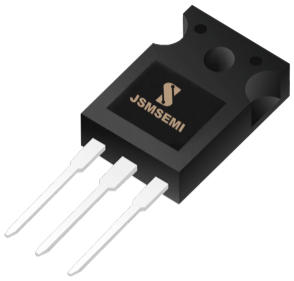
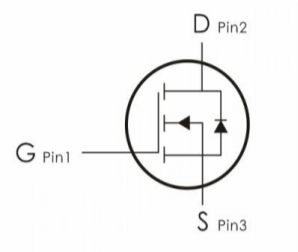
FEATURES

- 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**
IRFP240PBF	TO-247	IRFP240

Absolute Maximum Ratings T_C = 25°C, unless otherwise noted

Parameter	Symbol	Value	Unit
		TO-247	
Drain-Source Voltage (V_{GS} = 0V)	V_{DSS}	200	V
Continuous Drain Current	I_D	20	A
Pulsed Drain Current (note1)	I_{DM}	80	A
Gate-Source Voltage	V_{GSS}	±20	V
Single Pulse Avalanche Energy (note2)	E_{AS}	262.7	mJ
Avalanche Current (note1)	I_{AS}	7.3	A
Repetitive Avalanche Energy (note1)	E_{AR}	157.62	mJ
Power Dissipation (T_C = 25°C)	P_D	150	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	°C

Thermal Resistance

Parameter	Symbol	Value	Unit
		TO-247	
Thermal Resistance, Junction-to-Case	R_{thJC}	1.2	K/W
Thermal Resistance, Junction-to-Ambient	R_{thJA}	60	

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Specifications T_J = 25°C, 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	200	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 200V, V_{GS} = 0V, T_J = 25°C	--	--	1	μA
Gate-Source Leakage	I_{GSS}	V_{GS} = ±20V	--	--	±100	nA
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 = 9A	--	0.1	0.12	Ω
Dynamic						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1.0MHz	--	1200	--	pF
Output Capacitance	C_{oss}		--	161	--	
Reverse Transfer Capacitance	C_{rss}		--	70	--	
Total Gate Charge	Q_g	V_{DD} 160V, I_D = 18A, V_{GS} = 10V	--	38	--	nC
Gate-Source Charge	Q_{gs}		--	6	--	
Gate-Drain Charge	Q_{gd}		--	16	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 100V, I_D =18A, R_G = 25 Ω	--	40	--	ns
Turn-on Rise Time	t_r		--	33	--	
Turn-off Delay Time	$t_{d(off)}$		--	166	--	
Turn-off Fall Time	t_f		--	60	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	T_C = 25 °C	--	--	20	A
Pulsed Diode Forward Current	I_{SM}		--	--	80	
Body Diode Voltage	V_{SD}	T_J = 25°C, I_{SD} = 9A, V_{GS} = 0V	--	--	1.4	V
Reverse Recovery Time	t_{rr}	V_{GS} = 0V,I_S = 18A, di_F/dt =100A /μs	--	182	--	ns
Reverse Recovery Charge	Q_{rr}		--	1.29	--	μC

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Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. I_{AS} = 15A, V_{DD} = 50V, R_G = 25 Ω, Starting T_J = 25 °C
3. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 1. Output Characteristics (T_J= 25ºC)

