



# JMP(F.S)10N80A

## Description

### JMP N-channel MOSFET

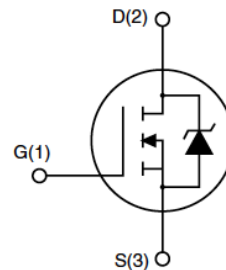
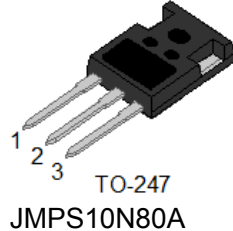
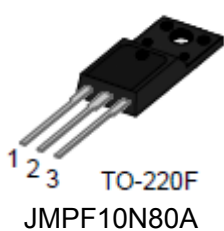
#### Features

- 800V, 10A
- $R_{DS(ON)} = 0.8\Omega$  (Typ.) @  $V_{GS} = 10V, I_D = 5A$
- 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<sub>C</sub>=25°C unless otherwise specified)

Symbol	Parameter	Max.		Units
		TO-220F	TO-247	
V <sub>DSS</sub>	Drain-Source Voltage	800		V
V <sub>GSS</sub>	Gate-Source Voltage	±30		V
I <sub>D</sub>	Continuous Drain Current	T <sub>C</sub> = 25°C		10
		T <sub>C</sub> = 100°C		6
I <sub>DM</sub>	Pulsed Drain Current <sup>note1</sup>	40		A
E <sub>AS</sub>	Single Pulsed Avalanche Energy <sup>note2</sup>	562		mJ
P <sub>D</sub>	Power Dissipation	T <sub>C</sub> = 25°C		65
				260
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	1.92	0.48	°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	62.5	41	°C/W
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Temperature Range	-55 to +150		°C



# JMP(F.S)10N80A

## Electrical Characteristics (T<sub>C</sub>=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	800	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = 800V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 25°C	-	-	1	μA
		V <sub>DS</sub> = 640V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125°C			100	
I <sub>GSS</sub>	Gate to Body Leakage Current	V <sub>GS</sub> = ±30V	-	-	±100	nA
<b>On Characteristics</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	2.0	3.0	4.0	V
R <sub>DS(on)</sub>	Static Drain-Source On-Resistance <small>note3</small>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 5A	-	0.8	1	Ω
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1.0MHz	-	1979	-	pF
C <sub>oss</sub>	Output Capacitance		-	233	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	53	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DD</sub> = 640V, I <sub>D</sub> = 10A, V <sub>GS</sub> = 10V	-	83	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	9	-	nC
Q <sub>gd</sub>	Gate-Drain("Miller") Charge		-	49	-	nC
<b>Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> = 400V, I <sub>D</sub> = 10A, R <sub>G</sub> = 25Ω	-	23	-	ns
t <sub>r</sub>	Turn-On Rise Time		-	15	-	ns
t <sub>d(off)</sub>	Turn-Off Delay Time		-	90	-	ns
t <sub>f</sub>	Turn-Off Fall Time		-	30	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	10	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	40	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> = 0V, I <sub>SD</sub> = 10A, T <sub>J</sub> = 25°C	-	-	1.4	V
t <sub>rr</sub>	Reverse Recovery Time	V <sub>GS</sub> = 0V, I <sub>S</sub> = 10A, di/dt = 100A/μs	-	320	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge		-	4.2	-	uC

