



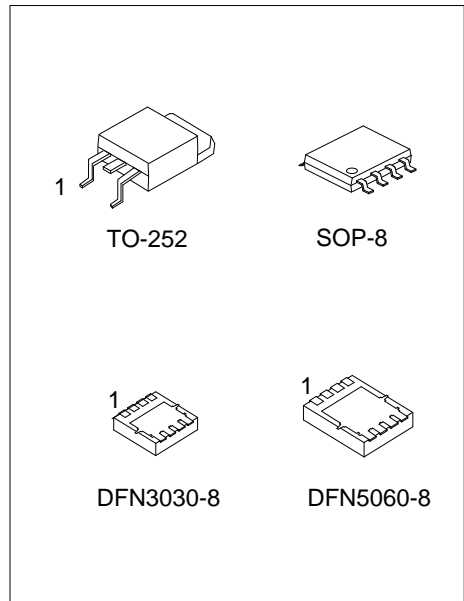
UT20N03

Power MOSFET

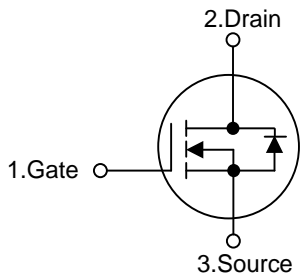
N-CHANNEL ENHANCEMENT MODE

FEATURES

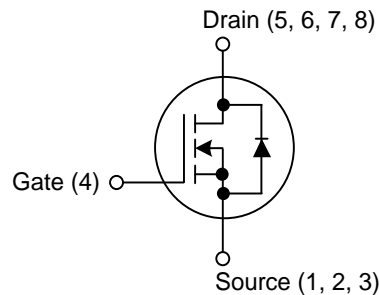
- * $R_{DS(ON)} \leq 20 \text{ m}\Omega$ @ $V_{GS}=10V, I_D = 15A$
- * Low capacitance
- * Optimized gate charge
- * Fast switching capability
- * Avalanche energy specified



SYMBOL



TO-252



SOP-8 / DFN3030-8
DFN5060-8

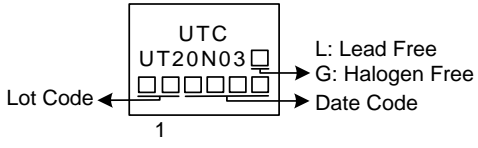
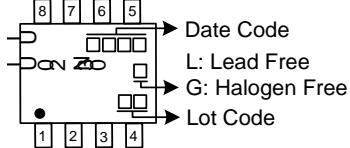
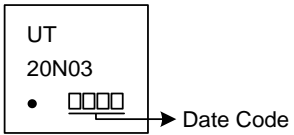
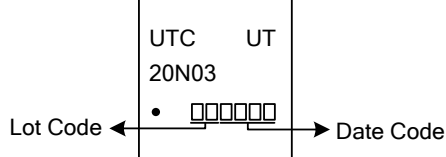
ORDERING INFORMATION

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-K08-3030-R	UT20N03G-K08-3030-R	DFN3030-8	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> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) TN3: TO-252, S08: SOP-8, K08-5060: DFN5060-8, K08-3030: DFN3030-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

TO-252	SOP-8
 <p>UTC UT20N03</p> <p>Lot Code ← [] [] [] [] [] →</p> <p>1</p> <p>→ L: Lead Free → G: Halogen Free → Date Code</p>	 <p>8 7 6 5</p> <p>→ Date Code → L: Lead Free → G: Halogen Free → Lot Code</p> <p>1 2 3 4</p>
DFN3030-8	DFN5060-8
 <p>UT 20N03</p> <p>• [] [] [] [] → Date Code</p>	 <p>UTC UT 20N03</p> <p>Lot Code ← [] [] [] [] → Date Code</p>

■ 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}	± 20	V
Continuous Drain Current		I_D	20	A
Pulsed Drain Current (Note 1)		I_{DM}	120	A
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/ μs
Power Dissipation	TO-252	P_D	30	W
	SOP-8		0.8	W
	DFN3030-8		16	W
	DFN5060-8		18	W
Junction Temperature		T_J	+150	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

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 DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-252	θ_{JA}	50	$^{\circ}\text{C}/\text{W}$
	SOP-8		90	$^{\circ}\text{C}/\text{W}$
	DFN3030-8		60	$^{\circ}\text{C}/\text{W}$
	DFN5060-8		65	$^{\circ}\text{C}/\text{W}$
Junction to Case	TO-252	θ_{JC}	4.16	$^{\circ}\text{C}/\text{W}$
	SOP-8		156	$^{\circ}\text{C}/\text{W}$
	DFN3030-8		7.8	$^{\circ}\text{C}/\text{W}$
	DFN5060-8		6.9	$^{\circ}\text{C}/\text{W}$