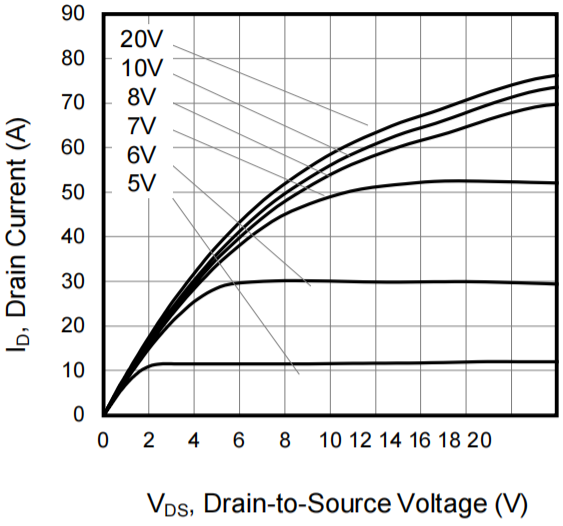


Figure 2. Body Diode Forward Voltage

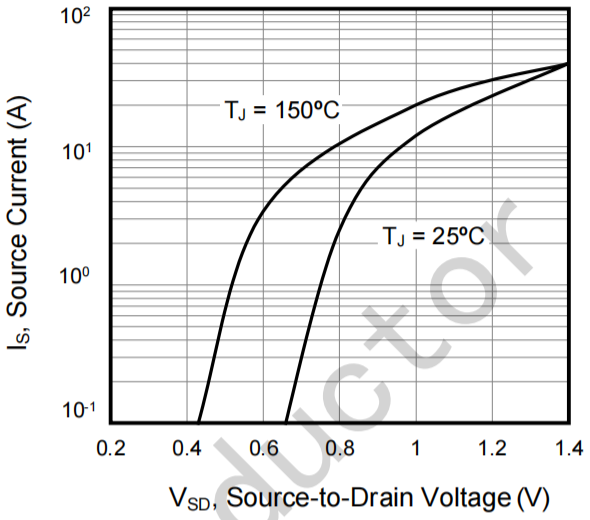


Figure 3. Drain Current vs. Temperature

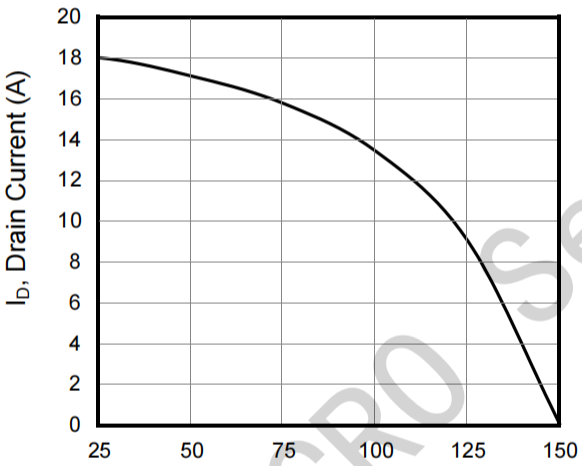


Figure 4. BV_{DSS} Variation vs. Temperature

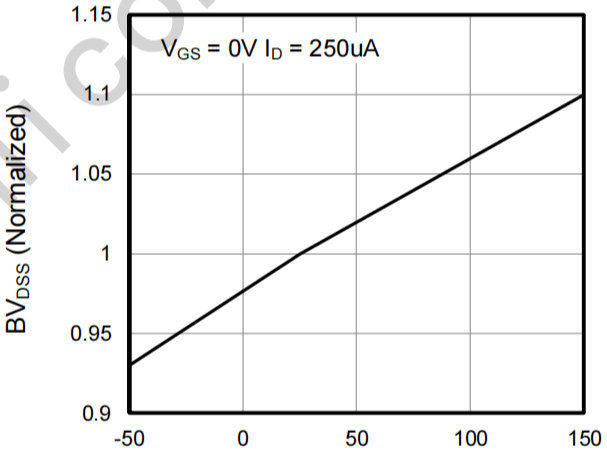


Figure 5. Transfer Characteristics

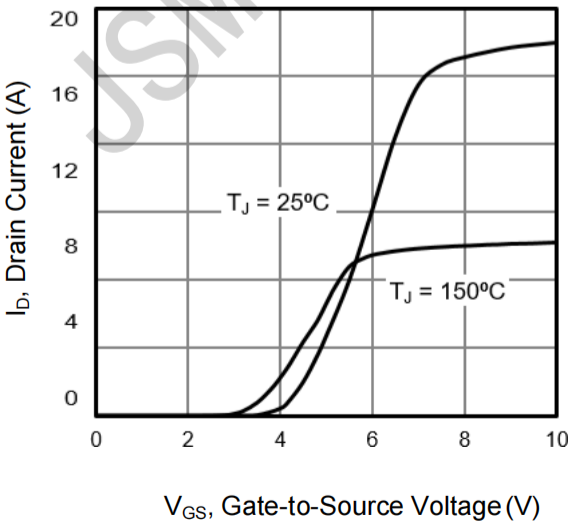
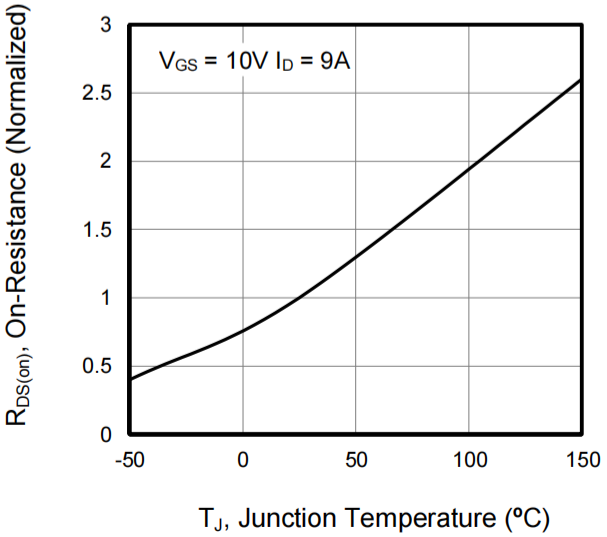


