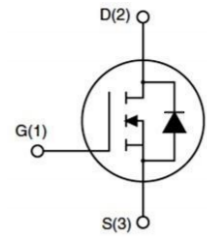


60V N-Channel Enhancement Mode MOSFET

General Description

IRF3205PBF-ML use advanced VD MOST technology to provide low RDS(ON), low gate charge, fast switching
 This device is specially designed to get better ruggedness and suitable to use in
 Low RDS(on) & FOM
 Extremely low switching loss
 Excellent stability and uniformity or Invertors

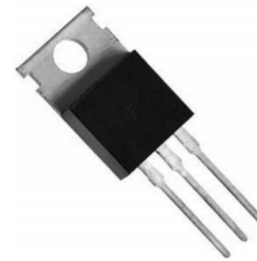


Applications

Consumer electronic power supply Motor control
 Synchronous-rectification Isolated DC
 Synchronous-rectification applications

General Features

$V_{DS} = 60V$ $I_D = 80 A$
 $R_{DS(ON)} < 12m\Omega$ @ $V_{GS} = 10V$



Absolute Maximum Ratings@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D @ T_C = 25^\circ C$	Drain Current, $V_{GS} @ 10V$	80	A
$I_D @ T_C = 100^\circ C$	Drain Current, $V_{GS} @ 10V$	43	A
I_{DM}	Pulsed Drain Current ¹	272	A
$P_D @ T_C = 25^\circ C$	Total Power Dissipation	104	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C
R_{thj-c}	Maximum Thermal Resistance, Junction-case	1.2	°C/W
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient (PCB mount) ³	62.5	°C/W

60V N-Channel Enhancement Mode MOSFET

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
B _{VDS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	60	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =45A	-	7.2	12	mΩ
			-			
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	2	3	4	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =30A	-	71	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =60V, V _{GS} =0V	-	-	10	uA
	Drain-Source Leakage Current (T _j =125°C)	V _{DS} =48V, V _{GS} =0V	-	-	250	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge	I _D =30A	-	33	45	nC
Q _{gs}	Gate-Source Charge	V _{DS} =48V	-	5	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	21	-	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =30V	-	10	-	ns
t _r	Rise Time	I _D =30A	-	43	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω	-	47	-	ns
t _f	Fall Time	V _{GS} =10V	-	80	-	ns
C _{iss}	Input Capacitance		-	2680	3300	pF
C _{oss}	Output Capacitance	V _{GS} =0V	-	260	-	pF
C _{rss}	Reverse Transfer Capacitance	V _{DS} =25V f=1.0MHz	-	180	-	pF
V _{SD}	Forward On Voltage ²	I _S =45A, V _{GS} =0V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _S =10A, V _{GS} =0V, di/dt=100A/μs	-	30	-	ns
Q _{rr}	Reverse Recovery Charge		-	18	-	nC

