



N-CHANNEL LOGIC LEVEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

DESCRIPTION

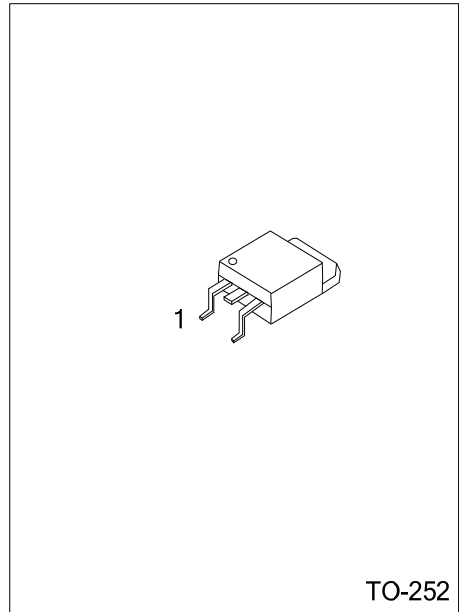
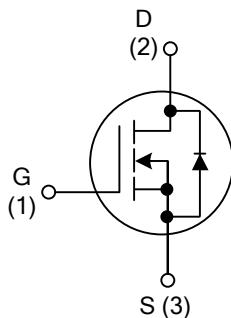
The UTC **UT2804** uses advanced technology to provide fast switching speed, ruggedized device design, low on-resistance and cost-effectiveness.

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		1	2	3	
UT2804G-TN3-R	UT2804L-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>UT2804G-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 (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	I_D	$T_C=25^\circ\text{C}$	10
		$T_C=100^\circ\text{C}$	8
Pulsed Drain Current (Note 2)	I_{DM}	40	A
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	32
		$T_C=100^\circ\text{C}$	22
Operating Junction Temperature	T_J	-55 ~ 150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ 150	$^\circ\text{C}$

- 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.
 2. Pulse width limited by maximum junction temperature.
 3. Duty cycle $\leq 1\%$

■ THERMAL RESISTANCE RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	75	$^\circ\text{C/W}$
Junction to Case	θ_{JC}	3	$^\circ\text{C/W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	40			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=32\text{V}, V_{GS}=0\text{V}$			1	μA
		$V_{DS}=30\text{V}, V_{GS}=0\text{V}, T_C=125^\circ\text{C}$			10	
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			± 250	nA
On-State Drain Current (Note 1)	$I_{D(ON)}$	$V_{DS}=10\text{V}, V_{GS}=10\text{V}$	40			A
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1	1.5	2.5	V
Static Drain-Source On-State Resistance (Note 1)	$R_{DS(ON)}$	$V_{GS}=-4.5\text{V}, I_D=8\text{A}$		30	42	m Ω
		$V_{GS}=10\text{V}, I_D=10\text{A}$		21	28	
Forward Transconductance (Note 1)	g_{FS}	$V_{DS}=10\text{V}, I_D=10\text{A}$		19		S
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}, V_{DS}=10\text{V}, f=1\text{MHz}$		790		pF
Output Capacitance	C_{OSS}			175		pF
Reverse Transfer Capacitance	C_{RSS}			65		pF
SWITCHING PARAMETERS (Note 2)						
Total Gate Charge	Q_G	$V_{GS}=10\text{V}, V_{DS}=0.5V_{(BR)DSS}, I_D=10\text{A}$		16		nC
Gate to Source Charge	Q_{GS}			2.5		nC
Gate to Drain Charge	Q_{GD}			2.1		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{GS}=10\text{V}, V_{DS}=20\text{V}, I_D \cong 1\text{A}, R_{GS}=6\Omega, R_L=1\Omega$		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}	$I_F=I_S, V_{GS}=0\text{V}$			1	V
Reverse Recovery Time	t_{RR}	$I_F=5\text{A}, dI_F/dt=100\text{A}/\mu\text{s}$		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 $\leq 300\mu\text{sec}$, Duty Cycle $\leq 2\%$.
 2. Independent of operating temperature.
 3. Pulse width limited by maximum junction temperature.

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