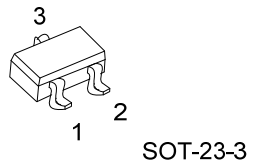
UTT2N10-H

POWER MOSFET

1.6A, 100V HEXFET POWER MOSFET



SOT-23-3
(JEDEC TO-236)

■ DESCRIPTION

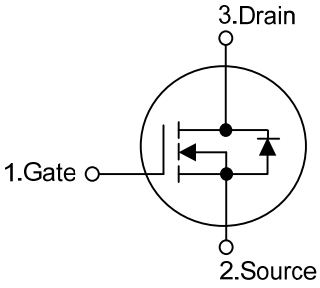
The UTC **UTT2N10-H** is an N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with high switching speed and low gate charge.

The UTC **UTT2N10-H** is suitable for Load/system switch.

■ FEATURES

* $R_{DS(ON)}$ ≤ 235mΩ @ V_{GS}=4.5V, I_D=1.3A
  $R_{DS(ON)}$ ≤ 220mΩ @ V_{GS}=10V, I_D=1.6A
* High switching speed
* Low gate charge

■ SYMBOL



■ ORDERING INFORMATION

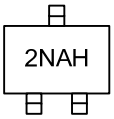
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT2N10L-AE2-R	UTT2N10G-AE2-R	SOT-23-3	G	S	D	Tape Reel

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

UTT2N10G-AE2-R

(1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) AE2: SOT-23-3
(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATING

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	100	V
Gate-Source Voltage			V_{GSS}	±16	V
Drain Current (V_{GS} @ 10V)	Continuous	T_A=25°C	I_D	1.6	A
		T_A=70°C		1.3	A
	Pulsed		I_{DM}	7.0	A
Power Dissipation		T_A=25°C	P_D	1.3	W
		T_A=70°C		0.8	W
Linear Derating Factor				0.01	W/°C
Junction Temperature			T_J	-55 ~ +150	°C
Storage Temperature Range			T_{STG}	-55 ~ +150	°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=70mH, I_{AS}=2.0A, V_{DD}=50V, R_G=25 Ω, Starting T_J = 25°C
4. I_{SD}≤2.4A, di/dt≤200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	100	°C/W

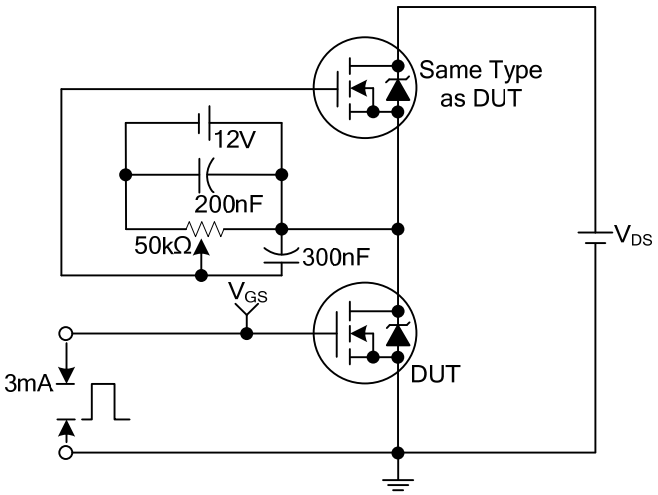
Note: Surface mounted on 1 in square Cu board.

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

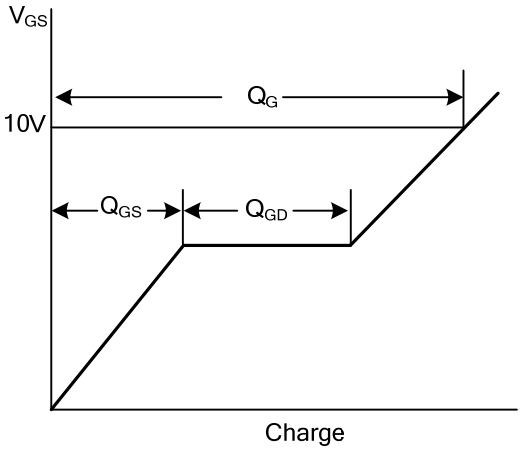
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=250μA	100			V
Breakdown Voltage Temperature Coefficient		$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C, I_D=1mA		0.10		mV/°C
Drain-Source Leakage Current		I_{DSS}	V_{DS}=100, V_{GS}=0V			20	μA
			V_{DS}=100V, V_{GS}=0V, T_J=125°C			250	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=16V			100	nA
	Reverse		V_{GS}=-16V			-100	nA
ON CHARACTERISTICS							
Static Drain-Source On-Resistance		$R_{DS(ON)}$	V_{GS}=4.5V, I_D=1.3A (Note 2)		190	235	mΩ
			V_{GS}=10V, I_D=1.6A (Note 2)		178	220	mΩ
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=25μA	1.0		2.5	V
Forward Transconductance		g_{FS}	V_{DS}=50V, I_D=1.6A	5.7			S
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		290		pF
Output Capacitance		C_{OSS}			27		pF
Reverse Transfer Capacitance		C_{RSS}			13		pF
Internal Gate Resistance		R_G			1.3		Ω
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	I_D=1.6A, V_{DS}=50V, V_{GS}=4.5V (Note 2)		2.5		nC
Gate-to-Source Charge		Q_{GS1}			0.5		nC
Gate-to-Drain ("Miller") Charge		Q_{GD}			1.2		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=50V, I_D=1.0A, R_G=6.8Ω V_{GS}=4.5V, (Note 2)		2.2		ns
Rise Time		t_R			2.1		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			9.0		ns
Fall Time		t_F			3.6		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Continuous Source Current (Body Diode)		I_S	MOSFET symbol showing the integral reverse p-n junction diode.			1.1	A
Pulsed Source Current (Body Diode) (Note 1)		I_{SM}				7.0	A
Drain-Source Diode Forward Voltage		V_{SD}	T_J=25°C, I_S=1.1A, V_{GS}=0V (Note 2)			1.3	V
Reverse Recovery Time		t_{rr}	T_J=25°C, I_F=1.1A, V_R=50V, di/dt=100A/us (Note 2)		20	30	ns
Reverse Recovery Charge		Q_{rr}			13	20	nC

