

NJ8N80 POWER MOSFET

8.0A 800V N-CHANNEL POWER MOSFET



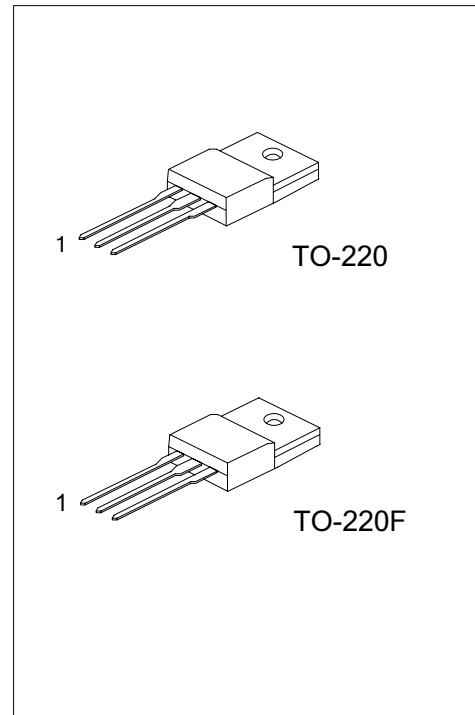
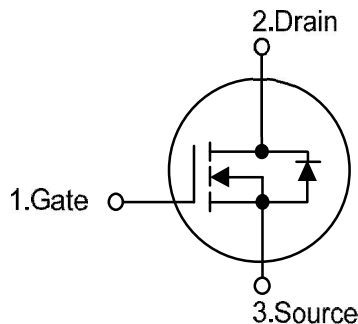
DESCRIPTION

The NJ8N80 is an N-channel mode power MOSFET, it uses advanced technology to provide customers planar stripe and DMOS technology. This technology allows a minimum on-state resistance, superior switching performance. It also can withstand high energy pulse in the avalanche and commutation mode. The NJ8N80 is generally applied in high efficiency switch mode power supplies.

FEATURES

- * $V_{DS} = 800V$ $I_D = 8.0A$
- * typically 35 nC Low Gate Charge
- * $R_{DS(ON)} = 1.45\Omega @ V_{GS} = 10V$.
- * Typically 13 pF Low CRSS
- * Improved dv/dt Capability
- * Fast switching capability
- * Avalanche energy specified
- * RoHS-Compliant Product

SYMBOL



ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
NJ8N80-LI	TO-220	G	D	S	Tape Box
NJ8N80-BL	TO-220	G	D	S	Bulk
NJ8N80F-LI	TO-220F	G	D	S	Tube

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

NJ8N80 POWER MOSFET

■ 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) (T _C =25°C)	I _D	8	A
Drain Current (Pulsed) (Note 1)	I _{DM}	32	A
Avalanche Current (Note 1)	I _{AR}	8	A
Single Pulse Avalanche Energy (Note 2)	E _{AS}	850	mJ
Repetitive Avalanche Energy (Note 1)	E _{AR}	17.8	mJ
Peak Diode Recovery dv/dt (Note 3)	dv/dt	4.5	V/ns
Power Dissipation	TO-220	178	W
	TO-220F	59	
Linear Derating Factor above T _C =25°C	TO-220	1.43	W/°C
	TO-220F	0.47	
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} = 8A, V_{DD} = 50V, R_G = 25 Ω, 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	0.7	°C/W
	TO-220F	2.1	

