



UT60N055

Power MOSFET

60A, 55V N-CHANNEL FAST SWITCHING MOSFET

DESCRIPTION

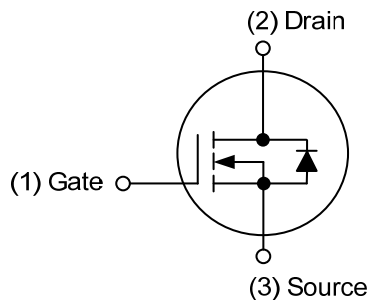
The UTC **UT60N055** is a N-Channel MOSFET, it uses UTC's advanced technology to provide customers with a minimum on-state resistance, high switching speed and low gate charge.

The UTC **UT60N055** is suitable for application in networking DC-DC power system and LCD/LED back light, etc.

FEATURES

- * $R_{DS(ON)} \leq 11 \text{ m}\Omega$ @ $V_{GS} = 10\text{V}$, $I_D = 30\text{A}$
- * $R_{DS(ON)} \leq 15 \text{ m}\Omega$ @ $V_{GS} = 4.5\text{V}$, $I_D = 30\text{A}$
- * Low gate charge
- * High switching speed

SYMBOL



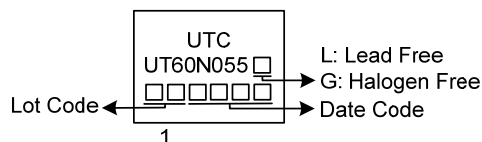
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT60N055L-TN3-T	UT60N055G-TN3-T	TO-252	G	D	S	Tape Reel

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

UT60N055G-TN3-R	(1) Packing Type (2) Package Type (3) Green Package	(1) R: Tape Reel (2) TN3: TO-252 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	55	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous	I_D	60	A
	Pulsed (Note 2)	I_{DM}	120	A
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	51	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	2.7	V/ns
Power Dissipation (Note 4)		P_D	44	W
Junction Temperature		T_J	+150	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

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. Repetitive Rating: Pulse width limited by maximum junction temperature.

3. $L=0.1\text{mH}$, $I_{AS}=32\text{A}$, $V_{DD}=25\text{V}$, $R_G=25\ \Omega$, Starting $T_J = 25^{\circ}\text{C}$

4. $I_{SD} \leq 30\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^{\circ}\text{C}$

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		θ_{JA}	110	$^{\circ}\text{C}/\text{W}$
Junction to Case		θ_{JC}	2.85	$^{\circ}\text{C}/\text{W}$

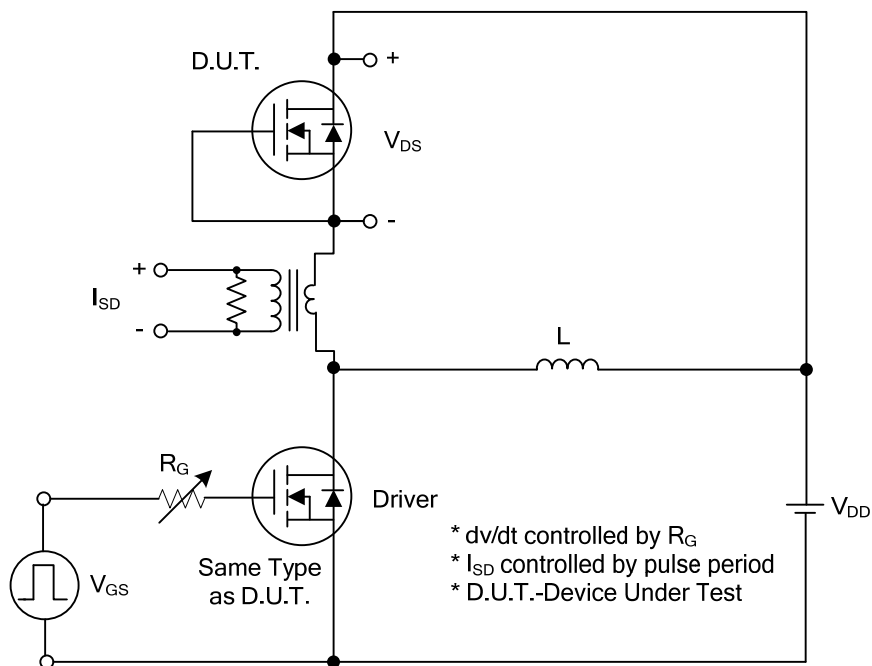
■ ELECTRICAL CHARACTERISTICS ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	55			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =55V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+100	nA
	Reverse		V _{GS} =-20V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.0		3.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =30A			11	mΩ
			V _{GS} =4.5V, I _D =30A			15	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		2350		pF
Output Capacitance		C _{OSS}			235		pF
Reverse Transfer Capacitance		C _{RSS}			195		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 1)		Q _G	V _{DS} =44V, V _{GS} =10V, I _D =60A		78		nC
Gate to Source Charge		Q _{GS}			10		nC
Gate to Drain Charge		Q _{GD}			26		nC
Turn-ON Delay Time (Note 1)		t _{D(ON)}	V _{DD} =30V, V _{GS} =0V, I _D =60A, R _G =3Ω		11		ns
Rise Time		t _R			19		ns
Turn-OFF Delay Time		t _{D(OFF)}			50		ns
Fall-Time		t _F			24		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				60	A
Maximum Body-Diode Pulsed Current		I _{SM}				120	A
Drain-Source Diode Forward Voltage (Note 1)		V _{SD}	I _S =60A, V _{GS} =0V			1.4	V
Body Diode Reverse Recovery Time (Note 1)		t _{rr}	I _S =30A, V _{GS} =0V,		46		nS
Body Diode Reverse Recovery Charge		Q _{rr}	dl _F /dt=100A/μs		25		nC

