

NJ7N80 POWER MOSFET

7.0A 800V N-CHANNEL POWER MOSFET



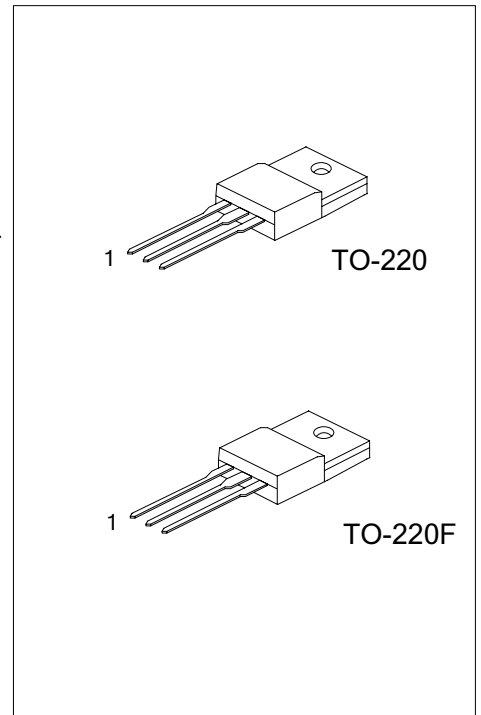
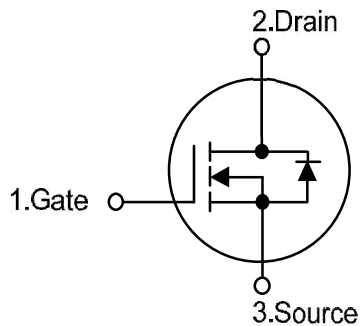
DESCRIPTION

The NJ7N80 is an N-channel mode power MOSFET using advanced technology to provide customers with planar stripe and DMOS technology. This technology specializes in allowing a minimum on-state resistance and superior switching performance. It also can withstand high energy pulse in the avalanche and commutation mode. The NJ7N80 is universally applied in high efficiency switch mode power supply.

FEATURES

- * $V_{DS} = 800V$
- * $I_D = 7.0A$
- * $R_{DS(on)} = 1.8 \text{ ohm}@V_{GS} = 10V$
- * High switching speed
- * 100% avalanche tested

SYMBOL



ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
NJ7N80-LI	TO-220	G	D	S	Tape Box
NJ7N80-BL	TO-220	G	D	S	Bulk
NJ7N80F-LI	TO-220F	G	D	S	Tube

Note: Pin Assignment: G: Gate D: Drain S: Source

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■ ABSOLUTE MAXIMUM RATINGS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	800	V
Gate-Source Voltage		V _{GSS}	±30	V
Drain Current	Continuous	I _D	7	A
	Pulsed (Note 1)	I _{DM}	26.4	A
Avalanche Energy	Single Pulsed (Note 2)	E _{AS}	580	mJ
	Repetitive (Note 1)	E _{AR}	16.7	mJ
Peak Diode Recovery dv/dt (Note 3)		dv/dt	4.5	V/ns
Power Dissipation	TO-220	P _D	142	W
	TO-220F		52	
Junction Temperature		T _J	+150	°C
Storage Temperature		T _{STG}	-55~+150	°C

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

2. L=25mH, I_{AS}=6.6A, V_{DD}= 50V, R_G=25Ω, Starting T_J=25°C

3. I_{SD} ≤ 8A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J=25°C

4. Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		θ _{JA}	62.5	°C/W
Junction to Case	TO-220	θ _{JC}	0.88	°C/W
	TO-220F		2.4	

