



UT20N03

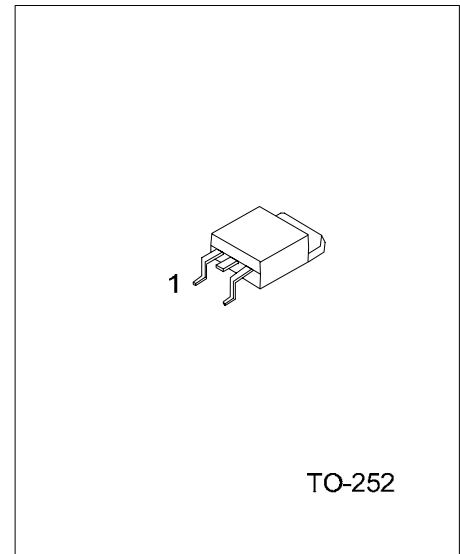
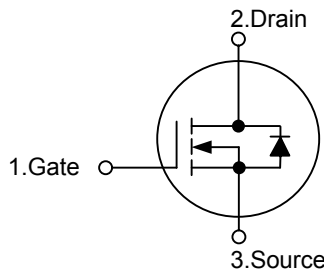
Power MOSFET

N-CHANNEL ENHANCEMENT MODE

■ FEATURES

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

■ SYMBOL



*Pb-free plating product number: UT20N03L

■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
UT20N03-TN3-R	UT20N03L-TN3-R	TO-252	G	D	S	Tape Reel
UT20N03-TN3-T	UT20N03L-TN3-T	TO-252	G	D	S	Tube

<p>UT20N03L-TN3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Plating</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) TN3: TO-252</p> <p>(3) L: Lead Free Plating, Blank: Pb/Sn</p>
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■ 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	
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		P_D	60	W
Junction Temperature		T_J	+175	
Storage Temperature		T_{STG}	-55 ~ +175	

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	MIN	TYP	MAX	UNIT
Junction-to-Ambient	θ_{JA}			100	$^{\circ}\text{C}/\text{W}$
Junction-to-Case	θ_{JC}		1.7	2.5	$^{\circ}\text{C}/\text{W}$

■ 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	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=25\mu\text{A}$	1.2	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 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						
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		
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	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0\text{V}, I_F=30\text{A}$		1.1	1.4	V
Maximum Continuous Drain-Source Diode Forward Current	I_S				30	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				120	
Reverse Recovery Time	t_{RR}	$V_R=15\text{V}, I_F=I_S, di_F/dt=100\text{A}/\mu\text{s}$		15	18	ns
Reverse Recovery Charge	Q_{RR}			2	3	nC

Notes: 1. Repetitive Rating : Pulse width limited by maximum junction temperature

