



UT3416

Preliminary

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

* $V_{DS} = 20\text{ V}$

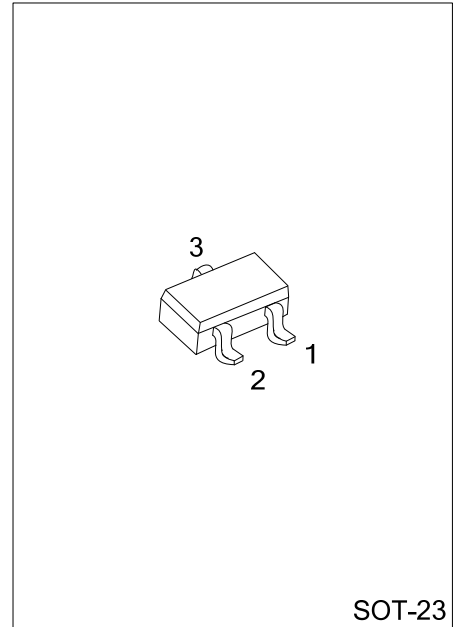
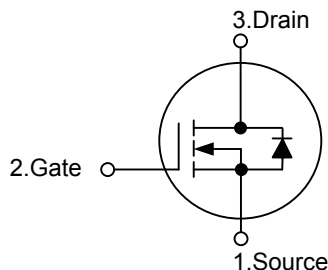
* $I_D = 6.5\text{ A}$

* $R_{DS(ON)} < 22\text{ m}\Omega$ @ $V_{GS} = 4.5\text{ V}$

$R_{DS(ON)} < 26\text{ m}\Omega$ @ $V_{GS} = 2.5\text{ V}$

$R_{DS(ON)} < 34\text{ m}\Omega$ @ $V_{GS} = 1.8\text{ V}$

SYMBOL

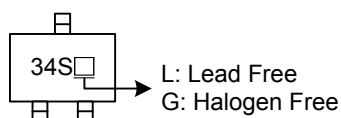


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3416L-AE3-R	UT3416G-AE3-R	SOT-23	S	G	D	Tape Reel

		(1) Packing Type	(1) R: Tape Reel
		(2) Package Type	(2) AE3: SOT-23
		(3) Lead Plating	(3) G: Halogen Free, L: Lead Free

MARKING



■ ABSOLUTE MAXIMUM RATINGS (Ta = 25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±8	V
Continuous Drain Current (Ta=25°C)	I_D	6.5	A
Pulsed Drain Current (Note 2)	I_{DM}	30	A
Power Dissipation (Ta=25°C)(Note 3)	P_D	1.4	W
Junction Temperature	T_J	+150	°C
Storage Temperature	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. 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	°C/W

Note: Surface mounted on 1 in² copper pad of FR4 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	20			V
Drain-Source Leakage Current	I _{DSS}	V _{GS} =0V, V _{DS} =16V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±4.5V, V _{DS} =0V			±1	μA
		V _{GS} = ±8V, V _{DS} =0V			±10	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	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	mΩ
		V _{GS} =2.5V, I _D =5.5A		21	26	mΩ
		V _{GS} =1.8V, I _D =5A		26	34	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =10V, f =1MHz		1160		pF
Output Capacitance	C _{OSS}			187		pF
Reverse Transfer Capacitance	C _{RSS}			146		pF
Gate Resistance	R _G	V _{GS} =0V , V _{DS} =0V, f =1MHz		1.5		Ω
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =10V, V _{GS} =4.5V, I _D =6.5A		16		nC
Gate Source Charge	Q _{GS}			0.8		nC
Gate Drain Charge	Q _{GD}			3.8		nC
Turn-ON Delay Time	t _{D(ON)}	V _{GS} =5V, V _{DS} =10V R _L =1.5Ω, R _{GEN} =3Ω		6.2		ns
Turn-ON Rise Time	t _R			12.7		ns
Turn-OFF Delay Time	t _{D(OFF)}			51.7		ns
Turn-OFF Fall-Time	t _F			16		ns
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/μs		17.7		ns
Body Diode Reverse Recovery Charge	Q _{RR}			6.7		nC

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

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