

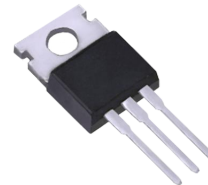
18A, 600V N-CHANNEL POWER MOSFET

■ DESCRIPTION

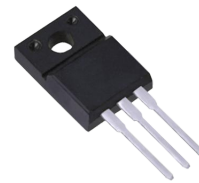
The UTC **18N60** uses UTC's advanced proprietary, planar stripe, DMOS technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

■ FEATURES

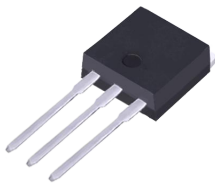
- * $R_{DS(ON)} \leq 0.5 \Omega$ @ $V_{GS}=10V, I_D=9.0A$
- * Fast Switching Capability
- * Avalanche Energy Specified
- * Improved dv/dt Capability, High Ruggedness



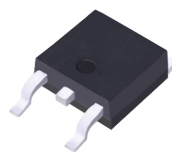
TO-220



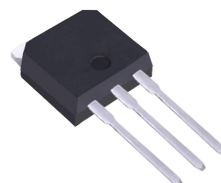
TO-220F



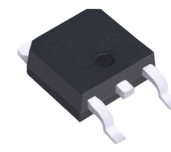
TO-262



TO-263



TO-251



TO-252

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	600	V
Gate-Source Voltage		V_{GSS}	± 30	V
Continuous Drain Current		I_D	18	A
Pulsed Drain Current		I_{DM}	45	A
Avalanche Current		I_{AR}	18	A
Avalanche Energy	Single Pulsed	E_{AS}	506 (Note 2)	mJ
Peak Diode Recovery dv/dt		dv/dt	3.35	V/ns
Power Dissipation	TO-247	P_D	360	W
	TO-3P/TO-3PN		395	W
Junction Temperature		T_J	+150	$^\circ\text{C}$
Storage Temperature		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. $L=6.18\text{mH}$, $I_{AS}=12.8\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$

