



## 18N40

Power MOSFET

### 400V N-CHANNEL POWER MOSFET

#### DESCRIPTION

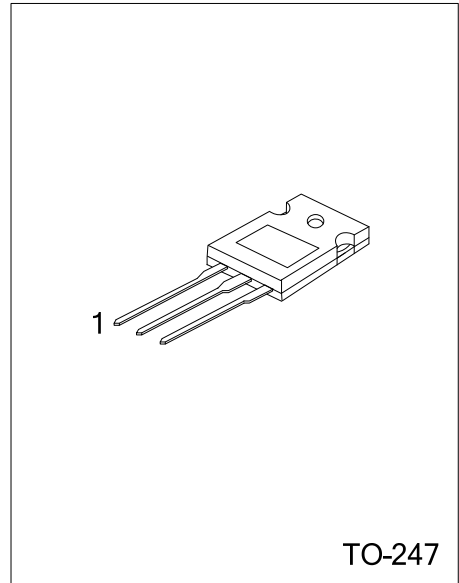
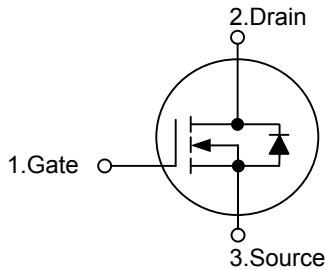
The UTC **18N40** is a 400V N-channel Power MOSFET, providing customers with perfect  $R_{DS(ON)}$ , low gate charge and operation with low gate voltages.

The UTC **18N40** is generally used as a load switch or applied in PWM applications.

#### FEATURES

- \*  $R_{DS(ON)} \leq 408m\Omega @ V_{GS} = 10V$
- \* Ultra Low Gate Charge: 50nC (TYP.)
- \* Low Reverse Transfer (  $C_{RSS} = \text{typical } 23pF$  )
- \* Fast Switching Speed
- \* 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	
18N40L-T47-T	18N40G-T47-T	TO-247	G	D	S	Tube

<p>18N40G-T47-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Halogen Free</p>	<p>(1) T: Tube</p> <p>(2) T47: TO-247</p> <p>(3) G: Halogen Free</p>
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■ ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub> =25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V <sub>DSS</sub>	400	V
Gate-Source Voltage	V <sub>GSS</sub>	±30	V
Drain Current	Continuous	I <sub>D</sub>	18
	Pulsed	I <sub>DM</sub>	45
Avalanche Current	I <sub>AR</sub>	18	A
Avalanche Energy	Single Pulsed	E <sub>AS</sub>	1000
	Repetitive	E <sub>AR</sub>	30
Peak Diode Recovery dv/dt	dv/dt	10	V/ns
Power Dissipation	P <sub>D</sub>	360	W
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	°C

Note: 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.

