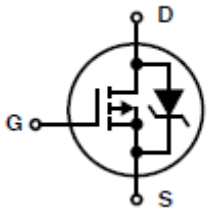
RFP30P05

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 A	-	-	-1.5	V
t_{rr}	Reverse Recovery Time	I_{SD} = -30 A dI_{SD}/dt = -100A/µs	-	-	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 µA, V_{GS}= 0 V	-50	-	-	V
$V_{GS(th)}$	Gate-threshold Voltage	I_D=250 µA, V_{GS}= V_{DS}	-2	-	-4	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= -50 V, V_{GS}= 0 V T_j= 25 °C	-	-	-1	µA
		V_{DS}=0.8x -50 V T_j= 150 °C	-	-	-25	
I_{GSS}	Gate-Source leakage Current	V_{GS}= ±20 V	-	-	±100	nA
$R_{DS(on)}$	Drain-Source on Resistance	I_D= 30 A, V_{GS}= -10 V	-	-	0.065	Ω

DYNAMIC CHARACTERISTICS

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit
C_{ISS}	Input Capacitance	V_{GS}= 0 V, V_{DS}= -25 V f= 1MHz	-	3200	-	pF
C_{OSS}	Output Capacitance		-	800	-	
C_{RSS}	Reverse transfer Capacitance		-	175	-	
$t_{(on)}$	Turn-on Time	V_{DD}= -25 V V_{GS}= -10 V I_D= 15 A R_L= 1.67 Ω R_{GS}= 6.25 Ω	-	-	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 to -20 V; V_{DD} = -40V; I_D = 30 A; R_L = 1.33Ω; $I_{G(REF)}$=1.6mA	-	140	170	nC
$Q_{g(-10)}$	Gate Charge at -10V	V_{GS} = 0 to -10 V	-	70	85	
$Q_{g(TH)}$	Threshold Gate Charge	V_{GS} = 0 to -2 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	

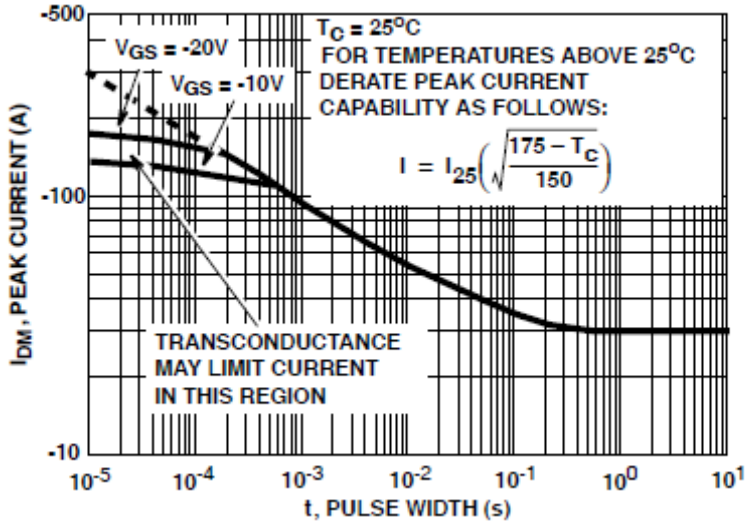
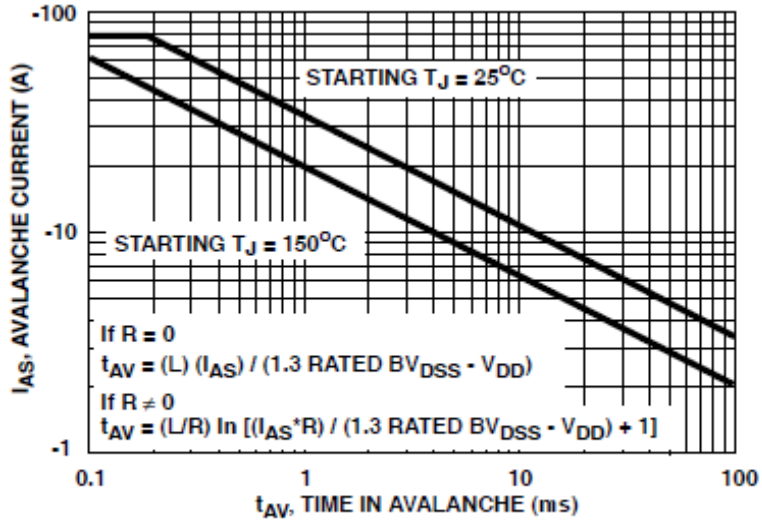


FIGURE 1: PEAK CURRENT CAPABILITY



NOTE: Refer to Intersil Application Notes AN9321 and AN9322.

FIGURE 2: UNCLAMPED INDUCTIVE SWITCHING CAPABILITY

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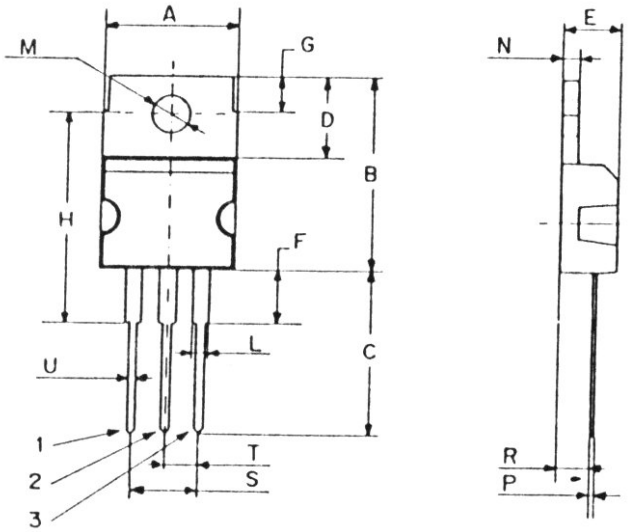
MECHANICAL DATA CASE TO-220

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

Revised november 2014