60V N-Channel Enhancement Mode MOSFET

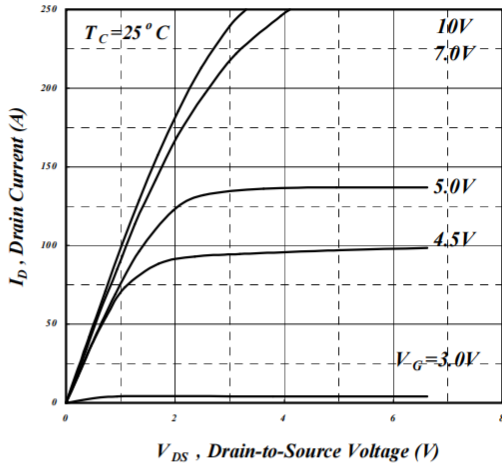


Fig 1. Typical Output Characteristics

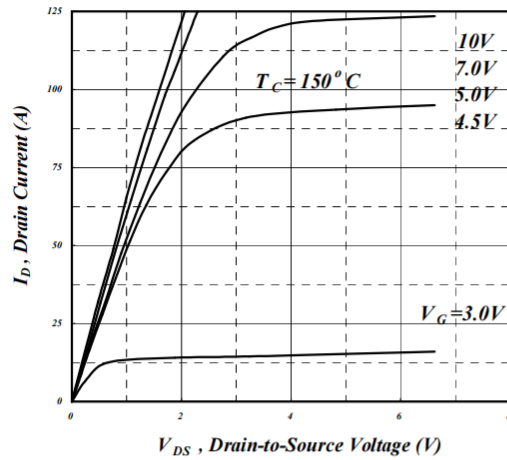


Fig 2. Typical Output Characteristics

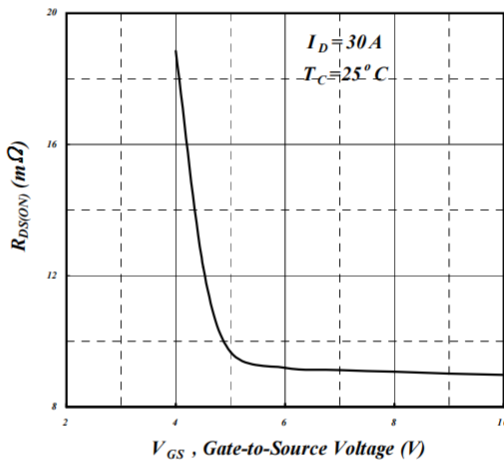


Fig 3. On-Resistance v.s. Gate Voltage

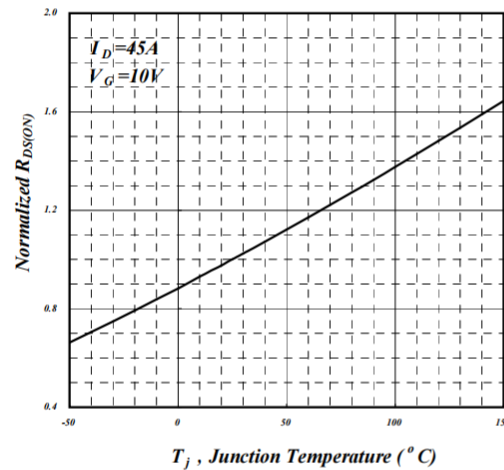


Fig 4. Normalized On-Resistance v.s. Junction Temperature

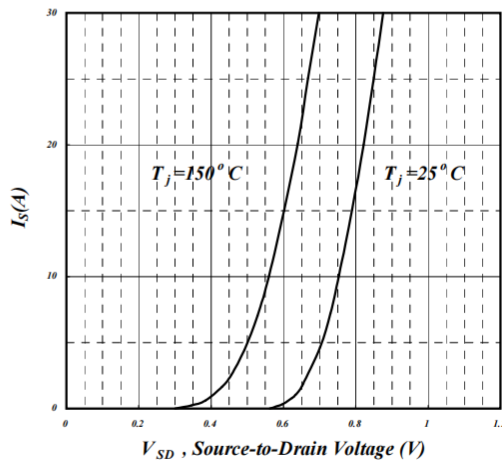


Fig 5. Forward Characteristic of Reverse Diode

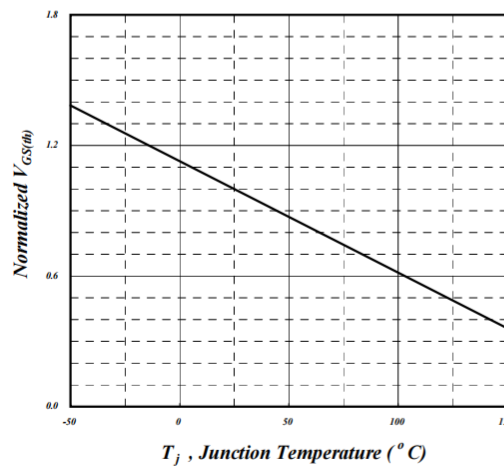


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

60V N-Channel Enhancement Mode MOSFET

