

RFP30P05

P-CHANNEL POWER MOSFETs

FEATURE

These are P-Channel power MOSFETs manufactured using the MegaFET process.

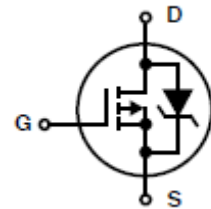
This process, which uses feature sizes approaching those of LSI circuits, gives optimum utilization of silicon, resulting in outstanding performance.

They were designed for use in applications such as switching

regulators, switching converters, motor drivers, and relay drivers. These transistors can be operated directly from integrated circuits.

They are mounted TO-220 package.

Compliance to RoHS.



ABSOLUTE MAXIMUM RATINGS (T_C= 25°C)

Symbol	Ratings	Value	Unit
V _{DS}	Drain-Source Voltage (1)	-50	V
V _{DGR}	Drain-gate Voltage (R _{GS} = 20kΩ) (1)	-50	V
V _{GS}	Gate-Source Voltage	±20	V
I _{DS}	Continuous Drain Current	30	A
I _{DM}	Pulsed Drain Current (Figure 1)	Refer to peak current curve	
R _{DS(on)}	Drain-Source on Resistance	0.065	Ω
E _{AS}	Single pulse Avalanche Rating (Figure 2)	Refer to UIS curve	
P _T	Power Dissipation at Case Temperature	120	W
	Linear Derating Factor	0.8	W/°C
T _J	Operating Temperature	-55 to +175	°C
t _{stg}	Storage Temperature Range	-55 to +175	
T _L	Maximum Temperature For Soldering Leads At 1.6mm From Case For 10s	300	°C
T _{pkg}	Maximum Temperature For Soldering Package Body For 10s	260	°C

(1) = 25°C to 150°C



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SOURCE TO DRAIN DIODE SPECIFICATIONS

Symbol	Ratings		Min	Typ	Max	Unit
V_{SD}	Source-Drain Diode Voltage	$I_{SD} = -30 \text{ A}$	-	-	-1.5	V
t_{rr}	Reverse Recovery Time	$I_{SD} = -30 \text{ A}$ $di_{SD}/dt = -100\text{A}/\mu\text{s}$	-	-	150	ns

ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit
V_{DSS}	Drain-Source Breakdown Voltage	$I_D = 250 \mu\text{A}$, $V_{GS} = 0 \text{ V}$	-50	-	-	V
$V_{GS(th)}$	Gate-threshold Voltage	$I_D = 250 \mu\text{A}$, $V_{GS} = V_{DS}$	-2	-	-4	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -50 \text{ V}$, $V_{GS} = 0 \text{ V}$ $T_j = 25 \text{ }^\circ\text{C}$	-	-	-1	μA
		$V_{DS} = 0.8 \times -50 \text{ V}$ $T_j = 150 \text{ }^\circ\text{C}$	-	-	-25	
I_{GSS}	Gate-Source leakage Current	$V_{GS} = \pm 20 \text{ V}$	-	-	± 100	nA
$R_{DS(on)}$	Drain-Source on Resistance	$I_D = 30 \text{ A}$, $V_{GS} = -10 \text{ V}$	-	-	0.065	Ω

DYNAMIC CHARACTERISTICS

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit
C_{ISS}	Input Capacitance	$V_{GS} = 0 \text{ V}$, $V_{DS} = -25 \text{ V}$ $f = 1\text{MHz}$	-	3200	-	μF
C_{OSS}	Output Capacitance		-	800	-	
C_{RSS}	Reverse transfer Capacitance		-	175	-	
$t_{(on)}$	Turn-on Time	$V_{DD} = -25 \text{ V}$ $V_{GS} = -10 \text{ V}$ $I_D = 15 \text{ A}$ $R_L = 1.67 \Omega$ $R_{GS} = 6.25 \Omega$	-	-	80	ns
$t_{d(on)}$	Turn-on Delay Time		-	15	-	
t_r	Rise time		-	23	-	
$t_{d(off)}$	Turn-off Delay Time		-	28	-	
$t_{(off)}$	Turn-off Time		-	-	100	
t_f	Fall Time		-	18	-	
$Q_{g(TOT)}$	Total Gate Charge		$V_{GS} = 0 \text{ to } -20 \text{ V}$	-	140	
$Q_{g(-10)}$	Gate Charge at -10V	$V_{GS} = 0 \text{ to } -10 \text{ V}$	-	70	85	
$Q_{g(TH)}$	Threshold Gate Charge	$V_{GS} = 0 \text{ to } -2 \text{ V}$	-	5.5	6.6	

