



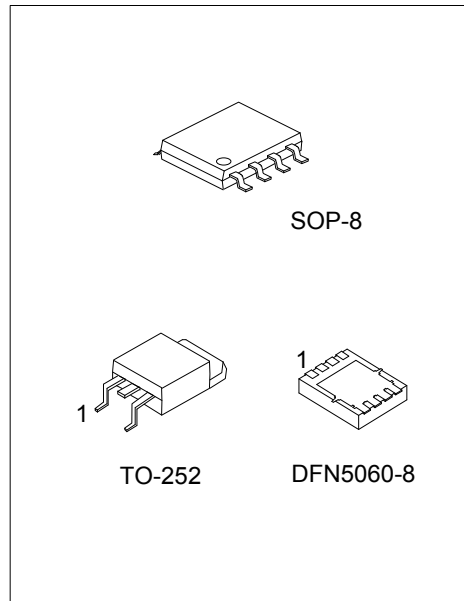
# UT20N03

*Power MOSFET*

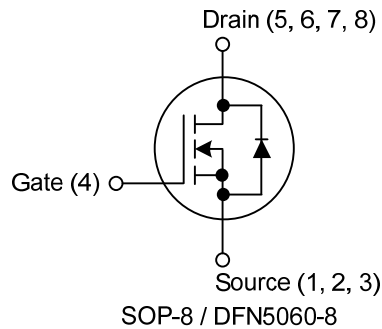
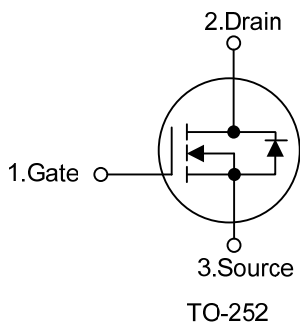
## N-CHANNEL ENHANCEMENT MODE

■ FEATURES

- \*  $R_{DS(ON)} \leq 20m\Omega$  @  $V_{GS}=10V, I_D=15A$
- \* Low capacitance
- \* Optimized gate charge
- \* Fast switching capability
- \* Avalanche energy specified



■ SYMBOL



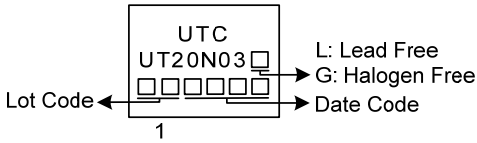
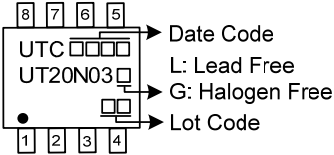
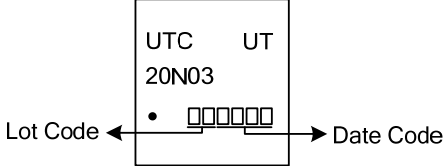
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT20N03L-TN3-R	UT20N03G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UT20N03L-S08-R	UT20N03G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UT20N03L-K08-5060-R	UT20N03G-K08-5060-R	DFN5060-8	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UT20N03G-TN3-R</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) TN3: TO-252, S08: SOP-8, K08-5060: DFN5060-8</li> <li>(3) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
-----------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

MARKING

Package	Marking
TO-252	 <p>UTC UT20N03 Lot Code → [ ] [ ] [ ] [ ] [ ] → Date Code 1</p> <p>L: Lead Free G: Halogen Free</p>
SOP-8	 <p>8 7 6 5 UTC [ ] [ ] [ ] [ ] → Date Code UT20N03 [ ] [ ] → L: Lead Free [ ] [ ] → G: Halogen Free [ ] [ ] → Lot Code 1 2 3 4</p>
DFN5060-8	 <p>UTC UT 20N03 Lot Code → [ ] [ ] [ ] [ ] [ ] → Date Code</p>

FLYING 汎翔國際有限公司  
[www.flying1688.com](http://www.flying1688.com)

