



20N60

Power MOSFET

20A, 600V N-CHANNEL POWER MOSFET

DESCRIPTION

The UTC **20N60** is an N-channel enhancement mode power MOSFET using UTC's advanced technology to provide customers with planar stripe and DMOS technology. This technology is specialized in allowing a minimum on-state resistance and superior switching performance. It also can withstand high energy pulse in the avalanche and commutation mode.

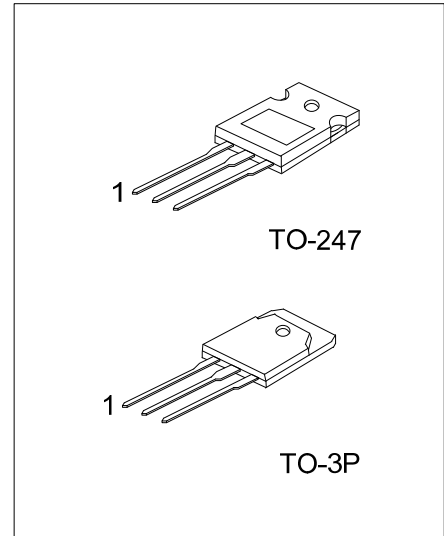
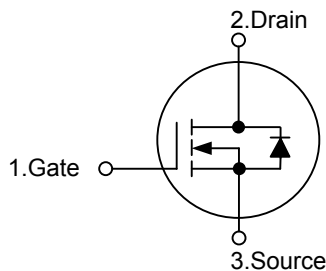
The UTC **20N60** is universally applied in motor control, UPS, DC choppers and switch-mode and resonant-mode power supplies.

FEATURES

* $R_{DS(ON)} < 0.45\Omega$ @ $V_{GS}=10V$, $I_D=10A$

* High switching speed

SYMBOL



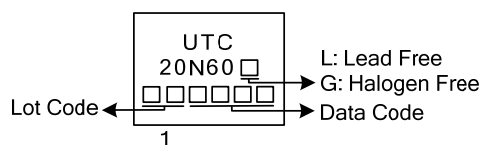
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
20N60L-T47-T	20N60G-T47-T	TO-247	G	D	S	Tube
20N60L-T3P-T	20N60G-T3P-T	TO-3P	G	D	S	Tube

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

20N60L-T47-T (1) Packing Type (2) Package Type (3) Green Package	(1) T: Tube (2) T47: TO-247, T3P: TO-3P (3) L: Lead Free, G: Halogen Free and Lead Free
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MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DS}	600	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current	Continuous	I_D	20	A
	Pulsed	I_{DM}	80	A
Avalanche Energy	Single Pulsed(Note 2)	E_{AS}	1200	mJ
Power Dissipation	TO-247	P_D	370	W
	TO-3P		416	
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. $V_{DD}=50\text{V}$, Starting $T_J=25^\circ\text{C}$, Peak $I_{AS}=20\text{A}$, $L=6\text{mH}$

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-247	θ_{JA}	40	$^\circ\text{C/W}$
	TO-3P		30	
Junction to Case	TO-247	θ_{JC}	0.34	$^\circ\text{C/W}$
	TO-3P		0.3	

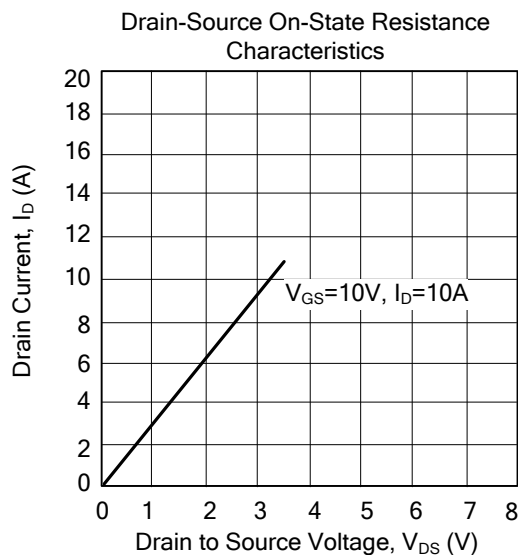
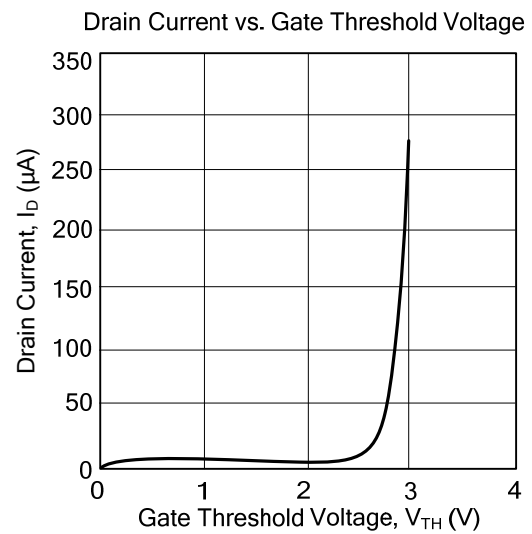
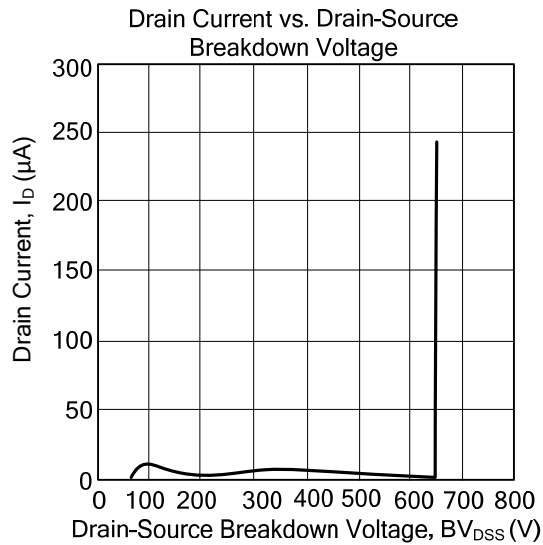
■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	600			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =600V, V _{GS} =0V			10	μA
Gate- Source Leakage Current	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+100	nA
	Reverse		V _{GS} =-20V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2		4.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =10A, Pulse test, t≤300μs, duty cycle d≤2%		0.32	0.45	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1MHz		4500		pF
Output Capacitance		C _{OSS}			330		pF
Reverse Transfer Capacitance		C _{RSS}			140		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{GS} =10V, V _{DS} =300V, I _D =10A (Note 1, 2)			170	nC
Gate to Source Charge		Q _{GS}				40	nC
Gate to Drain Charge		Q _{GD}				85	nC
Turn-ON Delay Time		t _{D(ON)}	V _{GS} =10V, V _{DS} =300V, I _D =10A,R _G =2Ω, (Note 1, 2)		110	40	ns
Rise Time		t _R			130	60	ns
Turn-OFF Delay Time		t _{D(OFF)}			800	90	ns
Fall-Time		t _F			170	60	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S	V _{GS} =0V			20	A
Maximum Body-Diode Pulsed Current		I _{SM}	Repetitive			80	A
Drain-Source Diode Forward Voltage		V _{SD}	I _F =I _S , V _{GS} =0V, Pulse test, t≤300μs, duty cycle d≤2%			1.5	V
Body Diode Reverse Recovery Time		t _{rr}	I _F =I _S ,V _R =100V,-di/dt=100A/μs(Note 1)		600		ns

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

2. Essentially independent of operating temperature

■ TYPICAL CHARACTERISTICS



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