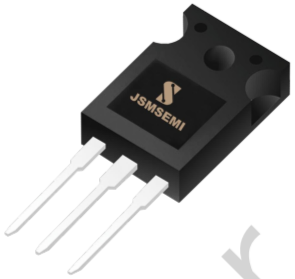
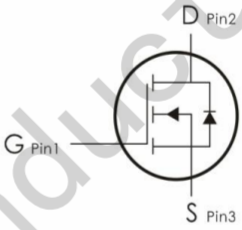
FEATURES

- Fast switching
- 100% avalanche tested
- Improved dv/dt capability



APPLICATIONS

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)



Device Marking and Package Information		
Device	**Package**	**Marking**
IRFP4332PBF	TO-247	IRFP4332

Absolute Maximum Ratings T_C = 25ºC, unless otherwise noted			
Parameter	**Symbol**	**Value**	**Unit**
		TO-247	
Drain-Source Voltage	V_{DSS}	250	V
Continuous Drain Current	I_D	70	A
Pulsed Drain Current (note2)	I_{DM}	280	A
Gate-Source Voltage	V_{GSS}	±20	V
Single Pulse Avalanche Energy (note2)	E_{AS}	780	mJ
Avalanche Current (note1)	I_{AR}	39.5	V/ns
Repetitive Avalanche Energy (note1)	E_{AR}	468	mJ
Power Dissipation (T_C = 25ºC)	P_D	400	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to175	ºC

Thermal Resistance			
Parameter	**Symbol**	**Value**	**Unit**
		TO-247	
Thermal Resistance, Junction-to-Case	R_{thJC}	0.5	℃/W
Thermal Resistance, Junction-to-Ambient	R_{thJA}	45	

Specifications T_J = 25ºC, unless otherwise noted						
Parameter	**Symbol**	**Test Conditions**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	250	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 250V, V_{GS} = 0V, T_J = 25ºC	--	--	1	μA
Gate-Source Leakage	I_{GSS}	V_{GS} = +20V,V_{DS}=0V	--	--	100	nA
		V_{GS}=-20V, V_{DS}=0V	--	--	-100	
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.0	--	4.0	V
Drain-Source On-Resistance (Note3)	$R_{DS(on)}$	V_{GS} = 10V, I_D = 25A	--	27	45	mΩ
Dynamic						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1.0MHz	--	3538	--	pF
Output Capacitance	C_{oss}		--	657	--	
Reverse Transfer Capacitance	C_{rss}		--	280	--	
Total Gate Charge	Q_g	V_{DD} =160V, I_D = 25A, V_{GS} = 0 to 10V	--	244	--	nC
Gate-Source Charge	Q_{gs}		--	16	--	
Gate-Drain Charge	Q_{gd}		--	144	--	
Turn-on Delay Time	$t_{d(on)}$	VDD = 100V, ID =25A, VGS= 10V R_G = 25 Ω	--	53	--	ns
Turn-on Rise Time	t_r		--	65	--	
Turn-off Delay Time	$t_{d(off)}$		--	689	--	
Turn-off Fall Time	t_f		--	230	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	T_C = 25 ºC	--	--	70	A
Pulsed Diode Forward Current	I_{SM}		--	--	280	
Body Diode Voltage	V_{SD}	T_J = 25ºC, I_{SD} = 25A, V_{GS} = 0V	--	--	1.5	V
Reverse Recovery Time	t_{rr}	V_{GS} = 0V,I_S = 25A, di_F/dt =100A /μs	--	208	--	ns
Reverse Recovery Charge	Q_{rr}		--	2.04	--	μC

Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. I_{AS} = 30A, V_{DD} = 30V, R_G = 25 Ω, Starting T_J = 25 ºC
3. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 1. Output Characteristics (T_J = 25ºC)

