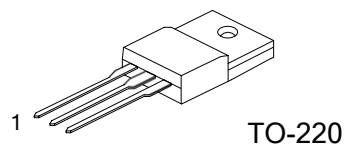


8.0A 800V N-CHANNEL POWER MOSFET

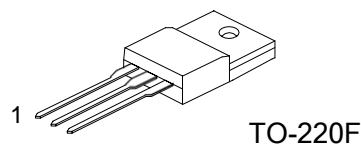
Description:

The KWNJ8N80 is an N-channel mode power MOSFET, it uses advanced technology to provide costumers planar stripe and DMOS technology. This technology allows a minimum on-state resistance, superior switching performance. It also can withstand high energypulse in the avalanche and commutation mode. The KWNJ8N80 is generally applied in high efficiency switch mode power supplies.

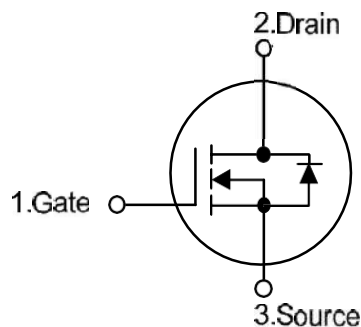


Features:

- * $V_{DS} = 800V$ $I_D = 8.0A$
- * ypically 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	
KWNJ8N80-LI	TO-220	G	D	S	Tape Box
KWNJ8N80-BL	TO-220	G	D	S	Bulk
KWNJ8N80F-LI	TO-220F	G	D	S	Tube

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

ABSOLUTE MAXIMUM RATINGS ($T_C=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	800	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current (Continuous) ($T_C=25^{\circ}\text{C}$)	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 $T_C=25^{\circ}\text{C}$	TO-220	1.43	W/ $^{\circ}\text{C}$
	TO-220F	0.47	
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

- Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature
 2. $L = 25\text{mH}$, $I_{AS} = 8\text{A}$, $V_{DD} = 50\text{V}$, $R_G = 25 \Omega$, Starting $T_J = 25^{\circ}\text{C}$
 3. $I_{SD} \leq 8\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^{\circ}\text{C}$
 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

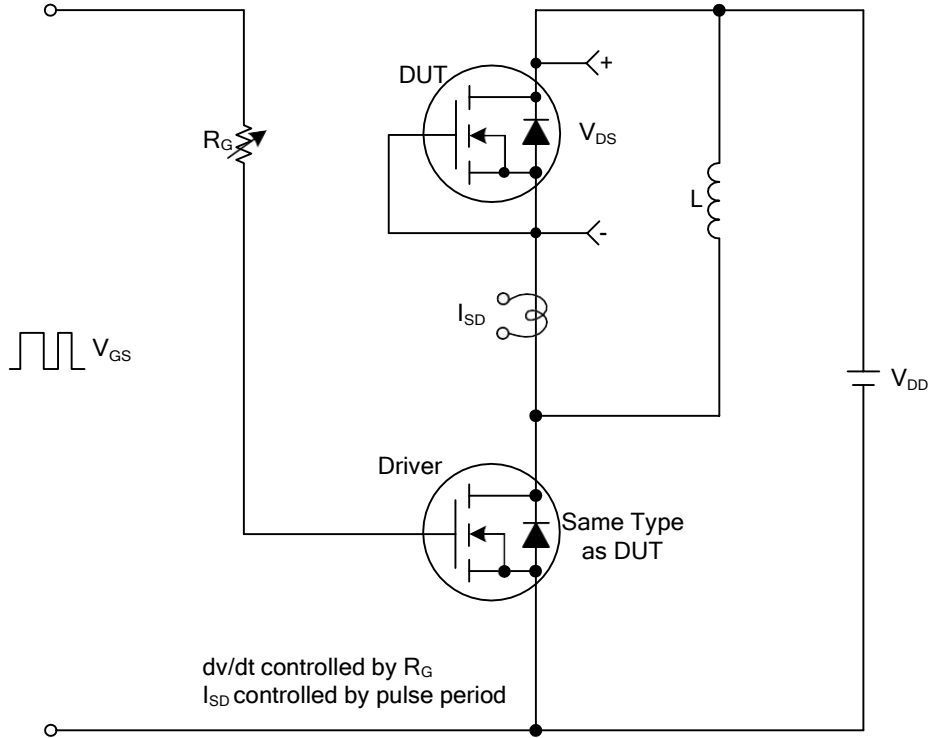
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62.5	$^{\circ}\text{C}/\text{W}$
Junction to Case	TO-220	0.7	$^{\circ}\text{C}/\text{W}$
	TO-220F	2.1	

