



UT3416-H

Power MOSFET

6.7A, 20V N-CHANNEL MOSFET

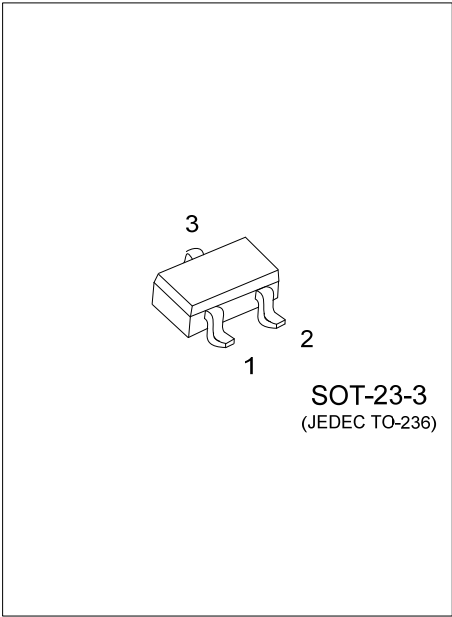
DESCRIPTION

The UTC **UT3416-H** is an N-Channel MOSFET, it uses UTC's advanced technology to provide customers with a minimum on-state resistance and high switching speed, etc.

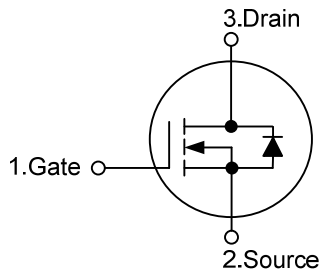
The UTC **UT3416-H** is suitable for high efficiency fast switching applications.

FEATURES

- * $R_{DS(ON)} \leq 19m\Omega @ V_{GS}=4.5V, I_D=4.0A$
- * High switching speed
- * Improved dv/dt capability



SYMBOL



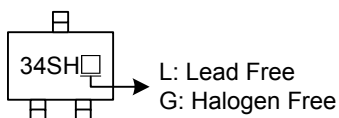
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3416L-AE2-R	UT3416G-AE2-R	SOT-23-3	G	S	D	Tape Reel

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

<p>UT3414G-AE2-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AE2: SOT-23-3 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT	
Drain-Source Voltage		V_{DSS}	20	V	
Gate-Source Voltage		V_{GSS}	± 10	V	
Drain Current	Continuous	I_D	$T_c=25^\circ\text{C}$	6.7	A
			$T_c=100^\circ\text{C}$	4.2	A
	Pulsed (Note 1)		I_{DM}	26.8	A
Power Dissipation	$T_c=25^\circ\text{C}$		P_D	1.56	W
	Derate above 25°C			0.012	W/ $^\circ\text{C}$
Junction Temperature		T_J	-55~+150	$^\circ\text{C}$	
Storage Temperature Range		T_{STG}	-55~+150	$^\circ\text{C}$	

Note: 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.

■ THERMAL CHARACTERISTICS

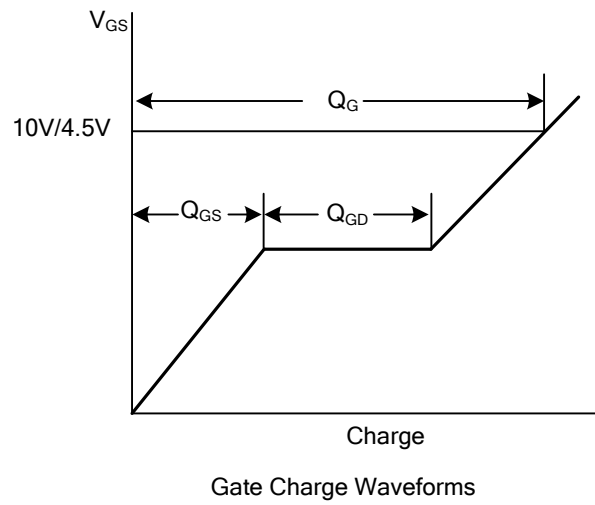
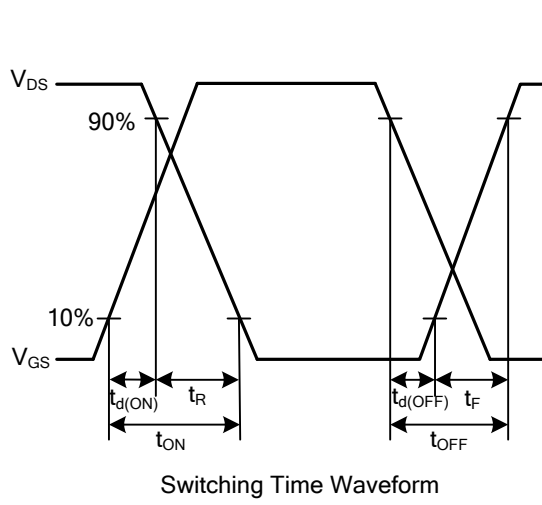
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	80	$^\circ\text{C}/\text{W}$

