

18N65

Power MOSFET

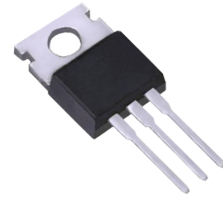
18A, 650V N-CHANNEL POWER MOSFET

■ DESCRIPTION

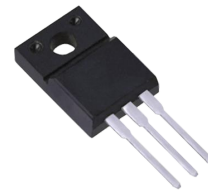
The UTC **18N65** uses UTC's advanced proprietary, planar stripe, DMOS technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

■ FEATURES

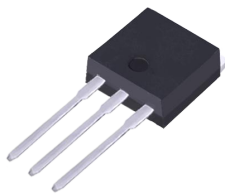
- * $R_{DS(ON)} \leq 0.5\Omega$ @ $V_{GS}=10V$, $I_D=9.0A$
- * Fast Switching Capability
- * Avalanche Energy Specified
- * Improved dv/dt Capability, High Ruggedness



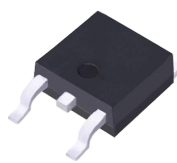
TO-220



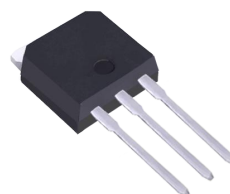
TO-220F



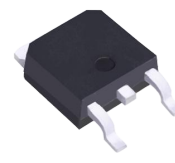
TO-262



TO-263



TO-251



TO-252

■ ABSOLUTE MAXIMUM RATINGS (T_C =25°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 Energy	Single Pulsed	E _{AS}	938 (Note 2)	mJ
Peak Diode Recovery dv/dt		dv/dt	10	V/ns
Power Dissipation	TO-3P/TO-3PN	P _D	390	W
	TO-247		357	W
Junction Temperature		T _J	+150	°C
Storage Temperature		T _{STG}	-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_{AS}=13.7A, V_{DD}=50V, R_G=25Ω, Starting T_J=25°C