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

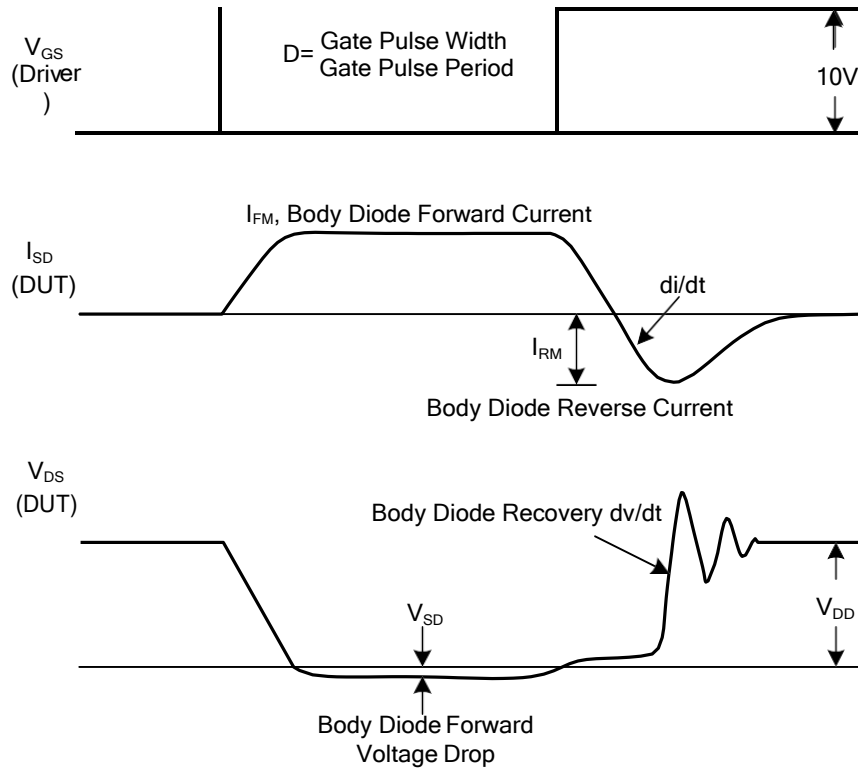
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	800			V	
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =250μA		0.5		V/°C	
Drain-Source Leakage Current	I _{DSS}	V _{DS} =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/dt=100A/μs		8.2		μC	