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

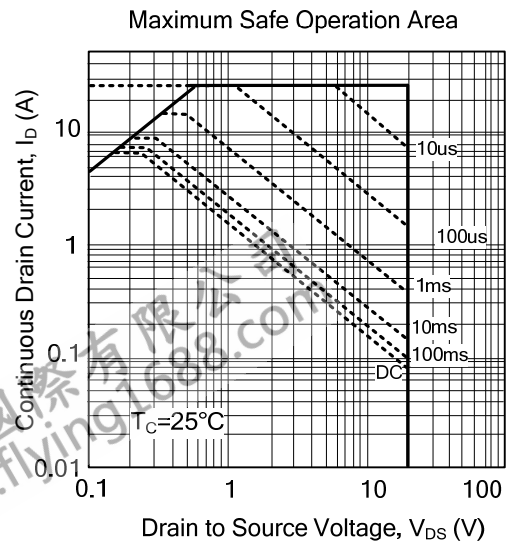
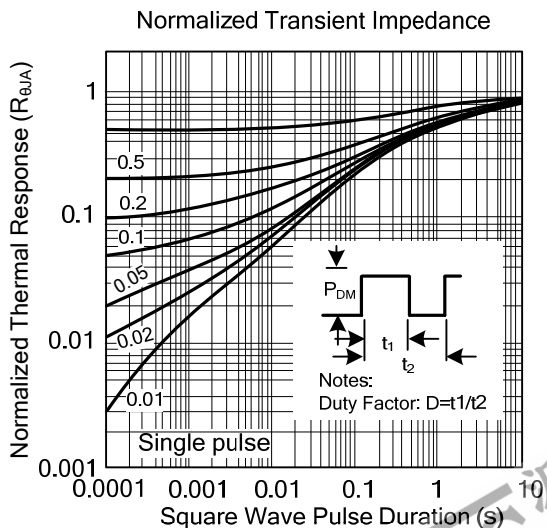
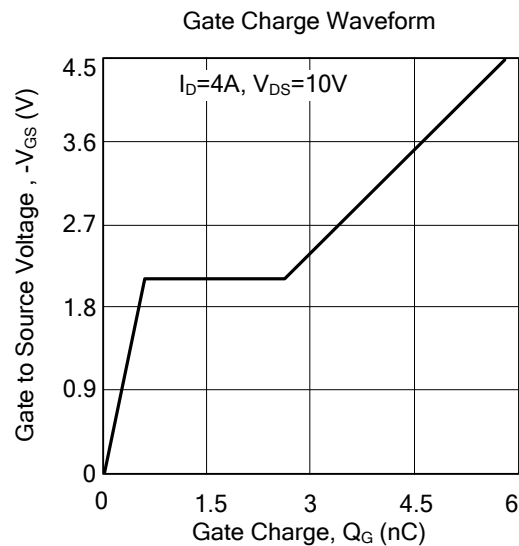
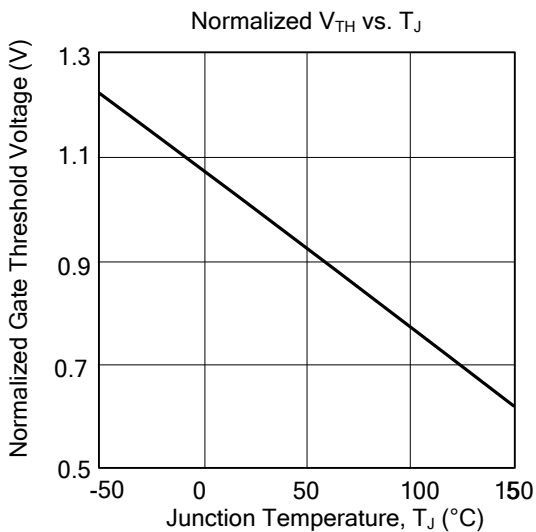
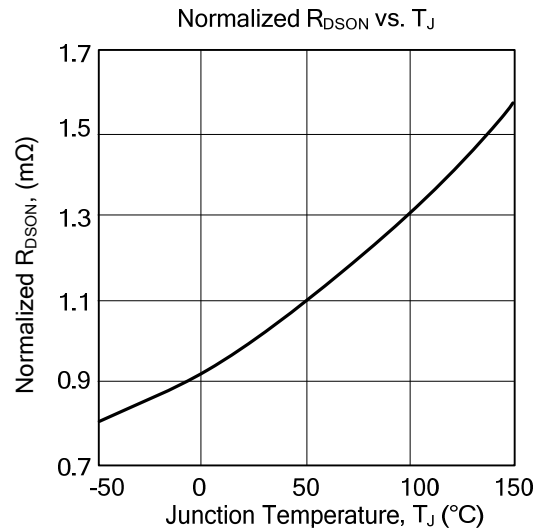
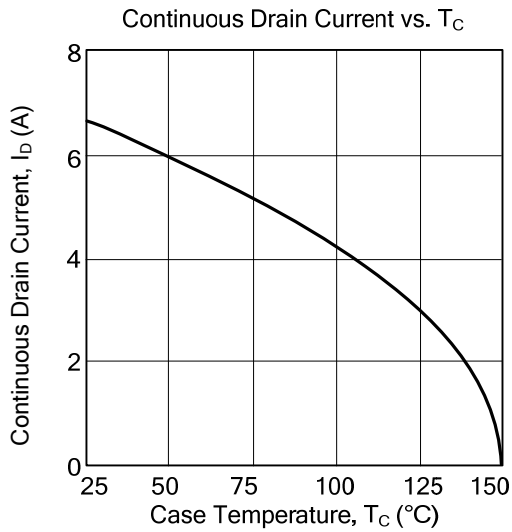
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	20			V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =1mA		0.02		V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V, T _J =25°C			1	μA
		V _{DS} =16V, V _{GS} =0V, T _J =125°C			10	μA
Gate-Source Leakage Current	Forward	V _{GS} =+10V, V _{DS} =0V			+100	nA
	Reverse	V _{GS} =-10V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.3	0.6	0.8	V
V _{GS(TH)} Temperature Coefficient	ΔV _{GS(TH)}			2		mV/°C
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =4A		15	19	mΩ
		V _{GS} =2.5V, I _D =3A		18	24	mΩ
		V _{GS} =1.8V, I _D =2A		23	32	mΩ
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =4A		9.5		S
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =10V, f=1.0MHz		600	870	pF
Output Capacitance	C _{OSS}			70	100	pF
Reverse Transfer Capacitance	C _{RSS}			45	65	pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 2, 3)	Q _G	V _{GS} =4.5V, V _{DS} =10V, I _D =4A		5.8	8	nC
Gate to Source Charge (Note 2, 3)	Q _{GS}			0.6	1	nC
Gate to Drain Charge (Note 2, 3)	Q _{GD}			2	4	nC
Turn-ON Delay Time (Note 2, 3)	t _{D(ON)}	V _{DD} =10V, V _{GS} =4.5V, I _D =1A, R _G =25Ω		5.0	9	ns
Rise Time (Note 2, 3)	t _R			14.4	27	ns
Turn-OFF Delay Time (Note 2, 3)	t _{D(OFF)}			30.0	55	ns
Fall-Time (Note 2, 3)	t _F			9.2	17	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current			6.7	A
Pulsed Source Current	I _{SM}				26.8	A
Drain-Source Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V, T _J =25°C			1	V

- Notes: 1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
 2. The data tested by pulsed, pulse width≤300μs, duty cycles≤2%.
 3. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS



TYPICAL CHARACTERISTICS



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