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THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R _{thJC}	Thermal Resistance, Junction to Case	<1.25	°C/W
R _{thJA}	Thermal Resistance, Junction to Ambient	<62	

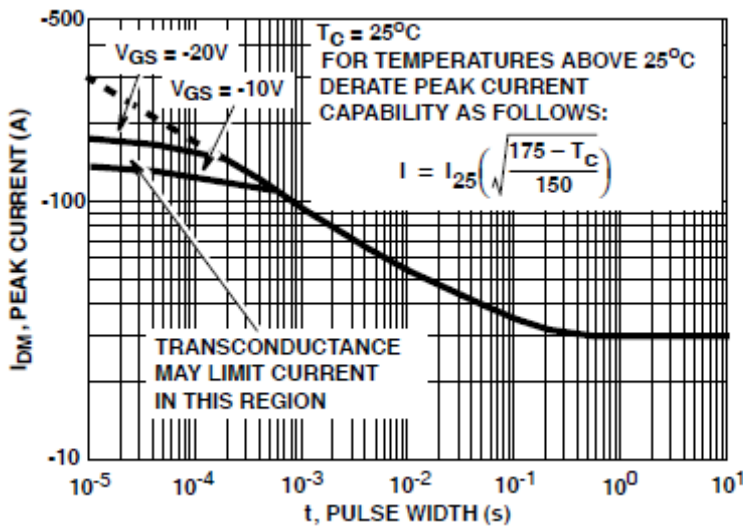
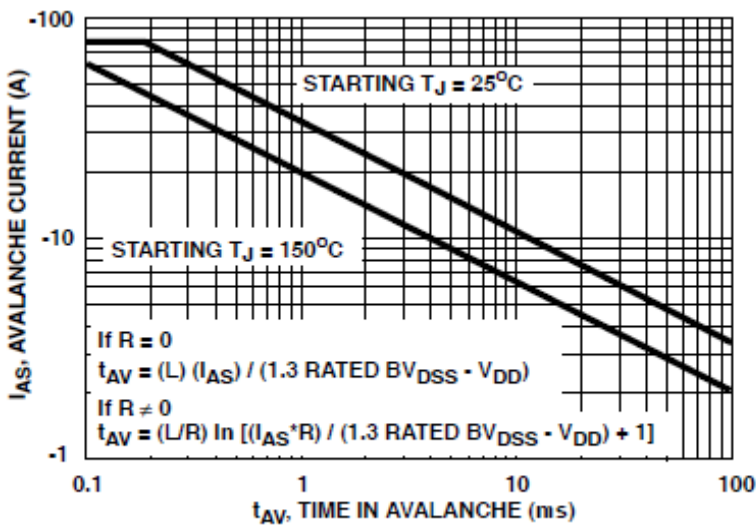


FIGURE 1: PEAK CURRENT CAPABILITY



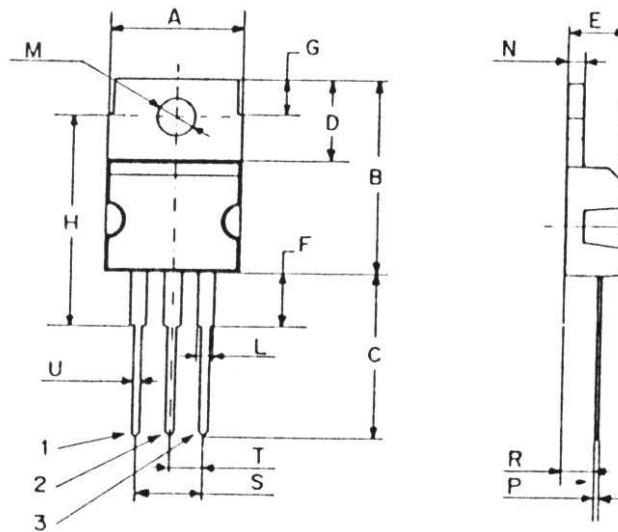
NOTE: Refer to Intersil Application Notes AN9321 and AN9322.

FIGURE 2: UNCLAMPED INDUCTIVE SWITCHING CAPABILITY

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MECHANICAL DATA CASE TO-220

DIMENSIONS (mm)		
	Min.	Max.
A	9,90	10,30
B	15,65	15,90
C	13,20	13,40
D	6,45	6,65
E	4,30	4,50
F	2,70	3,15
G	2,60	3,00
H	15,75	17,15
L	1,15	1,40
M	3,50	3,70
N	-	1,37
P	0,46	0,55
R	2,50	2,70
S	4,98	5,08
T	2,49	2,54
U	0,70	0,90



Pin 1 :	Gate
Pin 2 :	Drain
Pin 3 :	Source

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