+175 $^\circ\text{C}$
T_{JM}			175	$^\circ\text{C}$
T_{stg}		-55		+175 $^\circ\text{C}$
T_L	1.6mm (0.063 in) from case for 10 s		300	$^\circ\text{C}$
Weight			3	g



Features

- Isolated Substrate
 - high isolation voltage (>2500V)
 - excellent thermal transfer
 - Increased temperature and power cycling capability
- IXYS advanced low Q_g process
- Low gate charge and capacitances
 - easier to drive
 - faster switching
- Low $R_{DS(on)}$
- Very low insertion inductance (<2nH)
- No beryllium oxide (BeO) or other hazardous materials

Advantages

- Optimized for RF and high speed switching at frequencies to 50MHz
- Easy to mount—no insulators needed
- High power density


DE375-501N21A
RF Power MOSFET

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)		
		min.	typ.	max.
R_G			0.3	Ω
C_{iss}			2500	pF
C_{oss}	$V_{GS} = 0\text{ V}$, $V_{DS} = 0.8 V_{DSS(max)}$, $f = 1\text{ MHz}$		170	pF
C_{rss}			46	pF
C_{stray}	Back Metal to any Pin		33	pF
$T_{d(on)}$			5	ns
T_{on}	$V_{GS} = 15\text{ V}$, $V_{DS} = 0.8 V_{DSS}$ $I_D = 0.5 I_{DM}$		3	ns
$T_{d(off)}$	$R_G = 0.2\ \Omega$ (External)		5	ns
T_{off}			8	ns
$Q_{g(on)}$			70	nC
Q_{gs}	$V_{GS} = 10\text{ V}$, $V_{DS} = 0.5 V_{DSS}$ $I_D = 0.5 I_{D25}$		18	nC
Q_{gd}			40	nC

Source-Drain Diode
Characteristic Values

 ($T_J = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Test Conditions	min.	typ.	max.
I_S	$V_{GS} = 0\text{ V}$			21 A
I_{SM}	Repetitive; pulse width limited by T_{JM}			150 A
V_{SD}	$I_F = I_S$, $V_{GS} = 0\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$			1.5 V
T_{rr}			200	ns
Q_{RM}	$I_F = I_S$, $-di/dt = 100\text{A}/\mu\text{s}$, $V_R = 100\text{V}$		0.6	μC
I_{RM}			15	A

CAUTION: Operation at or above the Maximum Ratings values may impact device reliability or cause permanent damage to the device.

Information in this document is believed to be accurate and reliable. IXYSRF reserves the right to make changes to information published in this document at any time and without notice.

For detailed device mounting and installation instructions, see the "Device Installation & Mounting Instructions" technical note on the IXYSRF web site at;

http://www.ixysrf.com/pdf/switch_mode/apnotes/7de_series_mosfet_installation_instructions.pdf

IXYS RF reserves the right to change limits, test conditions and dimensions.

IXYS RF MOSFETS are covered by one or more of the following U.S. patents:

4,835,592	4,860,072	4,881,106	4,891,686	4,931,844	5,017,508
5,034,796	5,049,961	5,063,307	5,187,117	5,237,481	5,486,715
5,381,025	5,640,045				



