



18N65

Power MOSFET

18A, 650V N-CHANNEL POWER MOSFET

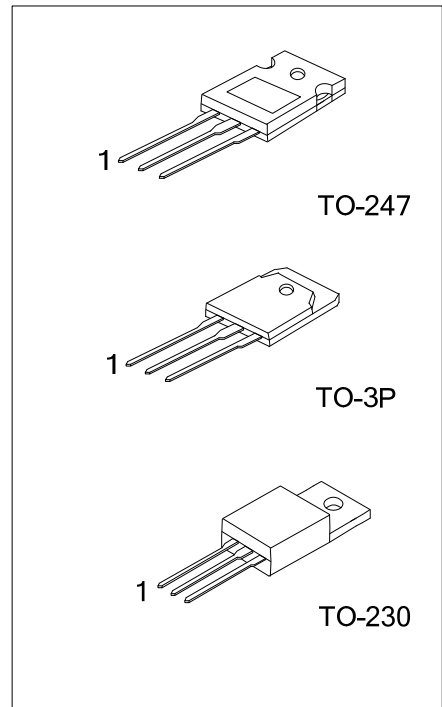
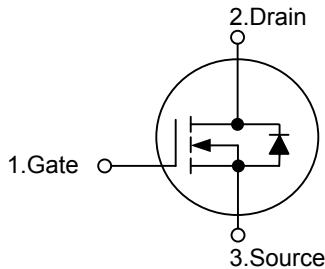
■ DESCRIPTION

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

- * $R_{DS(ON)} \leq 0.5\Omega @ V_{GS} = 10V$
- * Ultra Low Gate Charge (Typical 50nC)
- * Low Reverse Transfer Capacitance ($C_{RSS} =$ Typical 23pF)
- * 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-T47-T	18N65G-T47-T	TO-247	G	D	S	Tube
18N65L-TC3-T	18N65G-TC3-T	TO-230	G	D	S	Tube

<p>18N65L-T3P-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Free</p>	<p>(1) T: Tube</p> <p>(2) T3P:TO-3P, T47: TO-247, TC3: TO-230</p> <p>(3) L: Lead Free, G: Halogen Free</p>
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■ ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	650	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}	1000 (Note 2)	mJ
	Repetitive	E_{AR}	30	
Peak Diode Recovery dv/dt		dv/dt	10	V/ns
Power Dissipation	TO-3P	P_D	390	W
	TO-247		357	W
	TO-230		360	W
Junction Temperature		T_J	150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55 ~ +150	$^\circ\text{C}$

Note: 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. $L=6.18\text{mH}$, $I_{AS}=18\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$