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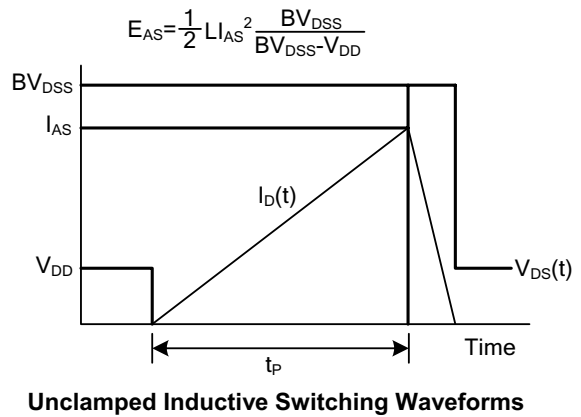
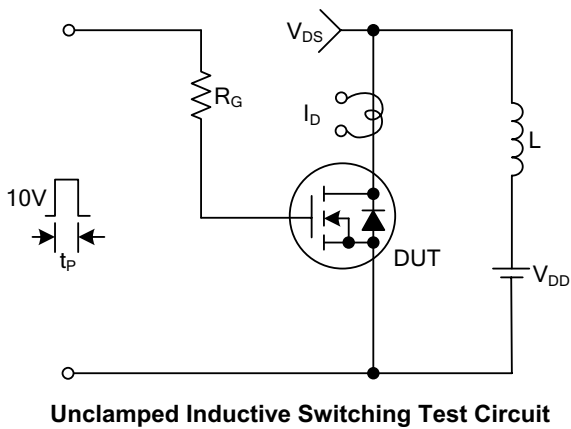
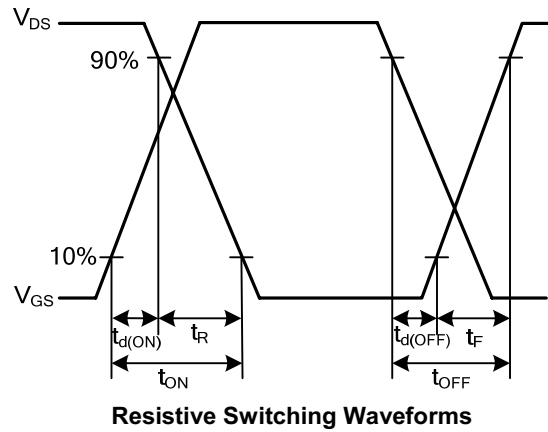
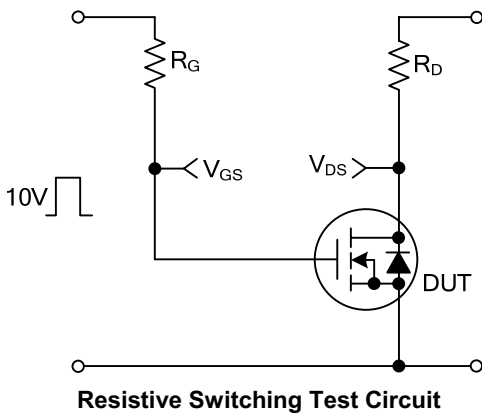
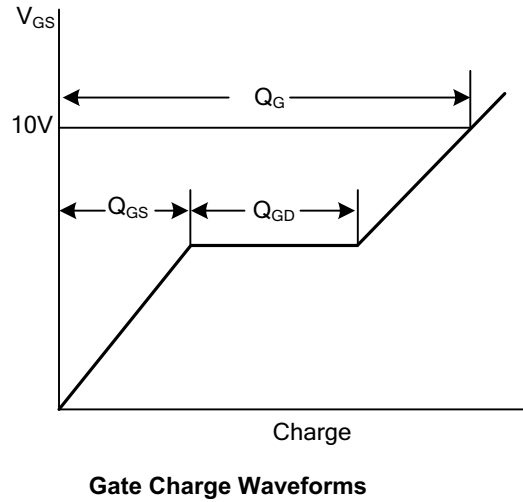
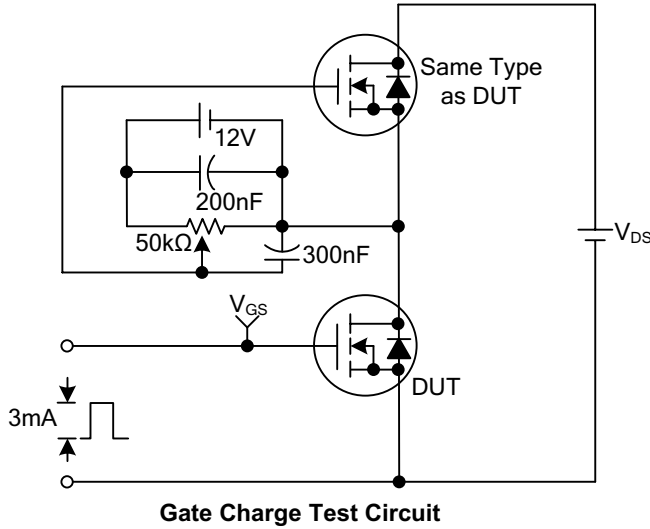
■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =250μA	800			V
Breakdown Voltage Temperature Coefficient		ΔBV _{DSS} /ΔT _J	I _D =250μA, Referenced to 25°C		0.93		V/°C
Drain-Source Leakage Current		I _{DSS}	V _{DS} =800V, V _{GS} =0V			10	μA
			V _{DS} =640V, T _C =125°C			100	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{DS} =0V, V _{GS} =30V			100	nA
	Reverse		V _{DS} =0V, V _{GS} =-30V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	3.0		5.0	V
Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =3.3A		1.4	1.8	Ω
Forward Transconductance		g _{FS}	V _{DS} =50V, I _D =3.3A (Note 1)		5.5		S
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz		1290	1680	pF
Output Capacitance		C _{OSS}			120	155	pF
Reverse Transfer Capacitance		C _{RSS}			10	13	pF
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{DS} =640V, V _{GS} =10V, I _D =6.6A (Note 1,2)		27	35	nC
Gate-Source Charge		Q _{GS}			8.2		nC
Gate-Drain Charge		Q _{GD}			11		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =400V, I _D =6.6A, R _G =25Ω (Note 1,2)		35	80	ns
Turn-ON Rise Time		t _R			100	210	ns
Turn-OFF Delay Time		t _{D(OFF)}			50	110	ns
Turn-OFF Fall Time		t _F			60	130	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				6.6	A
Maximum Body-Diode Pulsed Current		I _{SM}				26.4	A
Drain-Source Diode Forward Voltage		V _{SD}	I _S =6.6A, V _{GS} =0V			1.4	V
Body Diode Reverse Recovery Time		t _{rr}	V _{GS} =0V, I _S =6.6A,		650		ns
Body Diode Reverse Recovery Charge		Q _{RR}	di _F /dt=100A/μs (Note 1)		7.0		μC