NJ8N80 POWER MOSFET

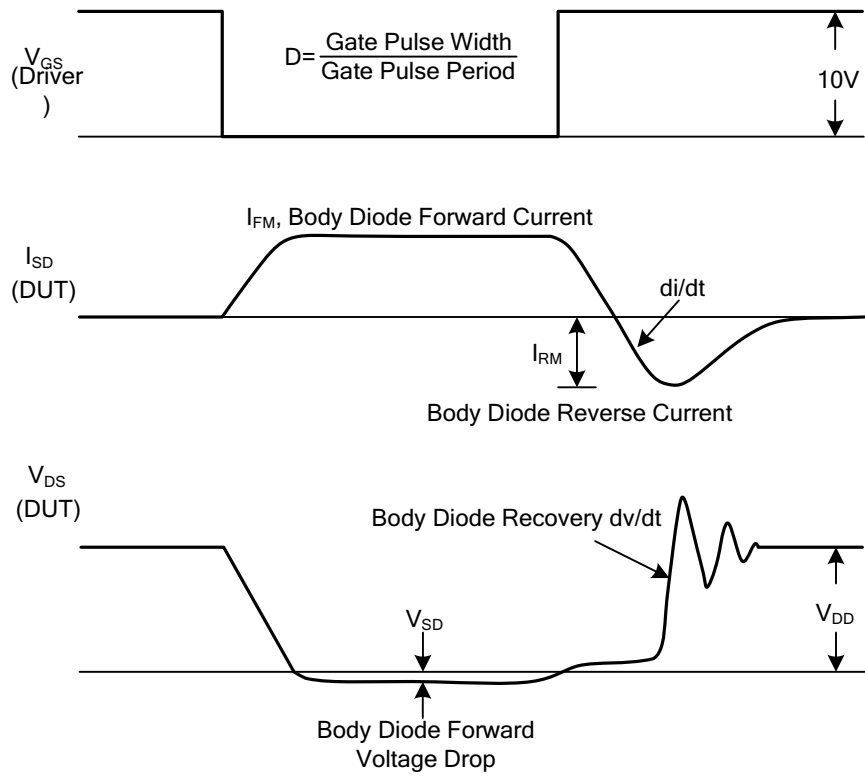
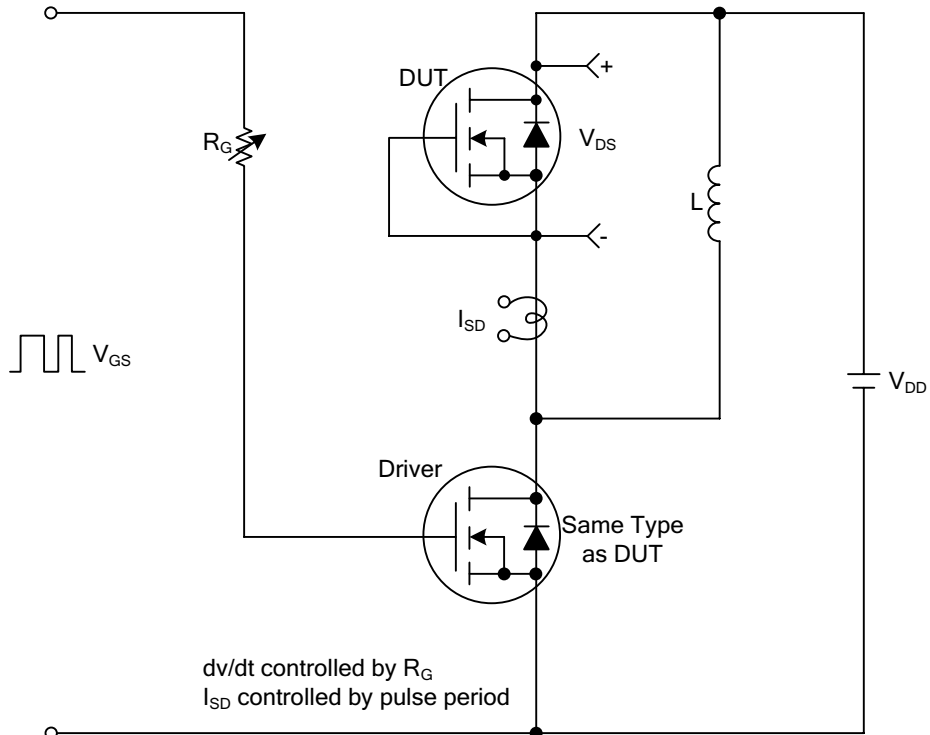
■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	800			V
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =250μA		0.5		V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =800V, V _{GS} =0V			10	μA
		V _{DS} =640V, T _C =125°C			100	
Gate- Source Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	3.0		5.0	V
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =4A		1.18	1.45	Ω
Forward Transconductance (Note 1)	g _{FS}	V _{DS} =50V, I _D =4A		5.6		S
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		1580	2050	pF
Output Capacitance	C _{OSS}			135	175	pF
Reverse Transfer Capacitance	C _{RSS}			13	17	pF
SWITCHING PARAMETERS (Note 1, Note 2)						
Total Gate Charge	Q _G	V _{GS} =10V, V _{DS} =640V, I _D =8A		35	45	nC
Gate to Source Charge	Q _{GS}			10		nC
Gate to Drain Charge	Q _{GD}			14		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =400V, I _D =8A, R _G =25Ω		40	90	ns
Rise Time	t _R			110	230	ns
Turn-OFF Delay Time	t _{D(OFF)}			65	140	ns
Fall-Time	t _F			70	150	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I _S				8	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				32	A
Drain-Source Diode Forward Voltage	V _{SD}	I _S =8A, V _{GS} =0V			1.4	V
Reverse Recovery Time (Note 1)	t _{rr}	I _S =8A, V _{GS} =0V,		690		ns
Reverse Recovery Charge (Note 1)	Q _{RR}	di _F /dt=100A/μs		8.2		μC

