



UT3416

Power MOSFET

N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

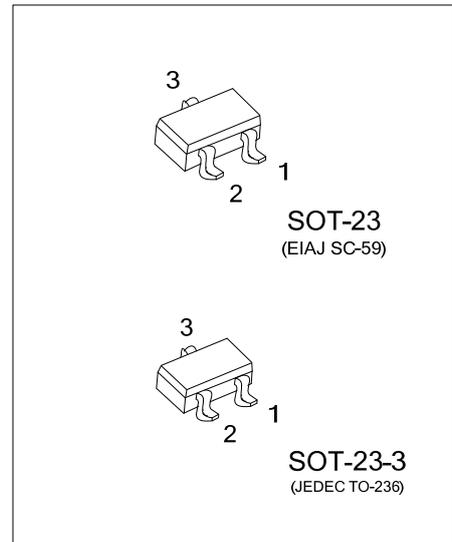
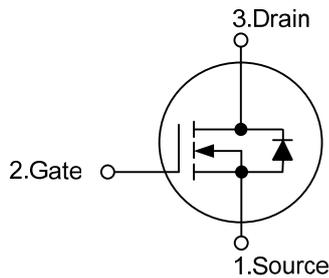
DESCRIPTION

The UTC **UT3416** is advanced n-channel enhancement MOSFET which can provide the designer with the best combination of excellent $R_{DS(ON)}$, low gate charge and low gate voltages as low as 1.8V. When it is used as a load switch or in PWM application, the UTC **UT3416** can be considered as an ideal.

FEATURES

- * $V_{DS} = 20\text{ V}$
- * $I_D = 6.5\text{ A}$
- * $R_{DS(ON)} < 22\text{ m}\Omega @ V_{GS} = 4.5\text{ V}, I_D = 6.5\text{ A}$

SYMBOL

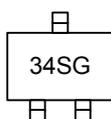


ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
UT3416G-AE2-R	SOT-23-3	S	G	D	Tape Reel
UT3416G-AE3-R	SOT-23	S	G	D	Tape Reel

	<p>(1) R: Tape Reel</p> <p>(2) AE2: SOT-23-3, AE3: SOT-23</p> <p>(3) G: Halogen Free and Lead Free</p>
--	--

MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GSS}	± 8	V
Continuous Drain Current ($T_A=25^\circ\text{C}$)	I_D	6.5	A
Pulsed Drain Current (Note 2)	I_{DM}	30	A
Power Dissipation ($T_A=25^\circ\text{C}$)(Note 3)	P_D	1.4	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. Pulse width limited by $T_{J(MAX)}$

3. Surface mounted on 1in² copper pad of FR4 board.

■ THERMAL DATA

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient (Note)	θ_{JA}		85	125	$^\circ\text{C}/\text{W}$

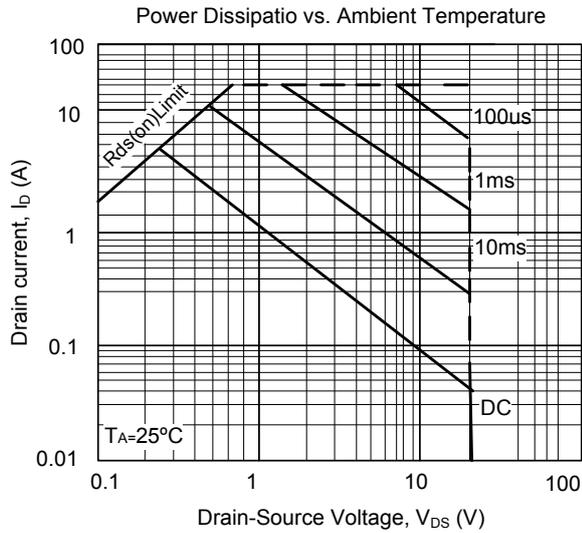
Note: Surface mounted on 1 in² copper pad of FR4 board

■ 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}	$V_{GS} = 0V, I_D = 250\mu\text{A}$	20			V
Drain-Source Leakage Current	I_{DSS}	$V_{GS} = 0V, V_{DS} = 16V$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 4.5V, V_{DS} = 0V$			± 1	μA
		$V_{GS} = \pm 8V, V_{DS} = 0V$			± 10	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	0.4	0.6	1	V
On State Drain Current	$I_{D(ON)}$	$V_{GS} = 4.5V, V_{DS} = 5V$	30			A
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 6.5A$		18	22	m Ω
		$V_{GS} = 2.5V, I_D = 5.5A$		21	26	m Ω
		$V_{GS} = 1.8V, I_D = 5A$		26	34	m Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS} = 0V, V_{DS} = 10V, f = 1\text{MHz}$		910	1100	pF
Output Capacitance	C_{OSS}			250	270	pF
Reverse Transfer Capacitance	C_{RSS}			230	250	pF
Gate Resistance	R_G	$V_{GS} = 0V, V_{DS} = 0V, f = 1\text{MHz}$		1.5		Ω
SWITCHING PARAMETERS						
Turn-ON Delay Time	$t_{D(ON)}$	$V_{GS} = 5V, V_{DS} = 10V$ $R_L = 10\Omega, R_{GEN} = 3\Omega$		30	50	ns
Turn-ON Rise Time	t_R			75	85	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			335	360	ns
Turn-OFF Fall-Time	t_F			210	250	ns
Total Gate Charge	Q_G	$V_{DS} = 10V, V_{GS} = 4.5V, I_D = 6.5A$		155	170	nC
Gate Source Charge	Q_{GS}			12		nC
Gate Drain Charge	Q_{GD}			14		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Forward Voltage	V_{SD}	$I_S = 1A, V_{GS} = 0V$		0.76	1	V
Maximum Body-Diode Continuous Current	I_S				2.5	A
Body Diode Reverse Recovery Time	t_{RR}	$I_F = 6.5A, dI/dt = 100A/\mu\text{s}$		17.7		ns
Body Diode Reverse Recovery Charge	Q_{RR}			6.7		nC

Note: Surface mounted on 1 in² copper pad of FR4 board.

■ TYPICAL CHARACTERISTICS



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.