Figure 6. On-Resistance vs. Temperature



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Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 7. Capacitance

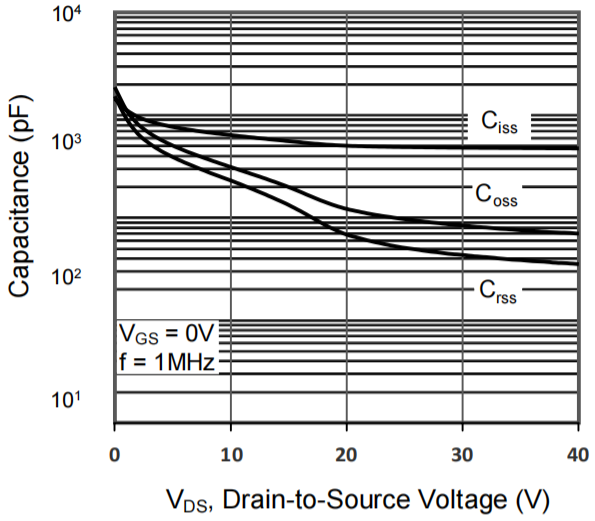

Figure 8. Gate Charge

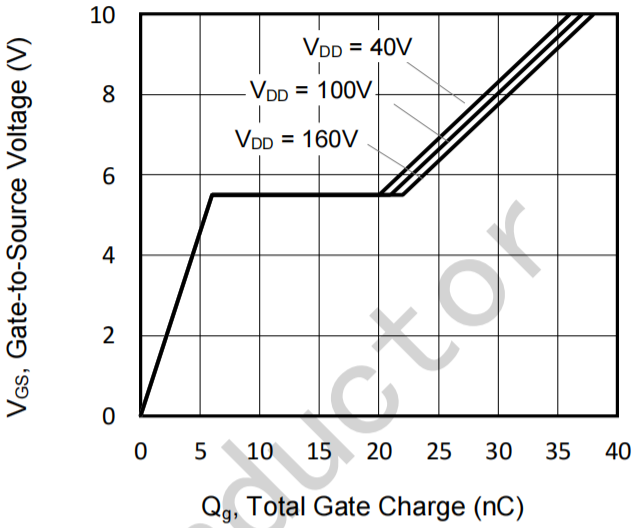

Figure 9. Transient Thermal Impedance TO-220F

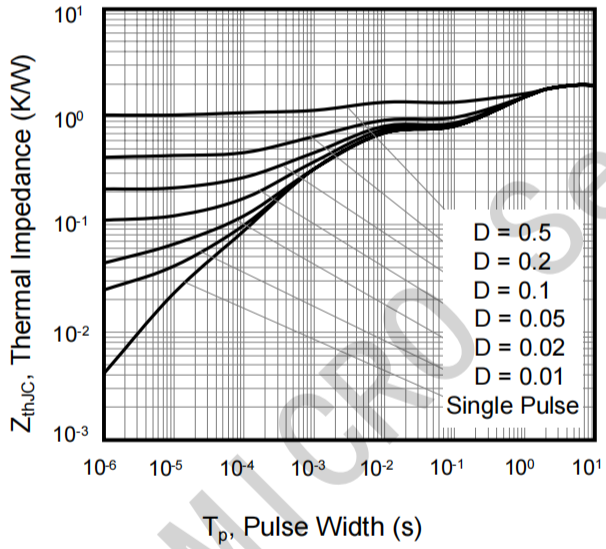

Figure 10. Transient Thermal Impedance TO-220

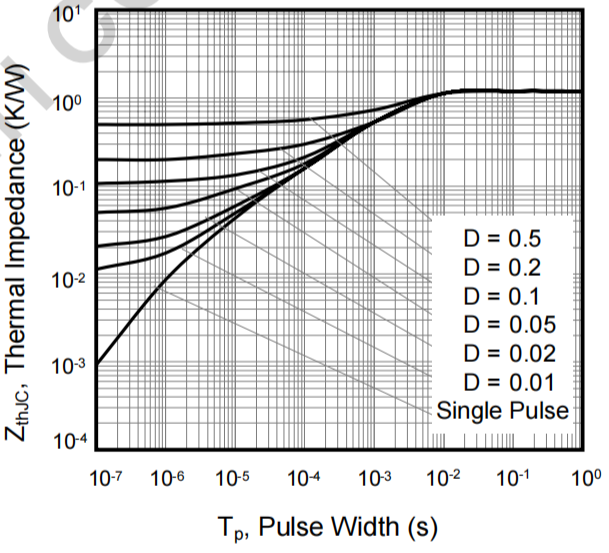

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Figure A：Gate Charge Test Circuit and Waveform