■ **THERMAL DATA**

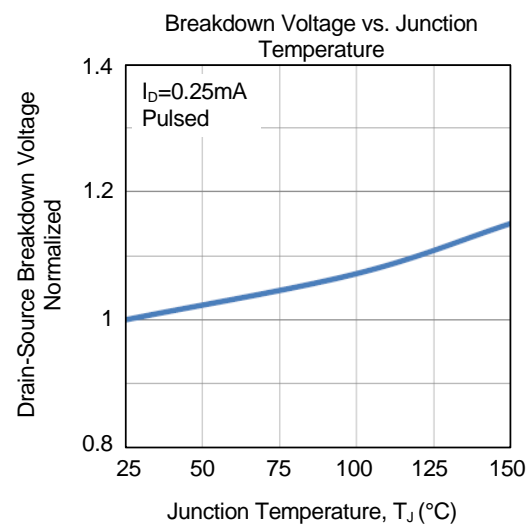
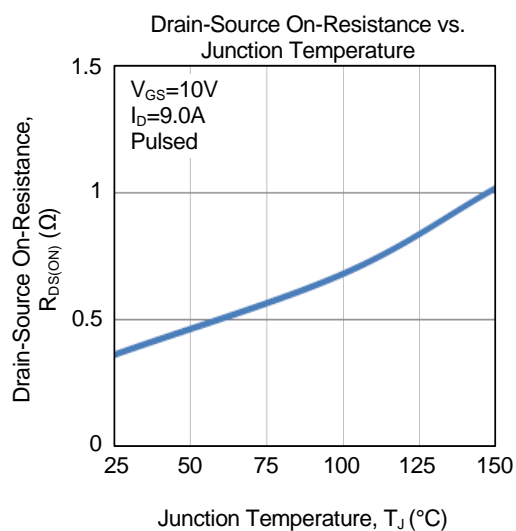
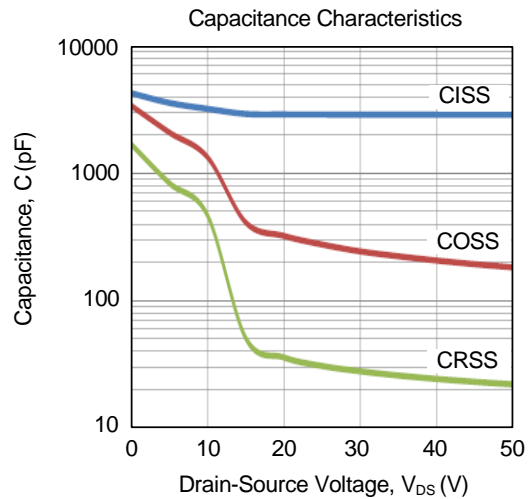
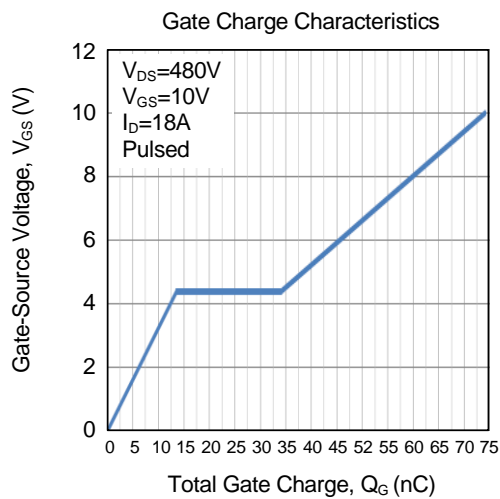
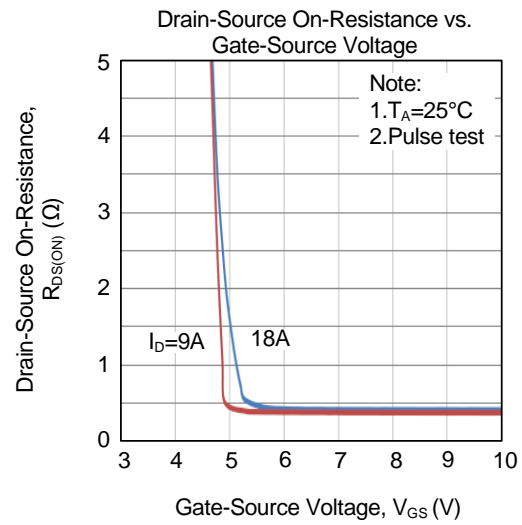
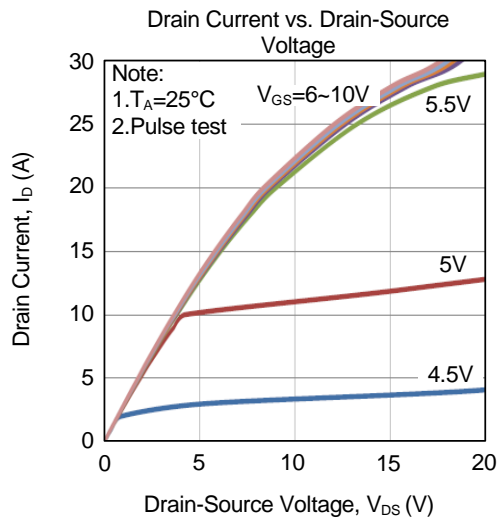
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-247	θ_{JA}	40	$^\circ\text{C/W}$
	TO-3P/TO-3PN		30	
Junction to Case	TO-247	θ_{JC}	0.35	$^\circ\text{C/W}$
	TO-3P/TO-3PN		0.32	

■ **ELECTRICAL CHARACTERISTICS** ($T_J = 25^\circ\text{C}$, unless otherwise specified)