Notes: 1. Repetitive rating; pulse width limited by max. Junction temperature.
2. Pulse width ≤ 400μs; duty cycle ≤ 2%.

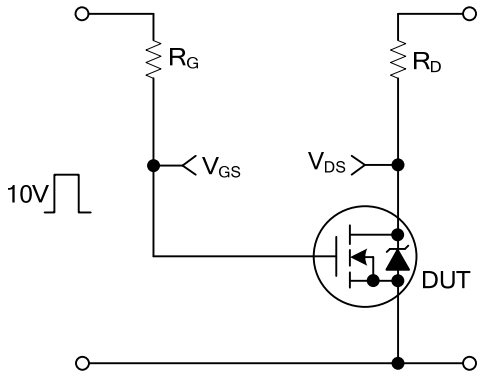
■ TEST CIRCUITS AND WAVEFORMS



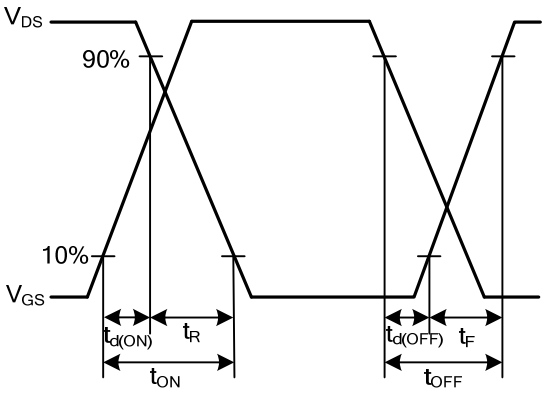
Gate Charge Test Circuit



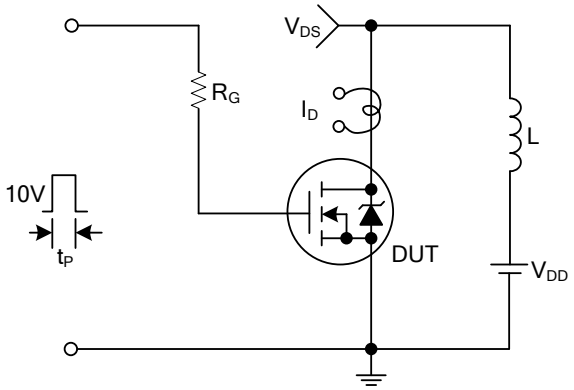
Gate Charge Waveforms



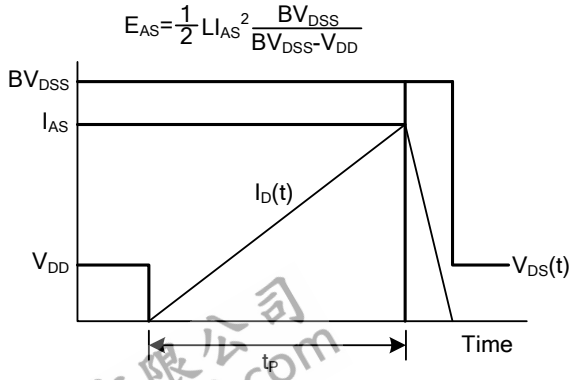
Resistive Switching Test Circuit



Resistive Switching Waveforms



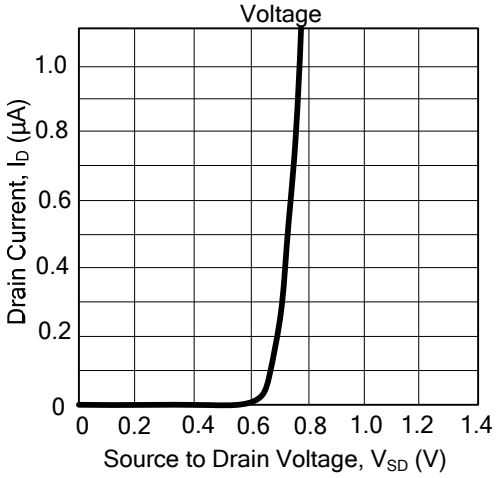
Unclamped Inductive Switching Test Circuit



