



# UTF3055

*Power MOSFET*

## N-CHANNEL ENHANCEMENT MODE POWER MOSFET

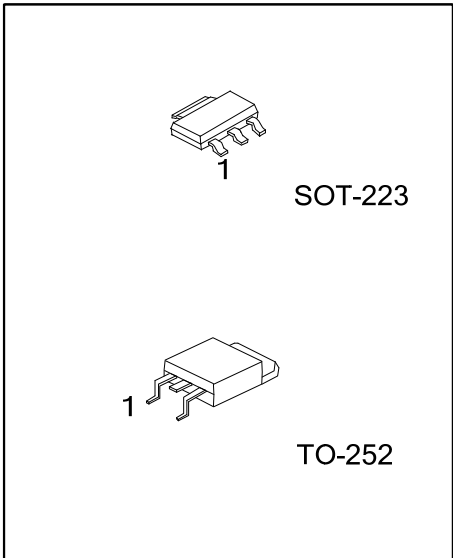
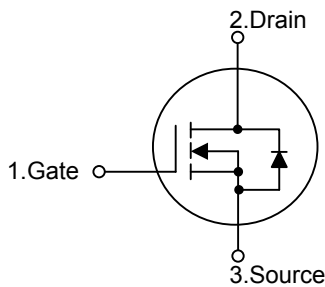
■ DESCRIPTION

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	
-	UTF3055G-AA3-R	SOT-223	G	D	S	Tape Reel
UTF3055L-TN3-R	UTF3055G-TN3-R	TO-252	G	D	S	Tape Reel

Note: Pin Assignment: S: Source G: Gate D: Drain

<p>UTF3055G-AA3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AA3: SOT-223, TN3: TO-252</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

SOT-223	TO-252

■ ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub> = 25°C, unless otherwise noted)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain Source Voltage		V <sub>DSS</sub>	60	V
Drain Gate Voltage (R <sub>GS</sub> = 10MΩ)		V <sub>DGR</sub>	60	V
Gate Source Voltage	Continuous	V <sub>GSS</sub>	±20	V
	Non-Repetitive (t <sub>P</sub> ≤ 10 ms)		±30	V
Continuous Drain Current (T <sub>a</sub> = 25°C)		I <sub>D</sub>	3.0	A
Pulsed Drain Current (t <sub>P</sub> ≤ 10 μs)		I <sub>DM</sub>	9.0	A
Single Pulsed Avalanche Energy (Note 2)		EAS	74	mJ
Power Dissipation (T <sub>a</sub> = 25°C) (Note 3)	SOT-223	P <sub>D</sub>	0.83	W
	TO-252		1.136	
Derate above 25°C	SOT-223		14	mW/°C
	TO-252		20	
Junction Temperature		T <sub>J</sub>	175	°C
Strong Temperature		T <sub>STG</sub>	-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<sub>J</sub> = 25°C, V<sub>DD</sub> = 25V, V<sub>GS</sub> = 10V, I<sub>L</sub> = 7.0A, L = 3.0mH, V<sub>DS</sub> = 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)	SOT-223	θ <sub>JA</sub>	150	°C/W
	TO-252		110	°C/W

