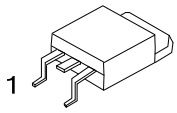
UTD20N03

Power MOSFET

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

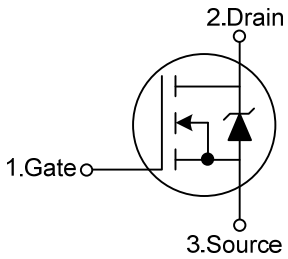


TO-252

■ 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



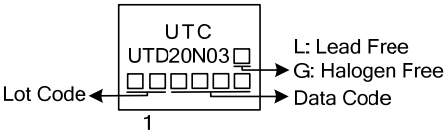
■ ORDERING INFORMATION

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

UTD20N03G-TN3-R (1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) TN3: TO-252
(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_J = 25°C, unless otherwise specified))

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		VDSS	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current (T_C=25°C)		I_D	30	A
Pulsed Drain Current (T_C=25°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°C)		P_D	60	W
Junction Temperature		T_J	+175	°C
Storage Temperature		T_{STG}	-55 ~ +175	°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 A, V_{DD} =25 V, R_G = 25 Ω, Starting T_J = 25°C
4. I_S =30 A, V_{DS} =24 V, di/dt =100A/μs, $T_{J(MAX)}$ = 175 °C

■ THERMAL DATA

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient	θ_{JA}			100	°C/W
Junction to Case	θ_{JC}		1.7	2.5	°C/W

■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0 V, I_D =1 mA	30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS} =30 V,V_{GS} =0 V		0.01	1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS} =20 V, V_{DS} =0 V		1	100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS} =V_{GS}, I_D =25μA	1.2	1.6	2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} =4.5 V, I_D =15 A		22.9	31	mΩ
		V_{GS} =10 V, I_D =15 A		15.5	20	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS} =25 V, V_{GS} =0 V, f =1MHz		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 V, I_D =15 A,V_{GS} =5V		8.4	11	nC
Gate Source Charge	Q_{GS}	V_{DD} =15 V, I_D =15 A		2.5	3.1	nC
Gate Drain Charge	Q_{GD}			6.4	9.6	nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD} =15 V, V_{GS} =10 V, I_D =15 A, R_G =12.7 Ω		6.2	9.3	ns
Turn-ON Rise Time	t_R			11	17	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			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°C			30	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				120	A
Inverse Diode Forward Voltage	V_{SD}	I_F =30 A, V_{GS} =0 V		1.1	1.4	V
Reverse Recovery Time	t_{rr}	V_R =15 V,I_F = I_S, dI/dt =100A/μs		15	18	ns
Reverse Recovery Charge	Q_{rr}			2	3	nC

■ TYPICAL CHARACTERISTICS