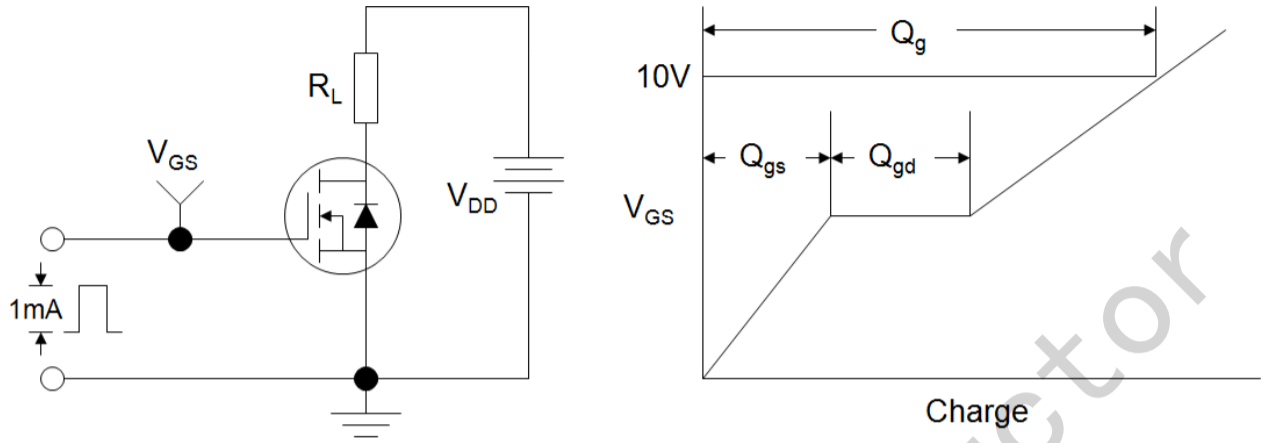


Figure B：Resistive Switching Test Circuit and Waveform

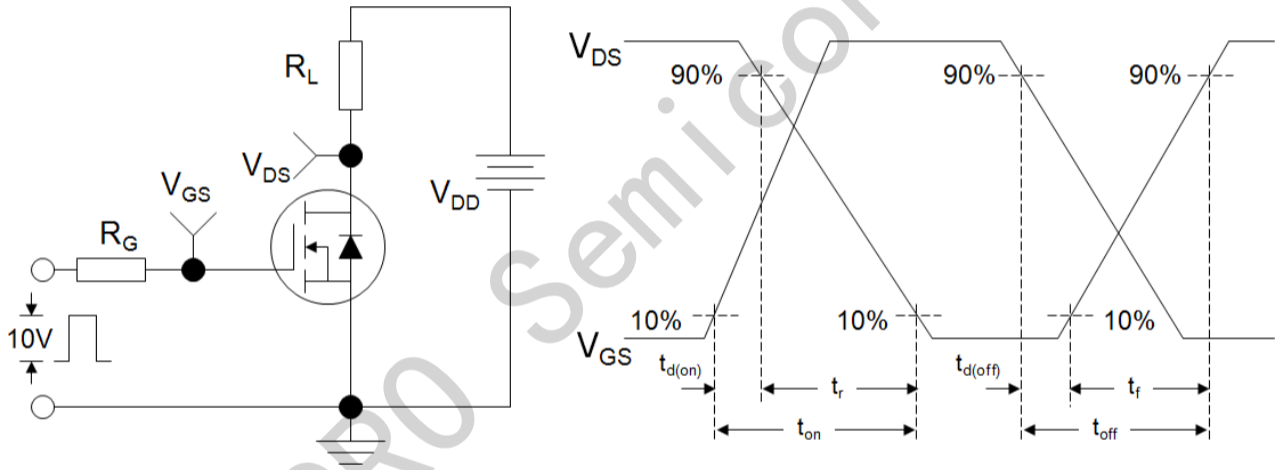
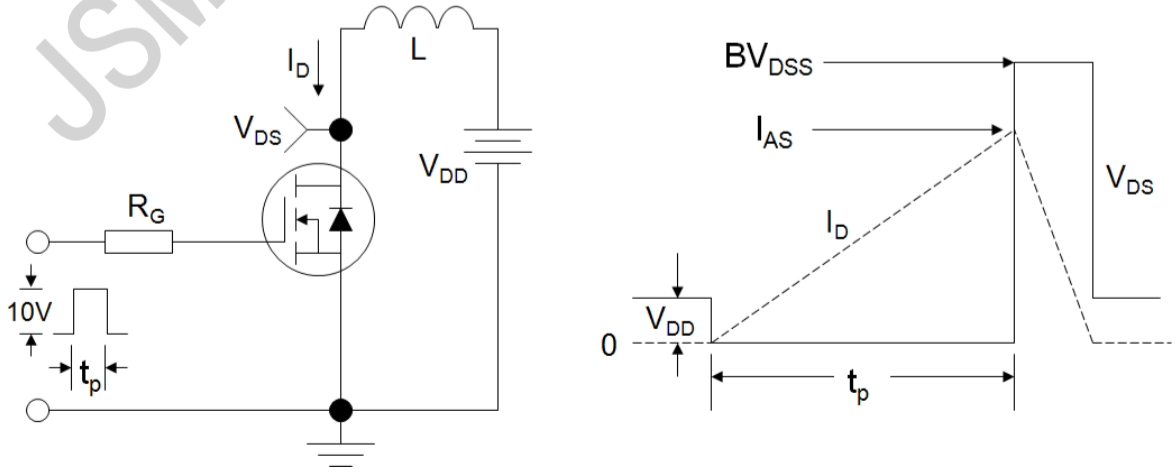