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

2. I<sub>AS</sub> = 7.5A, V<sub>DD</sub> = 50V, Starting T<sub>J</sub> = 25°C

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

## Typical Performance Characteristics

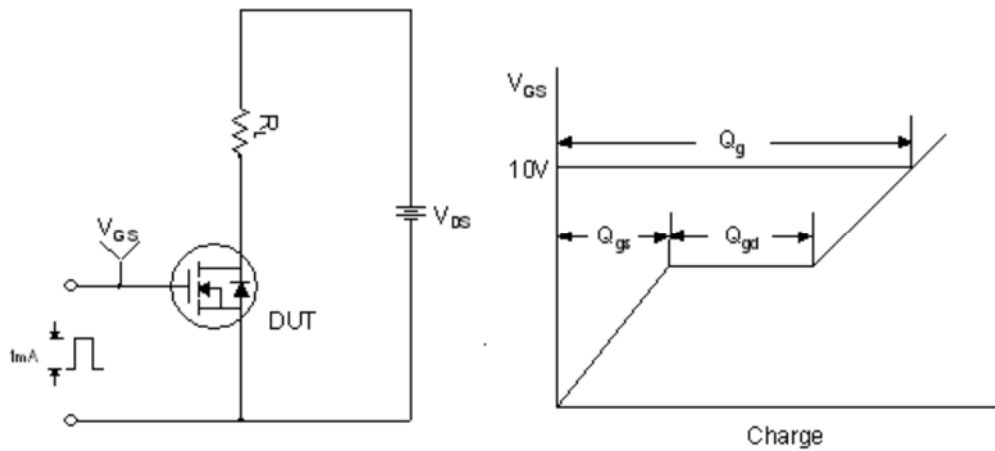


Figure 1. Gate Charge Test Circuit & Waveform

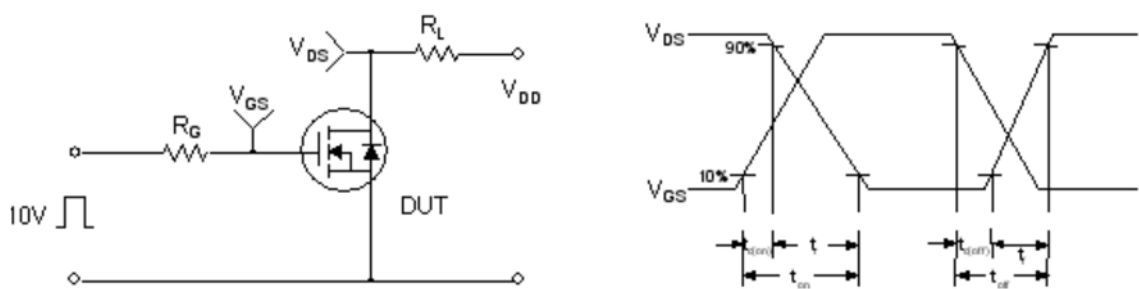


Figure 2. Resistive Switching Test Circuit & Waveforms

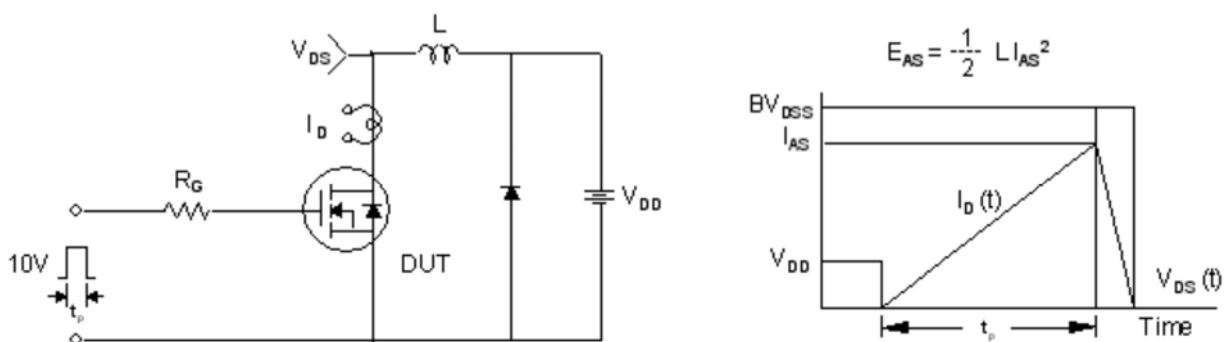


Figure 3. Unclamped Inductive Switching Test Circuit & Waveforms