■ THERMAL DATA

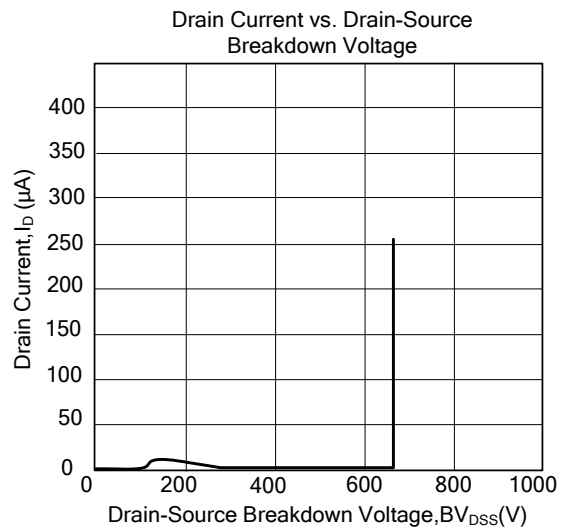
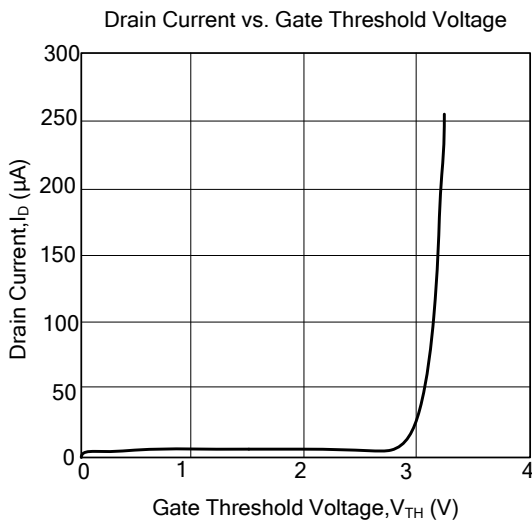
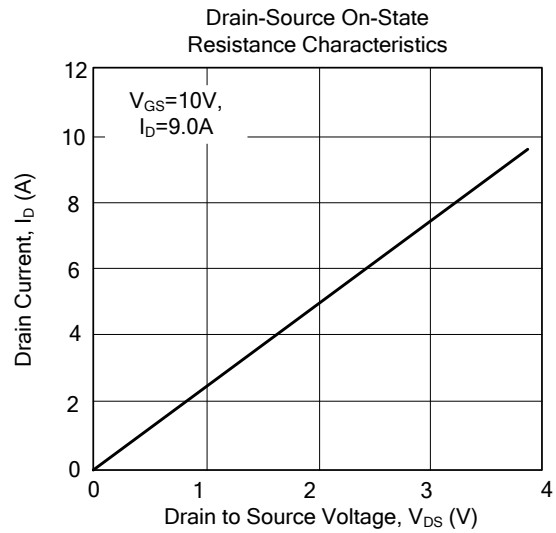
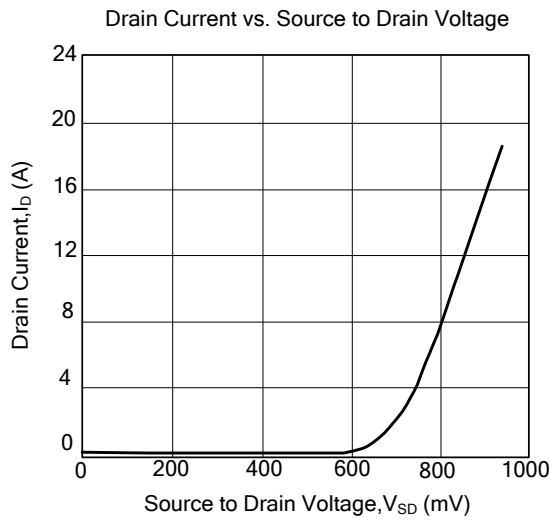
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-3P	θ_{JA}	30	$^\circ\text{C/W}$
	TO-247		40	$^\circ\text{C/W}$
	TO-230		62.5	$^\circ\text{C/W}$
Junction to Case	TO-3P	θ_{JC}	0.32	$^\circ\text{C/W}$
	TO-247		0.35	$^\circ\text{C/W}$
	TO-230		0.5	$^\circ\text{C/W}$

■ ELECTRICAL CHARACTERISTICS (T_J =25°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 =250μA	650			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V			25	μA
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±30V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	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		2500		pF
Output Capacitance	C _{OSS}			280		pF
Reverse Transfer Capacitance	C _{RSS}			23		pF
SWITCHING PARAMETERS						
Turn-ON Delay Time	t _{D(ON)}	V _{GS} =10V, V _{DS} =0.5V _{DSS} , I _D =18A, R _G =5Ω (External)		21		ns
Turn-ON Rise Time	t _R			60		ns
Turn-OFF Delay Time	t _{D(OFF)}			62		ns
Turn-OFF Fall-Time	t _F			60		ns
Total Gate Charge	Q _G	V _{GS} =10V, V _{DS} =0.8V _{DSS} , I _D =18A		50		nC
Gate Source Charge	Q _{GS}			15		nC
Gate Drain Charge	Q _{GD}			18		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V _{SD}	I _F =I _S , V _{GS} =0V (Note)			1.5	V
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
Reverse Recovery Time	t _{rr}	V _{GS} =0V, dI _F /dt=100A/μs, I _S =18A, V _R =100V			200	ns
Reverse Recovery Charge	Q _{RR}				0.8	μC

Note: Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

TYPICAL CHARACTERISTICS



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