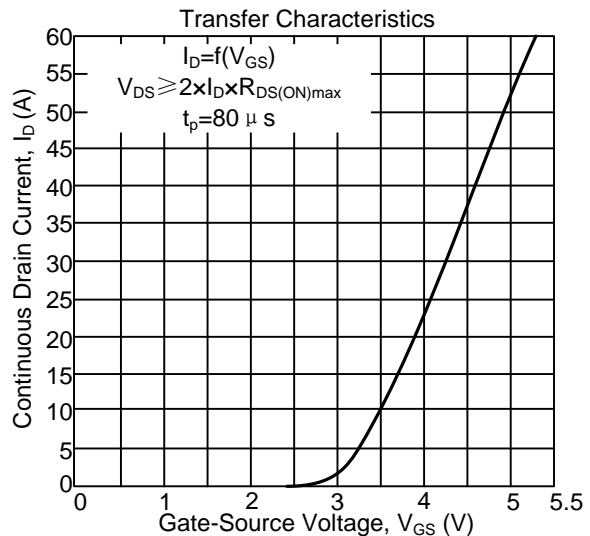
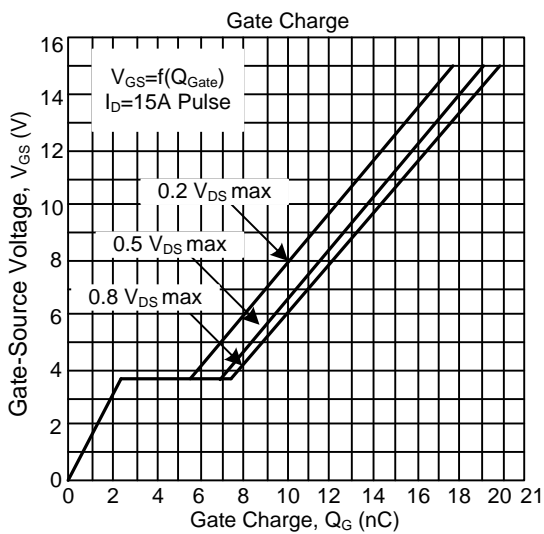
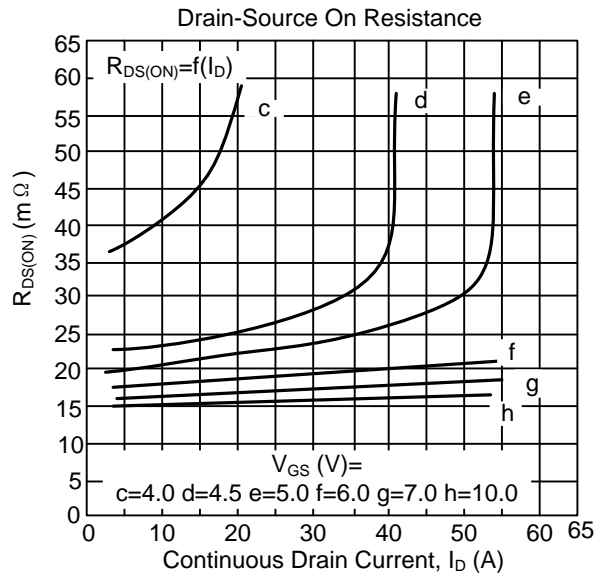
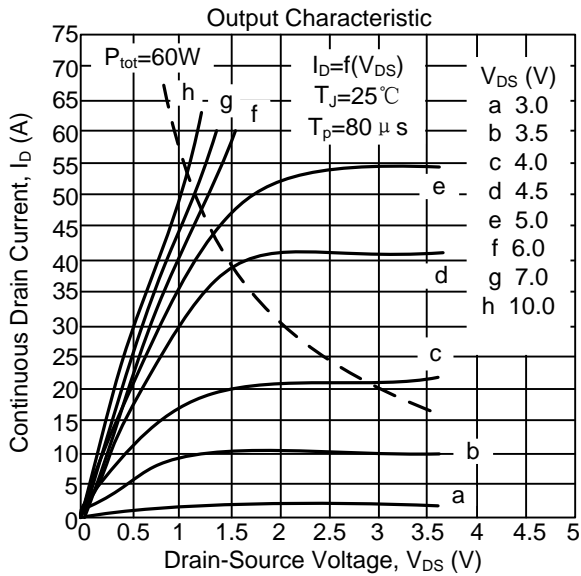
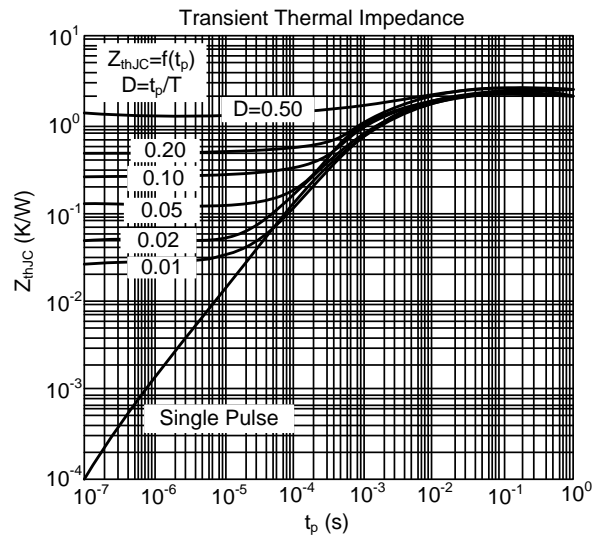
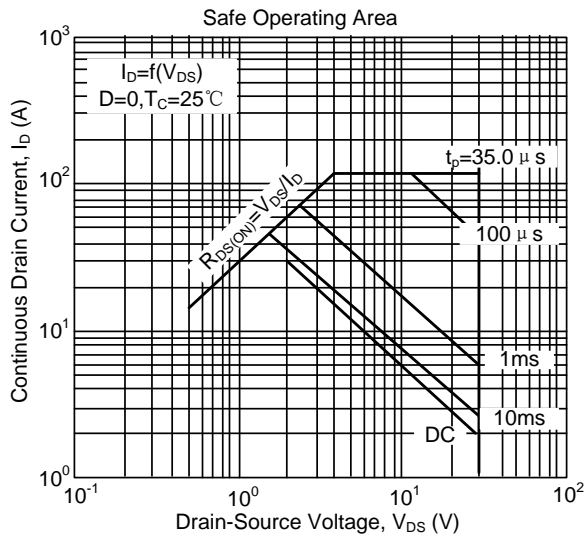
Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