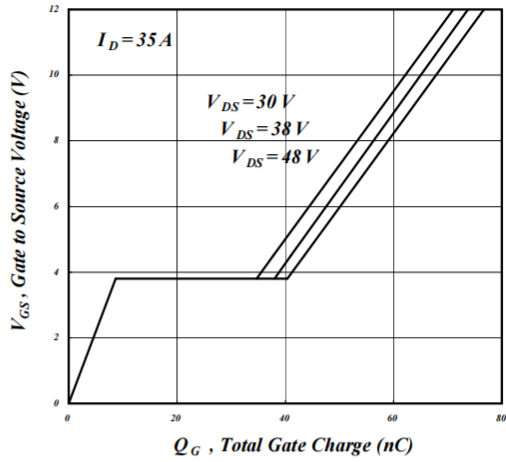


Fig 7. Gate Charge Characteristics

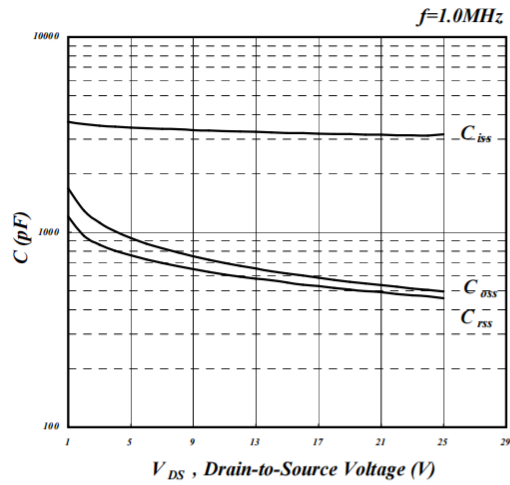


Fig 8. Typical Capacitance Characteristics

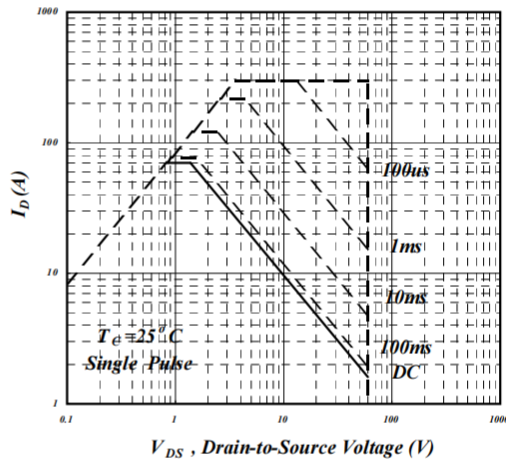


Fig 9. Maximum Safe Operating Area

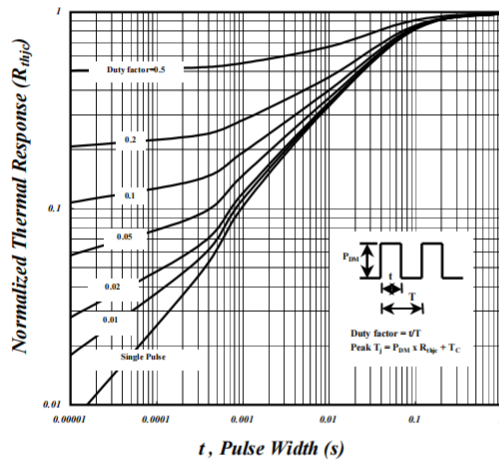


Fig 10. Effective Transient Thermal Impedance

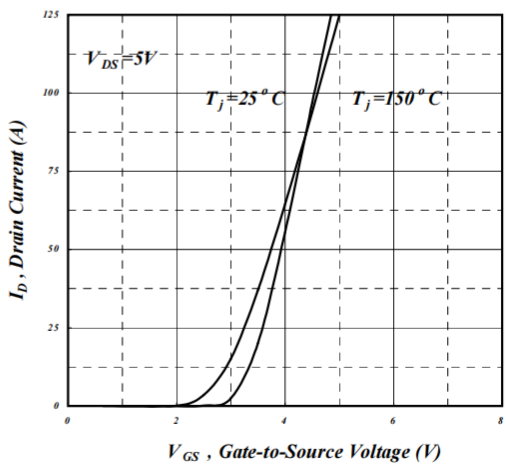


Fig 11. Transfer Characteristics

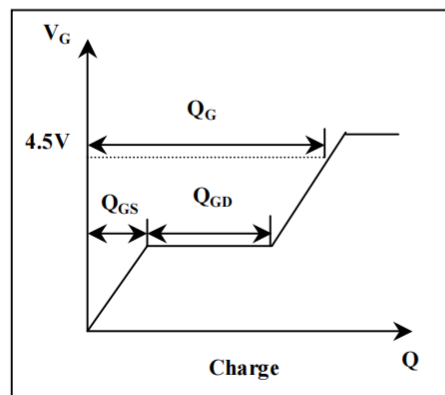
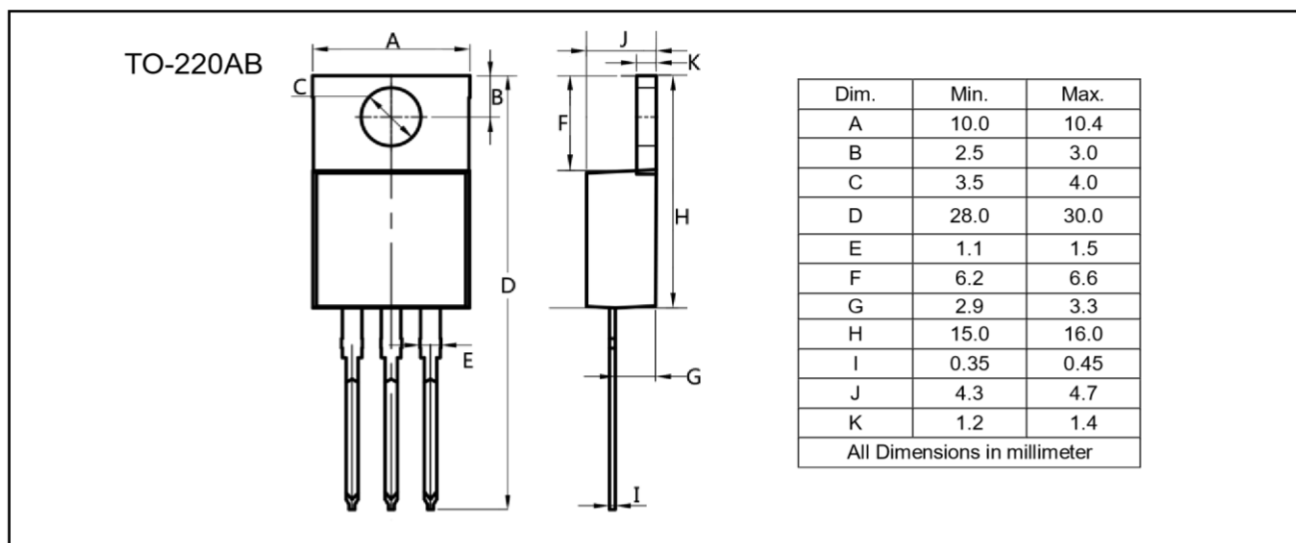


Fig 12. Gate Charge Waveform

60V N-Channel Enhancement Mode MOSFET



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