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



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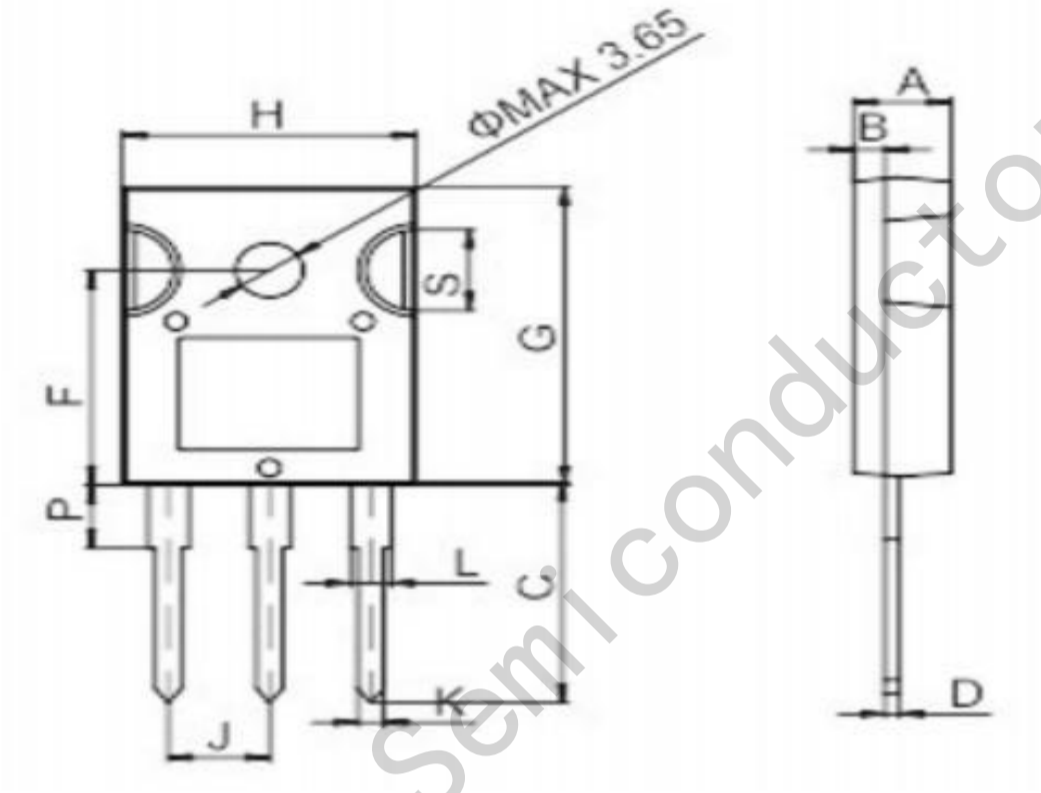
TO-247



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

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