



JMP(C.F)7N80A

Description

JMP N-channel MOSFET

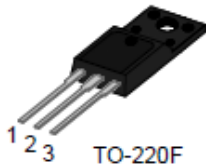
Features

- 800V,7A
- $R_{DS(ON)} = 1.35\Omega$ (Typ.) @ $V_{GS} = 10V, I_D = 3.5A$
- Fast Switching
- Improved dv/dt Capability
- 100% Avalanche Tested

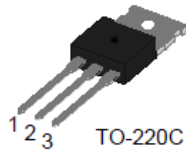
Application

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

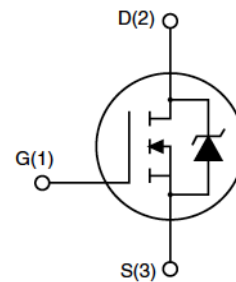
Package



JMPF7N80A



JMPC7N80A



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

Symbol	Parameter	Max.		Units	
		TO-220C	TO-220F		
V_{DSS}	Drain-Source Voltage	800		V	
V_{GSS}	Gate-Source Voltage	± 30		V	
I_D	Continuous Drain Current	$T_C = 25^\circ C$	7	A	
		$T_C = 100^\circ C$	4.5	A	
I_{DM}	Pulsed Drain Current ^{note1}	28		A	
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	245		mJ	
E_{AR}	Repetitive Avalanche Energy	147		mJ	
P_D	Power Dissipation	$T_C = 25^\circ C$	70	25	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.78		5	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	60		62.5	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150		$^\circ C$	



JMP(C.F)7N80A

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	800	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =800V, V _{GS} = 0V, T _J = 25°C	-	-	1	μA
		V _{DS} =640V, V _{GS} = 0V, T _J =125°C	-	-	100	nA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±30V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250μA	2.0	-	4.0	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note3</small>	V _{GS} =10V, I _D =3.5A	-	1.35	1.6	Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz	-	1178	-	pF
C _{oss}	Output Capacitance		-	128	-	pF
C _{rss}	Reverse Transfer Capacitance		-	27	-	pF
Q _g	Total Gate Charge	V _{DD} =640V, I _D =7A, V _{GS} = 10V	-	49	-	nC
Q _{gs}	Gate-Source Charge		-	6	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	26	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =400V, I _D = 7A, R _G = 25Ω	-	43	-	ns
t _r	Turn-on Rise Time		-	28	-	ns
t _{d(off)}	Turn-off Delay Time		-	244	-	ns
t _f	Turn-off Fall Time		-	54	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	7	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	28	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _{SD} =3.5A	-	-	1.4	V
t _{rr}	Reverse Recovery Time	V _{GS} =0V, I _S =7A, di/dt=100A/μs	-	295	-	ns
Q _{rr}	Reverse Recovery Charge		-	1.7	-	μC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. L=10mH, V_{DD} = 50V, R_G = 25 Ω, Starting T_J = 25 °C

