



Description

The IRF740PBF uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

General Features

$V_{DS} = 420V, I_D = 11A$

$R_{DS(ON)} < 0.5\Omega @ V_{GS} = 10V$

Application

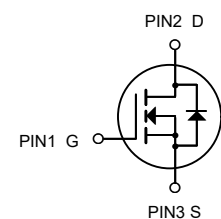
High efficiency switch mode power supplies

Power factor correction

Electronic lamp ballast



TO-220
(TO-220AB)



N-Channel MOSFET

Package Marking and Ordering Information

Product ID	Pack	Marking	Units Tube
IRF740PBF	TO-220(TO-220AB)	IRF740 XXXX	50

Absolute Maximum Ratings@ $T_J = 25^\circ C$ (unless otherwise specified)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	420	V
VGS	Gate-Source Voltage	± 30	V
$I_D @ T_C = 25^\circ C$	Drain Current, $V_{GS} @ 4.5V$	11	A
IDM	Pulsed Drain Current ¹	44	A
$P_D @ T_C = 25^\circ C$	Total Power Dissipation	87	W
TSTG	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$



Electrical Characteristics ($T_C=25^{\circ}\text{C}$, unless otherwise specified)

Parameter		Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =250μA	420			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =650V, V _{GS} =0V			1	μA
Gate- Source Leakage Current	Forward	I _{GSS}	V _{GS} =30V, V _{DS} = 0V			100	nA
	Reverse		V _{GS} =-30V, V _{DS} =0V			-100	nA
On Characteristics							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2.0		4.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =1A		0.36	0.5	Ω
Dynamic Characteristics							
Input Capacitance		C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0 MHz		1368		pF
Output Capacitance		C _{OSS}			90.3		pF
Reverse Transfer Capacitance		C _{RSS}			3		pF
Switching Characteristics							
Turn-On Delay Time		t _{D(ON)}	V _{DD} =250V, I _D =10A, R _G =25Ω (Note 1, 2)		16		ns
Turn-On Rise Time		t _R			25		ns
Turn-Off Delay Time		t _{D(OFF)}			40		ns
Turn-Off Fall Time		t _F			29		ns
Total Gate Charge		Q _G	V _{DS} =480V, I _D =12A, V _{GS} =10V (Note 1, 2)		8.1		nC
Gate-Source Charge		Q _{GS}			7.4		nC
Gate-Drain Charge		Q _{GD}			5		nC
Drain-Source Diode Characteristics And Maximum Ratings							
Drain-Source Diode Forward Voltage		V _{SD}	V _{GS} = 0 V, I _S = 11A			1.2	V
Maximum Continuous Drain-Source Diode Forward Current		I _S				11	A
Maximum Pulsed Drain-Source Diode Forward Current		I _{SM}				44	A
Reverse Recovery Time		t _{rr}	V _{GS} =0V, I _S =12A,		435		ns
Reverse Recovery Charge		Q _{RR}	di _F /dt =100 A/μs (Note 1)		4		μC

Notes: 1. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.



Typical Characteristics:

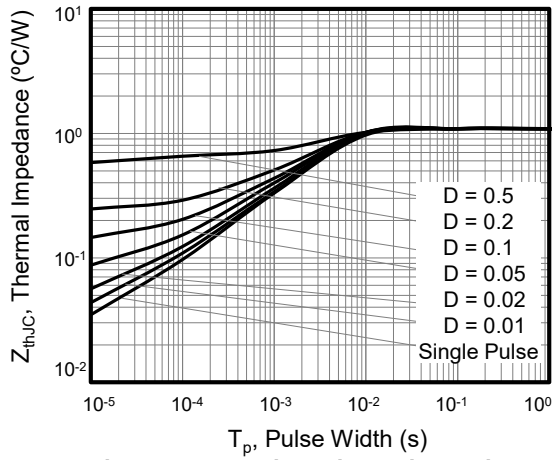


Figure 1. Transient Thermal Impedance

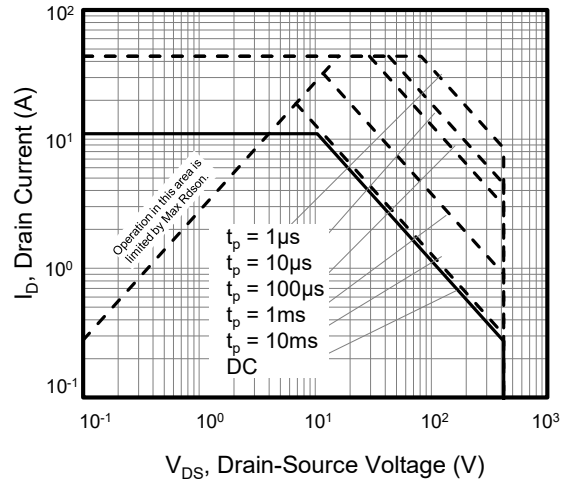


Figure 2. Safe Operation Area

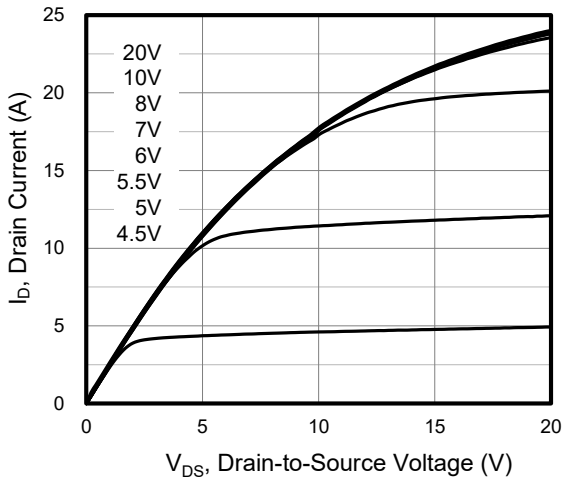


Figure 3. Output Characteristics

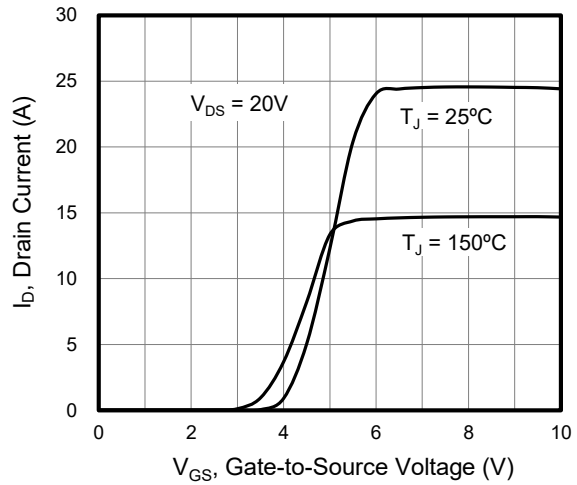


Figure 4. Transfer Characteristics

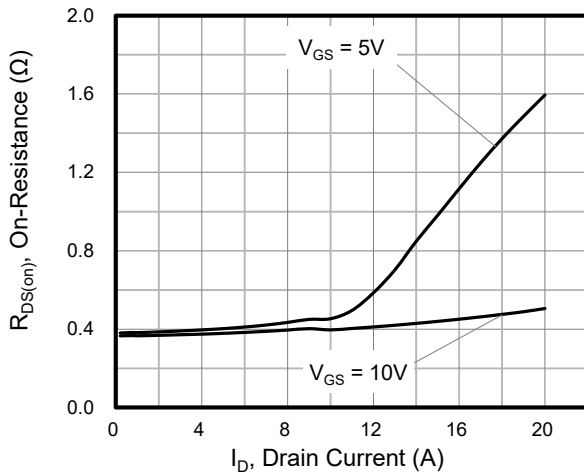


Figure 5. On-Resistance vs Drain Current

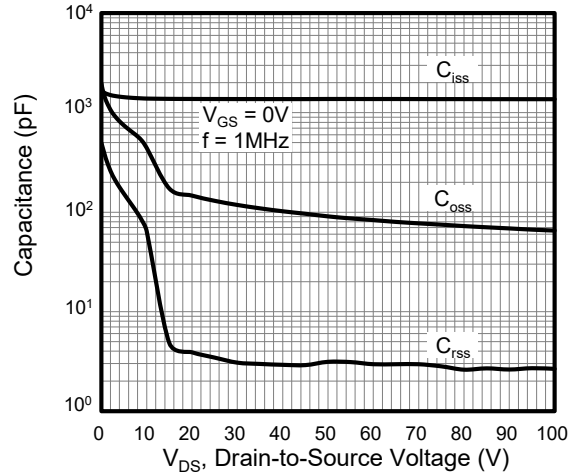


Figure 6. Capacitance

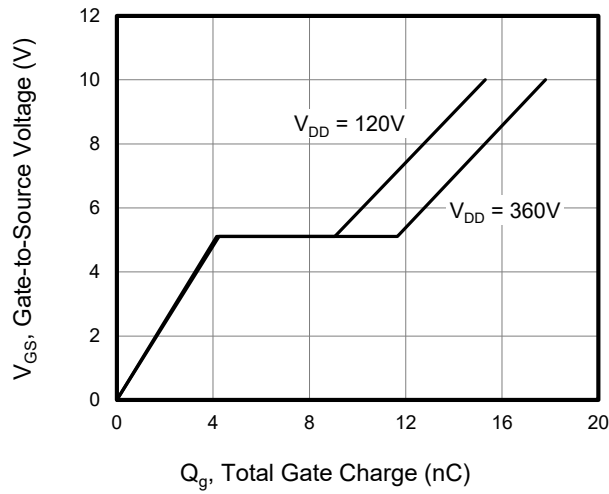


Figure 7. Gate Charge

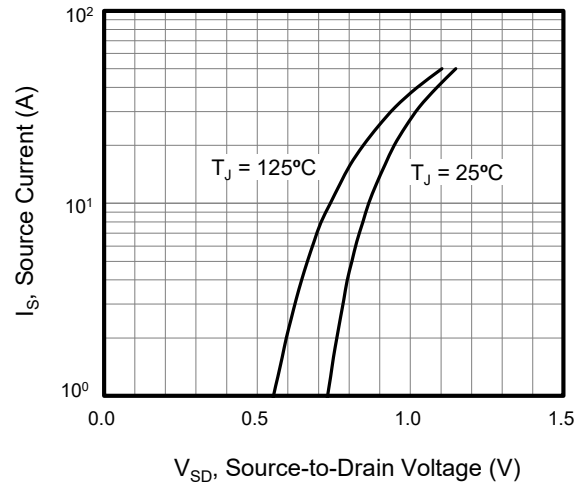


Figure 8. Body Diode Forward Voltage