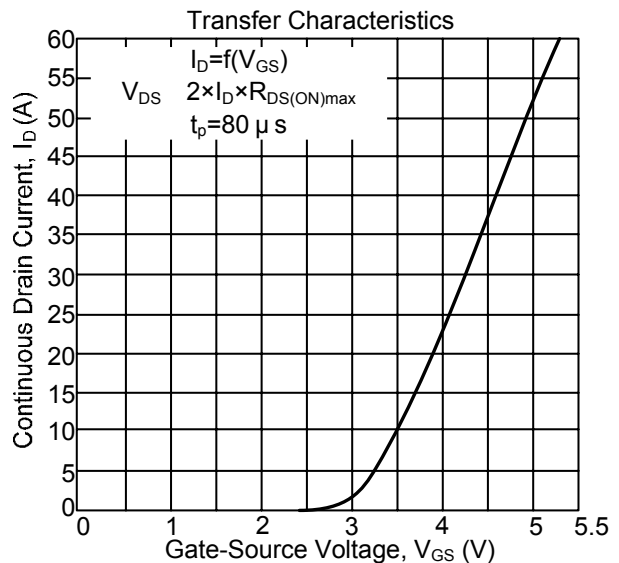
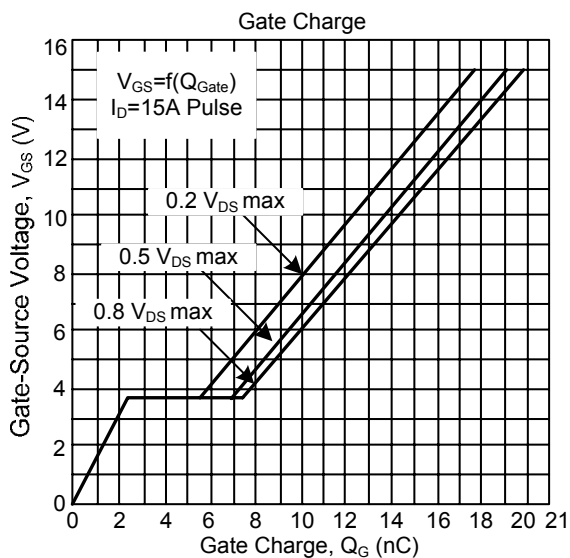
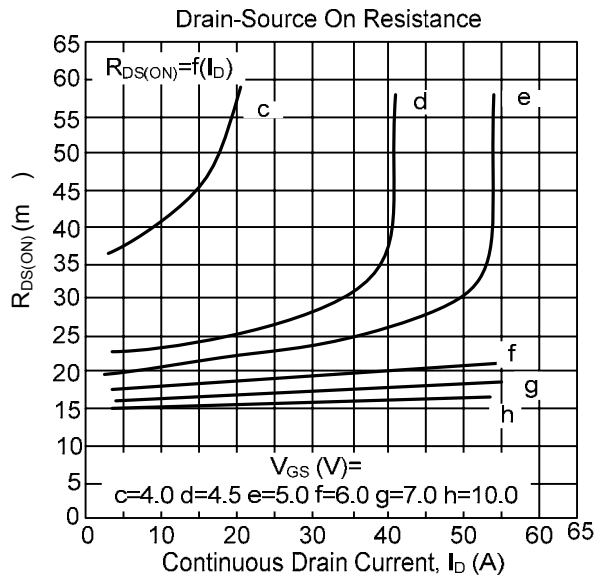
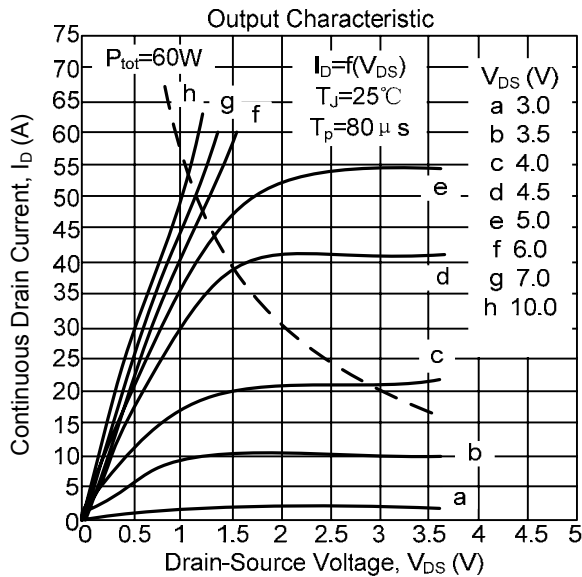
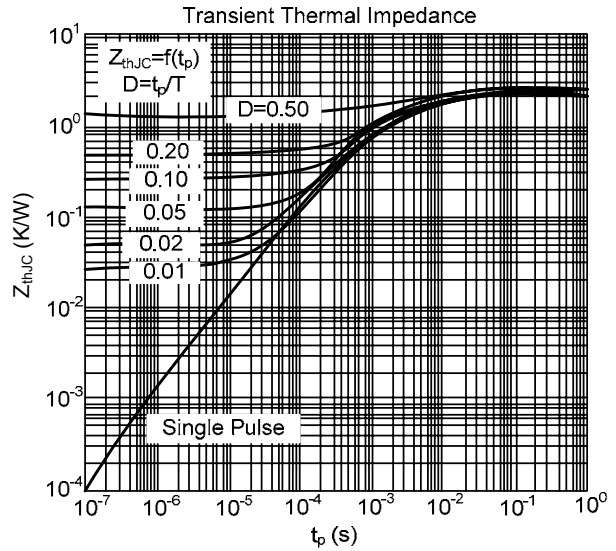
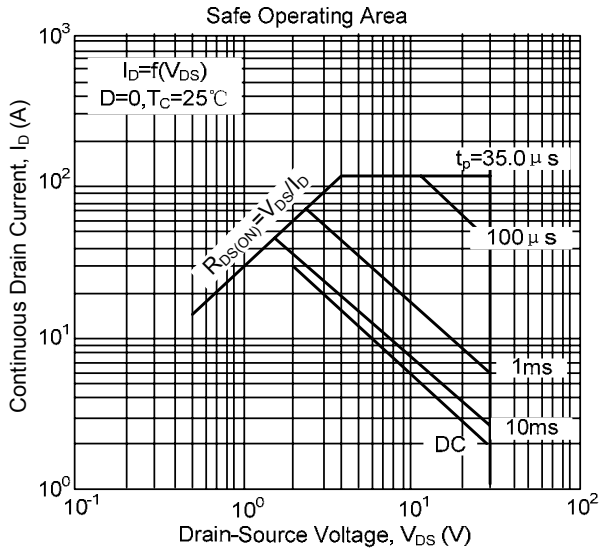
2. $I_D=15\text{A}, V_{DD}=25\text{V}, R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$

