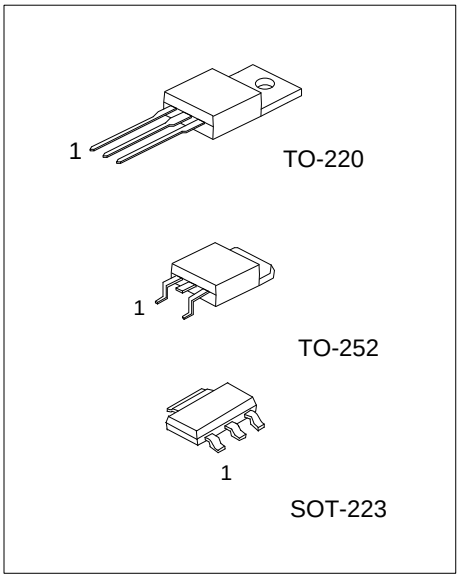
UF3055

Power MOSFET

N-CHANNEL ENHANCEMENT MODE POWER MOSFET



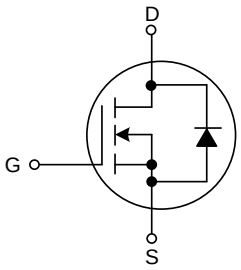
■ DESCRIPTION

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

* $R_{DS(ON)} \leq 110\ m\Omega$ @ V_{GS} =10 V, I_D =1.5A

■ SYMBOL



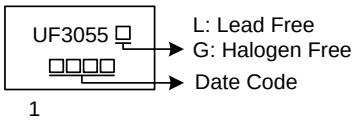
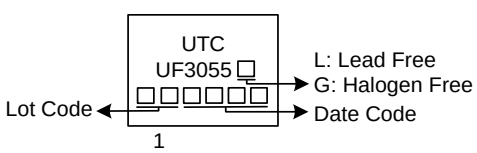
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF3055L-AA3-R	UF3055G-AA3-R	SOT-223	G	D	S	Tape Reel
UF3055L-TA3-R	UF3055G-TA3-R	TO-220	G	D	S	Tube
UF3055L-TN3-R	UF3055G-TN3-R	TO-252	G	D	S	Tape Reel

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

UF3055G-AA3-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel, T: Tube (2) AA3: SOT-223, TA3: TO-220, TN3: TO-252 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOT-223	TO-220 / TO-252
	

■ 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	Continuous	V_{GSS}	±20	V
	Non-Repetitive (t_P ≤10 ms)		±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)		EAS	74	mJ
Power Dissipation (T_A = 25°C)	SOT-223	P_D	0.8	W
	TO-220		2	W
	TO-252		1.13	W
Junction Temperature		T_J	+150	°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

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient (Note)	SOT-223	$θ_{JA}$	150	°C/W
	TO-220		62	°C/W
	TO-252		110	°C/W