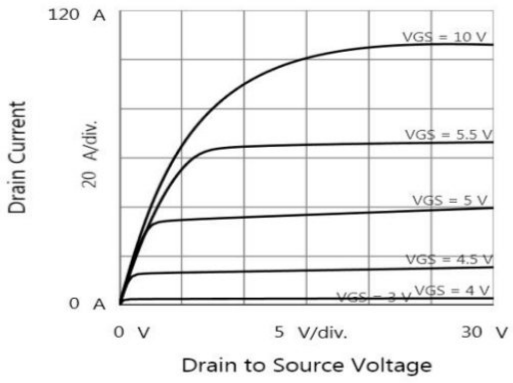


Figure 2. Transfer Characteristics

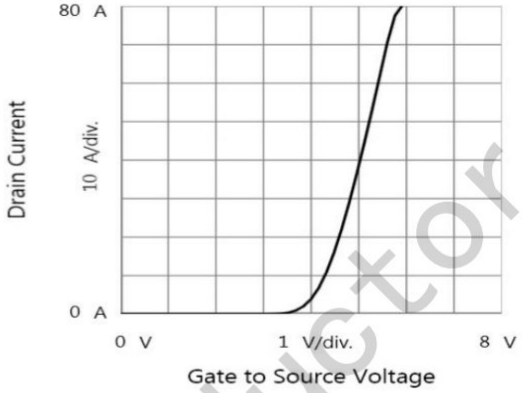


Figure3. Maximum Continuous Drain Current vs Case Temperature

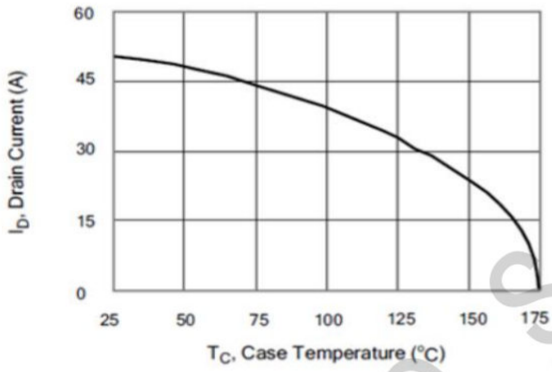


Figure 4. Drain to Source Voltage vs. Gate to Source Voltage

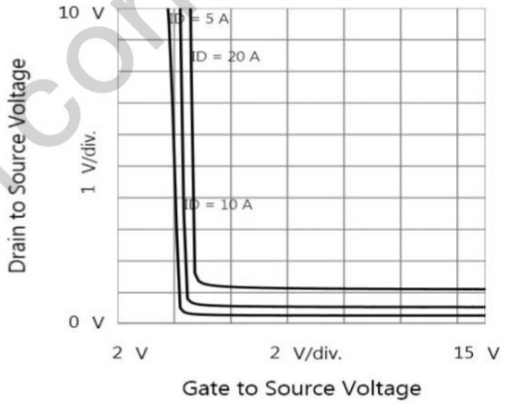


Figure 5 . Typical Breakdown Voltage vs Junction Temperature

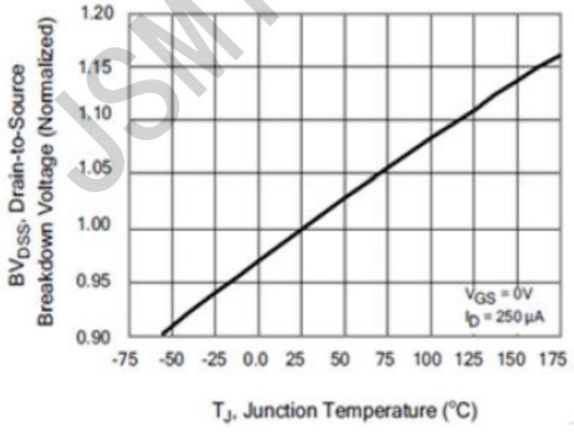
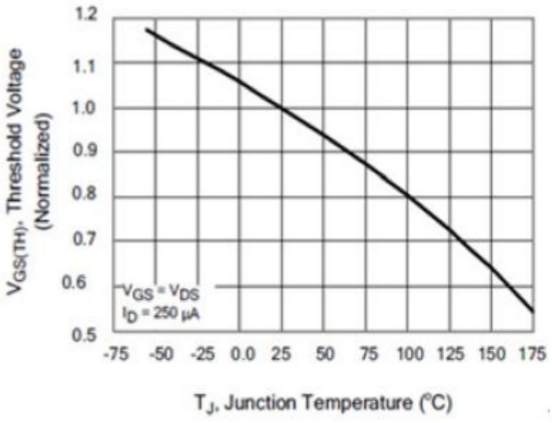


