



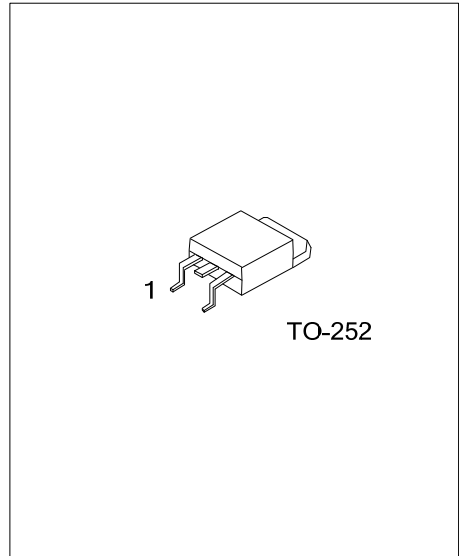
UTD20N03

Power MOSFET

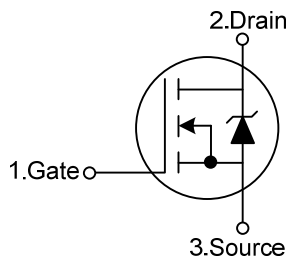
**N-CHANNEL ENHANCEMENT
MODE POWER MOSFET**

■ **FEATURES**

- * Ambient operating temperature: 175°C
- * Low drain-source and low on-resistance
- * Logic level
- * Perfect gate charge × $R_{DS(ON)}$ product
- * Superior thermal resistance
- * Avalanche rated
- * Specified dv/dt
- * For fast switching buck converters



■ **SYMBOL**



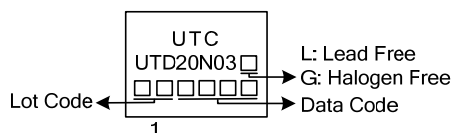
■ **ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTD20N03L-TN3-R	UTD20N03G-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>UTD20N03G-TN3-R</p> <ul style="list-style-type: none"> (1)Packing Type (2)Package Type (3)Green Package 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) TN3: TO-252 (3) G: Halogen Free and Lead Free, L: Lead Free
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■ **MARKING**



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

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	V_{DS}	30	V	
Gate-Source Voltage	V_{GS}	± 20	V	
Continuous Drain Current ($T_C=25^\circ\text{C}$)	I_D	30	A	
Pulsed Drain Current ($T_C=25^\circ\text{C}$)	I_{DM}	120	A	
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	15	mJ
	Repetitive (Note 2)	E_{AR}	6	mJ
Peak Diode Recovery dv/dt (Note 4)	dv/dt	6	kV/ μs	
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	60	W	
Junction Temperature	T_J	+175	$^\circ\text{C}$	
Storage Temperature	T_{STG}	-55 ~ +175	$^\circ\text{C}$	

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

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

4. $I_S = 30\text{ A}$, $V_{DS} = 24\text{ V}$, $di/dt = 100\text{ A}/\mu\text{s}$, $T_{J(\text{MAX})} = 175^\circ\text{C}$

