



## UF3055

Preliminary

Power MOSFET

### N-CHANNEL ENHANCEMENT MODE POWER MOSFET

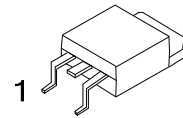
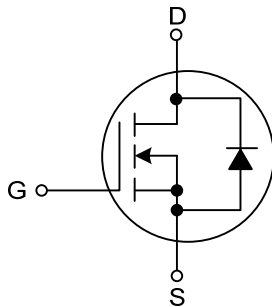
#### DESCRIPTION

As an N-channel enhancement mode power MOSFET, the UTC **UF3055** is designed for low voltage, high speed switching applications in power supplies, converters and power motor controls and bridge circuits.

#### FEATURES

\*  $R_{DS(ON)} < 110 \text{ m}\Omega$  @  $V_{GS} = 10\text{V}$

#### SYMBOL



TO-252

#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free Plating	Halogen Free		1	2	3	
UF3055L-TN3-R	UF3055G-TN3-R	TO-252	G	D	S	Tape Reel

UF3055L-TN3-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) TN3: TO-252
	(3)Lead Free	(3) G: Halogen Free, L: Lead Free

■ ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ , unless otherwise noted)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain Source Voltage	$V_{DSS}$	60	V
Drain Gate Voltage ( $R_{GS} = 10\text{M}\Omega$ )	$V_{DGR}$	60	V
Gate Source Voltage	$V_{GSS}$	$\pm 20$	V
		$\pm 30$	V
Continuous Drain Current ( $T_a = 25^\circ\text{C}$ )	$I_D$	3.0	A
Pulsed Drain Current ( $t_P \leq 10 \mu\text{s}$ )	$I_{DM}$	9.0	A
Single Pulsed Avalanche Energy (Note 2)	$E_{AS}$	74	mJ
Power Dissipation ( $T_a = 25^\circ\text{C}$ )	$P_D$	2	W
Junction Temperature	$T_J$	175	$^\circ\text{C}$
Strong Temperature	$T_{STG}$	-55 ~ +175	$^\circ\text{C}$

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.  $T_J = 25^\circ\text{C}$ ,  $V_{DD} = 25\text{V}$ ,  $V_{GS} = 10\text{V}$ ,  $I_L = 7.0\text{A}$ ,  $L = 3.0\text{mH}$ ,  $V_{DS} = 60\text{V}$

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (Note)	$\theta_{JA}$	62.5	$^\circ\text{C/W}$

■ ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$ , unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain Source Breakdown Voltage (Note 1)	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	60	68		V
Temperature Coefficient (Positive)				66		mV/°C
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =60V			1.0	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20 V, V <sub>DS</sub> =0V			±100	nA
ON CHARACTERISTICS (Note 1)						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250μA	2.0	3.0	4.0	V
Temperature Coefficient (Negative)					6.6	mV/°C
Static Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10 V, I <sub>D</sub> =1.5A		88	110	mΩ
Static Drain-to-Source On-Resistance	V <sub>DS(ON)</sub>	V <sub>GS</sub> =10 V, I <sub>D</sub> =3A		0.27	0.40	V
Forward Tran conductance	g <sub>FS</sub>	V <sub>DS</sub> =8.0V, I <sub>D</sub> =1.7A		3.2		M
DYNAMIC PARAMETERS						
Input Capacitance	C <sub>ISS</sub>	V <sub>GS</sub> =0 V, V <sub>DS</sub> =25 V, f=1.0MHz		324	455	pF
Output Capacitance	C <sub>OSS</sub>			35	50	pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			110	155	pF
SWITCHING PARAMETERS (Note 2)						
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =30V, I <sub>D</sub> =3.0A , R <sub>G</sub> =9.1Ω (Note 1)		9.4	20	ns
Turn-ON Rise Time	t <sub>R</sub>			14	30	ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			21	45	ns
Turn-OFF Fall-Time	t <sub>F</sub>			13	30	ns
Total Gate Charge	Q <sub>G</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =48V, I <sub>D</sub> =3.0A (Note 1)		10.6	22	nC
Gate-Source Charge	Q <sub>GS</sub>			1.9		nC
Gate-Drain Charge	Q <sub>GD</sub>			4.2		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =3.0A		0.89	1.0	V
Body Diode Reverse Recovery Time	t <sub>RR</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =3.0A, dI/dt=100 A/μs (Note 1)		30		ns
	t <sub>A</sub>			22		ns
	t <sub>B</sub>			8.6		ns
	Body Diode Reverse Recovery Charge		Q <sub>RR</sub>		0.04	

Notes: 1. Pulse Test: Pulse Width  $\leq 300\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

2. Switching characteristics are independent of operating junction temperatures.

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