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



Typical Performance Characteristics

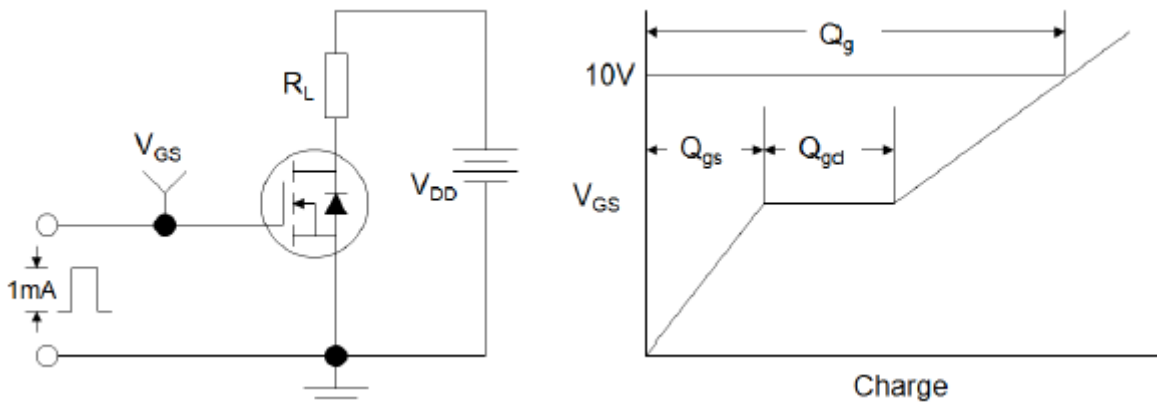


Figure 1: Gate Charge Test Circuit & Waveform

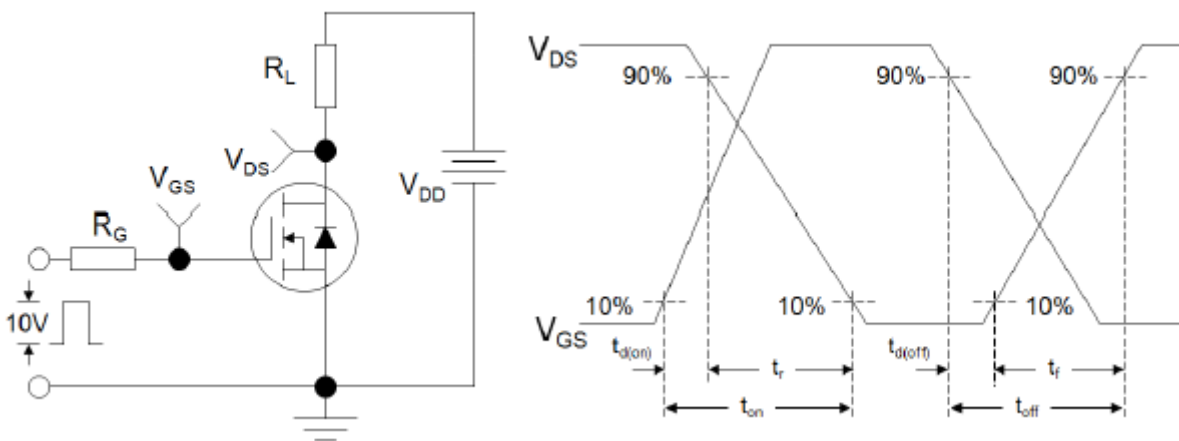


Figure 2: Resistive Switching Test Circuit & Waveforms

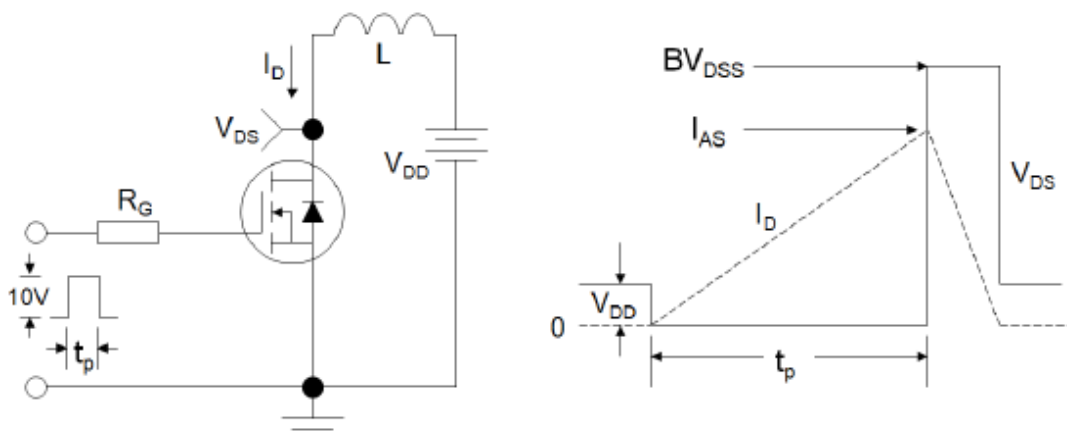


Figure 3: Unclamped Inductive Switching Test Circuit & Waveforms

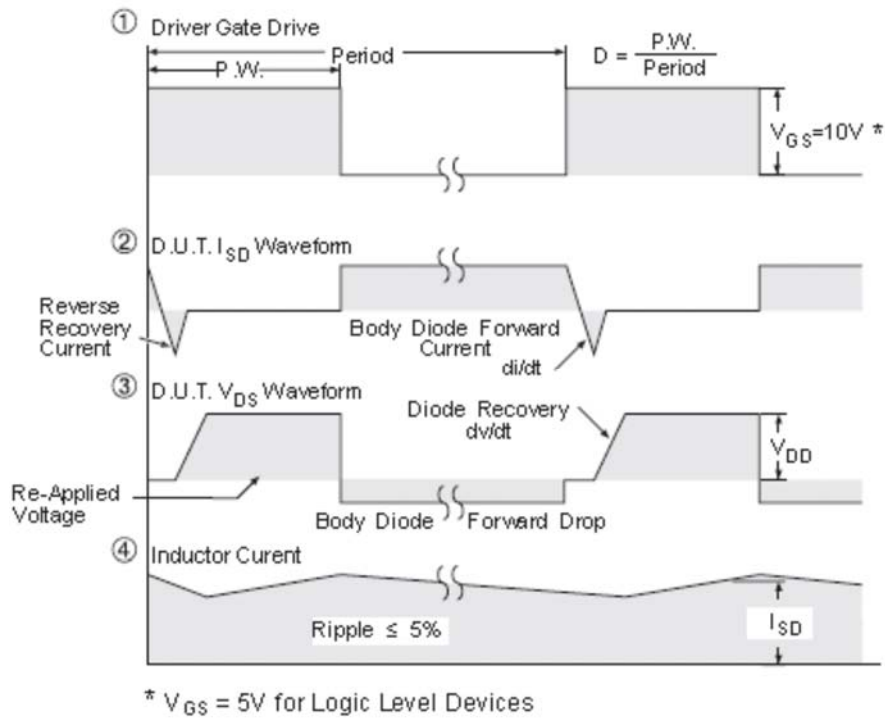
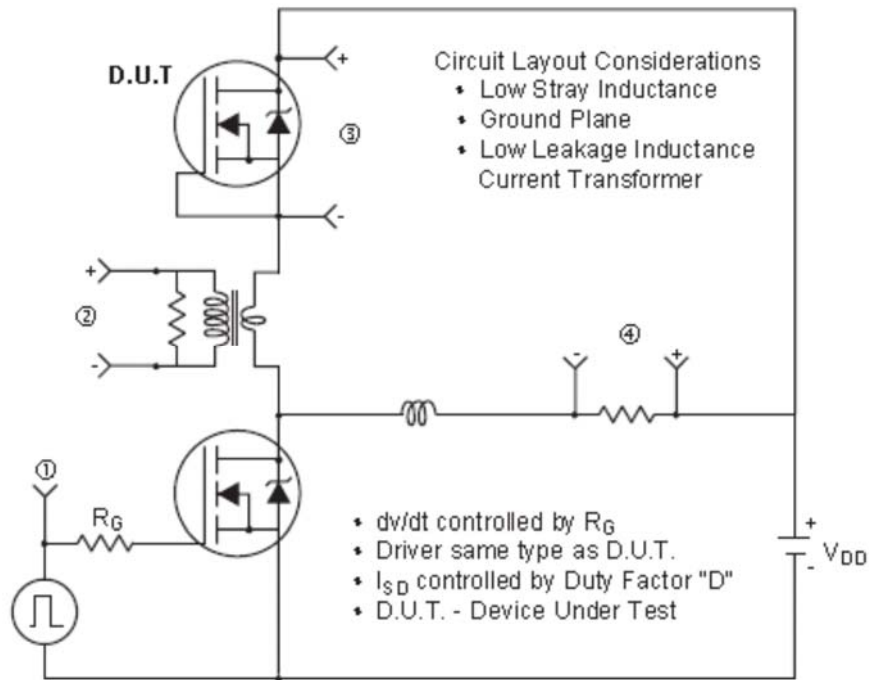
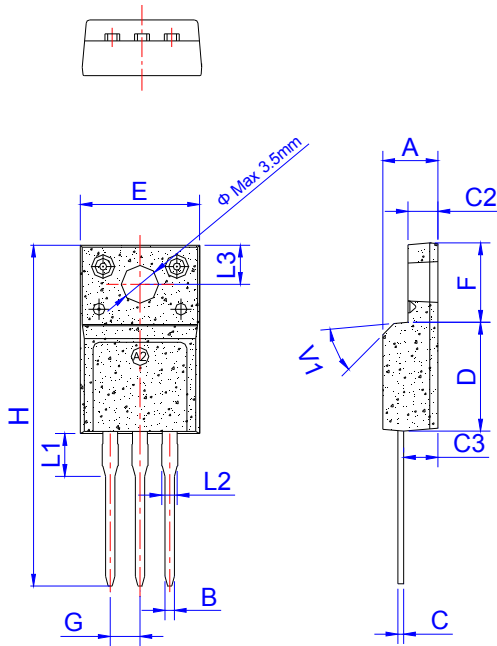


Figure 4: Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)



Package Mechanical Data



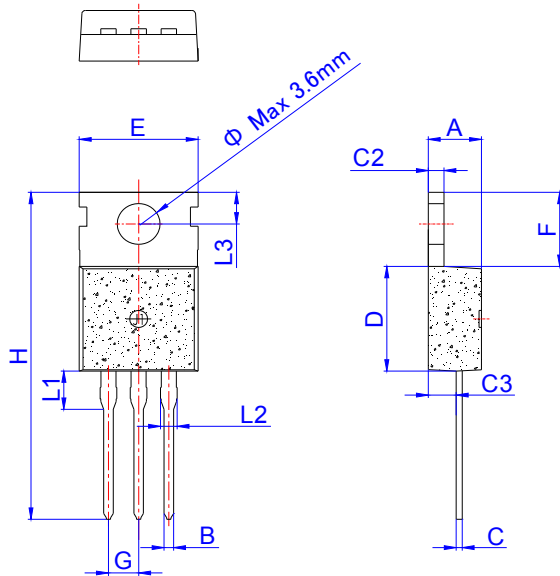
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G		2.54			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-220C

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		1.181
B	0.70		0.90	0.027		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.086		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	11.0		11.7
L1		3.39			0.133	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
Φ		3.6			0.142	

Package Information -TO-220C

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

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