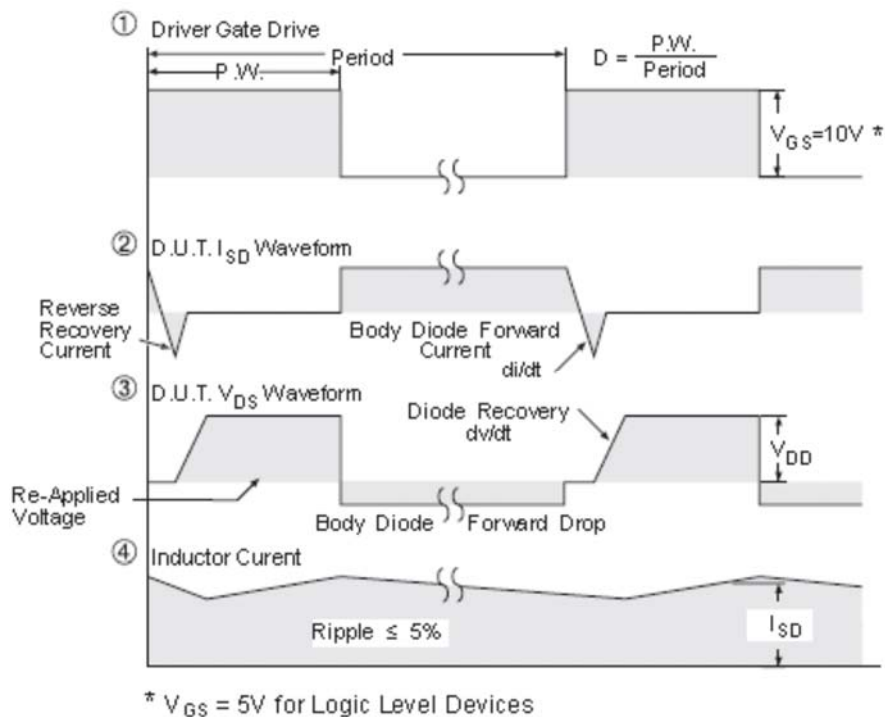
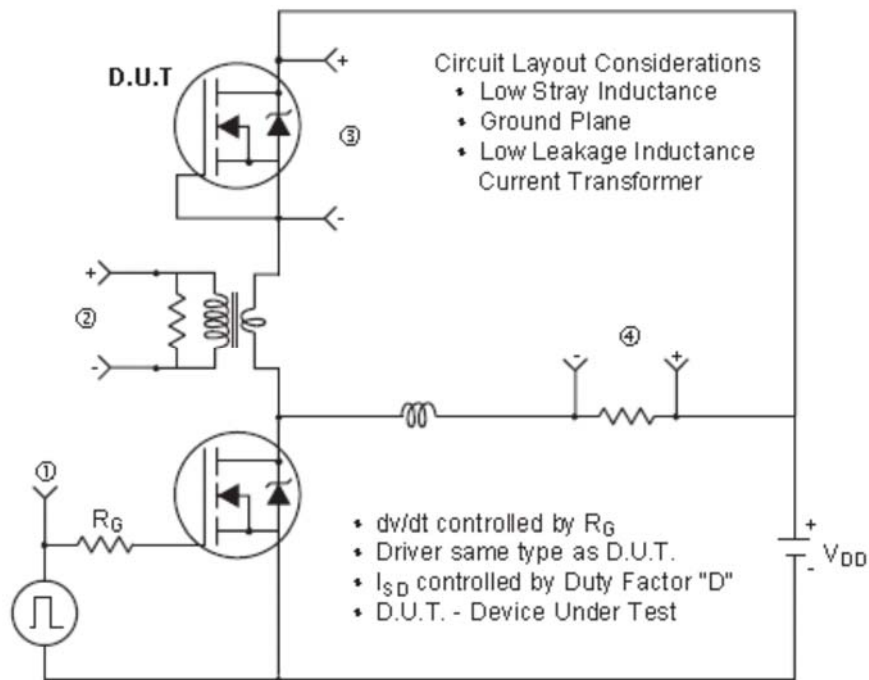
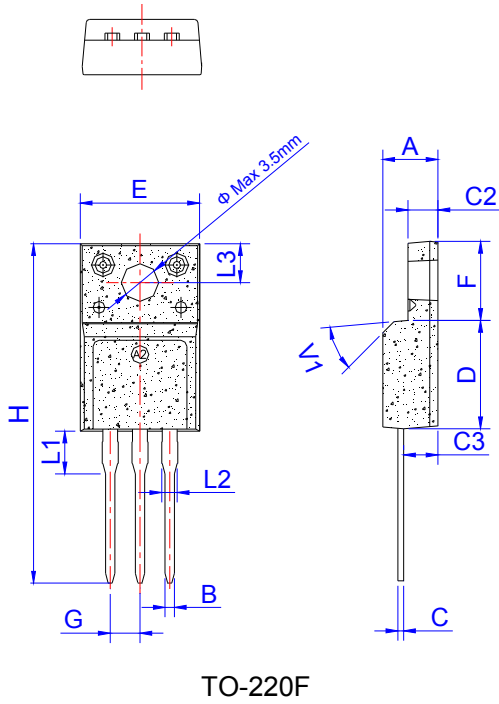


Figure 4. Peak Diode Recovery  $dv/dt$  Test Circuit & Waveforms (For N-channel)



## 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°	

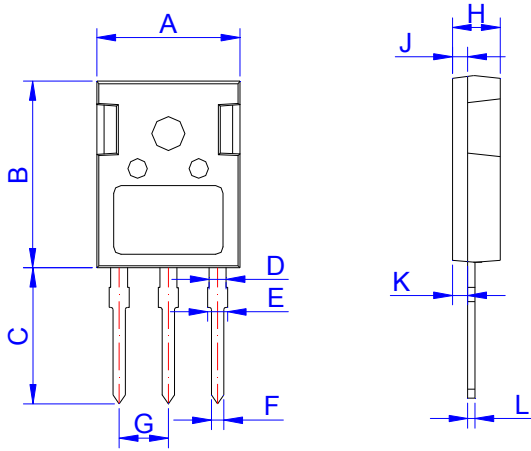
## Package Information -TO-220F

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



# JMP(F.S)10N80A

## 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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