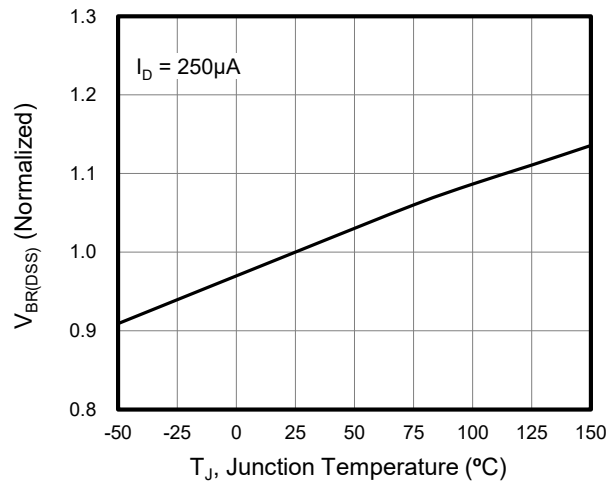


Figure 9. Breakdown Voltage vs Junction Temperature

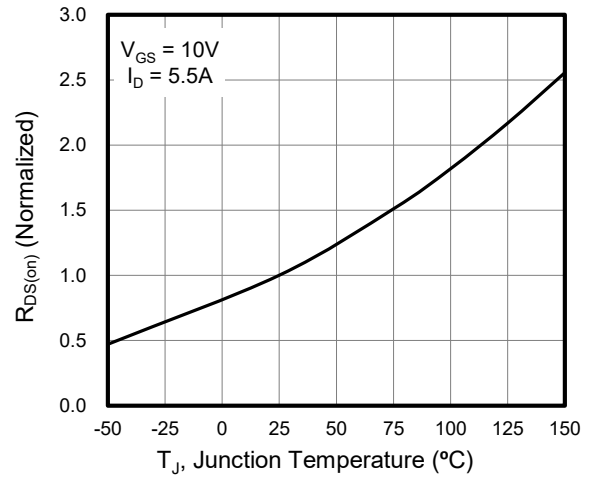
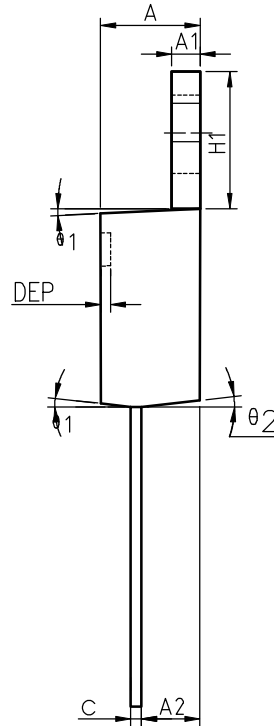
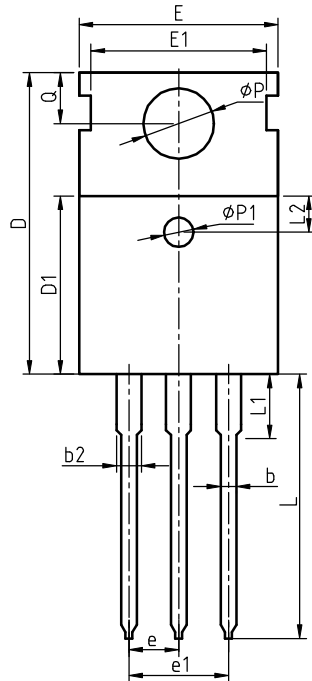


Figure 10. On-Resistance vs Temperature



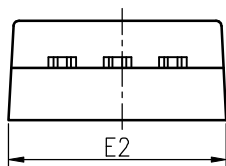
Package Information

TO-220(TO-220AB)



COMMON DIMENSIONS

SYMBOL	MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185
A1	1.27	1.30	1.33	0.050	0.051	0.052
A2	2.35	2.40	2.50	0.093	0.094	0.098
b	0.77	0.80	0.90	0.030	0.031	0.035
b2	1.17	1.27	1.36	0.046	0.050	0.054
c	0.48	0.50	0.56	0.019	0.020	0.022
D	15.40	15.60	15.80	0.606	0.614	0.622
D1	9.00	9.10	9.20	0.354	0.358	0.362
DEP	0.05	0.10	0.20	0.002	0.004	0.008
E	9.80	10.00	10.20	0.386	0.394	0.402
E1	-	8.70	-	-	0.343	-
E2	9.80	10.00	10.20	0.386	0.394	0.402
e		2.54	BSC		0.100	BSC
e1		5.08	BSC		0.200	BSC
H1	6.40	6.50	6.60	0.252	0.256	0.260
L	12.75	13.50	13.65	0.502	0.531	0.537
L1	-	3.10	3.30	-	0.122	0.130
L2		2.50	REF		0.098	REF
P	3.50	3.60	3.63	0.138	0.142	0.143
P1	3.50	3.60	3.63	0.138	0.142	0.143
Q	2.73	2.80	2.87	0.107	0.110	0.113
θ 1	5°	7°	9°	5°	7°	9°
θ 2	1°	3°	5°	1°	3°	5°
θ 3	1°	3°	5°	1°	3°	5°





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