



# 18N65

*Power MOSFET*

## 18A, 650V N-CHANNEL POWER MOSFET

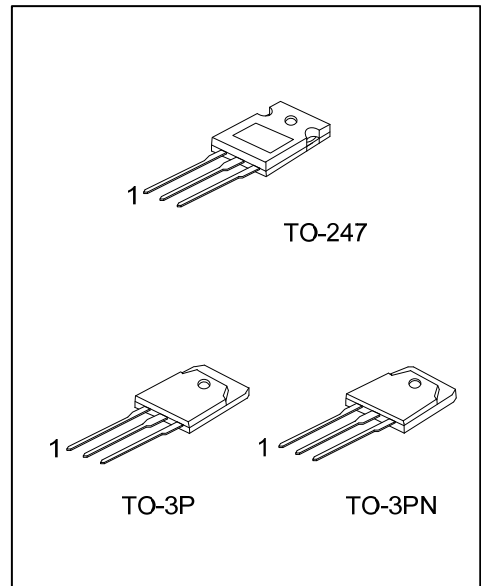
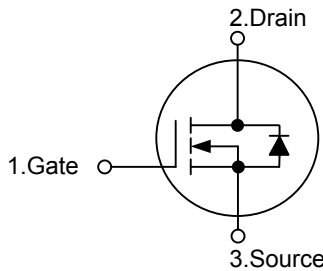
■ DESCRIPTION

The UTC **18N65** 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

■ SYMBOL



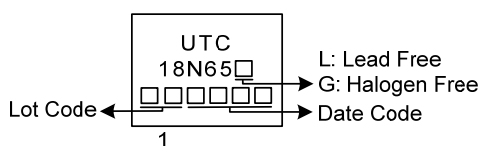
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
18N65L-T3P-T	18N65G-T3P-T	TO-3P	G	D	S	Tube
18N65L-T3N-T	18N65G-T3N-T	TO-3PN	G	D	S	Tube
18N65L-T47-T	18N65G-T47-T	TO-247	G	D	S	Tube

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

<p>18N65G-T3P-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) T: Tube</p> <p>(2) T3P: TO-3P, T3N: TO-3PN, T47: TO-247</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub> = 25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V <sub>DSS</sub>	650	V
Gate-Source Voltage		V <sub>GSS</sub>	±30	V
Continuous Drain Current		I <sub>D</sub>	18	A
Pulsed Drain Current		I <sub>DM</sub>	45	A
Avalanche Energy	Single Pulsed	E <sub>AS</sub>	938 (Note 2)	mJ
Peak Diode Recovery dv/dt		dv/dt	10	V/ns
Power Dissipation	TO-3P/TO-3PN	P <sub>D</sub>	390	W
	TO-247		357	W
Junction Temperature		T <sub>J</sub>	+150	°C
Storage Temperature		T <sub>STG</sub>	-55 ~ +150	°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=10mH, I<sub>AS</sub>=13.7A, V<sub>DD</sub>=50V, R<sub>G</sub>=25Ω, Starting T<sub>J</sub>=25°C

■ THERMAL CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-3P/TO-3PN	θ <sub>JA</sub>	30	°C/W
	TO-247		40	°C/W
Junction to Case	TO-3P/TO-3PN	θ <sub>JC</sub>	0.32	°C/W
	TO-247		0.35	°C/W