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

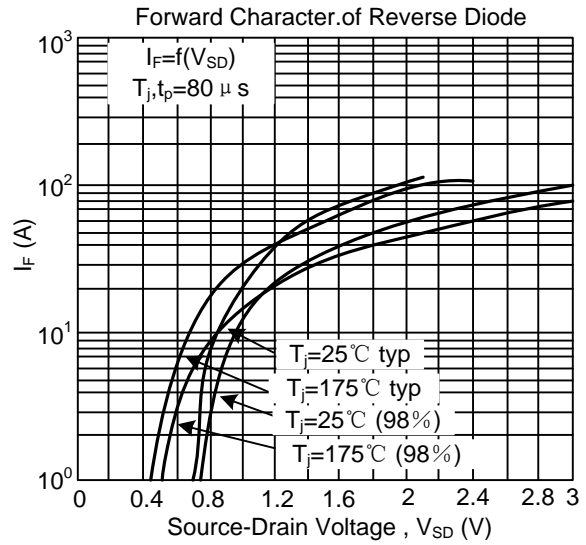
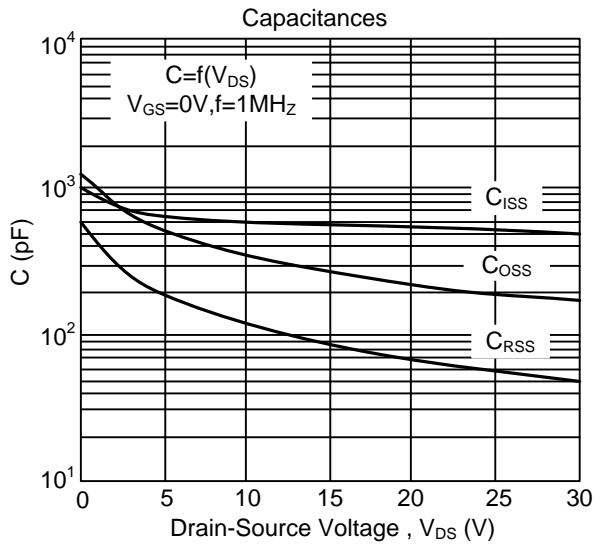
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{V}$			± 100	nA
ON CHARACTERISTICS						
Gate-Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = 25\mu\text{A}$	1.0	1.6	3.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = 4.5\text{V}, I_D = 15\text{A}$		22.9	31	m Ω
		$V_{GS} = 10\text{V}, I_D = 15\text{A}$		15.5	20	
DYNAMIC CHARACTERISTICS						
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		
SWITCHING CHARACTERISTICS						
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		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
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	nC	

- 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.)



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