Note: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%
 2. Essentially independent of operating temperature

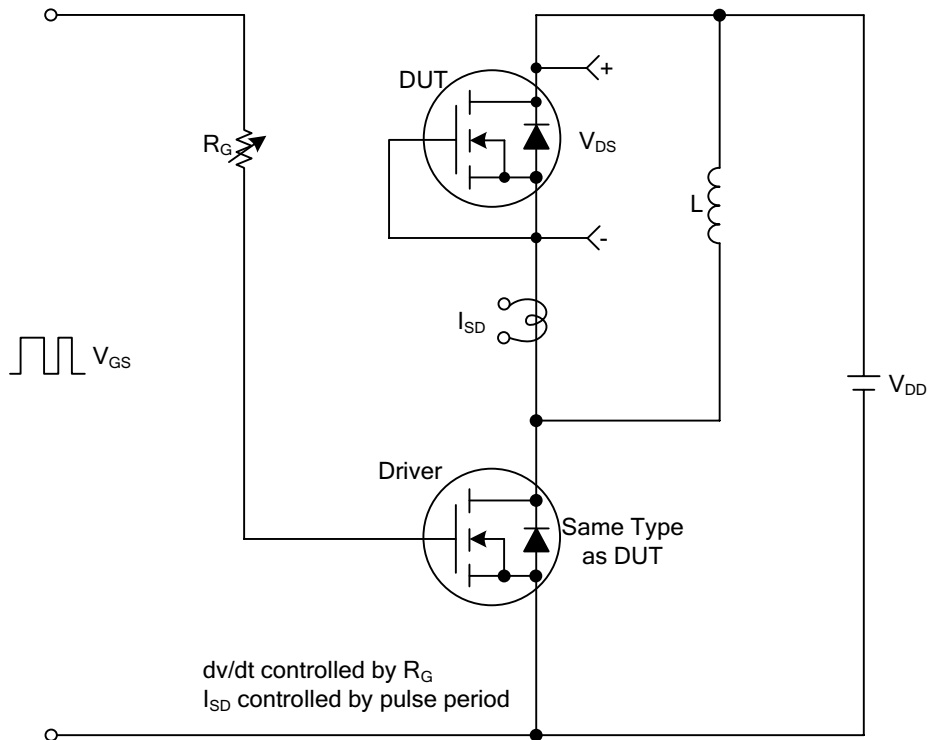
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■ TEST CIRCUITS AND WAVEFORMS

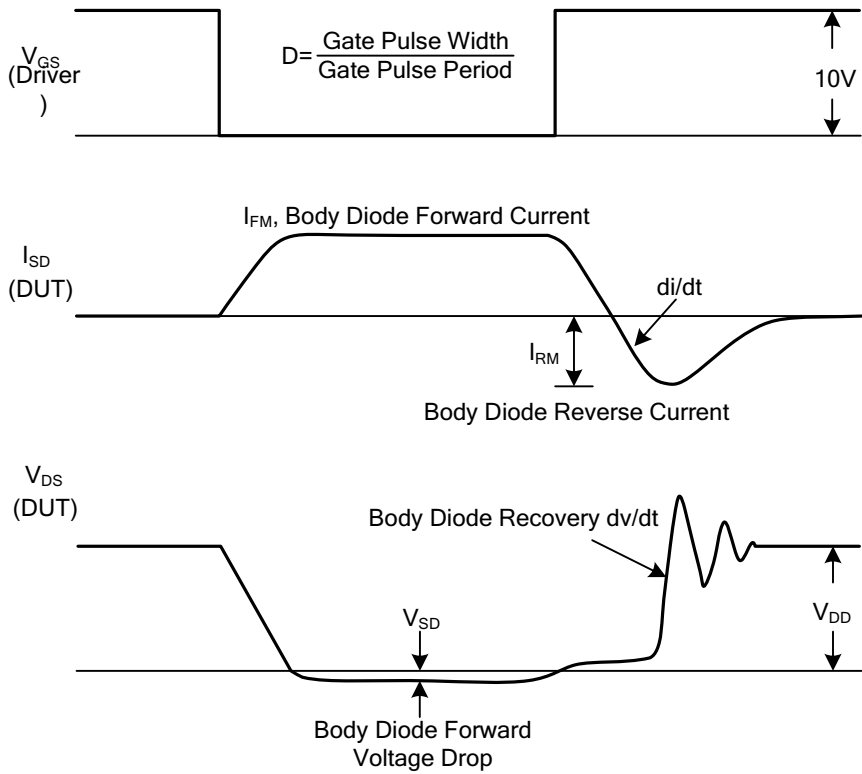


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■ TEST CIRCUITS AND WAVEFORMS(Cont.)



Peak Diode Recovery dv/dt Test Circuit & Waveforms



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■ TYPICAL CHARACTERISTICS