■ THERMAL CHARACTERISTICS

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

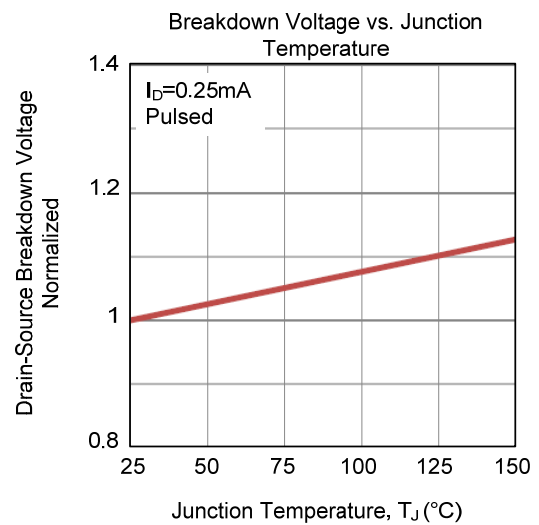
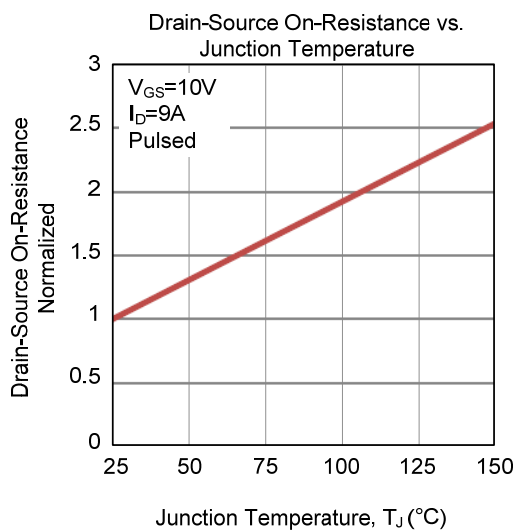
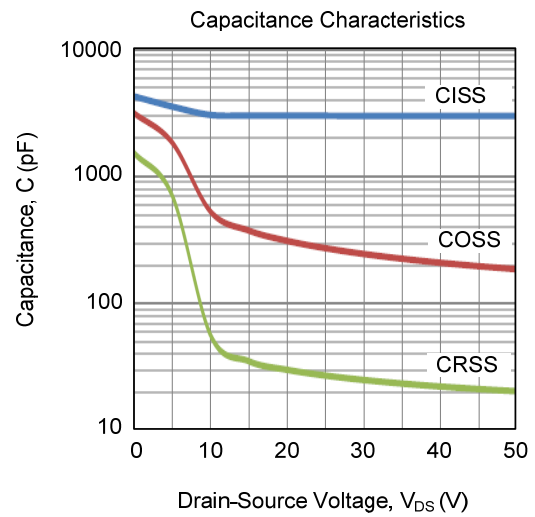
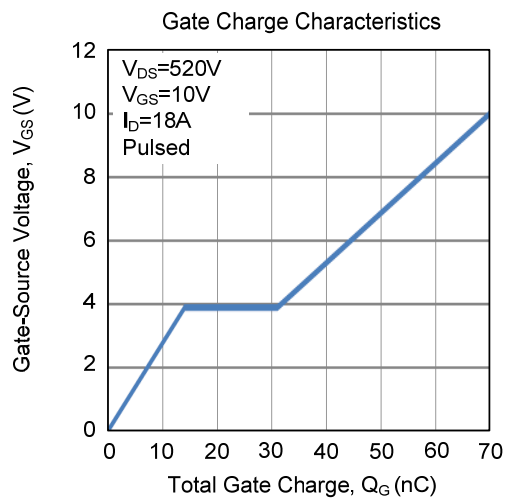
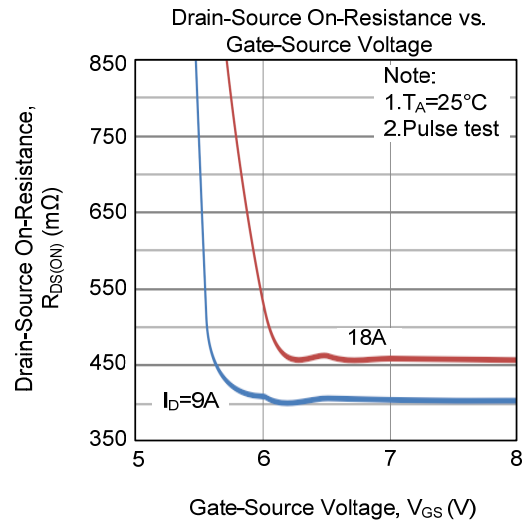
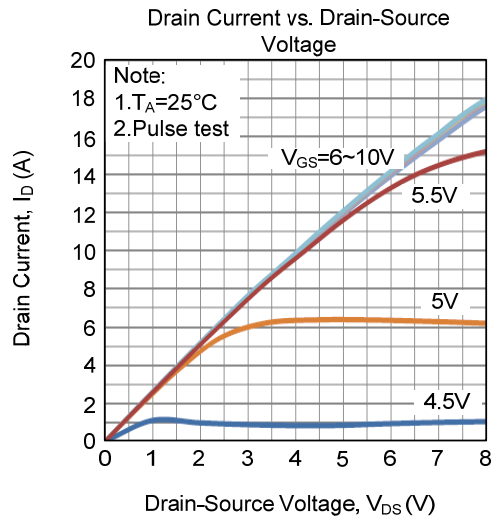
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

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 =9.0A (Note)			0.5	Ω
DYNAMIC PARAMETERS						
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
SWITCHING PARAMETERS						
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 =25Ω (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
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/μs, I _S =18A, V _R =400V		536		ns
Reverse Recovery Charge	Q _{rr}				10	