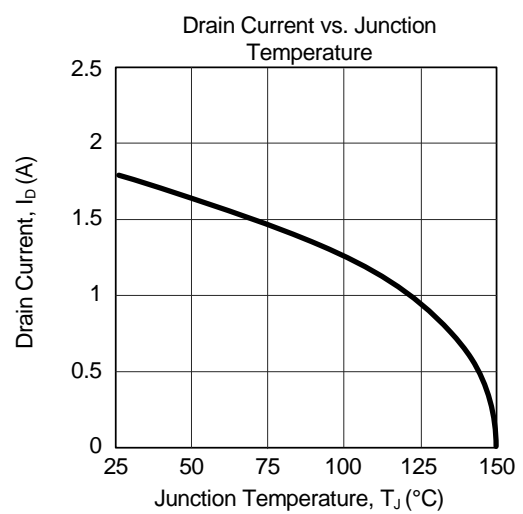
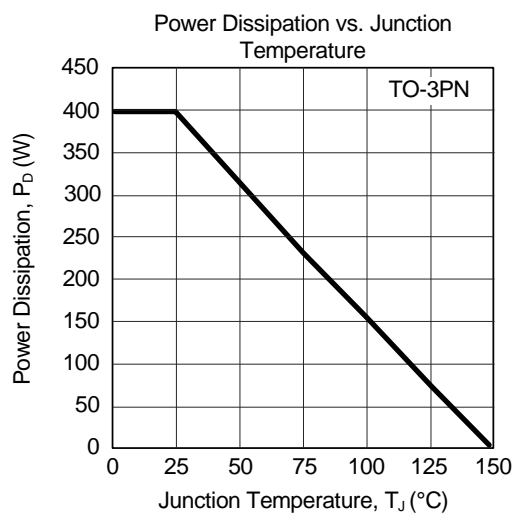
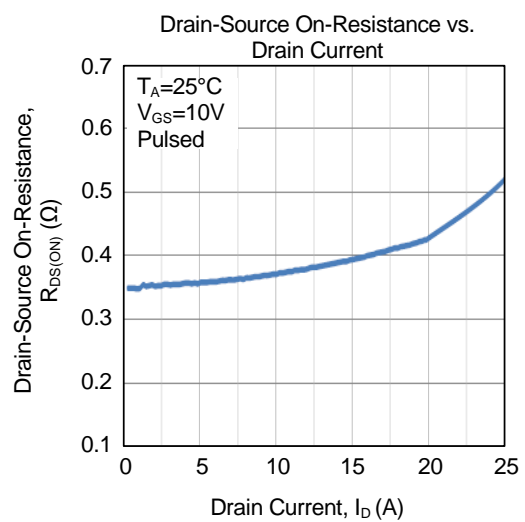
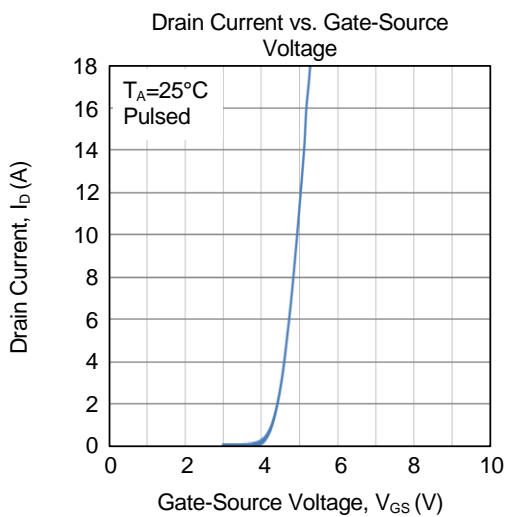
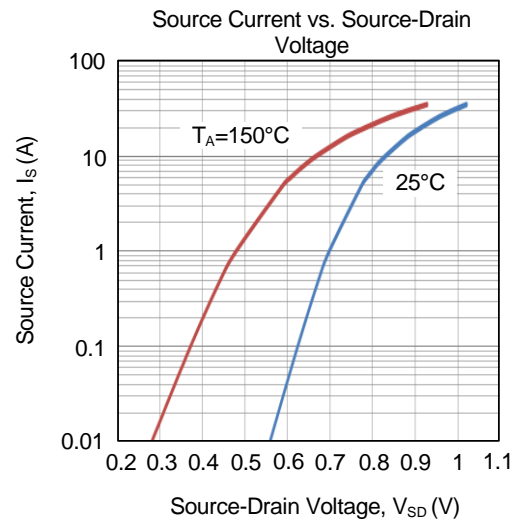
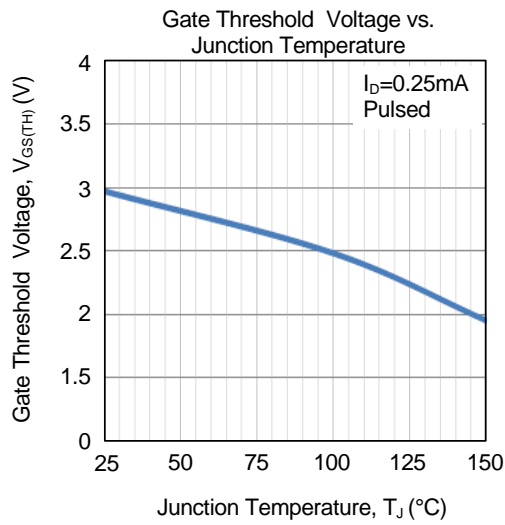
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	600			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=600V, V_{GS}=0V$			25	μA
Gate-Body Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 30V$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0		4.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=9A$ (Note)		0.36	0.5	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		2900		pF
Output Capacitance	C_{OSS}			275		pF
Reverse Transfer Capacitance	C_{RSS}			30		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{DS}=480V, V_{GS}=10V, I_D=18A$ $I_G=1mA$ (Note 1, 2)		75		nC
Gate Source Charge	Q_{GS}			15		nC
Gate Drain Charge	Q_{GD}			20		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DS}=100V, V_{GS}=10V, I_D=18A,$ $R_{GS}=25\Omega$		40		ns
Turn-ON Rise Time	t_R			26		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			232		ns
Turn-OFF Fall-Time	t_F			65		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I_S	$V_{GS}=0V$			18	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	Repetitive			54	A
Drain-Source Diode Forward Voltage	V_{SD}	$I_F=I_S, V_{GS}=0V$ (Note)			1.5	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, dI_F/dt=100A/\mu s,$ $I_S=18A, V_R=400V$		500		ns
Reverse Recovery Charge	Q_{rr}			18		μC

Note: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)