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	30	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Continuous Drain Current		$I_D$	20	A
Pulsed Drain Current (Note 1)		$I_{DM}$	120	
Avalanche Energy	Single Pulsed (Note 2)	$E_{AS}$	15	mJ
	Repetitive (Note 1)	$E_{AR}$	6	
Peak Diode Recovery (Note 3)		dv/dt	6	KV/ $\mu\text{s}$
Power Dissipation	TO-252	$P_D$	60	W
	SOP-8		1.6	W
	DFN5060-8		21	W
Junction Temperature		$T_J$	+175	$^{\circ}\text{C}$
Storage Temperature		$T_{STG}$	-55 ~ +175	$^{\circ}\text{C}$

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 CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-252	$\theta_{JA}$	100	$^{\circ}\text{C}/\text{W}$
	SOP-8		90	$^{\circ}\text{C}/\text{W}$
	DFN5060-8		46	$^{\circ}\text{C}/\text{W}$
Junction to Case	TO-252	$\theta_{JC}$	2.5	$^{\circ}\text{C}/\text{W}$
	SOP-8		78	$^{\circ}\text{C}/\text{W}$
	DFN5060-8		6	$^{\circ}\text{C}/\text{W}$

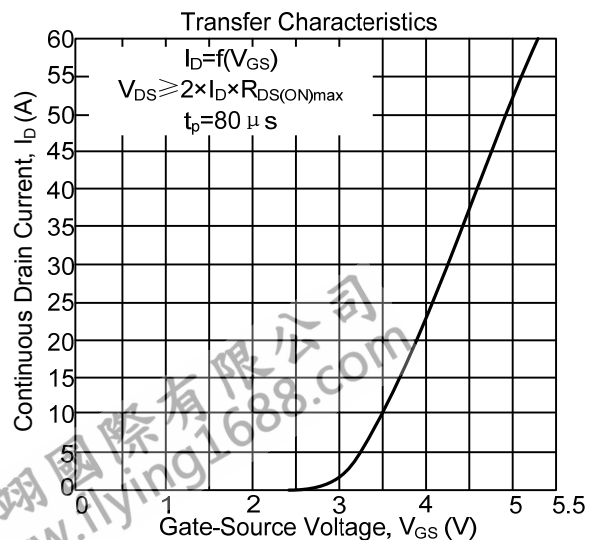
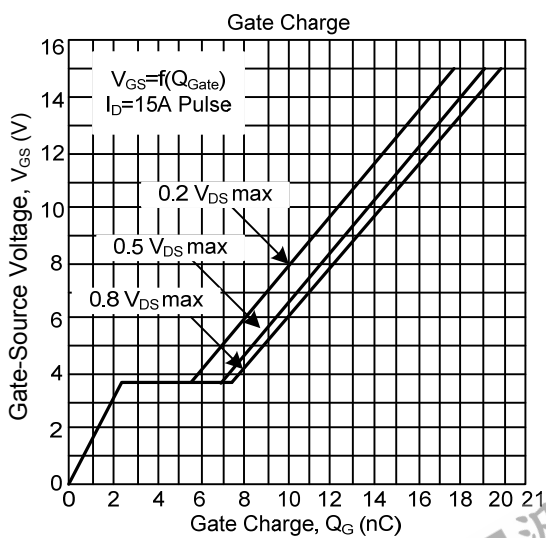
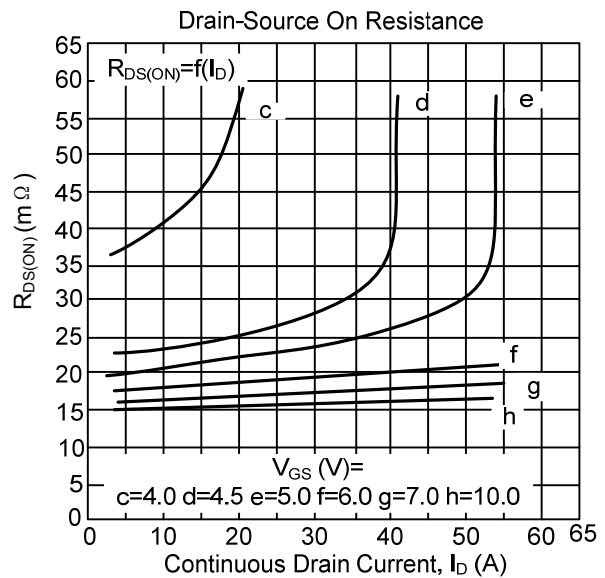
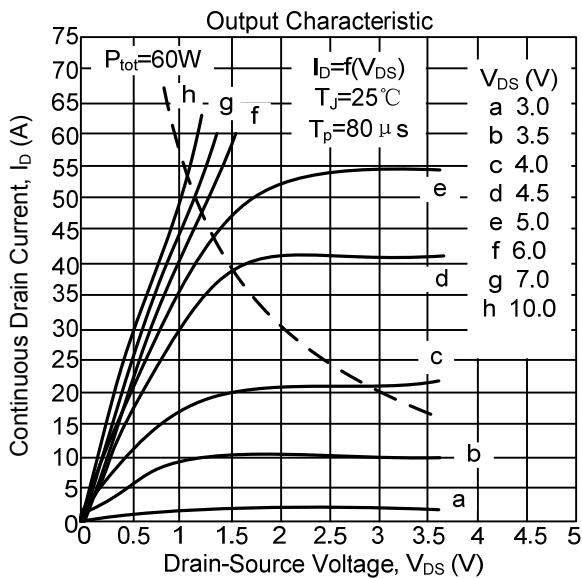
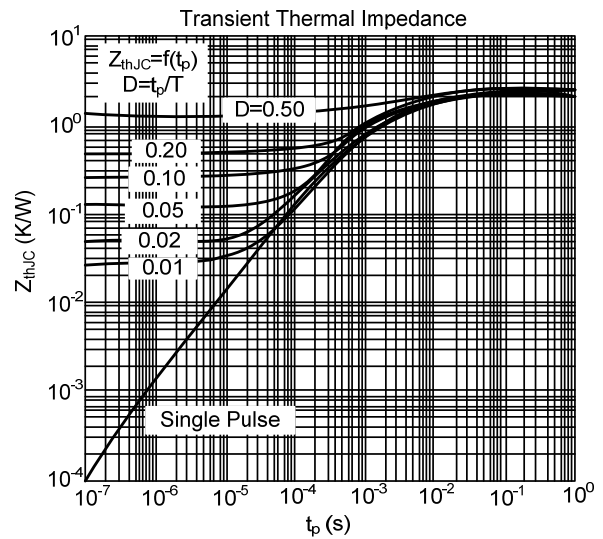
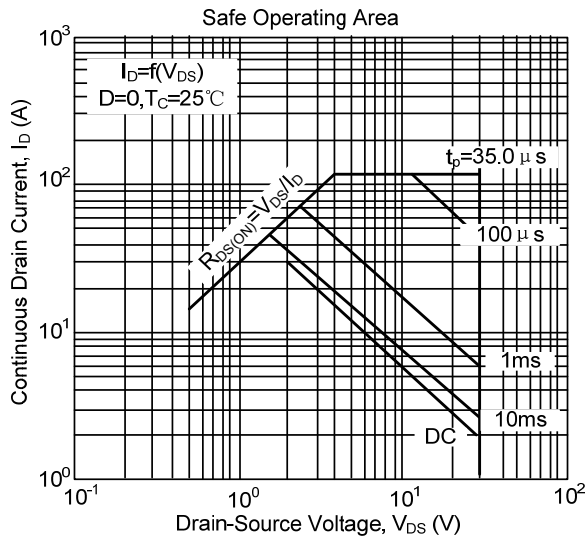
Note: The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.

