



Description

JMP N-channel MOSFET

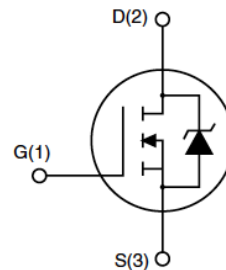
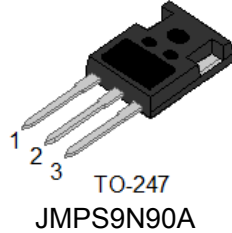
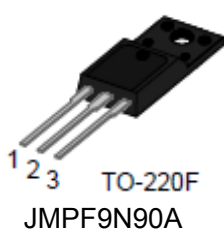
Features

- 900V, 9A
- $R_{DS(ON)} = 1.0 \Omega$ (Typ.) @ $V_{GS} = 10V, I_D = 4.5A$
- Fast Switching
- 100% Avalanche Tested
- Improved dv/dt Capability

Application

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

Package



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

Symbol	Parameter	Max.		Units	
		TO-220F	TO-247		
V_{DSS}	Drain-Source Voltage	900		V	
V_{GSS}	Gate-Source Voltage	± 30		V	
I_D	Continuous Drain Current	$T_C = 25^\circ C$	9	A	
		$T_C = 100^\circ C$	5.4	A	
I_{DM}	Pulsed Drain Current ^{note1}	36		A	
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	562		mJ	
P_D	Power Dissipation	$T_C = 25^\circ C$	65	255	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.92	0.49	$^\circ C/W$	
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62.5	41	$^\circ C/W$	
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150		$^\circ C$	



Electrical Characteristics (T_C=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	900	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 900V, V _{GS} = 0V, T _J = 25°C	-	-	1	μA
		V _{DS} = 720V, V _{GS} = 0V, T _J = 125°C			100	
I _{GSS}	Gate to Body Leakage Current	V _{GS} = ±30V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	3.0	-	4.0	V
R _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} = 10V, I _D = 4.5A	-	1	1.2	Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz	-	1979	-	pF
C _{oss}	Output Capacitance		-	233	-	pF
C _{rss}	Reverse Transfer Capacitance		-	53	-	pF
Q _g	Total Gate Charge	V _{DD} = 720V, I _D = 9A, V _{GS} = 10V	-	83	-	nC
Q _{gs}	Gate-Source Charge		-	9	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	49	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} = 450V, I _D = 9A, R _G = 25Ω	-	23	-	ns
t _r	Turn-On Rise Time		-	15	-	ns
t _{d(off)}	Turn-Off Delay Time		-	90	-	ns
t _f	Turn-Off Fall Time		-	30	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	9	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	36	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _{SD} = 9A, T _J = 25°C	-	-	1.4	V
t _{rr}	Reverse Recovery Time	V _{GS} = 0V, I _S = 9A, di/dt = 100A/μs	-	320	-	ns
Q _{rr}	Reverse Recovery Charge		-	4.2	-	μC

Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature

2. I_{AS} = 7.5A, V_{DD} = 50V, Starting T_J = 25°C

3. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

Typical Performance Characteristics

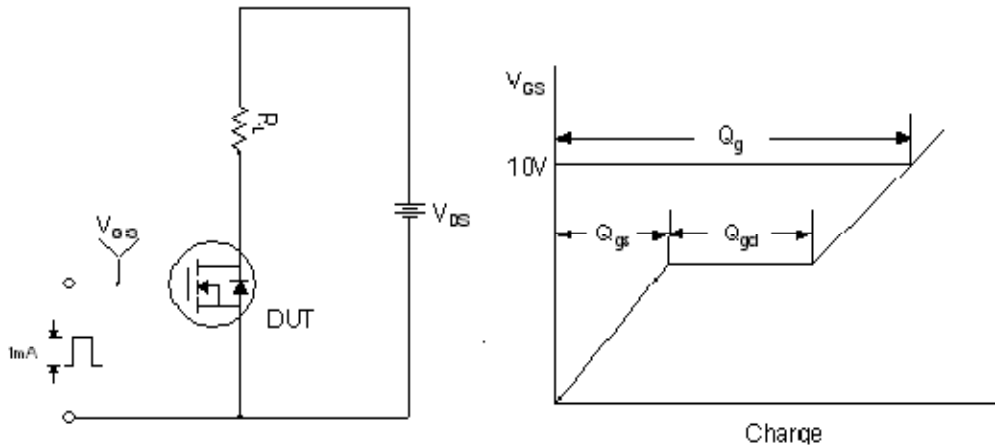


Figure 1. Gate Charge Test Circuit & Waveform

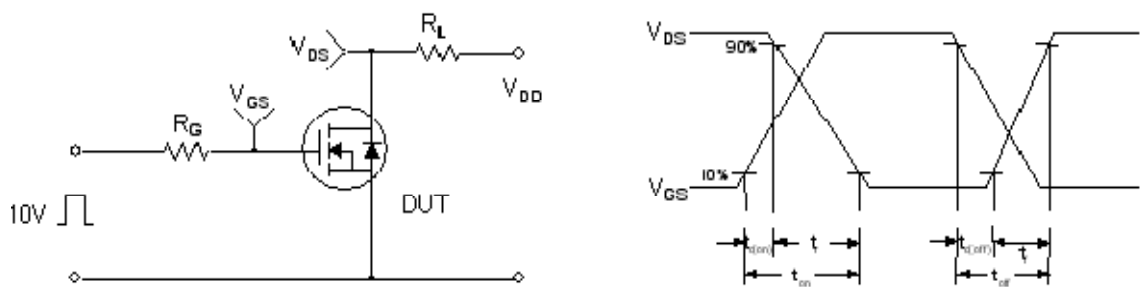


Figure 2. Resistive Switching Test Circuit & Waveforms

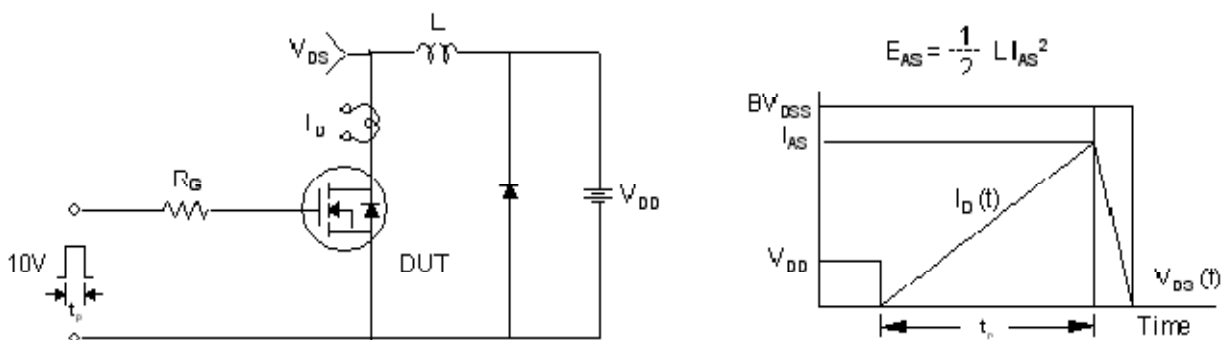


Figure 3. Unclamped Inductive Switching Test Circuit & Waveforms

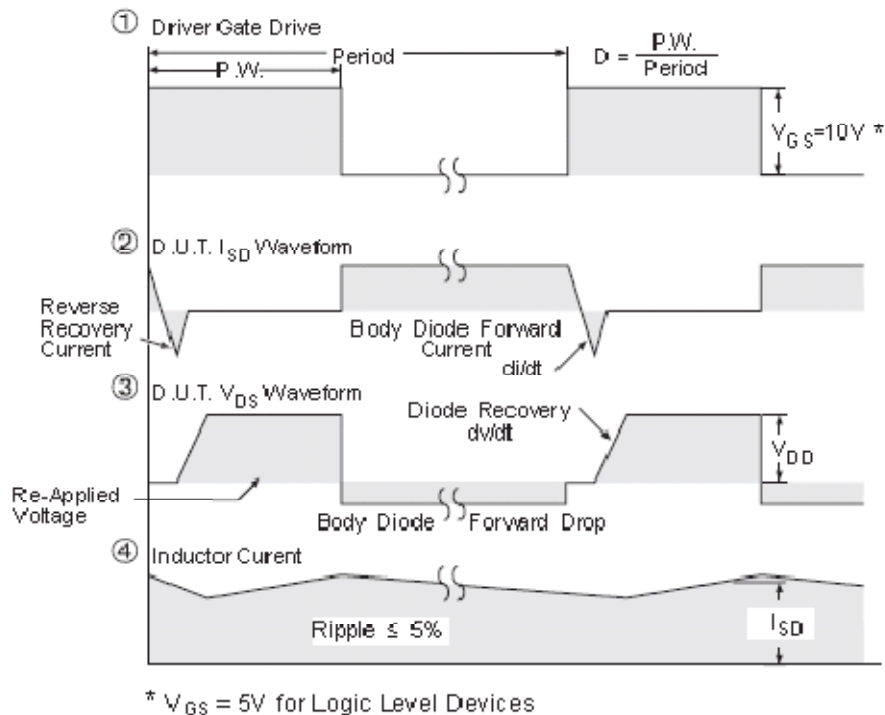
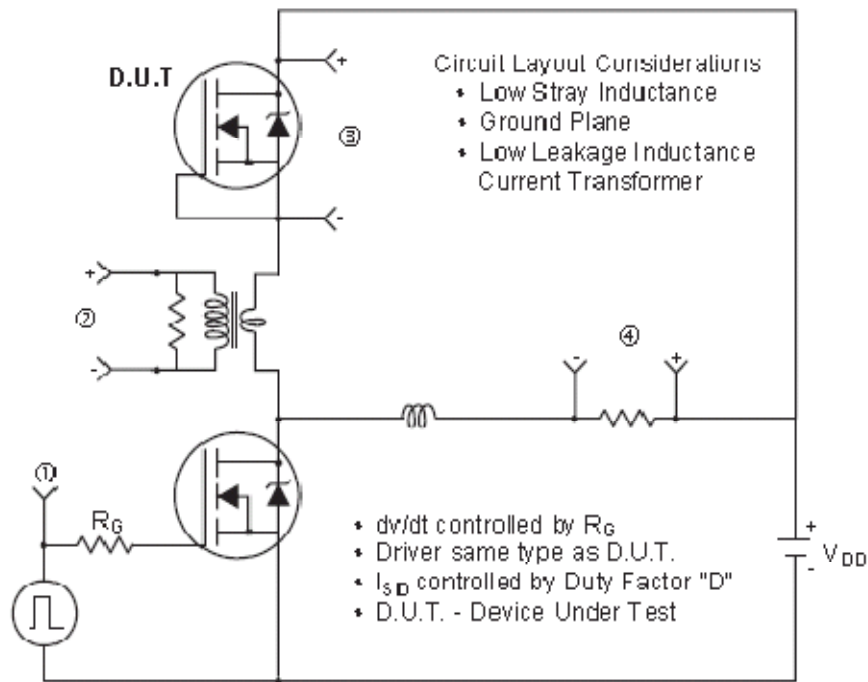
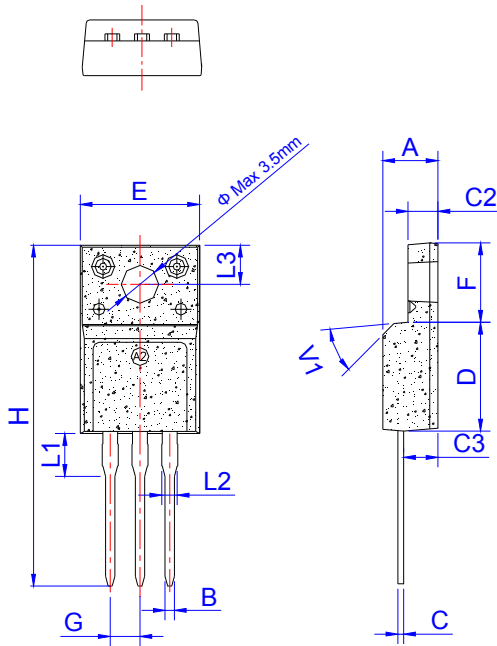


Figure 4. Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)



Package Mechanical Data



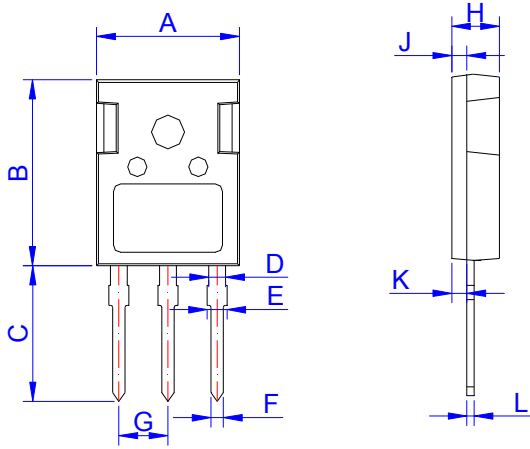
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.63			0.143	
L2	1.14		1.70	0.045		0.067
L3		3.30			0.130	
V1		45°			45°	

Package Information -TO-220F

OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON (PCS)
TUBE	50	1,000	8,000



Package Mechanical Data



TO-247

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.50	15.80	16.10	0.610	0.622	0.634
B	20.80	21.00	22.20	0.819	0.828	0.874
C	19.70	20.00	20.30	0.776	0.787	0.799
D	1.80	2.00	2.20	0.071	0.079	0.087
E	1.90	2.10	2.30	0.075	0.083	0.091
F	1.00	1.20	1.40	0.039	0.047	0.055
G		5.44			0.214	
H	4.80	5.00	5.20	0.189	0.197	0.205
J	1.90	2.00	2.10	0.075	0.079	0.083
K	2.20	2.35	2.50	0.087	0.093	0.098
L	0.41	0.60	0.79	0.016	0.024	0.031

Package Information-TO-247

OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON (PCS)
TUBE	30	450	3,600

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