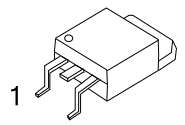
N-CHANNEL LOGIC LEVEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR



TO-252

■ DESCRIPTION

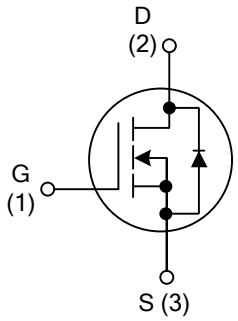
The UTC **UT2804** uses advanced technology to provide fast switching speed, ruggedized device design, low on-resistance and cost-effectiveness.

The UTC **UT2804** is suitable for low-profile applications with through-hole version and low voltage applications such as DC/DC converters.

■ FEATURES

* Low On-Resistance
* Simple Drive Requirement
* Fast Switching Speed

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free	TO-252	1	2	3	
UT2804G-TN3-R	UT2804L-TN3-R		G	D	S	Tape Reel

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

UT2804G-TN3-R (1)Packing Type (2)Package Type (3)Halogen Free	(1) R: Tape Reel (2) TN3: TO-252 (3) G: Halogen Free

■ ABSOLUTE MAXIMUM RATINGS (TC = 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	10	A
	T_C=100°C		8	
Pulsed Drain Current (Note 2)		I_{DM}	40	A
Power Dissipation	T_C=25°C	P_D	32	W
	T_C=100°C		22	
Operating Junction Temperature		T_J	-55 ~ 150	°C
Storage Temperature		T_{STG}	-55 ~ 150	°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.
2. Pulse width limited by maximum junction temperature.
3. Duty cycle ≤ 1%

■ THERMAL RESISTANCE RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	75	°C/W
Junction to Case	θ_{JC}	3	°C/W

■ ELECTRICAL CHARACTERISTICS (TC =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_C=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}=10V, V_{GS}=10V	40			A
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	1	1.5	2.5	V
Static Drain-Source On-State Resistance (Note 1)	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=8A		30	42	mΩ
		V_{GS}=10V, I_D=10A		21	28	
Forward Transconductance (Note 1)	g_{FS}	V_{DS}=10V, I_D=10A		19		S
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{GS}=0V, V_{DS}=10V, f=1MHz		790		pF
Output Capacitance	C_{OSS}			175		pF
Reverse Transfer Capacitance	C_{RSS}			65		pF
SWITCHING PARAMETERS (Note 2)						
Total Gate Charge	Q_G	V_{GS}=10V, V_{DS}=0.5$V_{(BR)DSS}$, I_D=10A		16		nC
Gate to Source Charge	Q_{GS}			2.5		nC
Gate to Drain Charge	Q_{GD}			2.1		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{GS}=10V, V_{DS}=20V, I_D≅ 1A, R_{GS}=6Ω, R_L=1Ω		2.2	4.4	ns
Rise Time	t_R			7.5	15	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			11.8	21.3	ns
Fall-Time	t_F			3.7	7.4	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage (Note 1)	V_{SD}	I_F=I_S, V_{GS}=0V			1	V
Reverse Recovery Time	t_{RR}	I_F=5A, dI_F/dt=100A/μs		15.5		ns
Reverse Recovery Charge	Q_{RR}			7.9		nC
Continuous Current	I_S				1.3	A
Pulsed Current (Note 3)	I_{SM}				2.6	A

Note: 1. Pulse test: Pulse Width ≤ 300μsec, Duty Cycle ≤ 2%.
2. Independent of operating temperature.
3. Pulse width limited by maximum junction temperature.