



UTF3055

Power MOSFET

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

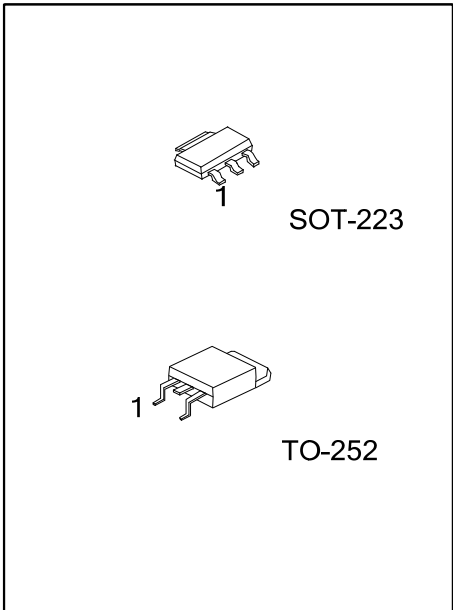
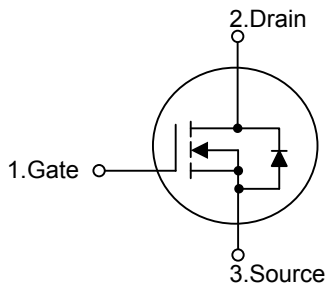
■ DESCRIPTION

As an N-channel enhancement mode power MOSFET, the UTC **UTF3055** is designed for low voltage, high speed switching applications in power supplies, converters and power motor controls and bridge circuits.

■ FEATURES

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

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTF3055L-AA3-R	UTF3055G-AA3-R	SOT-223	G	D	S	Tape Reel
UTF3055L-TN3-R	UTF3055G-TN3-R	TO-252	G	D	S	Tape Reel

<p>UTF3055L-AA3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Free</p>	<p>(1) R: Tape Reel</p> <p>(2) AA3: SOT-223, TN3: TO-252</p> <p>(3) G: Halogen Free, L:Lead Free</p>
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■ ABSOLUTE MAXIMUM RATINGS (T_C = 25°C, unless otherwise noted)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain Source Voltage	V _{DSS}	60	V
Drain Gate Voltage (R _{GS} = 10MΩ)	V _{DGR}	60	V
Gate Source Voltage	V _{GSS}	±20	V
		±30	V
Continuous Drain Current (T _a = 25°C)	I _D	3.0	A
Pulsed Drain Current (t _p ≤ 10 μs)	I _{DM}	9.0	A
Single Pulsed Avalanche Energy (Note 2)	E _{AS}	74	mJ
Power Dissipation (T _a = 25°C) (Note 3)	P _D	SOT-223	0.83
		TO-252	1.136
Derate above 25°C	P _D	SOT-223	14
		TO-252	20
Junction Temperature	T _J	175	°C
Strong Temperature	T _{STG}	-55 ~ +175	°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°C, V_{DD} = 25V, V_{GS} = 10V, I_L = 7.0A, L = 3.0mH, V_{DS} = 60V
 3. When surface mounted to an FR4 board using 1" pad size, 1 oz.(Cu. Area 1.127 sq in).

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (Note)	θ _{JA}	SOT-223	150
		TO-252	110

