



## N-CHANNEL ENHANCEMENT MODE POWER MOSFET

### DESCRIPTION

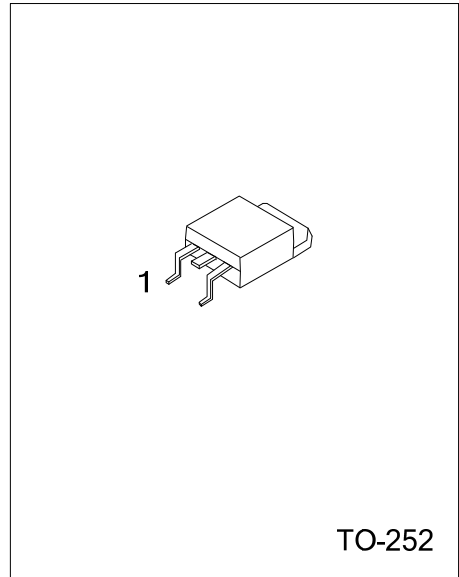
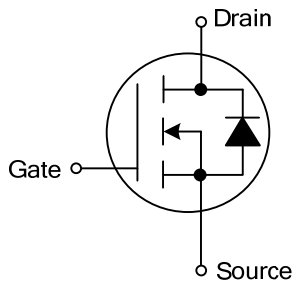
The UTC **25N10** is an N-channel enhancement mode power MOSFET and it uses UTC's perfect technology to provide designers with fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

It is generally suitable for all commercial-industrial applications and DC/DC converters requiring low voltage.

### FEATURES

- \* Single Drive Requirement
- \* Low Gate Charge
- \* RoHS Compliant

### SYMBOL



### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free Plating	Halogen Free		1	2	3	
25N10L-TN3-R	25N10G-TN3-R	TO-252	G	D	S	Tape Reel

<p>25N10G-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, L: Lead Free Plating</p>
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### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain Source Voltage	$V_{DSS}$	100	V	
Gate Source Voltage	$V_{GSS}$	$\pm 20$	V	
Continuous Drain Current ( $V_{GS}=10V$ )	$T_C=25^\circ C$	$I_D$	23	A
	$T_C=100^\circ C$	$I_D$	14.6	A
Pulsed Drain Current (Note 2)	$I_{DM}$	80	A	
Total Power Dissipation ( $T_C=25^\circ C$ )	$P_D$	41	W	
Operating Junction Temperature	$T_J$	-55 ~ +150	$^\circ C$	
Storage Temperature	$T_{STG}$	-55 ~ +150	$^\circ C$	

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 max. junction temperature

### ■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	100	$^\circ C/W$
Junction to Case	$\theta_{JC}$	3	$^\circ C/W$

### ■ ELECTRICAL CHARACTERISTICS ( $T_J=25^\circ C$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=1mA$	100			V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to $25^\circ C, I_D=1mA$		0.14		$V/^\circ C$
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ C$			25	$\mu A$
		$V_{DS}=80V, V_{GS}=0V, T_J=150^\circ C$			100	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2		4	V
Static Drain-Source On-Resistance (Note)	$R_{DS(ON)}$	$V_{GS}=10V, I_D=16A$			80	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=10V, I_D=16A$		14		S
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS}=25V, V_{GS}=0V, f=1.0MHz$		1060	1700	pF
Output Capacitance	$C_{OSS}$			270		pF
Reverse Transfer Capacitance	$C_{RSS}$			8		pF
Gate Resistance	$R_G$	$f=1.0MHz$		1.5	2.3	$\Omega$
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge (Note)	$Q_G$	$V_{GS}=10V, V_{DS}=80V, I_D=16A$		19	30	nC
Gate Source Charge	$Q_{GS}$			5		nC
Gate Drain Charge	$Q_{GD}$			6		nC
Turn-ON Delay Time <sup>1</sup>	$t_{D(ON)}$	$V_{DD}=50V, I_D=16A, R_G=3.3\Omega, V_{GS}=10V, R_D=3.125\Omega$		10		ns
Turn-ON Rise Time	$t_R$			28		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			17		ns
Turn-OFF Fall-Time	$t_F$			2		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Drain-Source Diode Forward Voltage (Note)	$V_{SD}$	$I_S=16A, V_{GS}=0V$			1.3	V
Reverse Recovery Time	$t_{RR}$	$I_S=16A, V_{GS}=0V,$		90		ns
Reverse Recovery Charge	$Q_{RR}$	$dI/dt=100A/\mu s$		380		nC

Note: Pulse Test : Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$

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