DE375-501N21A
RF Power MOSFET

Fig. 1
Typical Transfer Characteristics
 $V_{DS} = 100V, PW = 40\mu S$

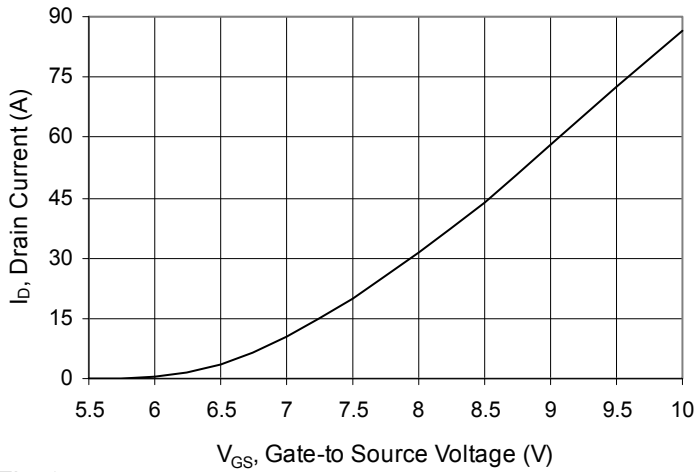


Fig. 2
Typical Output Characteristics

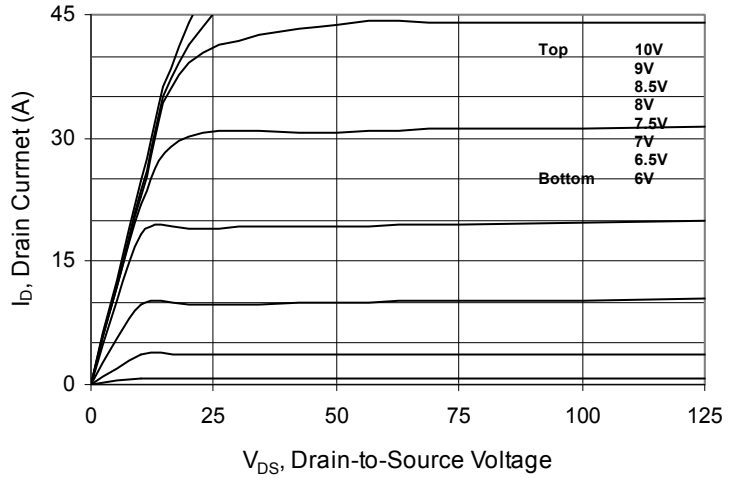


Fig. 3
Gate Charge vs. Gate-to-Source Voltage
 $V_{DS} = 250V, I_D = 12.5A$

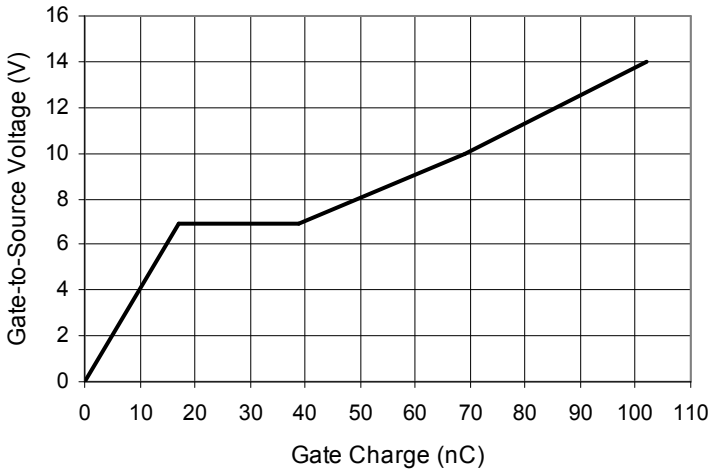


Fig. 4
Extended Typical Output Characteristics

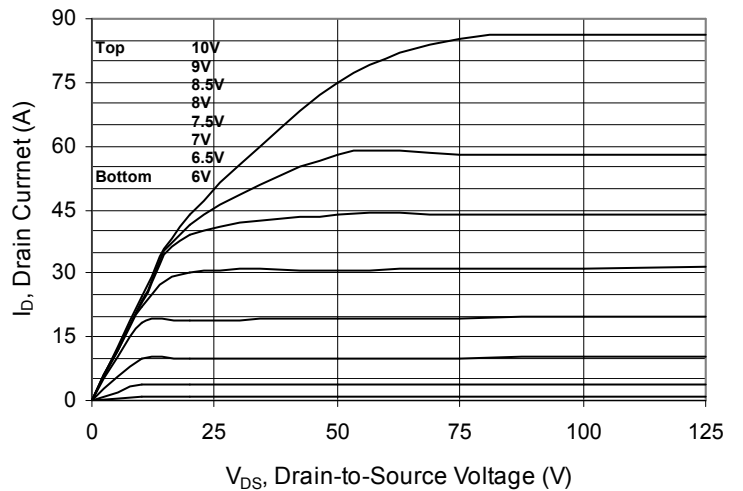
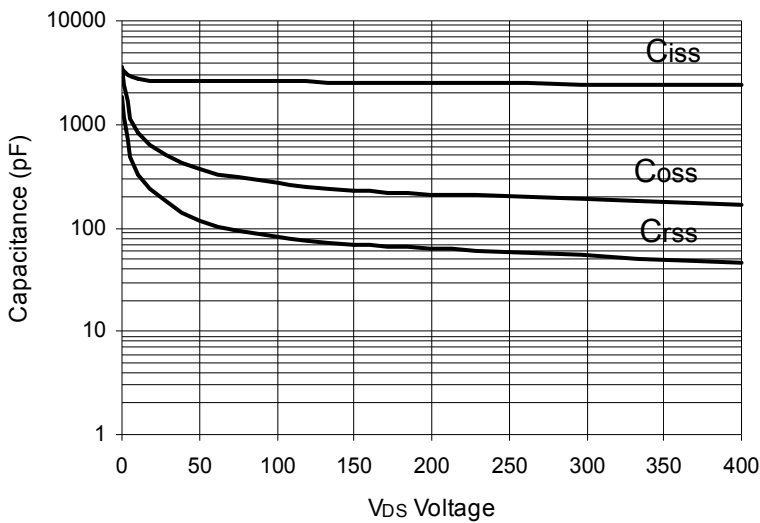


Fig. 5
 V_{DS} vs. Capacitance



OUR CERTIFICATE

DiGi provide top-quality products and perfect service for customer worldwide through standardization, technological innovation and continuous improvement. DiGi through third-party certification, we stricly control the quality of products and services. Welcome your RFQ to

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