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

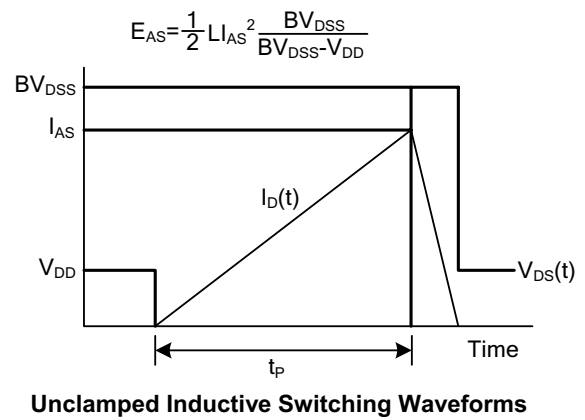
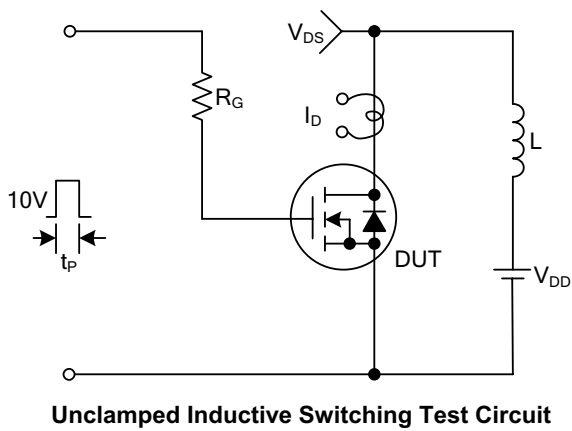
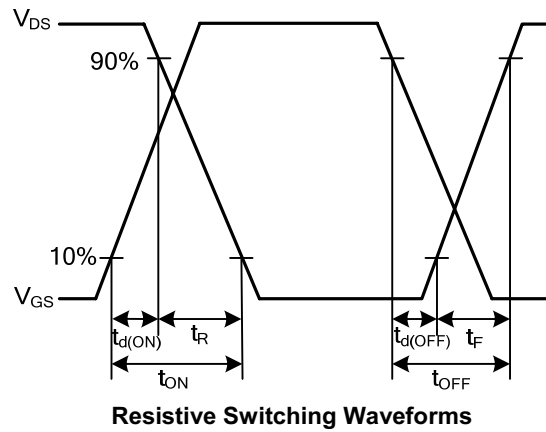
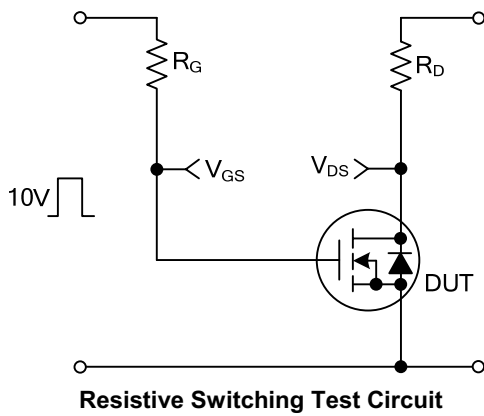
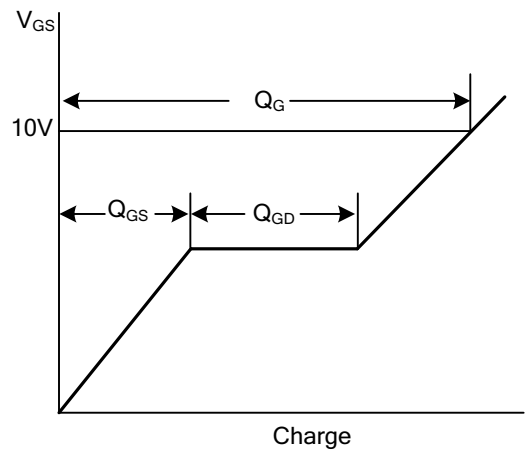
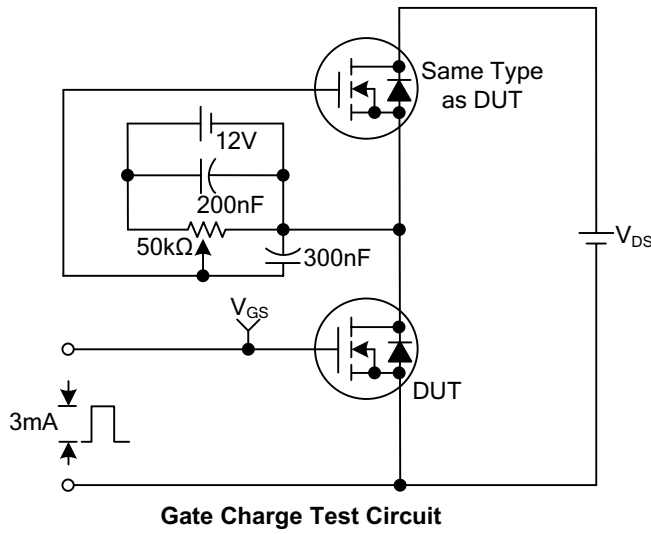
NJ8N80 POWER MOSFET

TEST CIRCUITS AND WAVEFORMS



NJ8N80 POWER MOSFET

TEST CIRCUITS AND WAVEFORMS(Cont.)



NJ8N80 POWER MOSFET

TYPICAL CHARACTERISTICS