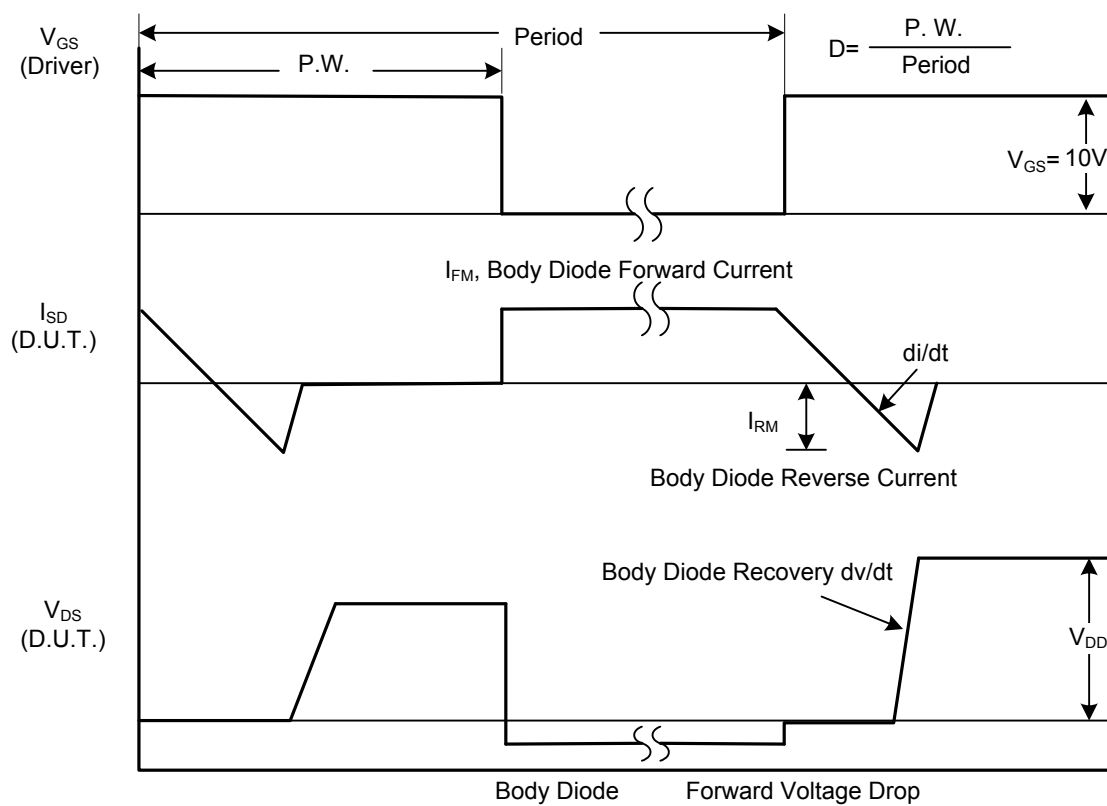
Notes: 1. The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycles $\leq 2\%$.