Figure 6 . Typical Threshold Voltage vs Junction Temperature



Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 7. Capacitance

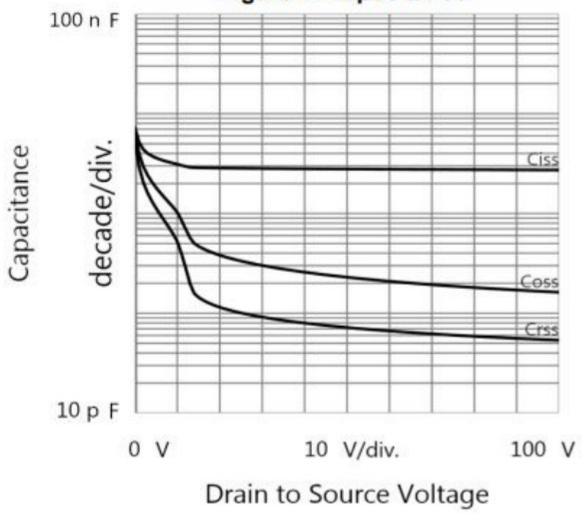


Figure 8. Gate Charge

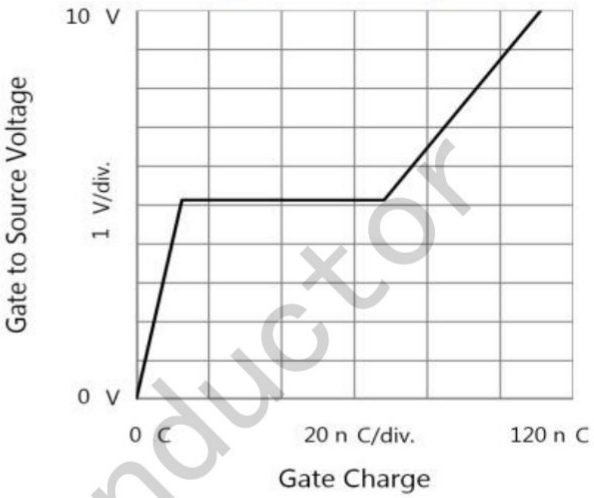


Figure 9. Transient Thermal Impedance TO-247,TO-3P

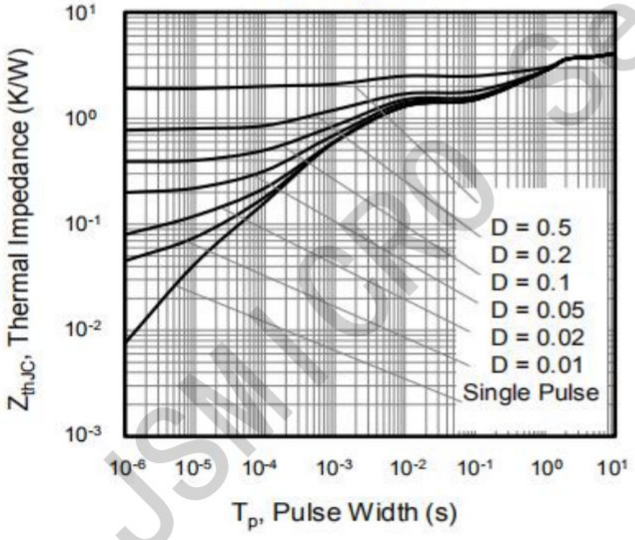


Figure 10. Maximum Forward Bias Safe Operating Area