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

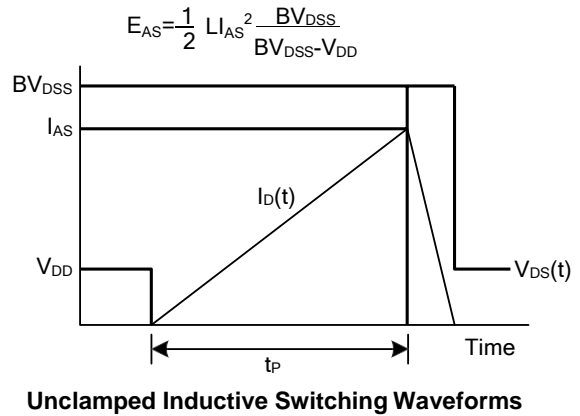
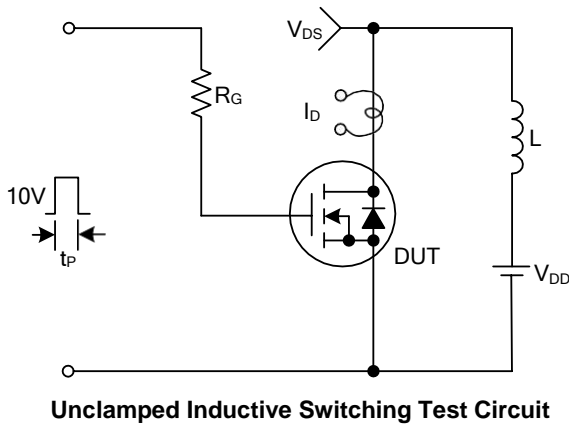
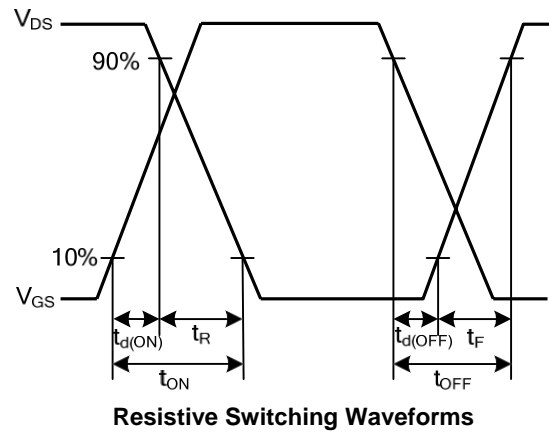
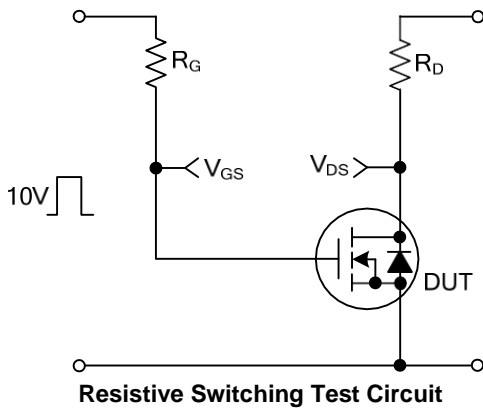
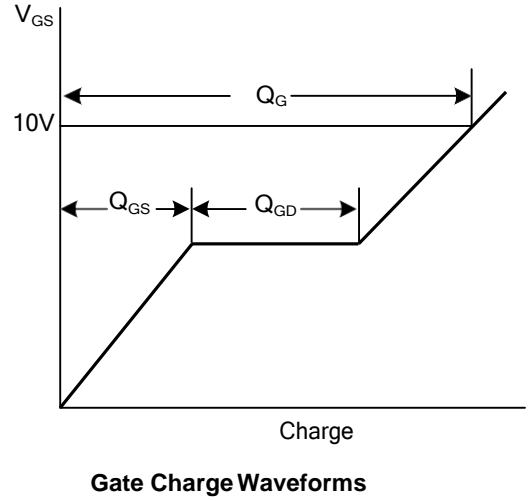
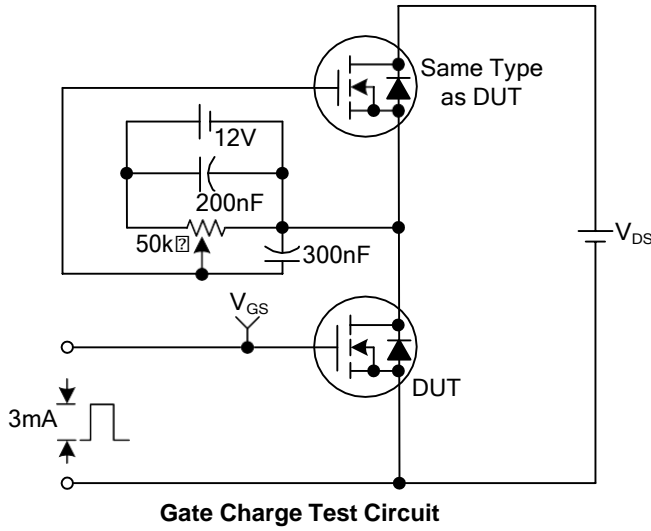
TEST CIRCUITS AND WAVEFORMS



Peak Diode Recovery dv/dt Test Circuit & Waveforms



TEST CIRCUITS AND WAVEFORMS(Cont.)



■ **TYPICAL CHARACTERISTICS**