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

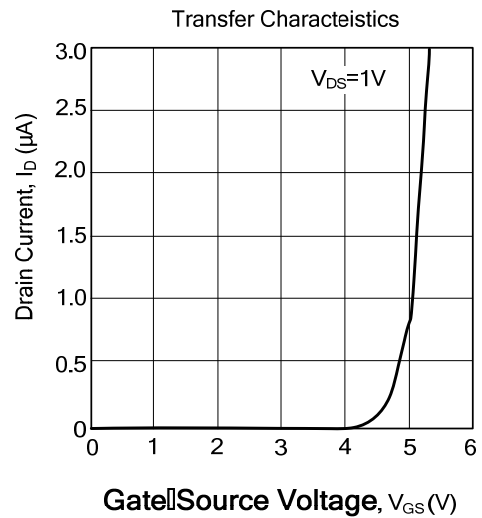
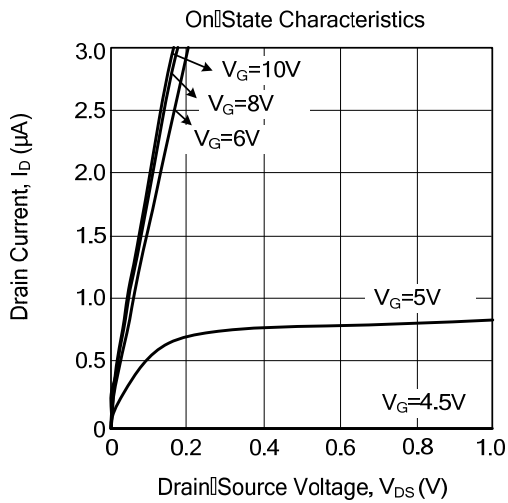
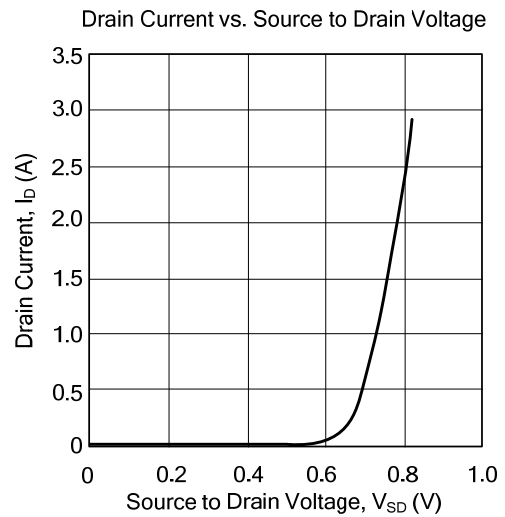
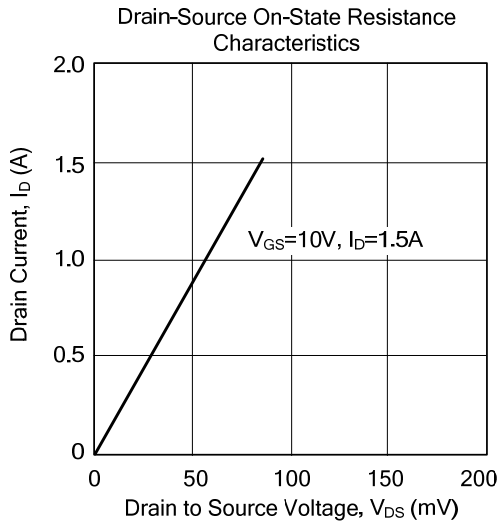
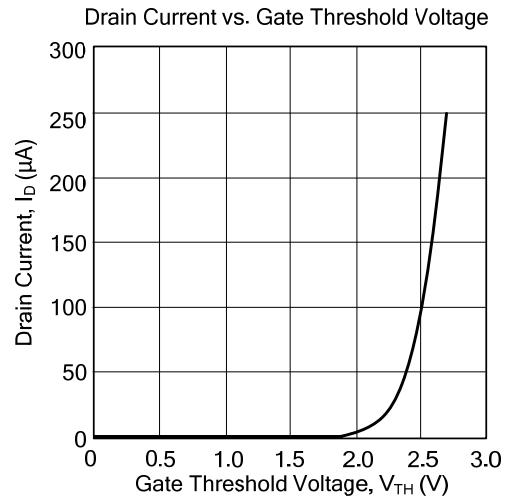
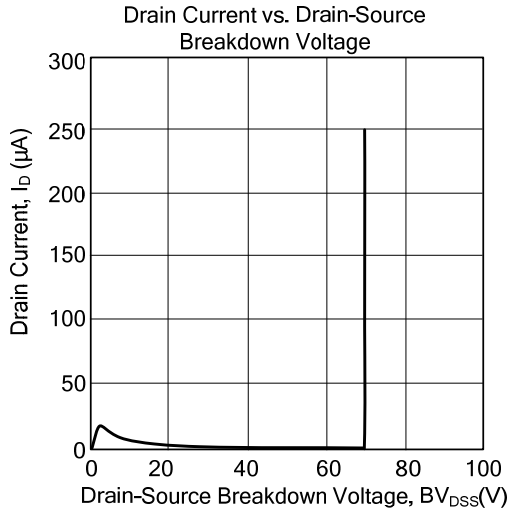
■ ELECTRICAL CHARACTERISTICS (T<sub>J</sub> =25°C, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
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
<b>ON CHARACTERISTICS (Note 1)</b>						
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	
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
<b>DYNAMIC PARAMETERS</b>						
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
<b>SWITCHING PARAMETERS (Note 2)</b>						
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
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		nC

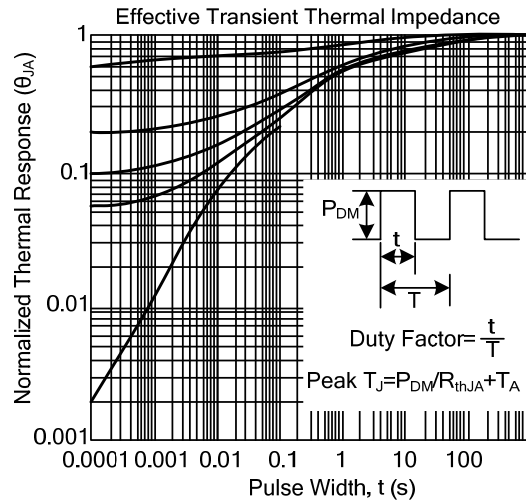
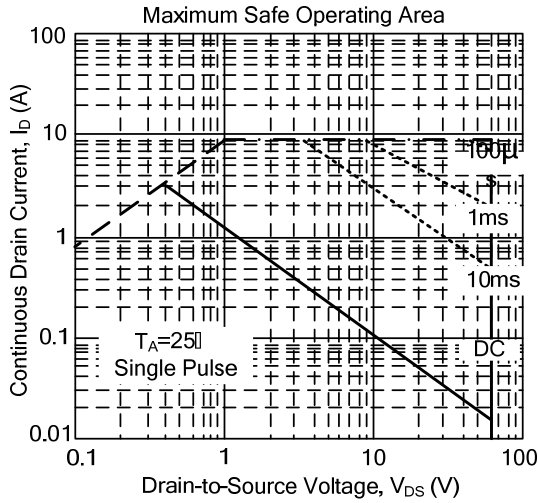
Notes: 1. Pulse Test : Pulse width ≤300μs, Duty cycle ≤2%.

2. Switching characteristics are independent of operating junction temperatures.

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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