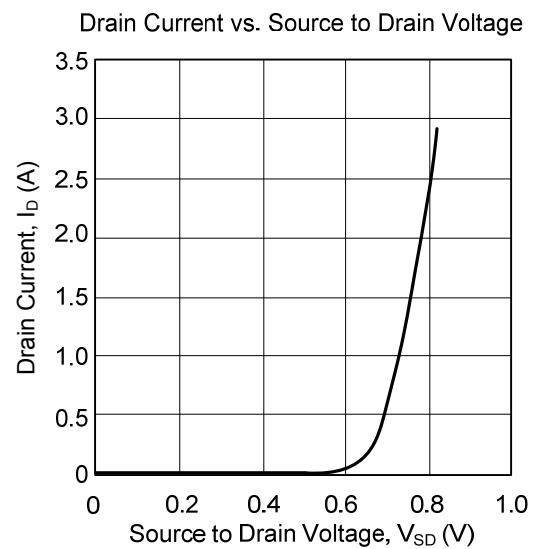
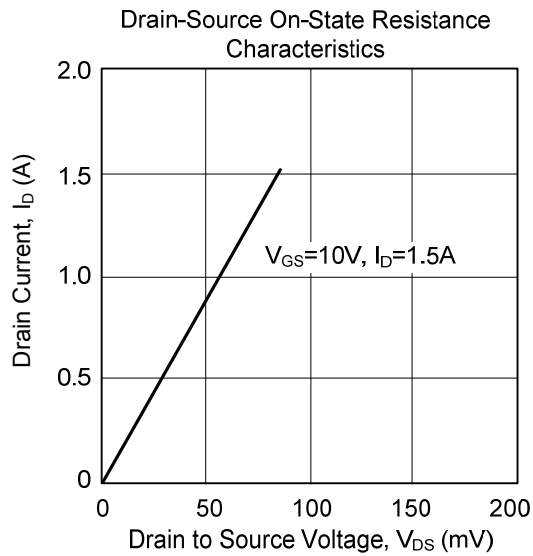
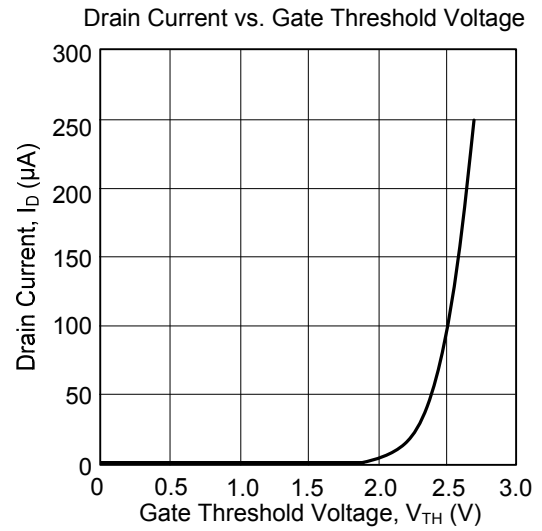
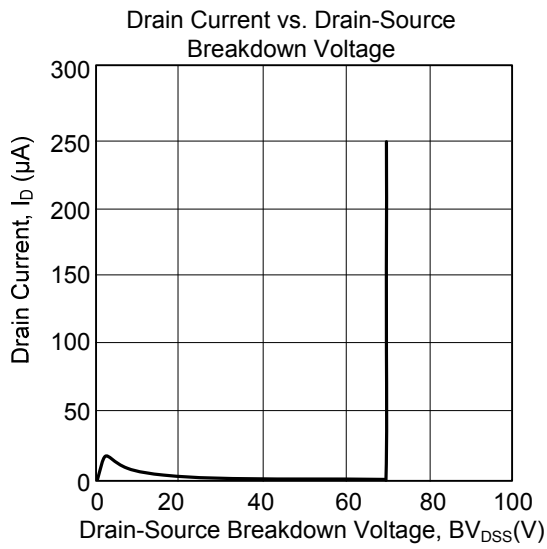
Note: When surface mounted to an FR4 board using 1" pad size, 1 oz.(Cu. Area 1.127 sq in).

■ 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_{DSS}	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$	60	68		V
Temperature Coefficient (Positive)				66		mV/ $^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{GS} = 0\text{V}, V_{DS} = 60\text{V}$			1.0	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$			± 100	nA
ON CHARACTERISTICS (Note 1)						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu\text{A}$	2.0	3.0	4.0	V
Temperature Coefficient (Negative)					6.6	
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = 10\text{V}, I_D = 1.5\text{A}$		88	110	m Ω
Static Drain-to-Source On-Resistance	$V_{DS(ON)}$	$V_{GS} = 10\text{V}, I_D = 3\text{A}$		0.27	0.40	V
Forward Transconductance	g_{FS}	$V_{DS} = 8.0\text{V}, I_D = 1.7\text{A}$		3.2		M
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1.0\text{MHz}$		324	455	pF
Output Capacitance	C_{OSS}			35	50	pF
Reverse Transfer Capacitance	C_{RSS}			110	155	pF
SWITCHING PARAMETERS (Note 2)						
Turn-ON Delay Time	$t_{D(ON)}$	$V_{GS} = 10\text{V}, V_{DD} = 30\text{V}, I_D = 3.0\text{A}, R_G = 9.1\Omega$ (Note 1)		9.4	20	ns
Turn-ON Rise Time	t_R			14	30	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			21	45	ns
Turn-OFF Fall-Time	t_F			13	30	ns
Total Gate Charge	Q_G	$V_{GS} = 10\text{V}, V_{DS} = 48\text{V}, I_D = 3.0\text{A}$ (Note 1)		10.6	22	nC
Gate-Source Charge	Q_{GS}			1.9		nC
Gate-Drain Charge	Q_{GD}			4.2		nC
Diode Forward Voltage	V_{SD}	$V_{GS} = 0\text{V}, I_S = 3.0\text{A}$		0.89	1.0	V
Body Diode Reverse Recovery Time	t_{RR}	$V_{GS} = 0\text{V}, I_S = 3.0\text{A}, dl/dt = 100\text{A}/\mu\text{s}$ (Note 1)		30		ns
	t_A			22		ns
	t_B			8.6		ns
Body Diode Reverse Recovery Charge	Q_{RR}			0.04		nC

Note: 1. Pulse Test: Pulse Width $\leq 300\text{ s}$, Duty Cycle $\leq 2.0\%$.
 2. Switching characteristics are independent of operating junction temperatures.

TYPICAL CHARACTERISTICS



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