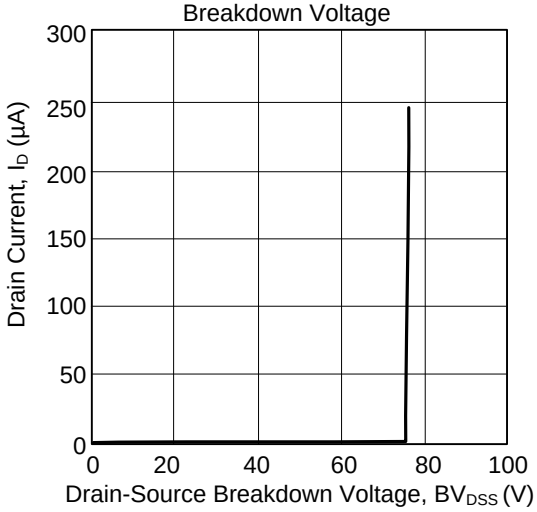
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain Source Breakdown Voltage (Note 1)	BV_{DSS}	V_{GS}= 0V, I_D =250μA	60	68		V
Temperature Coefficient (Positive)				66		mV/°C
Drain-Source Leakage Current	I_{DSS}	V_{GS}=0V, V_{DS}=60V			1.0	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS} = ±20 V, V_{DS} =0V			±100	nA
ON CHARACTERISTICS (Note 1)						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS}, I_D =250μA	2.0	3.0	4.0	V
Temperature Coefficient (Negative)				6.6		mV/°C
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} =10 V, I_D =1.5A		50	110	mΩ
Static Drain-to-Source On-Resistance	$V_{DS(ON)}$	V_{GS} =10 V, I_D =3A		0.15	0.40	V
Forward Tran conductance	g_{FS}	V_{DS}=8.0V, I_D=1.7A		3.2		S
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{GS} =0 V, V_{DS} =25 V, f=1.0MHz		700	780	pF
Output Capacitance	C_{OSS}			180	210	pF
Reverse Transfer Capacitance	C_{RSS}			20	50	pF
SWITCHING PARAMETERS (Note 2)						
Total Gate Charge	Q_G	V_{GS} =10V, V_{DS} =48V, I_D =3.0A (Note 1)		50	70	nC
Gate-Source Charge	Q_{GS}			6		nC
Gate-Drain Charge	Q_{GD}			3		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{GS}=10V, V_{DD}=30V, I_D =3.0A , R_G =9.1Ω (Note 1)		50	70	ns
Turn-ON Rise Time	t_R			40	60	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			95	115	ns
Turn-OFF Fall-Time	t_F			30	50	ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=3.0A		0.89	1.0	V
Body Diode Reverse Recovery Time	t_{rr}	V_{GS}=0V, I_S=3.0A, dI/dt=100 A/μs (Note 1)		30		ns
	t_A			22		ns
	t_B			8.6		ns
Body Diode Reverse Recovery Charge	Q_{rr}			0.04		nC

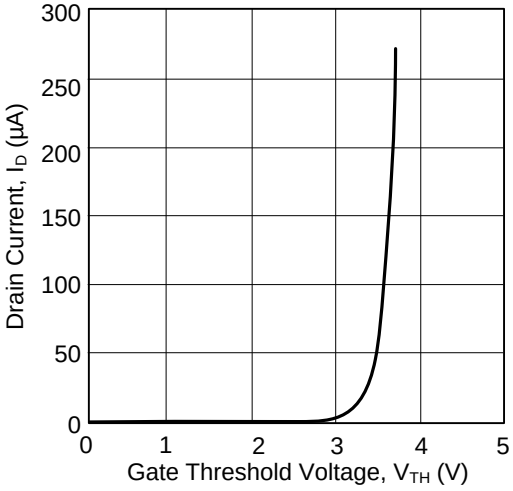
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Switching characteristics are independent of operating junction temperatures.

■ TYPICAL CHARACTERISTICS

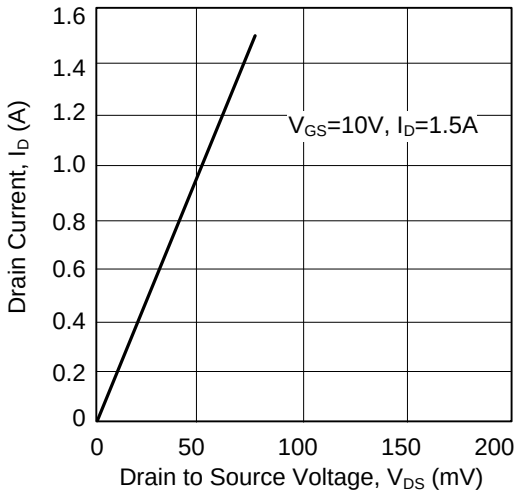
Drain Current vs. Drain-Source Breakdown Voltage



Drain Current vs. Gate Threshold Voltage



Drain-Source On-State Resistance Characteristics



Drain Current vs. Source to Drain Voltage