3. $I_S=30\text{A}, V_{DS}=24\text{V}, di/dt=200\text{A}/\mu\text{s}, T_{J(MAX)}=175$

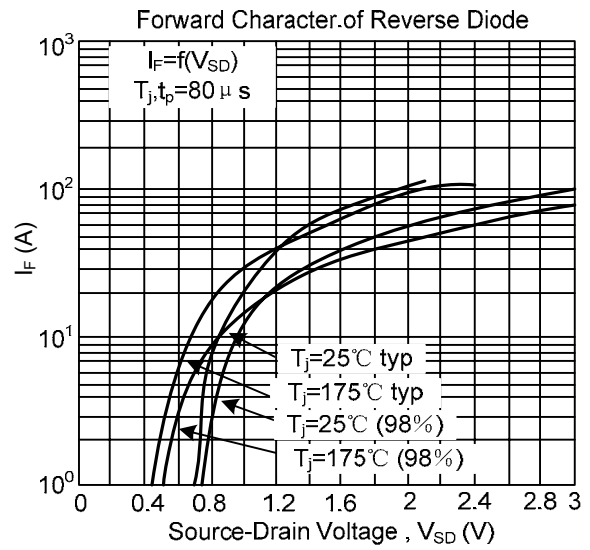
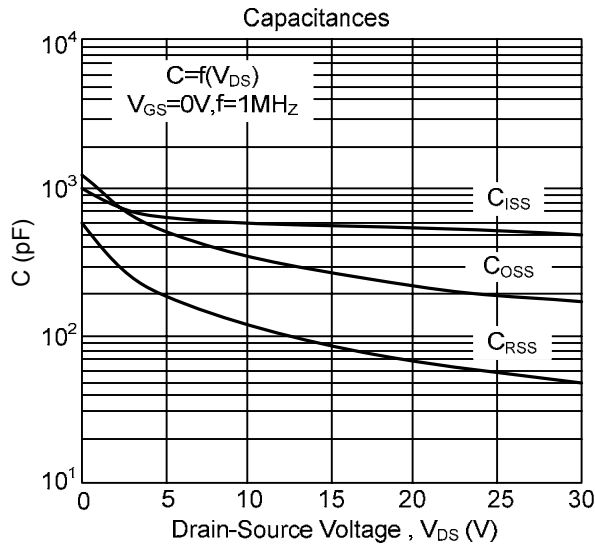
4. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

5. Essentially independent of operating temperature

TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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