



UTD20N03

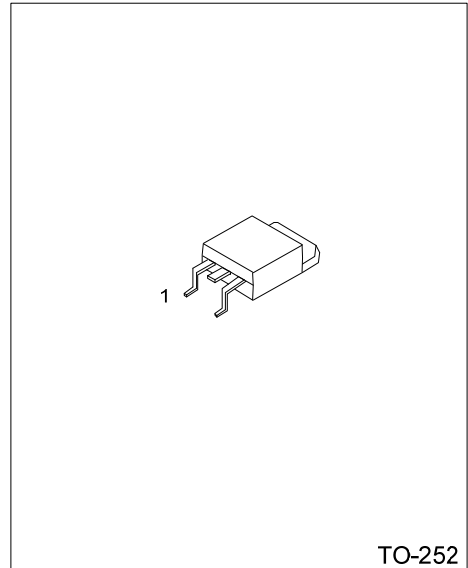
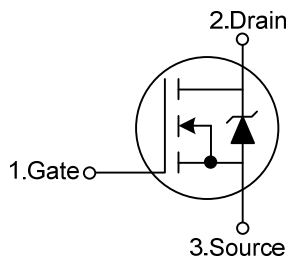
Power MOSFET

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

■ FEATURES

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

■ SYMBOL



■ ORDERING INFORMATION

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

<p>UTD20N03G-TN3-R</p>	<p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Halogen Free</p>	<p>(1) R: Tape Reel</p> <p>(2) TN3: TO-252</p> <p>(3) G: Halogen Free</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_{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 2)	E_{AS}	15
	Repetitive (Note 3)	E_{AR}	6
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	$^\circ\text{C}$

Note: 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.

- $I_D = 15\text{ A}$, $V_{DD} = 25\text{ V}$, $R_{GS} = 25\ \Omega$
- Repetitive Rating: Pulse width limited by T_J
- $I_S = 30\text{ A}$, $V_{DS} = 24\text{ V}$, $di/dt = 100\text{ A}/\mu\text{s}$, $T_{J(\text{MAX})} = 175\ ^\circ\text{C}$

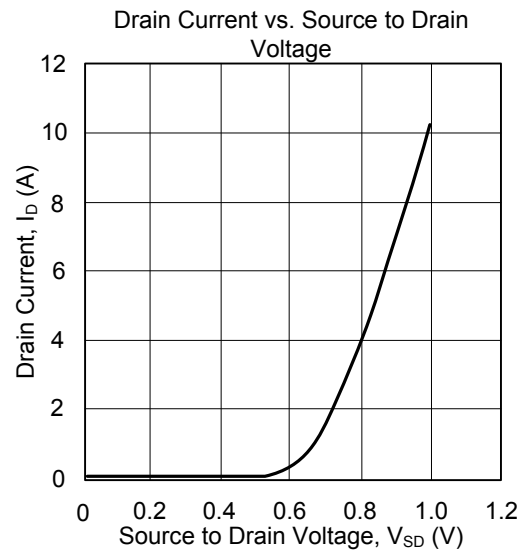
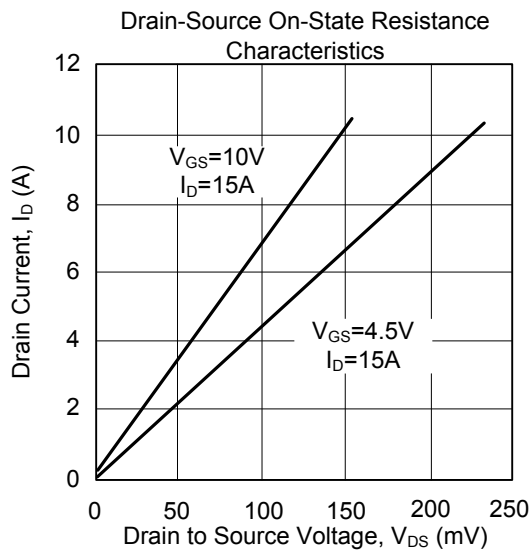
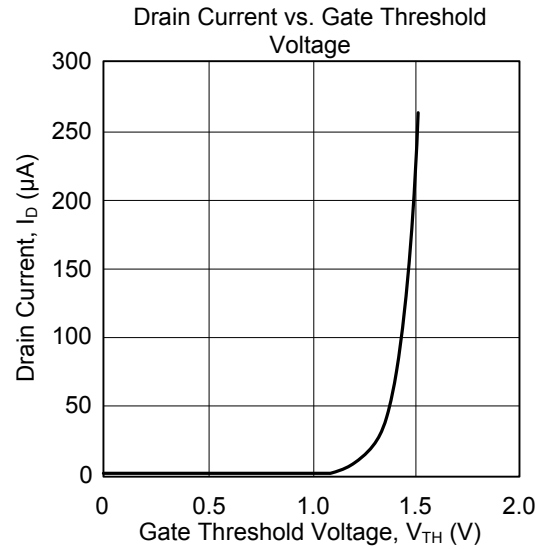
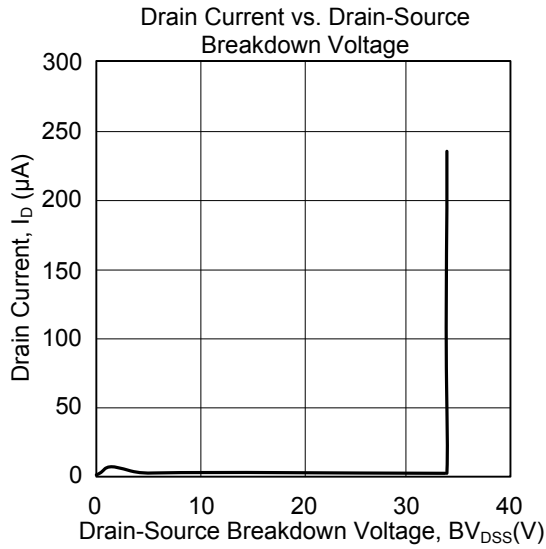
■ THERMAL DATA

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						
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
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
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Inverse Diode Forward Voltage	V_{SD}	$I_F = 30\text{ A}$, $V_{GS} = 0\text{ V}$		1.1	1.4	V
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
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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