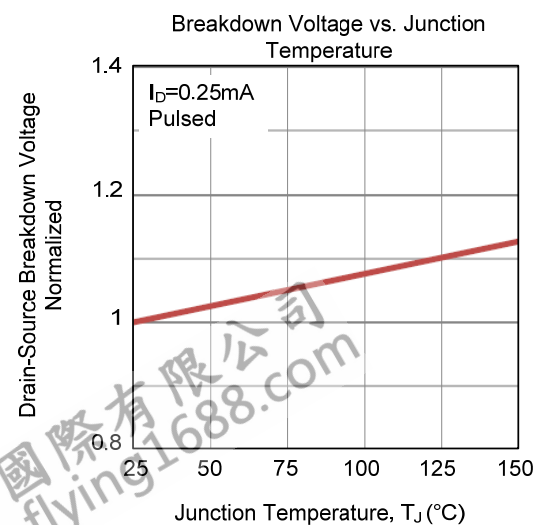
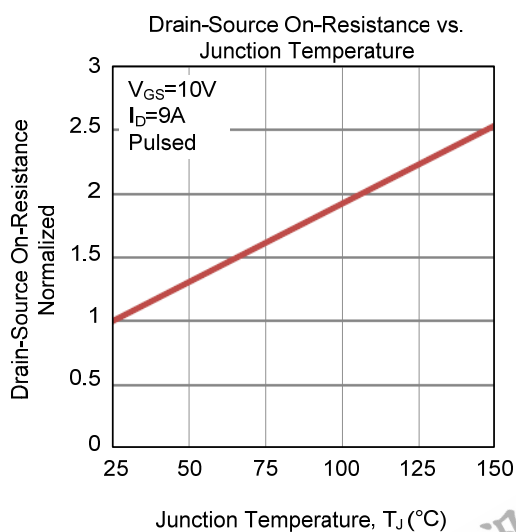
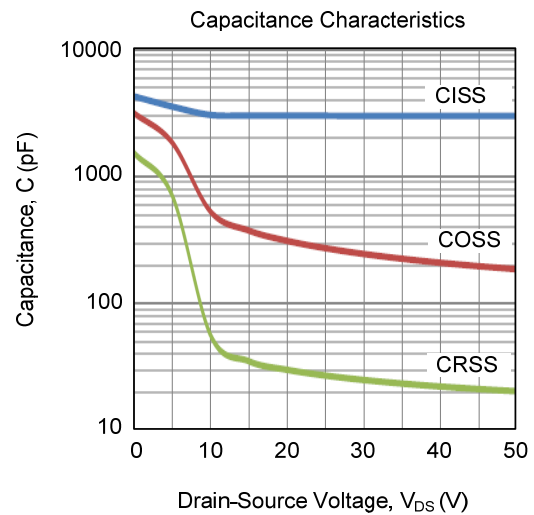
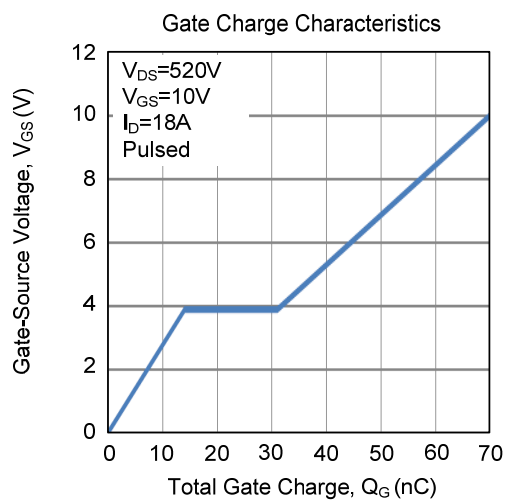
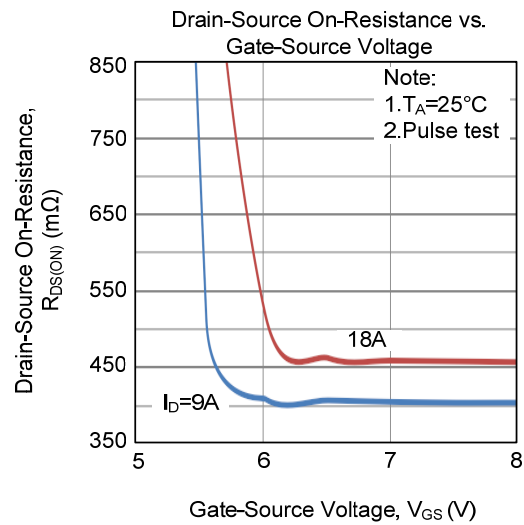
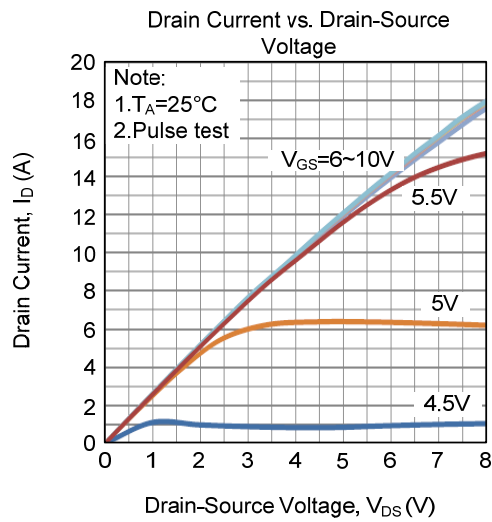
■ ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	650			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=650V, V_{GS}=0V$			25	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 30V$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=9.0A$ (Note)			0.5	$\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		3020		pF
Output Capacitance	$C_{OSS}$			273		pF
Reverse Transfer Capacitance	$C_{RSS}$			27		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	$Q_G$	$V_{DS}=520V, V_{GS}=10V, I_D=18A$ $I_G=1mA$ (Note1,2)		70		nC
Gate Source Charge	$Q_{GS}$			14		nC
Gate Drain Charge	$Q_{GD}$			17		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{GS}=10V, V_{DS}=100V,$ $I_D=18A, R_G=25\Omega$ (External) (Note1,2)		46		ns
Turn-ON Rise Time	$t_R$			27		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			206		ns
Turn-OFF Fall-Time	$t_F$			87		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
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	$t_{rr}$	$V_{GS}=0V, dI_F/dt=100A/\mu s,$		536		ns
Reverse Recovery Charge	$Q_{rr}$	$I_S=18A, V_R=400V$		10		$\mu C$