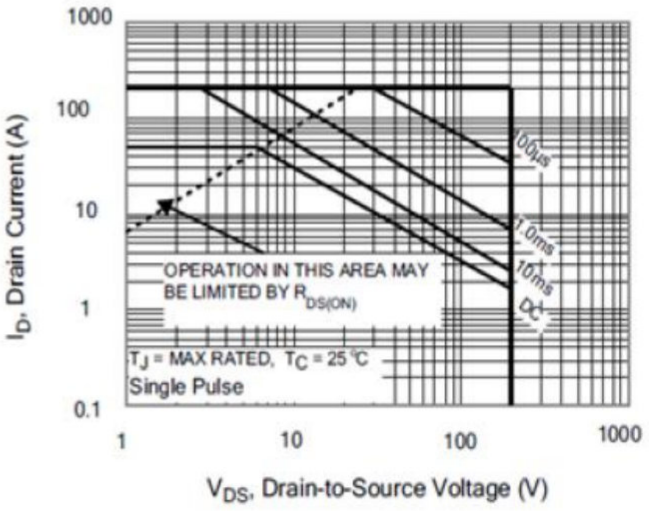


Figure A: Gate Charge Test Circuit and Waveform

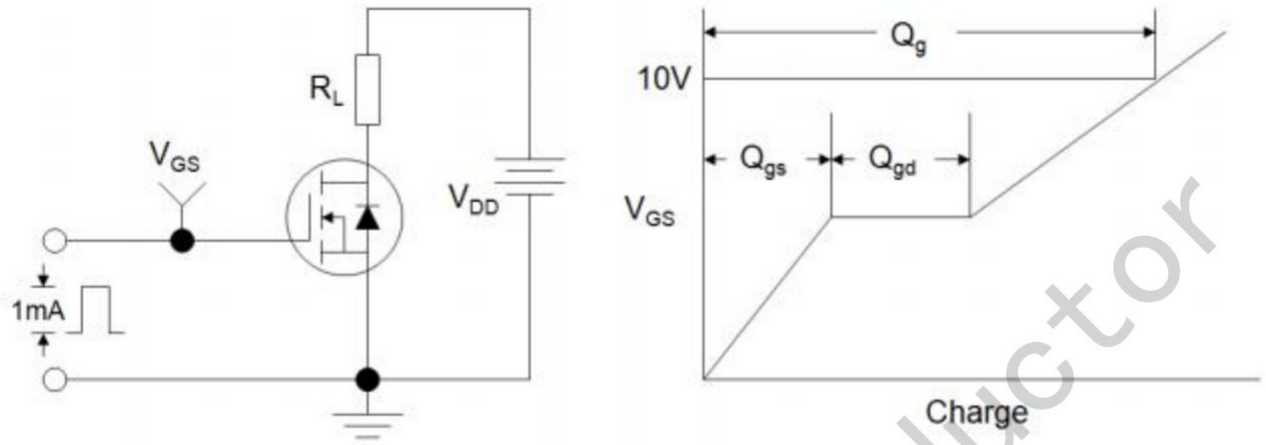


Figure B: Resistive Switching Test Circuit and Waveform

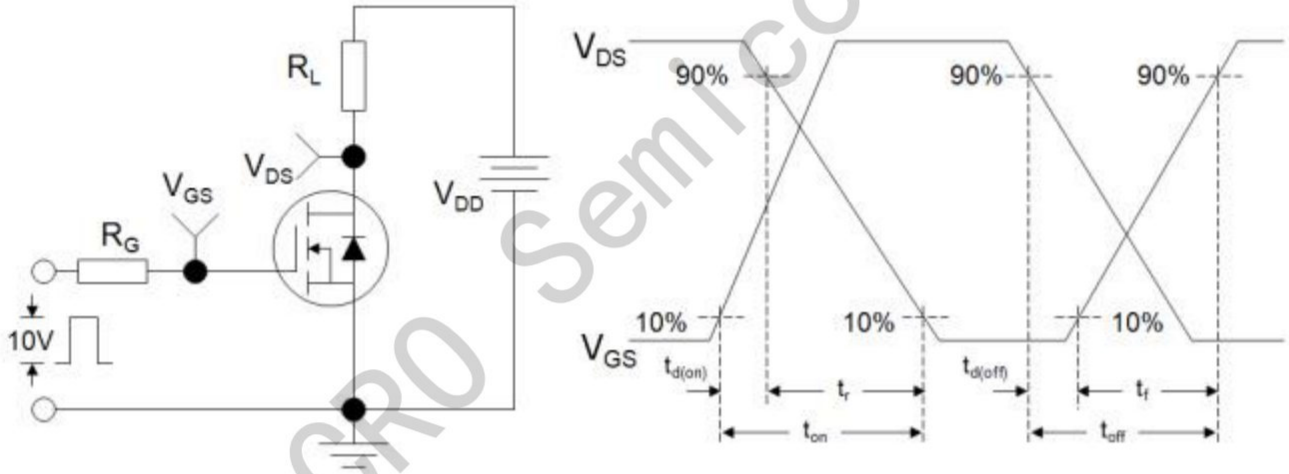
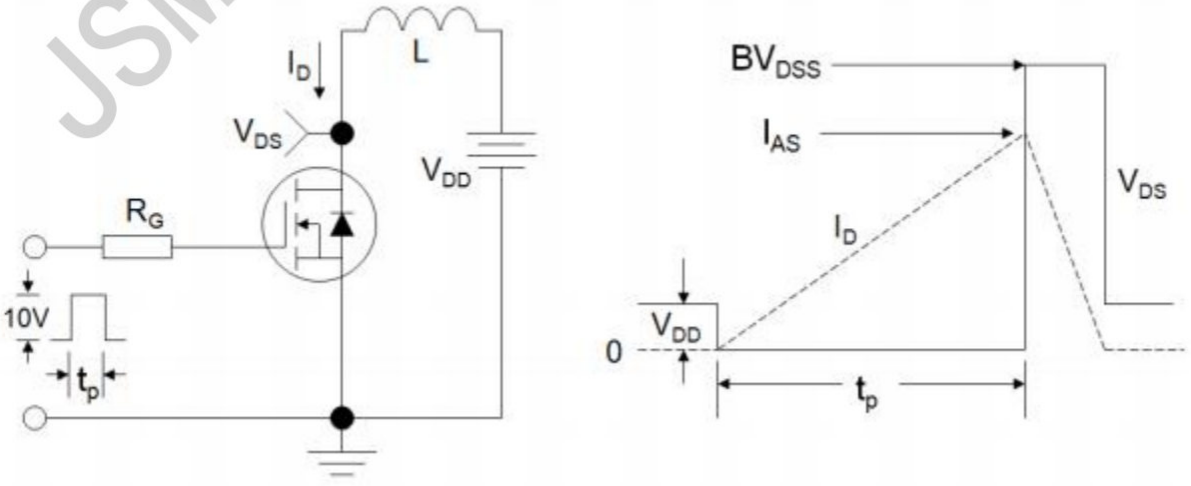
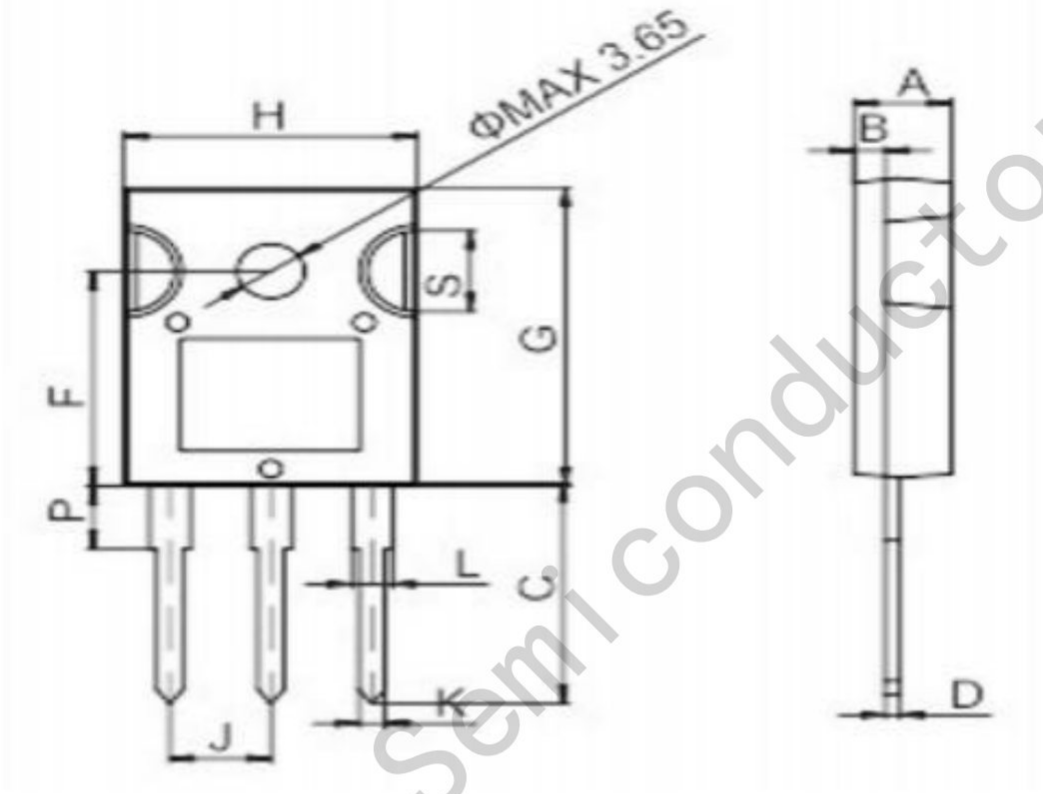


Figure C: Unclamped Inductive Switching Test Circuit and Waveform



TO-247



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.9		5.4	0.193		0.213
B	1.6		2.0	0.063		0.079
C	14.35		15.4	0.565		0.606
D	0.5		0.8	0.020		0.031
F	14.4		15.1	0.567		0.594
G	19.7		20.6	0.775		0.811
H	15.4		16.2	0.606		0.638
J	5.3		5.6	0.209		0.220
K	1.3		1.5	0.051		0.059
L	2.8		3.3	0.110		0.130
P	3.7		4.2	0.146		0.165
S	5.35		5.65	0.211		0.222