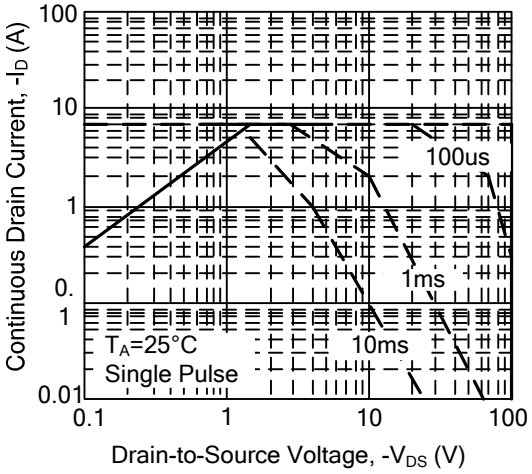
Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS

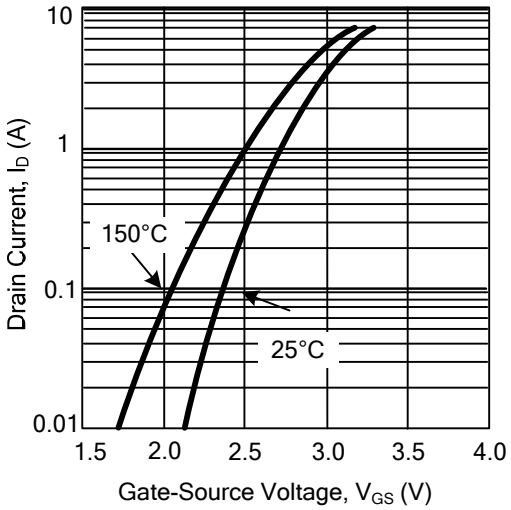
Drain Current vs. Source to Drain Voltage



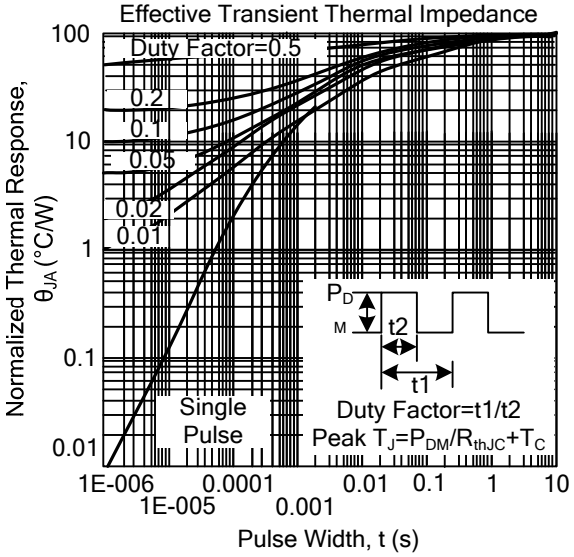
Maximum Safe Operating Area



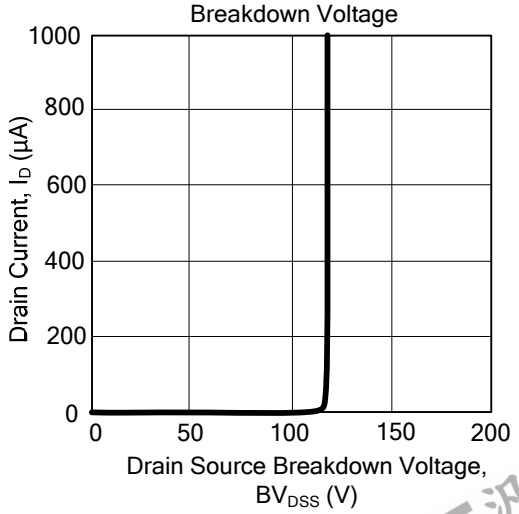
Transfer Characteristics



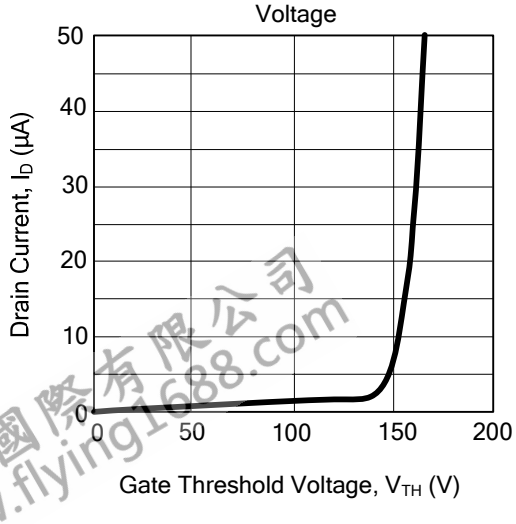
Effective Transient Thermal Impedance



Drain Current vs. Drain Source Breakdown Voltage



Drain Current vs. Gate Threshold Voltage



■ TYPICAL CHARACTERISTICS