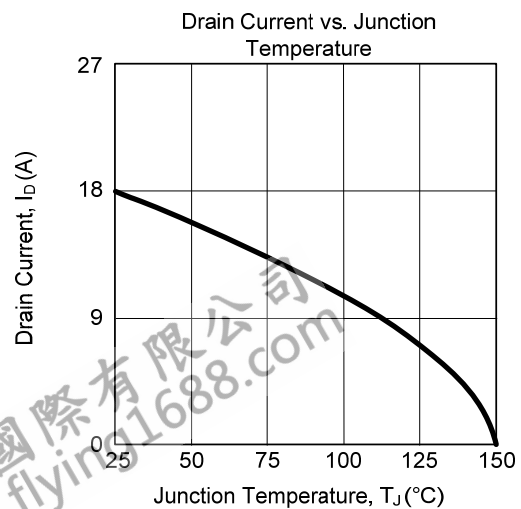
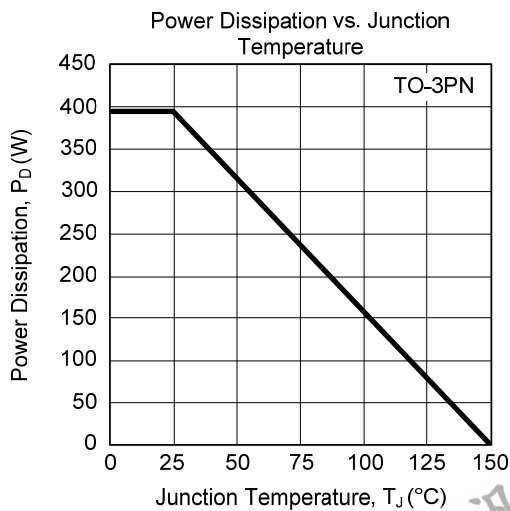
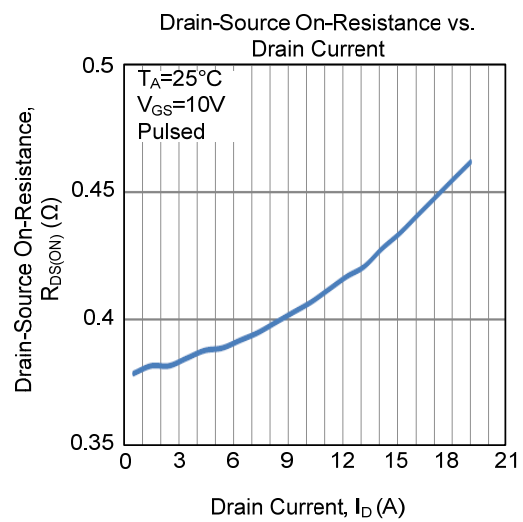
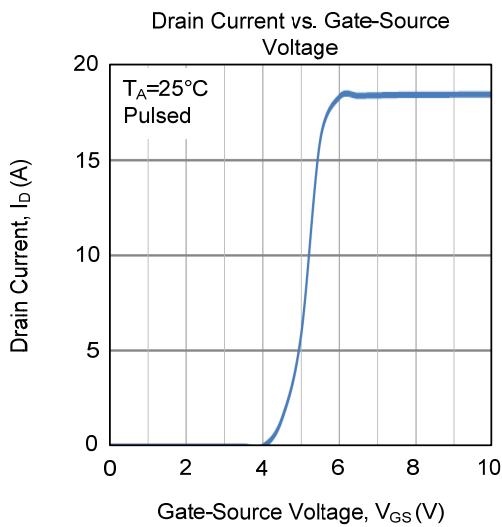
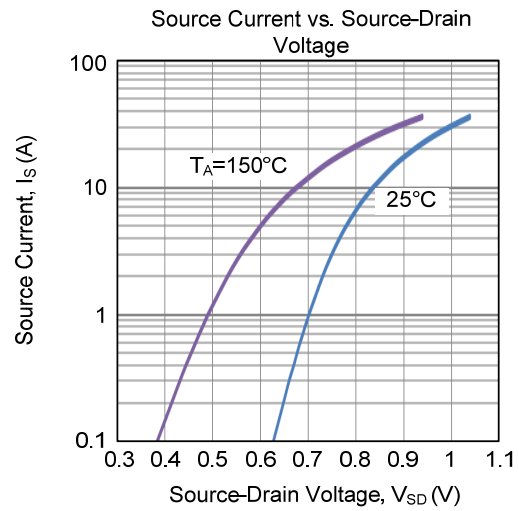
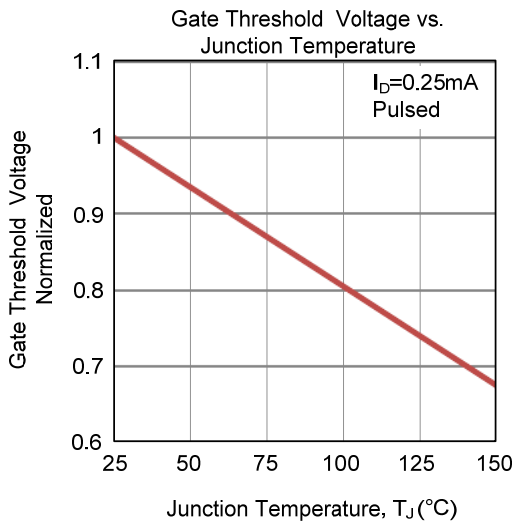
Notes: 1. Pulse Test: Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$ .

2. Essentially independent of operating temperature.

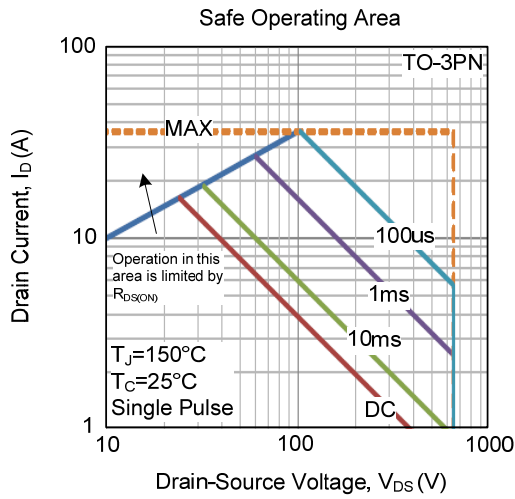
## TYPICAL CHARACTERISTICS



### TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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