

# 11N80

Preliminary

Power MOSFET

## 11A, 800V N-CHANNEL POWER MOSFET

### ■ DESCRIPTION

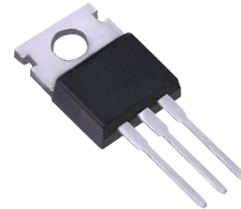
The **UTC 11N80** is an N-Channel power MOSFET, it uses UTC's advanced technology to provide customers with a minimum on-state resistance, low gate charge and high switching speed.

The **UTC 11N80** is suitable for high speed switching applications in power supplies, PWM motor controls, high efficient DC to DC converters and bridge circuits.

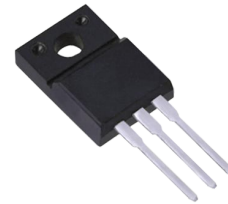
### ■ FEATURES

\*  $R_{DS(ON)} \leq 1.0\Omega$  @  $V_{GS}=10V, I_D=5.5A$

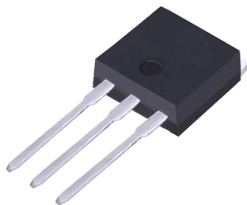
\* High switching speed



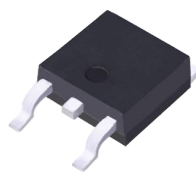
T0-220



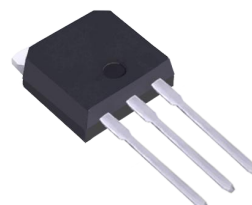
T0-220F



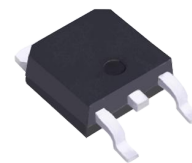
T0-262



T0-263



T0-251



T0-252

■ 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		$V_{GSS}$	$\pm 30$	V
Drain Current	Continuous	$I_D$	11	A
	Pulsed	$I_{DM}$	44	A
Avalanche Current		$I_{AR}$	10.5	A
Avalanche Energy	Single Pulsed	$E_{AS}$	551	mJ
Peak Diode Recovery dv/dt		dv/dt	1.8	V/ns
Power Dissipation ( $T_C=25^\circ\text{C}$ )	TO-220F1/TO-220F2	$P_D$	50	W
	TO-3P		297	
Junction Temperature		$T_J$	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range		$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

Notes: 1. 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.

2. Repetitive Rating : Pulse width limited by maximum junction temperature.

3.  $L=10\text{mH}$ ,  $I_{AS}=10.5\text{A}$ ,  $V_{DD}=50\text{V}$ ,  $R_G=25\Omega$ , Starting  $T_C=25^\circ\text{C}$ .

4.  $I_{SD} \leq 11\text{A}$ ,  $di/dt \leq 200\text{A}/\mu\text{s}$ ,  $V_{DD} \leq BV_{DSS}$ , Starting  $T_J = 25^\circ\text{C}$

■ THERMAL CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220F1/ TO-220F2	$\theta_{JA}$	62.5	$^\circ\text{C}/\text{W}$
	TO-3P		40	
Junction to Case	TO-220F1	$\theta_{JC}$	1.98	$^\circ\text{C}/\text{W}$
	TO-220F2		1.89	
	TO-3P		0.42	

■ ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu A, V_{GS}=0V$	800			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=800V, V_{GS}=0V$			1	$\mu A$
Gate-Source Leakage Current	Forward	$V_{GS}=+30V, V_{DS}=0V$			+100	nA
	Reverse		$V_{GS}=-30V, V_{DS}=0V$			-100
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3		5	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=5.5A$			1.0	$\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS}=25V, V_{GS}=0V, f=1.0MHz$		1920		pF
Output Capacitance	$C_{OSS}$			200		pF
Reverse Transfer Capacitance	$C_{RSS}$			22		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge (Note 1)	$Q_G$	$V_{DS}=50V, V_{GS}=10V, I_D=1.3A$ $I_G=100\mu A$ (Note 1, 2)		140		nC
Gate to Source Charge	$Q_{GS}$			19		nC
Gate to Drain Charge	$Q_{GD}$			50		nC
Turn-ON Delay Time (Note 1)	$t_{D(ON)}$	$V_{DD}=30V, V_{GS}=10V, I_D=0.5A,$ $R_G=25\Omega$ (Note 1, 2)		150		ns
Rise Time	$t_R$			260		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			440		ns
Fall-Time	$t_F$			140		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$				11	A
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$				44	A
Drain-Source Diode Forward Voltage (Note 1)	$V_{SD}$	$I_S=11.0A, V_{GS}=0V$			1.4	V
Reverse Recovery Time (Note 1)	$t_{rr}$	$I_S=11.0A, V_{GS}=0V$		890		ns
Reverse Recovery Charge	$Q_{rr}$	$dI_F/dt=200A/\mu s$		10.9		$\mu C$

Notes: 1. Pulse Test: Pulse width  $\leq 250\mu s$ , Duty cycle  $\leq 2\%$ .

2. Essentially independent of operating temperature.