■ THERMAL DATA

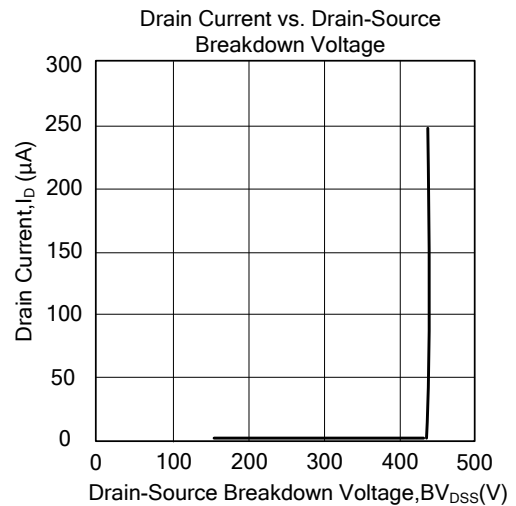
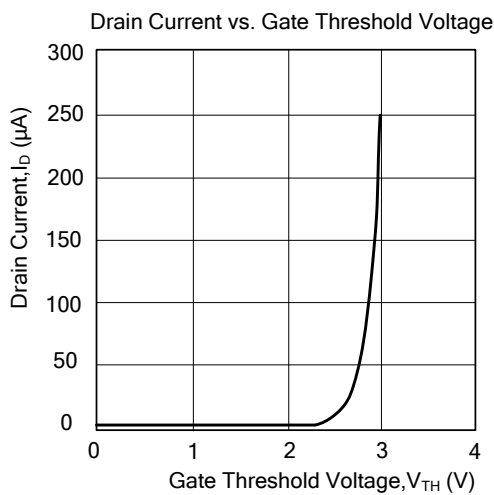
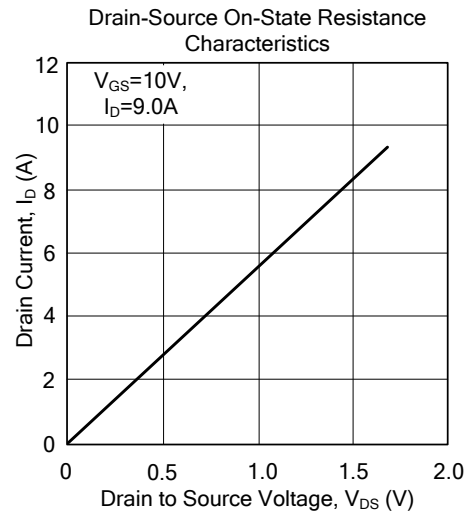
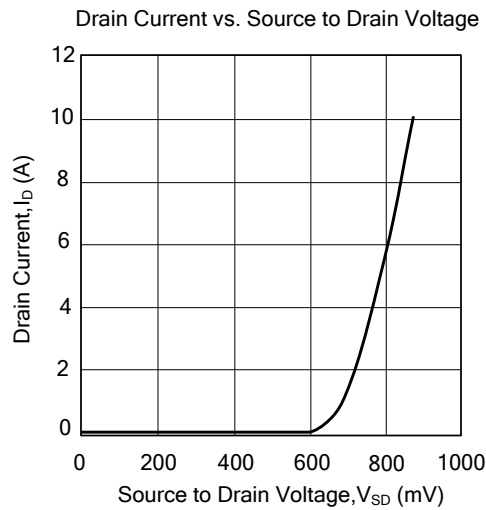
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case	θ <sub>JC</sub>	0.35	°C/W

■ ELECTRICAL CHARACTERISTICS (T<sub>J</sub> =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	400			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =400V, V <sub>GS</sub> =0V			25	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±30V			±100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	2.0		4.0	V
Static Drain-Source On-Resistance	R <sub>DSON</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =9A (Note)			200	mΩ
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz		2500		pF
Output Capacitance	C <sub>OSS</sub>			280		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			23		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	Q <sub>G</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =0.5V <sub>DSS</sub> , I <sub>D</sub> =18A, R <sub>G</sub> =5Ω (External)		50		nC
Gate Source Charge	Q <sub>GS</sub>			15		nC
Gate Drain Charge	Q <sub>GD</sub>			18		nC
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =0.5V <sub>DSS</sub> , I <sub>D</sub> =9A		21		ns
Turn-ON Rise Time	t <sub>R</sub>			22		ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			62		ns
Turn-OFF Fall-Time	t <sub>F</sub>			22		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	I <sub>F</sub> =I <sub>S</sub> , V <sub>GS</sub> =0V (Note)			1.5	V
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>	V <sub>GS</sub> =0V			18	A
Maximum Pulsed Drain-Source Diode Forward Current	I <sub>SM</sub>	Repetitive			54	A
Reverse Recovery Time	t <sub>RR</sub>	V <sub>GS</sub> =0V, dI <sub>F</sub> /dt=100A/μs,			200	ns
Reverse Recovery Charge	Q <sub>RR</sub>	I <sub>S</sub> =18A, V <sub>R</sub> =100V		0.8		μC

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

## TYPICAL CHARACTERISTICS



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