2. The power dissipation is limited by 150°C junction temperature.

■ TEST CIRCUITS AND WAVEFORMS

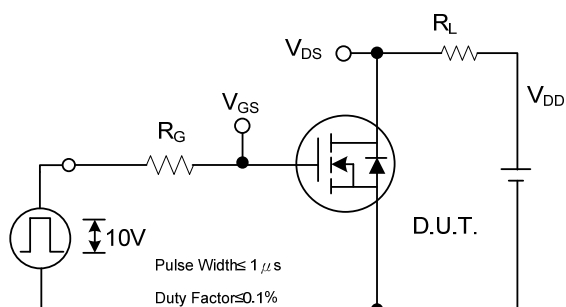


Peak Diode Recovery dv/dt Test Circuit

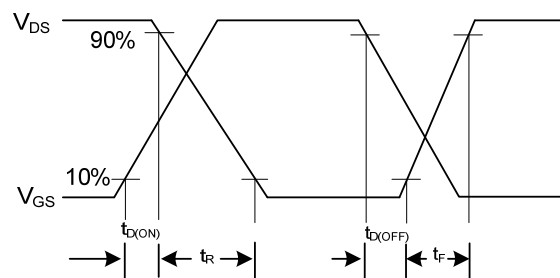


Peak Diode Recovery dv/dt Waveforms

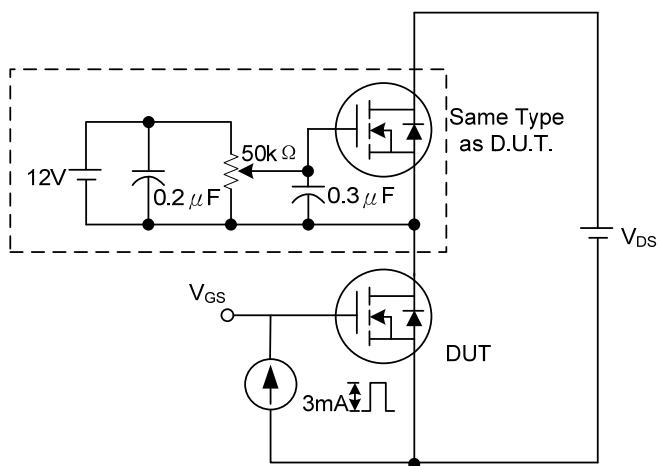
■ TEST CIRCUITS AND WAVEFORMS



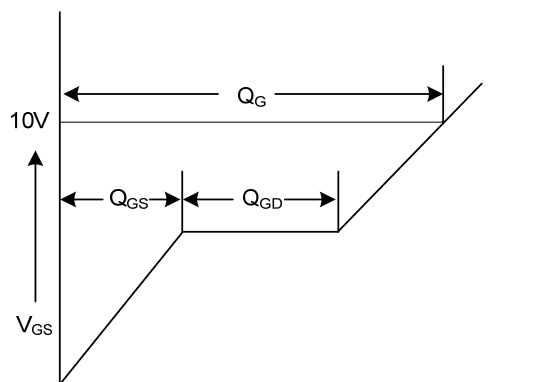
Switching Test Circuit



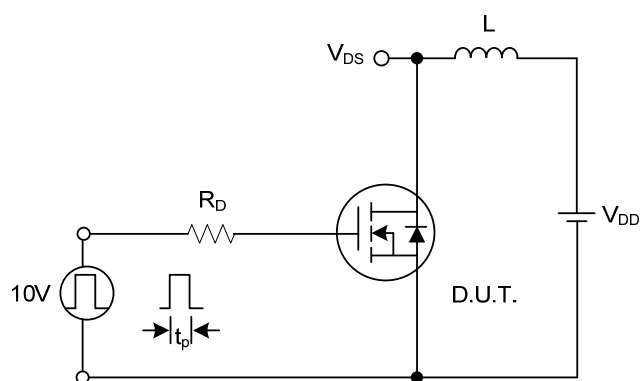
Switching Waveforms



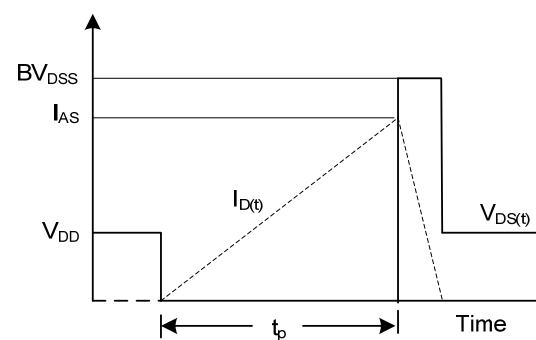
Gate Charge Test Circuit



Gate Charge Waveform

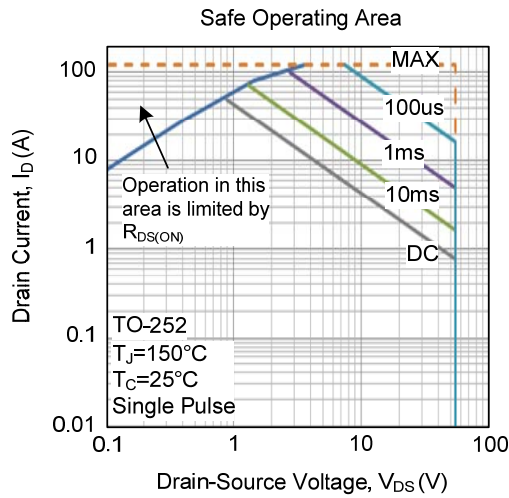


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS



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