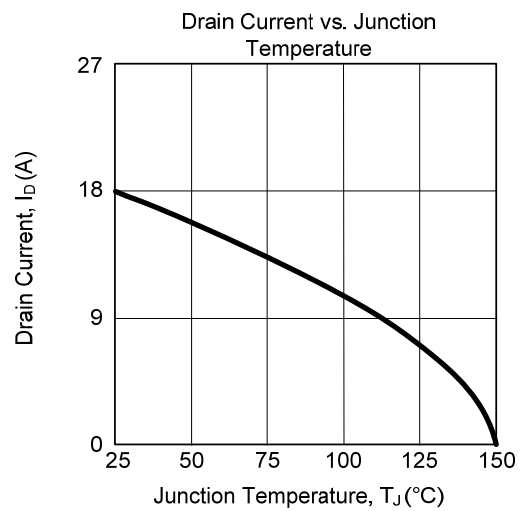
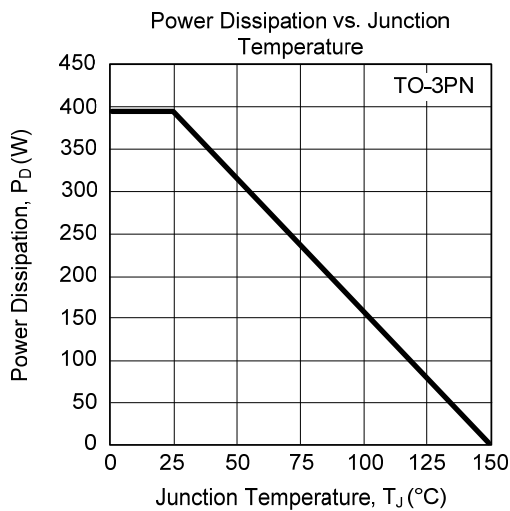
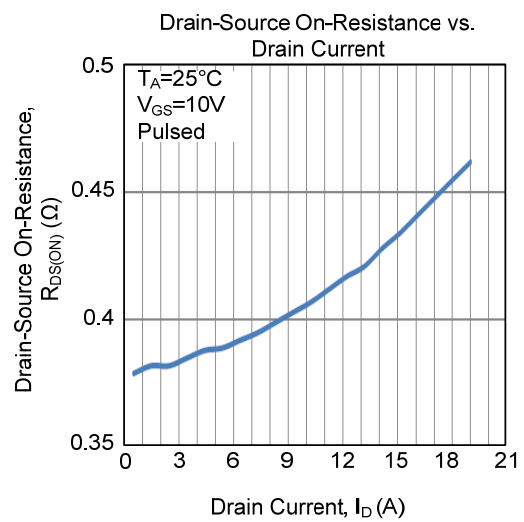
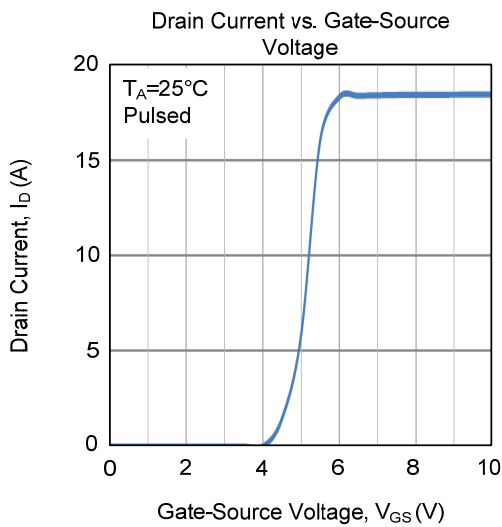
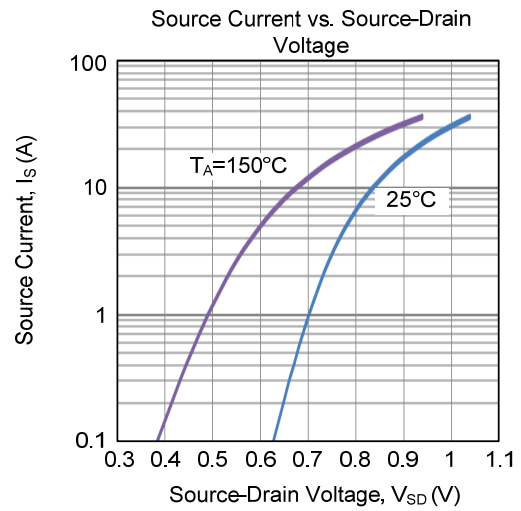
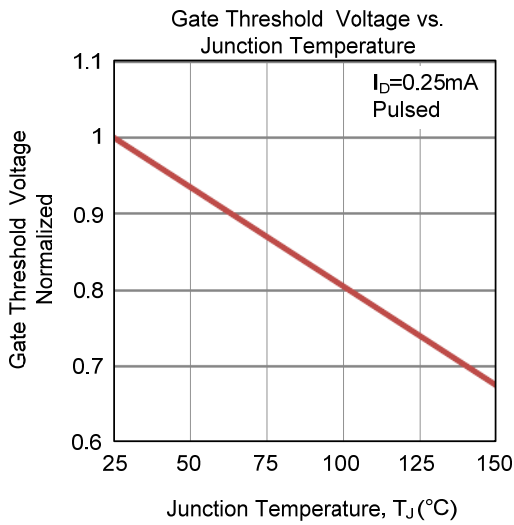
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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