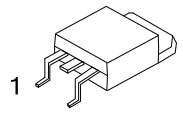
N-CHANNEL LOGIC LEVEL ENHANCEMENT MODE FIDLD EFFECT TRANSISTOR



TO-252

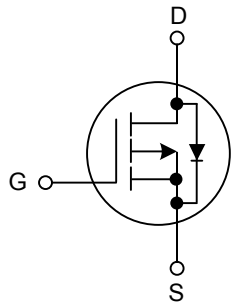
■ DESCRIPTION

The UTC **40N04** is an N-channel enhancement mode FET using advanced technology to provide fast switching speed, ruggedized device design, low on-resistance and cost-effectiveness.

■ FEATURES

* Low on-Resistance
* Fast Switching Speed
* Halogen Free

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
UT40N04G-TN3-R	TO-252	G	D	S	Tape Reel

Note: G: Gate, D: Drain, S: Source

UT40N04G-TN3-R

(1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) TN3: TO-252
(3)Halogen Free	(3) G: Halogen Free

■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C Unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	25	A
	T_C=70°C		20	
Pulsed Drain Current (Note 1)		I_{DM}	75	
Avalanche Current		I_{AS}	27	
Avalanche Energy	L=0.1mH	E_{AS}	37	mJ
Power Dissipation	T_C=25°C	P_D	30	W
	T_C=70°C		20	
Operating Junction Temperature		T_J	-55~150	°C
Storage Temperature		T_{STG}	-55~150	°C

Note:1. Pulse width limited by maximum junction temperature.
2. 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	θ_{JA}	40	°C/W
Junction to Case	θ_{JC}	4.1	°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}	I_D=250μA, V_{GS}=0V	40			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=32V, V_{GS}=0V			1	μA
		V_{DS}=30V, V_{GS}=0V, T_J=125°C			10	
Gate- Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±250	nA
On-State Drain Current (Note 1)	$I_{D(ON)}$	V_{DS}=5V, V_{GS}=10V	75			A
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	2	2.4	3	V
Static Drain-Source On-State Resistance (Note 1)	$R_{DS(ON)}$	V_{GS}=5V, I_D=8A		26	50	mΩ
		V_{GS}=7V, I_D=8A		22	45	
		V_{GS}=10V, I_D=10A		19	29	
Forward Transconductance (Note 1)	g_{FS}	V_{DS}=5V, I_D=10A		30		S
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1.0MHz		1.55		Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{GS}=0V, V_{DS}=20V, f=1.0MHz		1150		pF
Output Capacitance	C_{OSS}			157		
Reverse Transfer Capacitance	C_{RSS}			80		
SWITCHING PARAMETERS (Note 2)						
Total Gate Charge	Q_G (V_{GS}=10V)	V_{DS}=0.5$V_{(BR)DSS}$, I_D=10A		19		nC
	Q_G (V_{GS}=4.5V)			9		
Gate to Source Charge	Q_{GS}			4.5		
Gate to Drain Charge	Q_{GD}			3		
Turn-ON Delay Time	$t_{D(ON)}$	V_{GS}=10V, V_{DS}=20V, I_D≈-1A, R_{GS}=6Ω, R_L=1Ω		10		ns
Rise Time	t_R			6		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			26		ns
Fall-Time	t_F			6		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Continuous Current	I_S				23	A
Drain-Source Diode Forward Voltage (Note 1)	V_{SD}	I_F=10A, V_{GS}=0V			1.3	V
Reverse Recovery Time	t_{RR}	I_F=10A, dI_F/dt=100A/μs		38		ns
Reverse Recovery Charge	Q_{RR}			29		nC

Note: 1. Pulsde test: Pulse width ≤300μsec, duty cycle ≤2%.
2. Independent of Operating Temperature.