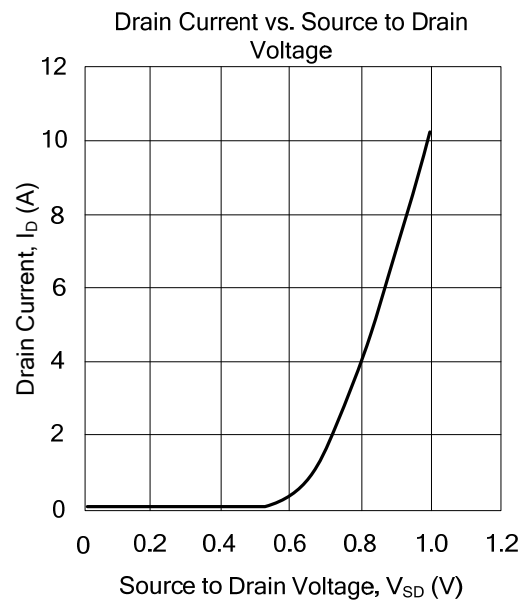
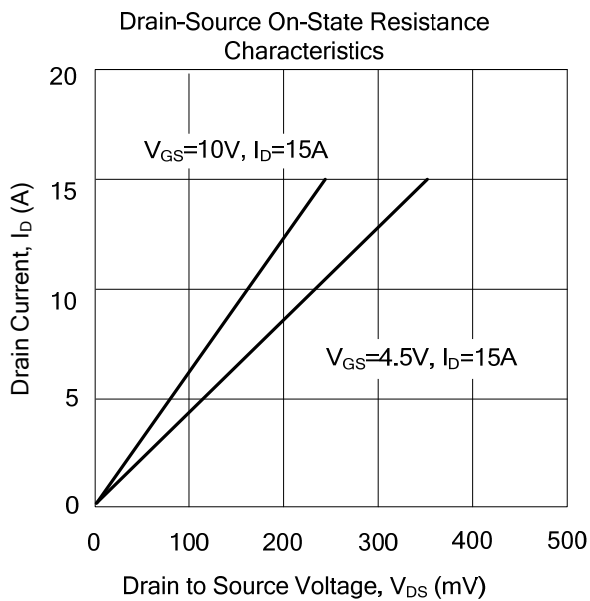
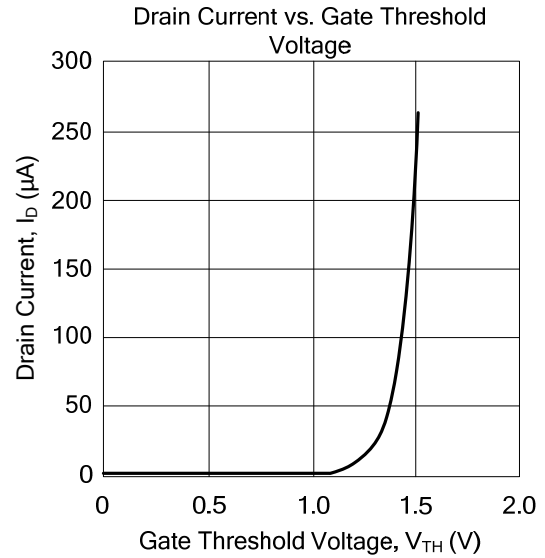
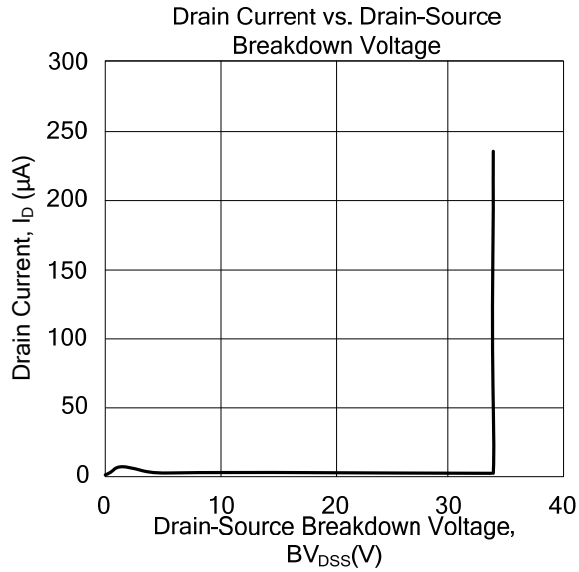
■ THERMAL DATA

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}	$V_{GS} = 0\text{ V}$, $I_D = 1\text{ mA}$	30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 30\text{ V}$, $V_{GS} = 0\text{ V}$		0.01	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS} = 20\text{ V}$, $V_{DS} = 0\text{ V}$		1	100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(\text{TH})}$	$V_{DS} = V_{GS}$, $I_D = 25\ \mu\text{A}$	1.2	1.6	2	V
Drain-Source On-State Resistance	$R_{DS(\text{ON})}$	$V_{GS} = 4.5\text{ V}$, $I_D = 15\text{ A}$		22.9	31	m Ω
		$V_{GS} = 10\text{ V}$, $I_D = 15\text{ A}$		15.5	20	m Ω
DYNAMIC PARAMETERS						
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	pF
Reverse Transfer Capacitance	C_{RSS}			60	90	pF
Gate Resistance	R_G			1.3		Ω
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{DD} = 15\text{ V}$, $I_D = 15\text{ A}$, $V_{GS} = 5\text{ V}$		8.4	11	nC
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	nC
Turn-ON Delay Time	$t_{D(\text{ON})}$	$V_{DD} = 15\text{ V}$, $V_{GS} = 10\text{ V}$, $I_D = 15\text{ A}$, $R_G = 12.7\ \Omega$		6.2	9.3	ns
Turn-ON Rise Time	t_R			11	17	ns
Turn-OFF Delay Time	$t_{D(\text{OFF})}$			23	34	ns
Turn-OFF Fall-Time	t_F			18	27	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I_S	$T_C = 25^\circ\text{C}$			30	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				120	A
Inverse Diode Forward Voltage	V_{SD}	$I_F = 30\text{ A}$, $V_{GS} = 0\text{ V}$		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

TYPICAL CHARACTERISTICS



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