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

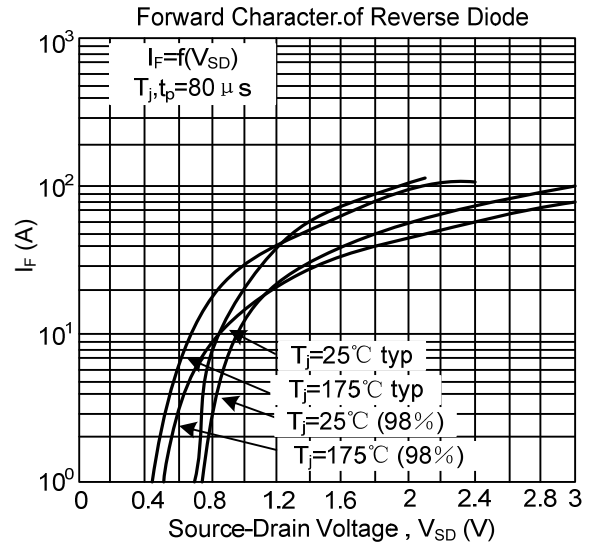
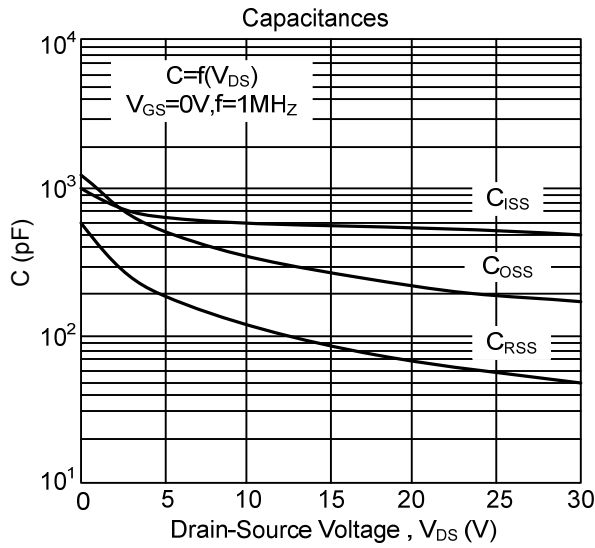
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	30			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}$			1	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{V}$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate-Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = 25\mu\text{A}$	1.2	1.6	2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = 4.5\text{V}, I_D = 15\text{A}$		22.9	31	m $\Omega$
		$V_{GS} = 10\text{V}, I_D = 15\text{A}$		15.5	20	
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		530	700	pF
Output Capacitance	$C_{OSS}$			200	275	
Reverse Transfer Capacitance	$C_{RSS}$			60	90	
<b>SWITCHING CHARACTERISTICS</b>						
Gate-Source Charge	$Q_{GS}$	$V_{DD} = 15\text{V}, I_D = 15\text{A}$		2.5	3.1	nC
Gate-Drain Charge	$Q_{GD}$			6.4	9.6	
Gate Charge Total	$Q_G$	$V_{DD} = 15\text{V}, I_D = 15\text{A}, V_{GS} = 0\sim 5\text{V}$		8.4	11	
Turn-On Delay Time	$t_{D(ON)}$	$V_{GS} = 10\text{V}, V_{DD} = 15\text{V}, R_G = 12.7\Omega, I_D = 15\text{A}$		6.2	9.3	ns
Turn-On Rise Time	$t_R$			11	17	
Turn-Off Delay Time	$t_{D(OFF)}$			23	24	
Turn-Off Fall-Time	$t_F$			18	27	
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$				30	A
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$				120	
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS} = 0\text{V}, I_F = 30\text{A}$		1.1	1.4	V
Reverse Recovery Time	$t_{rr}$	$V_R = 15\text{V}, I_F = I_S, di/dt = 100\text{A}/\mu\text{s}$		15	18	ns
Reverse Recovery Charge	$Q_{rr}$				2	3

- Notes:
1. Repetitive Rating : Pulse width limited by maximum junction temperature
  2.  $I_D = 15\text{A}, V_{DD} = 25\text{V}, R_G = 25\Omega$ , Starting  $T_J = 25^\circ\text{C}$
  3.  $I_S = 30\text{A}, V_{DS} = 24\text{V}, di/dt = 200\text{A}/\mu\text{s}, T_{J(MAX)} = 175^\circ\text{C}$
  4. Pulse Test: Pulse width  $\leq 300\mu\text{s}$ , Duty cycle  $\leq 2\%$
  5. Essentially independent of operating temperature

## TYPICAL CHARACTERISTICS



### ■ TYPICAL CHARACTERISTICS (Cont.)



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.